AMENDED TECHNICAL REPORT

ON THE

MINERAL RESOURCE ESTIMATE FOR THE PITARRILLA AG-PB-ZN PROJECT, DURANGO STATE, MEXICO

NAD83 UTM Zone 13R 504000 m E; 2811300 m N
LATITUDE 25° 25.1’ S, LONGITUDE 104° 57.6’ W

Prepared for:

Endeavour Silver Corp.
1130 – 609 Granville Street
Vancouver, B.C., Canada, V7Y 1G5

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Qualified Persons
Allan Armitage, Ph. D., P. Geo.,

Company
SGS Geological Services (“SGS”)

SGS Project # P2022-15

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1 SUMMARY

SGS Geological Services Inc. ("SGS") was contracted by Endeavour Silver Corp., ("Endeavour" or the "Company") to complete a Mineral Resource Estimate ("MRE") update for the Pitarrilla Project ("Project" or "Property") including the Pitarrilla Silver-Lead-Zinc Deposit ("Deposit"), located near Durango State, Mexico, and to prepare a National Instrument 43-101 ("NI 43-101") Technical Report written in support of the MRE.

On January 12, 2022, Endeavour entered into a definitive agreement to purchase the Project by acquiring all of the issued and outstanding shares of SSR Durango S.A. de C.V. (SSD) from SSR Mining Inc. ("SSR") for total consideration of $70 million, consisting of $35 million in common shares and a further $35 million in cash or in common shares at the election of SSR and agreed to by the Company, and a grant of a 1.25% NSR royalty. The acquisition was completed on July 6, 2022. Total consideration paid included 8,577,380 shares of the Company issued on July 6, 2022, with a deemed value of $34,909,937 and a $35,066,829 cash payment.

The Company is engaged in silver mining in Mexico and related activities including property acquisition, exploration, development, mineral extraction, processing, refining and reclamation. The Company is also engaged in exploration activities in Chile and Nevada, USA. Since 2002, the Company's business strategy has been to focus on acquiring advanced-stage silver mining properties in Mexico. Endeavour is headquartered in Vancouver, British Columbia (1130 – 609 Granville Street Vancouver, B.C., Canada, V7Y 1G5) with management offices in Leon, Mexico and Durango, Mexico, and is listed on the Toronto (TSX:EDR), New York (NYSE:EXK) and Frankfurt (FSE:EJD) stock exchanges.

The current report is authored by Allan Armitage, Ph.D., P. Geo., ("Armitage" or the "Author") of SGS, and the MRE presented in this report was estimated by Armitage. Armitage is an independent Qualified Person as defined by NI 43-101 and is responsible for all sections of this report.

1.1 Property Description, Location, Access, and Physiography

The Property is located within the Municipality of Inde, on the eastern flank of the Sierra Madre Occidental mountain range in the central part of Durango State, Mexico, and is centered at 25 degrees 25 minutes south latitude and 104 degrees 57 minutes west longitude. The city of Victoria de Durango, the capital of Durango state, is located 160 km southwest of the property and the major city of Torreón (capital of Coahuila state) 160 km to the east.

The nearest population centers are San Francisco de Asís (located 12 km to the northeast of the property) and Casas Blancas (situated in the northeast portion of the project concessions). Both villages are located in Durango State. San Francisco de Asís has a population of about 800 and Casas Blancas has a population of approximately 120. The larger population centers near the project, Torreón and Victoria de Durango, have approximately 1.5 million and 1 million inhabitants, respectively.

The Property is defined as the group of mining concessions and the surface rights that partially overlie the mining concessions. The Property is formed by 5 contiguous mineral concessions entitled to SSD and covering a total area of approximately 4,950 hectares. SSD is a Mexican corporate entity, and a wholly-owned subsidiary of Endeavour.

On June 30, 2015 SSD requested before the mining authorities the reduction of the mining concession "La Pitarrilla 2" (title number 220231), from 5,771.2505 hectares to 3,221.2517 hectares, assigning a new name to the claim "La Pitarrilla 2 Reducción", record number 2/2-0245. The reduction is in process to be approved.

SSD has acquired surface rights to most of the lands required for successful project permitting, construction and operation.

The Property is currently accessible through a network of public roadways in the region. From Durango, access is gained by traveling north along paved highway 45 for 235 km, then south west on paved highway

30 to El Palmeto and then south on unpaved public roads to Casa Blancas. The main access to the Project site is planned to be along the approximate 47 km of public and private dirt roadways, from the junction with paved Highway 45, to the Project's southeast gate. The primary site access road will utilize the existing roadway serving the nearby local community of San Francisco de Asís, with secondary access via the existing road to Casas Blancas. Improvements are required for the main road, the most significant of which is the addition of a permanent bridge over the Nazas River, approximately 11 km from the Property site.

The Project and all parts of the deposit area, from the main project facilities, is road accessible and can be accessed by pickup truck, larger supply trucks, truck and low-bed (float) trailer carrying mine equipment and drill equipment, and self-driven mine trucks.

Power for the Project is available from the national power grid at the Subestacion Electrica Canatlán II (substation) located approximately 139 km south of the plant site. The power will be provided by the national power utility, CFE.

Fresh make-up water to the project will be provided from several wells located on the property near the Nazas River, approximately 10 km from the Project site. Water from the wells will be pumped to a booster tank and, from there, be pumped to Project water consumers.

There is a well-established camp for the Project. The camp is in the southern area of the town of Casas Blancas and includes the following facilities: general offices, welding workshop, mechanical workshop, general warehouse, clinic-medical services, as well as six core storage facilities. The camp provides accommodation for a capacity of 101 personnel, as well as dining facilities with a capacity for 110 people.

1.2 History of Exploration, Drilling

Available records of mineral exploration conducted on the Property and immediately adjacent ground date back to 1996. In 2002, Silver Standard contracted F. Hillemeyer and P. Durning of La Cuesta International, Inc. ("LCI") to acquire mineral properties in Mexico which showed good exploration potential for silver. One of the areas LCI recommended for claiming was the ground covered by the Pitarrilla Project claim group. Between November 2002 and March 2003, a total of 12 concessions covering 136,191 hectares were claimed by Explominerals, S.A. de C.V. on behalf of Silver Standard.

Beginning in 2002, several programs of rock-chip sampling were completed over the core of the Property, where multiple zones of silver mineralization eventually came to be outlined. The outlined zones represented exploration targets that were eventually drill-tested, resulting in the discovery of the five zones of oxide silver mineralization that form the upper part of the Pitarrilla Project deposit.

A number of diamond and reverse circulation ("RC") drilling campaigns were undertaken by SSR on the Property between September 2003 and July of 2012. A total of 852 diamond and RC drillholes totaling 258,658 m have been completed on the Property.

Monarch Resources de Mexico, S.A. de C.V. completed a Phase I drilling program on the Fluorite Mine Target in 1996, including 22 RC drillholes totalling 2,842 m. The drilling was on the Property, but not in the area of the current Mineral Resource.

The greatest amount of exploration-related data has come from the several campaigns of reverse circulation and diamond drilling completed by Silver Standard on the Property between September 2003 and July 2012.

From September 2003 until October 2005, 186 reverse circulation holes with a combined length of 20,619 m were drilled on the Property. The RC drillholes targeted oxide mineralization in the Cordon Colorado, Peña Dyke, and Javelina Creek Zones (Figure 10 2 and Figure 10 3).

Between 2005 and July 2012, 428 diamond drillholes were drilled for exploration and resource infill purposes, with a total of 183,358 m being completed (Figure 10 4 and Figure 10 5). The majority of the drillcore was of HQ diameter, though core samples from depths below surface greater than about 450 m were generally of NQ diameter. To provide a sufficient amount of core from different types of mineralization for metallurgical testing, nine drillholes of HQ diameter were cored into the deposit in 2008 for a total of 6,126 m. An additional four holes of PQ diameter were drilled into four of the five zones of oxide silver mineralization to obtain core samples for communition tests. In the area of the deposit, 31 drillholes (including re-drills), totalling 12,834 m, were drilled for mining-related geotechnical information between 2010 and 2012. Condemnation, water well, piezometer, and short geotechnical holes drilled for the investigation of foundations for site facilities were also completed during the history of the project.

Most recently, during May and June of 2012, 33 closely-spaced diamond drillholes totaling 8,914 m were completed as part of a study to investigate the short distance variability of oxide and transitional silver mineralization in the upper 200-250 m of the Pitarrilla deposit. These holes were drilled along three control lines, two oriented ENE-WSW with the third line crossing the other two lines perpendicular to them (Figure 10 4). The orientation of drillholes varied in order to drill perpendicular to the interpreted orientation of the mineralised bodies. The dips of all drillholes were between 45° and 90°. In the Breccia Ridge Zone, drillholes were generally oriented vertically or at azimuths of 240° dipping at an average of 55°. In the South Ridge Zone, the drillholes were oriented at 100° and 274° with dips averaging 60°. In the Peña Dyke Zone, drillholes were drilled at azimuths of 200° and 025° degrees with dips at 60°. In the Cordon Colorado and Javelina Creek Zones, there were no preferred drillhole orientations.

All geological data has been reviewed and verified by the Author as being accurate to the extent possible and to the extent possible all geologic information was reviewed and confirmed. There were no errors or issues identified with the database. The Author is of the opinion that the database is of sufficient quality to be used for the current Indicated and Inferred MRE.

1.3 Geology and Mineralization

The Property is located on the eastern flank of the Sierra Madre Occidental mountain range. This mountain range is the erosional remnant of one of the Earth's most voluminous accumulations of intermediate to felsic volcanic rocks, which formed a calc-alkaline magmatic arc that was built during Eocene to early Miocene time, roughly 52 to 25 million years ago, in response to subduction of the Farallón tectonic plate beneath North America, this mountain building event is known as the Laramide Orogeny. A large number of medium to high-level hydrothermal systems variably enriched in Ag, Au, Pb, and Zn were intermittently generated during this extended period of volcanism, including the epithermal mineral systems that formed the great Mexican silver mining districts at Guanajuato, Real de Angeles in Zacatecas, Fresnillo, and Santa Barbara-San Francisco del Oro. The silver-lead-zinc mineralization found on the Pitarrilla property is situated in Central Mexican Silver Belt, a metallogenic province defined by the four previously noted silver mining districts along with the mining districts of Parral, Santa Maria del Oro, and Sombrerete-Chalchihuites.

The Pitarrilla Project Ag-Zn-Pb deposit is hosted by deformed Cretaceous marine sediments and unconformably overlying Eocene (52 to 40 Ma) and Oligocene (32 to 28 Ma) volcanics volcaniclastics and intrusives. Eocene volcanics and volcaniclastics were derived from arc volcanism and from the erosion of subaerial arc volcanoes and deposited into a back-arc basin. Uplift of the basin was accompanied by extension and voluminous bi-modal volcanism with the emplacement of andesitic and felsic sills and dykes during the early Oligocene. The culmination of the volcanism was the development of a rhyolitic dome which crops out on Cerro La Pitarrilla.

Ag-Zn-Pb mineralization at the Pitarrilla Project occurs as a vertically stacked mineralised system centered on rhyolitic dykes and sills that constitute the feeder system for an early Oligocene volcanic center manifest by the rhyolitic dome. Sulphide-associated mineralization is rooted in the basement Cretaceous sedimentary strata and is represented by an aerially restricted but vertically extensive zone of disseminated and veinlet Ag-Zn-Pb (-Cu-As-Sb) sulphide mineralization and strata-bound massive replacement mineralization within a polymictic conglomerate that occur at the Cretaceous-Eocene unconformity.

The sulphide mineralization extends into the overlying Eocene and Oligocene volcaniclastic rocks and felsic sills, where it grades into mixed sulphide–oxide or transitional mineralization and a more laterally extensive zone of disseminated iron oxide-associated mineralization. The Ag-Zn-Pb mineralization is interpreted to have occurred during or after emplacement of the early Oligocene rhyolitic dome.

The Pitarrilla deposit is centrally located within the Central Mexican Silver Belt, which is defined by numerous Ag-Pb-Zn (±Au ±Cu) deposits and is classified as an intermediate sulphidation epithermal deposit.

1.4 Mineral Processing, Metallurgical Testing and Recovery Methods

In 2004, Silver Standard initiated testwork to provide a better understanding of the Pitarrilla deposit metallurgy and to establish design criteria for the mineral extraction process. The test programs have included initial scoping studies, flotation process development for sulphide ore, cyanide leaching development for oxide ore, and a combination of processes for the transitional (located between sulphide and oxide ore zones) and sulphide ores. Within the testwork, four pilot flotation tests of sulphide ore were completed.

The testwork has covered most of the possible process options, but until now, it was difficult to predict metallurgical performance based on material type and location. The historic representation of a mixed oxide and sulphide ore body has become better defined as, an ore body with oxide ore on surface, an intermediate zone of transition ore comprised of both oxide and sulphide ores below, and sulphide ore at depth.

Laboratory and pilot scale testing on sulphide ore composite samples demonstrated that the sulphide mineralization was readily amenable to flotation process treatment. A conventional lead-zinc sequential flotation separation flow sheet is the basis of the process design. The variability flotation testwork indicated that the sulphide mineralized zones are relatively similar in terms of ore grindability, chemical and mineral compositions, and flotation response. Galena can be recovered into a flotation concentrate that will also contain the majority of the silver in the ore. The tailings from the lead flotation circuit can then be processed by flotation, to recover most of the sphalerite mineral in an acceptable zinc flotation concentrate.

Laboratory testing on oxide ore composite samples demonstrated that the oxide mineralization was amenable to the cyanide leach process for the extraction of silver. A conventional cyanide leach circuit flow sheet is the basis of the process design. The variability leaching testwork indicated that the oxide mineralized zones are relatively similar in terms of ore grindability, chemical and mineral compositions, and cyanide leaching response.

Laboratory testing on transitional ore composite samples demonstrated that the transition mineralization was amenable to flotation process treatment and the flotation tailings were amenable to the cyanide leach process for the extraction of silver. It was determined that the circuit proposed for the sulphide mineral flotation process would perform acceptably for the transition material and that the cyanide leach circuit, proposed for the oxide leaching circuit, would also perform acceptably for the transition material. The variability testwork indicated that the transition mineralized zones are relatively similar in terms of ore grindability, chemical and mineral compositions, and leach response.

Identifying the mineralized material by oxidation code (0 for Sulphide to 5 for Oxide) has allowed the metallurgical test results to be understood. The results were categorized to develop a predictive model of metallurgical performance for each material type. The models for sulphide material treated by the flotation process are conventional metal head grade to recovery relationships. For the transition material that will be processed by flotation and cyanide leaching, the sulphide models can be used. The predicted performance from the sulphide model can be reduced with increasing values of the oxidation code for a particular block of material. The flotation model cannot be used for material with an oxidation code above 3.5 (i.e. more oxidized). The models for cyanide leaching, of the flotation tailings and the oxide material, are based on a grade recovery relationships indicated from the test results.

The overall modeling logic for flotation includes three, separate mathematical units:

- Firstly, for each metal, a basic head grade to rougher recovery relationship;
- Secondly, an adjustment factor to this recovery to account for degree of oxidation
- Thirdly, a cleaning stage recovery applied to the oxidation adjusted rougher recovery.

The flotation tests results were combined into one larger data set for all rock types on the basis that the sulphide mineralogy is consistent across the rock types. The drill hole and sample intervals used to generate each metallurgically tested sample or composite were identified. For each interval, the geological oxidation code was recorded against the sample or composite and therefore each flotation test can be identified by an oxidation code value. All tests with particle sizes significantly finer or coarser than the plant design grind size distribution of 80 percent passing 150 micron have not been included.

The combined data set for oxidation codes 0 to 2 (i.e. sulphide material) contains the results of some 130 individual rougher tests, 113 tests with cleaning stages, plus the four pilot plant campaigns. The raw data was sorted or "binned" into short grade ranges of metal values (i.e. silver, lead, zinc and copper) and then averaged. The binned averages were then analyzed by making scatter plots of comparative data, for example "percent lead head grade" versus "recovery of lead in lead rougher flotation". A "best-fit" three-term polynomial curve was fitted to each scatter plot. The apogee of a curve fitting the "percent lead head grade" and the "recovery of lead in lead rougher flotation" data points defines the value above which recovery is fixed at a maximum value.

1.5 Pitarrilla Deposit Mineral Resource Estimate

Completion of the current MRE for the Property involved the assessment of a drill hole database, which included all data for surface drilling completed through the end of 2012, as well as three-dimensional (3D) mineral resource models (resource domains), 3D geological models, 3D surface models of fault structures, a 3D topographic surface model, and available written reports.

Inverse Distance Squared ("ID2") calculation method restricted to mineralized domains was used to interpolate grades for Ag (g/t), Pb (ppm) and Zn (ppm) into a block model. The current MRE takes into consideration that the Pitarrilla deposit may be mined by open pit and underground mining methods.

In order to complete the MRE for the Pitarrilla deposit, a database comprising a series of comma delimited spreadsheets containing surface RC and diamond drill hole information was provided by Endeavour. The database included hole location information, down-hole survey data, assay data, lithology data and density data. The data in the assay table included assays for Ag (g/t), Pb (ppm) and Zn (ppm), as well as Cu (ppm) As (ppm), S (%), Ca (%) and AgCN (ppm). After review of the database, the data was then imported into GEOVIA GEMS version 6.8.3 software ("GEMS") for statistical analysis, block modeling and resource estimation.

The original database provided by Endeavour included data for 831 surface RC and diamond drill holes, including 804 drill holes completed by Silver Standard between 2003 and 2012. Thus, the database used for the current MRE comprises data for 804 surface RC and diamond drill holes which total 254,386 m. The database totals 134,441 assay intervals for 188,816 m.

The database was checked for typographical errors in drill hole locations, down hole surveys, lithology, assay values and supporting information on source of assay values. Overlaps and gapping in survey, lithology and assay values in intervals were checked. All assays had analytical values for Ag (g/t), Pb (ppm) and Zn (ppm).

The Author was provided with a total of 19 3D Resource models (mineral domains), to be used for the current MRE, as well as 9 lithological 3D solids and a digital elevation surface model. All models were constructed by Silver Standard for the 2012 historical MRE. All mineral domains are clipped to topography.

The Author has reviewed the resource models on section and in the Author's opinion the models provided are very well constructed and fairly accurately represents the distribution of the various styles of mineralization, i.e. high grade vs low grade mineralization; oxide, transition and sulphide mineralization; and, steep breccia/quartz vein and horizontal manto style sulphide mineralization. No re-modeling of the deposits is recommended at this time. Limited sporadic mineralization exists outside of these wireframes, as well as along strike and at depth. With additional drilling, some areas of scattered mineralization may get incorporated into the mineral domains.

The main Pitarrilla deposit generally strikes 330° to 335° and dips/plunges steeply east-northeast (-60° to -65°). Additional oxide mineralization in the Cordon Colorado and Javelina Creek Zones extend for 700 to 900 m southwest and northeast of the main Breccia Ridge Zone.

The assay sample database available for the revised resource modelling totalled 134,441 representing 188,816 m of drilling. Of this, a total of 53,758 assays occur within the Pitarrilla deposit mineral domains. A statistical analysis of the assay data from within the mineralized domains, by state of oxidation, is presented in Table 14 3. Average length of the assay sample intervals is 1.33 to 1.45. Of the total assay population approximately 97% are 1.53 m or less with approximately 64% of the samples between 1.50 and 1.53 m and 92 % between 1.00 m and 1.53 m in length and only 8% greater than 1.53 m. To minimize the dilution and over smoothing due to compositing, a composite length of 1.50 m was chosen as an appropriate composite length for the current MRE.

Composites were constrained to the individual mineral domains. The constrained composites were extracted to point files for statistical analysis and capping studies. The constrained composites were grouped based on the mineral domain (rock code) of the constraining wireframe model. A total of 49,994 composite sample points occur within the resource wire frame models. High grade capping of Ag, Pb and Zn was done on 1.50 m composite data.

The Author was provided with a database of 8,535 dry bulk density ("DBD") measurements for the current MRE. DBD measurements were selected to be spatially and geologically representative (i.e., representative of geology, lithology, structure, mineralization, alteration). The density database was sub-divided by mineralization and waste domain. A total of 5,085 DBD values are from mineralized domains and 3,453 values are from waste domains. Based on a review of the available density data, it was decided that a fixed value be used for each resource model and waste model.

1.5.1 Mineral Resource Statement

The MRE presented in this Technical Report was prepared and disclosed in compliance with all current disclosure requirements for mineral resources set out in the NI 43-101 Standards of Disclosure for Mineral Projects (2016). The classification of the current Mineral Resource Estimate into Indicated and Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves, including the critical requirement that all mineral resources "have reasonable prospects for eventual economic extraction".

The general requirement that all Mineral Resources have "reasonable prospects for economic extraction" implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate cut-off grade taking into account extraction scenarios and processing recoveries. In order to meet this requirement, the Author considers that the Pitarrilla deposit mineralization is amenable for open pit and underground extraction.

In order to determine the quantities of material offering "reasonable prospects for economic extraction" by an open pit, Whittle™ pit optimization software 4.7.1 and reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be "reasonably expected" to be mined from an open pit were used. The pit optimization was completed by SGS. The pit optimization parameters used are summarized in Table 1-1. A Whittle pit shell at a revenue factor of 1.0 was selected as the ultimate pit shell for the purposes of this MRE. The optimized pit has been limited to the base of the transition mineralization.

The reader is cautioned that the results from the pit optimization are used solely for the purpose of testing the "reasonable prospects for economic extraction" by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade. A selected base case cut-off grade of 50 g/t AgEq is used to determine the in-pit MRE for the Pitarrilla deposit.

In order to determine the quantities of material offering "reasonable prospects for economic extraction" by underground mining methods, reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be "reasonably expected" to be mined from underground are used. The Pitarrilla sulphide mineralized zones have sufficient widths and continuity suitable for low cost bulk mining methods such as longhole stoping. The average true width of the manto style mineralization is 32 m within a range of 2.4 m and 104 m (90 % of drill intercepts > 10 m true width). The average true width of the breccia style mineralization is 31 m within a range of 1.2 m and 119 m (81 % of drill intercepts > 10 m true width). Based on other Endeavor operations in Mexico, a minimum mining thickness of 0.8 m is required for low cost bulk mining methods such as longhole stoping.

The underground parameters used, based on mining using low cost bulk mining methods, are summarized in Table 1-1. Based on these parameters, underground (below-pit) Mineral Resources are reported at a base case cut-off grade of 150 g/t AgEq. Underground Mineral Resources are estimated from the bottom of the pit (base of transition mineralization). The underground Mineral Resource grade blocks were quantified above the base case cut-off grade of 150 g/t AgEq, below the constraining pit shell and within the 3D constraining mineralized wireframes (the constraining volumes).

The current MRE for the Pitarrilla deposit is presented in Table 1-2 and includes an in-pit (oxide and sulphide transition mineralization) and an underground (below-pit) Mineral Resources (restricted to sulphide mineralization).

Highlights of the Pitarrilla deposit Mineral Resource Estimate are as follows:

- The in-pit Mineral Resource includes, at a base case cut-off grade of 50 g/t AgEq, 133.9 Mt grading 87.1 g/t Ag (375.1 Moz Ag), 0.19% Pb and 0.48% Zn in the Indicated category, and 25.6 Mt grading 76.4 g/t Ag (63.0 Moz Ag), 0.14% Pb and 0.48% Zn in the Inferred category.
- The below-pit Mineral Resource includes, at a base case cut-off grade of 150 g/t AgEq, 24.8 Mt grading 146.1 g/t Ag (116.5 Moz Ag), 1.01% Pb and 2.14% Zn in the Indicated category, and 9.8 Mt grading 115.5 g/t Ag (36.4 Moz Ag), 0.93% Pb and 1.80% Zn in the Inferred category.

There is no other relevant data or information available that is necessary to make the technical report understandable and not misleading. The Author is not aware of any known mining, processing, metallurgical, environmental, infrastructure, economic, permitting, legal, title, taxation, socio-political, or marketing issues, or any other relevant factors not reported in this technical report, that could materially affect the current Mineral Resource Estimate.

Table 1-1 Whittle™ Pit Optimization Parameters and Parameters used for In-pit and Underground Cut-off Grade Calculation

Parameter	Value	Unit
Silver Price	$22.00	US$ per pound
Zinc Price	$1.30	US$ per pound
Lead Price	$1.00	US$ per pound
In-Pit Mining Cost	$2.50	US$ per tonne mined
Underground Mining Cost	$46.50	US$ per tonne mined
Transportation	$3.00	US$ per tonne milled
Processing Cost (incl. crushing)	$17.40	US$ per tonne milled
In-Pit General and Administrative	$2.00	US$ tonne of feed
Underground General and Administrative	$10.50	US$ tonne of feed
Pit Slope - Oxide	42	Degrees
Pit Slope - Transition/Sulphide	48	Degrees
Silver Recovery - Oxide	75.0	Percent (%)
Lead Recovery - Oxide	70.0	Percent (%)
Zinc Recovery - Oxide	65.0	Percent (%)
Silver Recovery - Transition	75.0	Percent (%)
Lead Recovery - Transition	70.0	Percent (%)
Zinc Recovery - Transition	65.0	Percent (%)
Silver Recovery - Sulphide	86.0	Percent (%)
Lead Recovery - Sulphide	91.0	Percent (%)
Zinc Recovery - Sulphide	85.0	Percent (%)
Mining loss / Dilution (open pit)	5/5	Percent (%) / Percent (%)
Mining loss/Dilution (underground)	10/10	Percent (%) / Percent (%)

Table 1-2 Pitarrilla Deposit In-Pit and Underground (below-pit) Mineral Resource Estimate, October 6, 2022

In Pit (Oxide and Transition)									
Cut-off Grade (AgEq g/t)	**Tonnes**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**AgEq (g/t)**	**Ag (oz)**	**Pb (Mlbs)**	**Zn (Mlbs)**	**AgEq (oz)**
Indicated									
50	133,864,000	87.1	0.19	0.48	112.3	**375,113,000**	547	1,409	483,234,000
Inferred									
50	25,643,000	76.4	0.14	0.48	100.2	**62,958,000**	80	272	82,650,000
Underground (Sulphide)									
Cut-off Grade (AgEq g/t)	**Tonnes**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**AgEq (g/t)**	**Ag (oz)**	**Pb (Mlbs)**	**Zn (Mlbs)**	**AgEq (oz)**
Indicated									
150	24,783,000	146.1	1.01	2.14	264.4	**116,456,000**	551	1,172	210,707,000
Inferred									
150	9,808,000	115.5	0.93	1.80	217.5	**36,424,000**	202	389	68,588,000
Total in-pit and underground (Oxide, Transition and Sulphide)									
Cut-off Grade (AgEq g/t)	**Tonnes**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**AgEq (g/t)**	**Ag (oz)**	**Pb (Mlbs)**	**Zn (Mlbs)**	**AgEq (oz)**
Indicated									
50 and 150	158,647,000	96.4	0.31	0.74	136.0	**491,569,000**	1,098	2,580	693,941,000
Inferred									
50 and 150	35,451,000	87.2	0.36	0.85	132.7	**99,382,000**	281	661	151,238,000

(1) *The classification of the current Mineral Resource Estimate into Indicated and Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves.*

(2) *All figures are rounded to reflect the relative accuracy of the estimate and numbers may not add due to rounding.*

(3) *All Resources are constrained by continuous 3D wireframe models (constraining volumes), and are considered to have reasonable prospects for eventual economic extraction.*

(4) *Mineral resources which are not mineral reserves do not have demonstrated economic viability. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.*

(5) *It is envisioned that parts of the Pitarrilla deposit (oxide and transition mineralization) may be mined using open pit mining methods. In-pit mineral resources are reported at a cut-off grade of 50 g/t AgEq within a conceptual pit shell, which has been limited to the base of the transition mineralization.*

(6) *The results from the pit optimization are used solely for the purpose of testing the "reasonable prospects for economic extraction" by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade.*

(7) *It is envisioned that parts of the Pitarrilla deposit (sulphide mineralization) may be mined using underground mining methods. Underground (below-pit) Mineral Resources are estimated from the bottom of the pit (base of transition mineralization) and are reported at a base case cut-off grade of 150 g/t AgEq. The underground*

Mineral Resource grade blocks were quantified above the base case cut-off grade, below the constraining pit shell and within the constraining mineralized wireframes. At this base case cut-off grade the deposit shows good deposit continuity with limited orphaned blocks. Any orphaned blocks are connected within the models by lower grade blocks and are included in the MRE.

(8) *Based on the size, shape, location and orientation of the Pitarrilla deposit, it is envisioned that the deposit may be mined using low cost underground bulk mining methods.*

(9) *High grade capping of Ag, Pb and Zn was done on 1.50 m composite data.*

(10) *Bulk density values were determined based on physical test work from each deposit model and waste model.*

(11) *AgEq Cut-off grades consider metal prices of $22.00/oz Ag, $1.00/lb Pb and $1.30/lb Zn and considers variable metal recoveries for Ag, Pb and Zn: oxide and transition mineralization - 75% for silver, 70% for Pb and 65% for Zn; sulphide mineralization - 86% for silver, 91% for Pb and 85% for Zn.*

(12) *The pit optimization and in-pit base case cut-off grade of 50 g/t AgEq considers a mining cost of US$2.50/t rock and processing, treatment and refining, transportation and G&A cost of US$22.40/t mineralized material, an overall pit slope of 42° for oxide and 48° for transition and metal recoveries. The below-pit base case cut-off grade of 150 g/t AgEq considers a mining cost of US$46.50/t rock and processing, treatment and refining, transportation and G&A cost of US$30.90/t mineralized material.*

(13) *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*

1.6 Recommendations

The Pitarrilla deposit contains within-pit and underground Indicated and Inferred Mineral Resources that are associated with well-defined mineralized trends and models. The deposit is open along strike and at depth.

Given the prospective nature of the Deposit, it is the Author's opinion that the Project merits further exploration and that a proposed plan for further work by Endeavour is justified. A proposed work program by Endeavour will help advance the Project and will provide key inputs required to evaluate the economic viability of the Project.

The Author is recommending Endeavour conduct further exploration, subject to funding and any other matters which may cause the proposed exploration program to be altered in the normal course of its business activities or alterations which may affect the program as a result of exploration activities themselves.

The total cost of the recommended work program by Endeavour is estimated at C$2.8 million. The recommended budget should be sufficient to rehabilitate and expand the existing ramp by 500 m, develop cross-cuts and establish underground drill stations. A 5,000 m underground drill program will focus on resource delineation and improve geological interpretation. An updated mineral resource estimate may need to be completed pending results.

Field exploration activities will consist of geological mapping of the Santa Cecilia and El Consuelo areas, while a regional geology program will develop additional exploration targets proximal to the main deposit.

2 INTRODUCTION

SGS Geological Services Inc. ("SGS") was contracted by Endeavour Silver Corp., ("Endeavour" or the "Company") to complete a Mineral Resource Estimate ("MRE") update for the Pitarrilla Project ("Project" or "Property") including the Pitarrilla Silver-Lead-Zinc Deposit ("Deposit"), located near Durango State, Mexico, and to prepare a National Instrument 43-101 ("NI 43-101") Technical Report written in support of the MRE. The Property is an advanced stage exploration project.

On January 12, 2022, Endeavour entered into a definitive agreement to purchase the Project by acquiring all of the issued and outstanding shares of SSR Durango S.A. de C.V. (SSD) from SSR Mining Inc. ("SSR") for total consideration of $70 million, consisting of $35 million in common shares and a further $35 million in cash or in common shares at the election of SSR and agreed to by the Company, and a grant of a 1.25% NSR royalty. The acquisition was completed on July 6, 2022. Total consideration paid included 8,577,380 shares of the Company issued on July 6, 2022 with a deemed value of $34,909,937 and a $35,066,829 cash payment.

The Company is engaged in silver mining in Mexico and related activities including property acquisition, exploration, development, mineral extraction, processing, refining and reclamation. The Company is also engaged in exploration activities in Chile and Nevada, USA. Since 2002, the Company's business strategy has been to focus on acquiring advanced-stage silver mining properties in Mexico. Endeavour is headquartered in Vancouver, British Columbia (1130 – 609 Granville Street Vancouver, B.C., Canada, V7Y 1G5) with management offices in Leon, Mexico and Durango, Mexico, and is listed on the Toronto (TSX:EDR), New York (NYSE:EXK) and Frankfurt (FSE:EJD) stock exchanges.

The current report is authored by Allan Armitage, Ph.D., P. Geo., ("Armitage" or the "Author") of SGS, and the MRE presented in this report was estimated by Armitage. Armitage is an independent Qualified Person as defined by NI 43-101 and is responsible for all sections of this report.

2.1 Sources of Information

In preparing the current Property MRE and the current technical report, Armitage has utilized a digital database, provided to the Author by Endeavour, and miscellaneous internal technical reports provided by Endeavour. All background information regarding the Property has been sourced from previous internal technical reports and revised or updated as required. As of the effective date of this report, Endeavour has yet to complete exploration work on the Property.

Note: SSR was formerly known as Silver Standard Resources Inc. ("Silver Standard"). Silver Standard announced that they had filed a notice of alteration to change their name to SSR Mining Inc., effective August 1, 2017. All technical reports completed for Silver Standard are posted on SEDAR under SSR's profile.

- *The Property was the subject of a technical report by M3 Engineering and Technology Corporation in 2012 titled "Feasibility Study Durango, Mexico" Dated: November 30, 2012. (Internal Report)*
- *The Property was the subject of a technical report by prepared for Silver Standard Resources Inc. in 2012 titled "NI 43-101 Technical Report on the Pitarrilla Project Durango State, Mexico" Dated: December 14, 2012; Effective: December 4, 2012. (Posted on SEDAR under SSR Mining Inc. profile)*
- *The Property was the subject of a technical report by Wardrop titled "NI 43-101 Technical Report – Pitarrilla Property Pre-Feasibility Study" Prepared for Silver Standard Resources Inc. Dated: September 21, 2009. (Posted on SEDAR under SSR Mining Inc. profile)*
- *The Property was the subject of a technical report by P&E Mining Consultants Inc. in 2008 titled "Technical Report and Resource Estimate on the La Pitarrilla Property, Breccia Ridge Deposit, Durango, Mexico" for Silver Standard Resources Inc. Dated: August 26, 2008; Effective: August 3, 2008. (Posted on SEDAR under SSR Mining Inc. profile).*

- *The Property was the subject of a NI 43-101 technical report by James A. McCrea, P.Geo in 2006 titled "Technical Report on the La Pitarrilla Property Durango, Mexico" for Silver Standard Resources Inc. Dated: September 28, 2006. (Posted on SEDAR under SSR Mining Inc. profile)*

Information regarding the property exploration history, previous mineral resource estimates, regional property geology, deposit type, recent exploration and drilling, metallurgical test work, and sample preparation, analyses, and security for previous drill programs (Sections 5-13) have been sourced from the previous technical reports.

Historical Mineral Resource figures contained in this report, including any underlying assumptions, parameters and classifications, are quoted "as is" from the source.

2.2 **Site Visit**

Armitage completed a site visit to the Property on September 12 and 13, 2022, accompanied by Alejandro Alegria of Endeavour. Armitage visited the camp, offices, dining area and core storage and core logging facilities. The Author participated in a field tour of the Pitarrilla Property to become familiar with conditions on the Property (road access), to observe and gain an understanding of the geology and various styles mineralization, and to verify the work done including surface drilling and underground development (decline). At the time of the site visit the existing decline was not accessible to the Author.

At the time of the site visit, there was no active exploration on the Property and Endeavour has completed no exploration on the Property to date. Current mining activities on the Property is limited to improving access in the existing decline for the purposes of future underground drilling.

Armitage had the opportunity to examine a number of selected mineralized core intervals from more recent diamond drill holes from the Project, including core from the Cordon Colorado and Breccia Ridge Zones (BPD-014, BPD-239, BPD-018, BPD-226, BPD-152). Armitage examined assay certificates and assays were examined against the drill core mineralized zones. All core boxes were well labelled with DDH number, depths and properly stored in core racks inside warehouses. Sample numbers for drill holes were written on the core boxes and it was possible to validate sample intervals and confirm the presence of mineralization in witness half-core samples from the mineralized zones.

On September 14, Armitage was able to visit the Endeavour office in Durango to discuss with Luis R Castro Valdez, VP Exploration the project geology and mineralization, past exploration, deposit modeling and mineral resources, and to discuss future plans for the project.

As a result of the site visit, the Author was able to become familiar with conditions on the Property, was able to observe and gain an understanding of the geology and various styles mineralization, was able to verify the work done and, on that basis, is able to review and recommend to Endeavour an appropriate exploration or development program.

The Author considers the site visit current, per Section 6.2 of NI 43-101CP. To the Authors knowledge there is no new material scientific or technical information about the Property since that personal inspection. The technical report contains all material information about the Property.

2.3 **Units of Measure**

Units used in the report are metric units unless otherwise noted. Monetary units are in United States dollars (US$) unless otherwise stated.

2.4 **Effective Date**

The Effective Date of the current MRE is October 6, 2022.

2.5 Units and Abbreviations

All units of measurement used in this technical report are in metric. All currency is in US dollars (US$), unless otherwise noted.

Table 2-1 List of Abbreviations

$	Dollar sign	m^2	Square metres
%	Percent sign	m^3	Cubic meters
°	Degree	masl	Metres above sea level
°C	Degree Celsius	mm	millimetre
°F	Degree Fahrenheit	mm^2	square millimetre
µm	micron	mm^3	cubic millimetre
AA	Atomic absorption	Moz	Million troy ounces
Ag	Silver	MRE	Mineral Resource Estimate
Au	Gold	Mt	Million tonnes
Az	Azimuth	NAD 83	North American Datum of 1983
CAD$	Canadian dollar	Ni	Nickel
cm	centimetre	NQ	Drill core size (4.8 cm in diameter)
cm^2	square centimetre	oz	Ounce
cm^3	cubic centimetre	Pd	Palladium
Co	Cobalt	PGE	Platinum Group Elements
Cu	Copper	ppb	Parts per billion
DDH	Diamond drill hole	ppm	Parts per million
ft	Feet	Pt	Platinum
ft^2	Square feet	QA	Quality Assurance
ft^3	Cubic feet	QC	Quality Control
g	Grams	QP	Qualified Person
g/t or gpt	Grams per Tonne	RC	Reverse circulation drilling
GPS	Global Positioning System	RQD	Rock quality description
Ha	Hectares	SG	Specific Gravity
HQ	Drill core size (6.3 cm in diameter)	t.oz	Troy ounce (31.1035 grams)
ICP	Induced coupled plasma	Ton	Short Ton
kg	Kilograms	Tonnes or T	Metric tonnes
km	Kilometres	TPM	Total Platinum Minerals
km^2	Square kilometre	US$	US Dollar
m	Metres	UTM	Universal Transverse Mercator

3 Reliance on Other Experts

Verification of information concerning Property status and ownership, which are presented in Section 4 below, have been provided to the Author by Luis Castro, VP exploration for Endeavour, by way of an E-mail on November 14, 2022. The Author only reviewed the land tenure in a preliminary fashion and has not independently verified the legal status or ownership of the Property or any underlying agreements or obligations attached to ownership of the Property. However, the Author has no reason to doubt that the title situation is other than what is presented in this technical report (Section 4). The Author is not qualified to express any legal opinion with respect to Property titles or current ownership.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Property is located within the Municipality of Inde, on the eastern flank of the Sierra Madre Occidental mountain range in the central part of Durango State, Mexico, and is centered at 25 degrees 25 minutes south latitude and 104 degrees 57 minutes west longitude. The city of Victoria de Durango, the capital of Durango state, is located 160 km southwest of the property and the major city of Torreón (capital of Coahuila state) 160 km to the east (Figure 4-1).

The nearest population centers are San Francisco de Asís (located 12 km to the northeast of the property) and Casas Blancas (situated in the northeast portion of the project concessions). Both villages are located in Durango State. San Francisco de Asís has a population of about 800 and Casas Blancas has a population of approximately 120. The larger population centers near the project, Torreón and Victoria de Durango, have approximately 1.5 million and 1 million inhabitants, respectively.

4.2 Land Tenure

The Property is defined as the group of mining concessions and the surface rights that partially overlie the mining concessions. The mining concessions are displayed in Figure 4-2 and presented in Table 4-1, and the surface rights that partially overlie the concessions are described in Section 4-4 and are displayed in Figure 4-3, and the ownership or rights thereto is presented in Table 4-2.

4.3 Mining Concessions

The Property is formed by 5 contiguous mineral concessions entitled to SSD and covering a total area of approximately 4,950 hectares. SSD is a Mexican corporate entity, and a wholly-owned subsidiary of Endeavour.

On June 30, 2015 SSD requested before the mining authorities the reduction of the mining concession “La Pitarrilla 2” (title number 220231), from 5,771.2505 hectares to 3,221.2517 hectares, assigning a new name to the claim “La Pitarrilla 2 Reducción”, record number 2/2-0245. The reduction is in process to be approved.

The complete set of mining concessions is shown in Figure 4-2 and the legal status of each, including expiration dates, is summarised in Table 4-1.

4.4 Surface Rights Property

SSD has acquired surface rights to most of the lands required for successful project permitting, construction and operation. Figure 4-3 provides a map that shows the boundaries of the surface rights required for the Project site, and Table 4-2 provides the corresponding status of SSD’s ownership of, or access to, this land.

During the permitting process in Mexico, clear title or land access agreements must be presented to the regulatory authority in order to obtain mining or operating permits.

Figure 4-1 Property Location Map

Figure 4-2 Pitarrilla Mining Concessions (WGS 84 UTM Zone 13N)

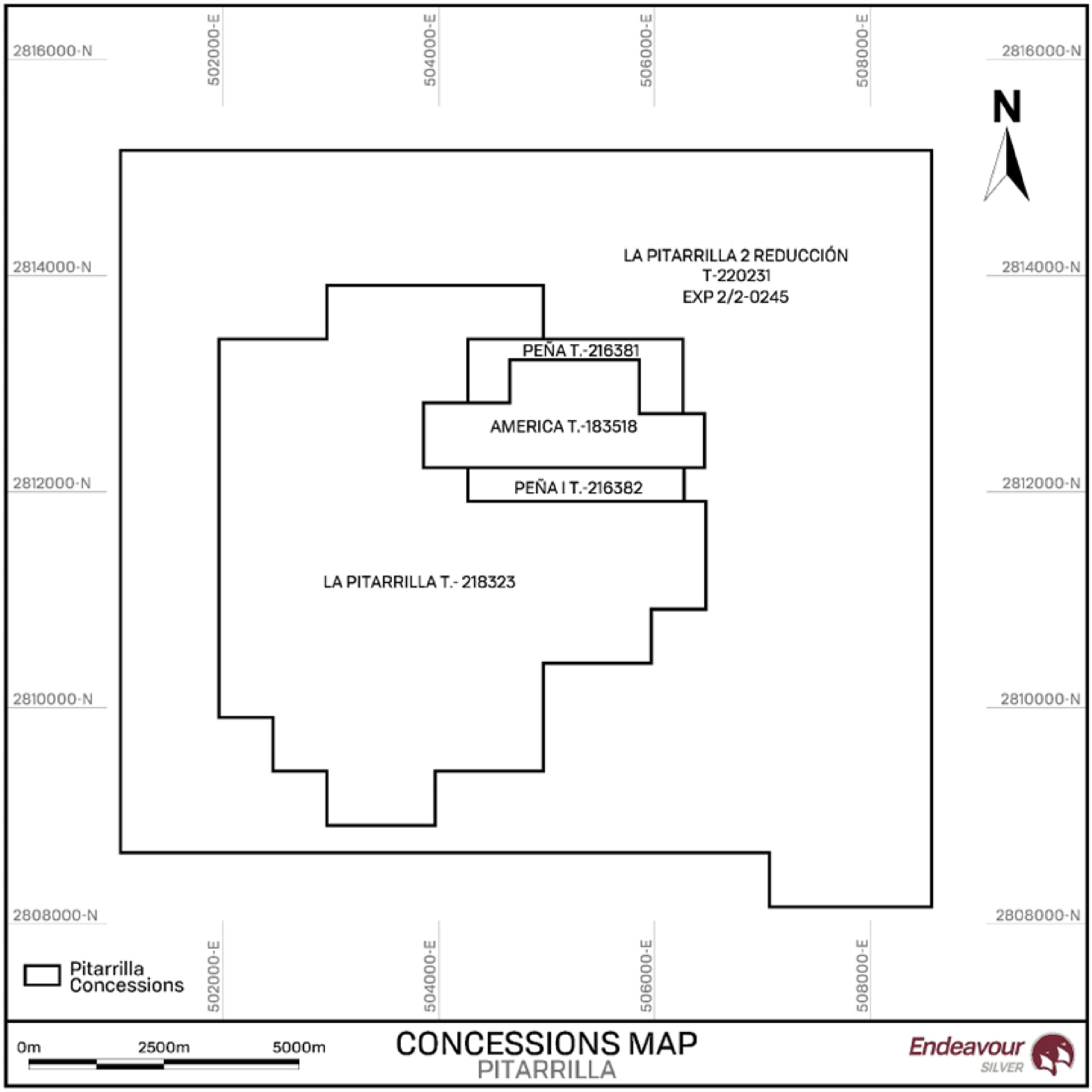


Table 4-1 Legal Status of Pitarrilla Mineral Concessions

No.	Claim name	File No.	Title	Area (ha)	Agency	Municipality & State	Validity	
							From	To
1	AMERICA	321.1/1/1-111	183518	198.0000	DGO.	EL ORO, DGO.	26/10/1988	25/10/2038
2	PEÑA	025/27442	216381	73.1969	DGO.	EL ORO, DGO.	14/05/2002	13/05/2052
3	PEÑA I	025/27443	216382	62.0818	DGO.	EL ORO, DGO.	14/05/2002	13/05/2052
4	LA PITARRILLA	025/30749	218323	1,395.4696	DGO.	EL ORO, DGO.	05/11/2002	04/11/2052
5	LA PITARRILLA 2 REDUCCIÓN	EXP 2/2-0245 (025/31124)	220231	3,221.2517	DGO.	EL ORO E INDE, DGO.	25/06/2003	24/06/2053
	Total			**4,950.0000**				

Figure 4-3 Pitarrilla Surface Properties

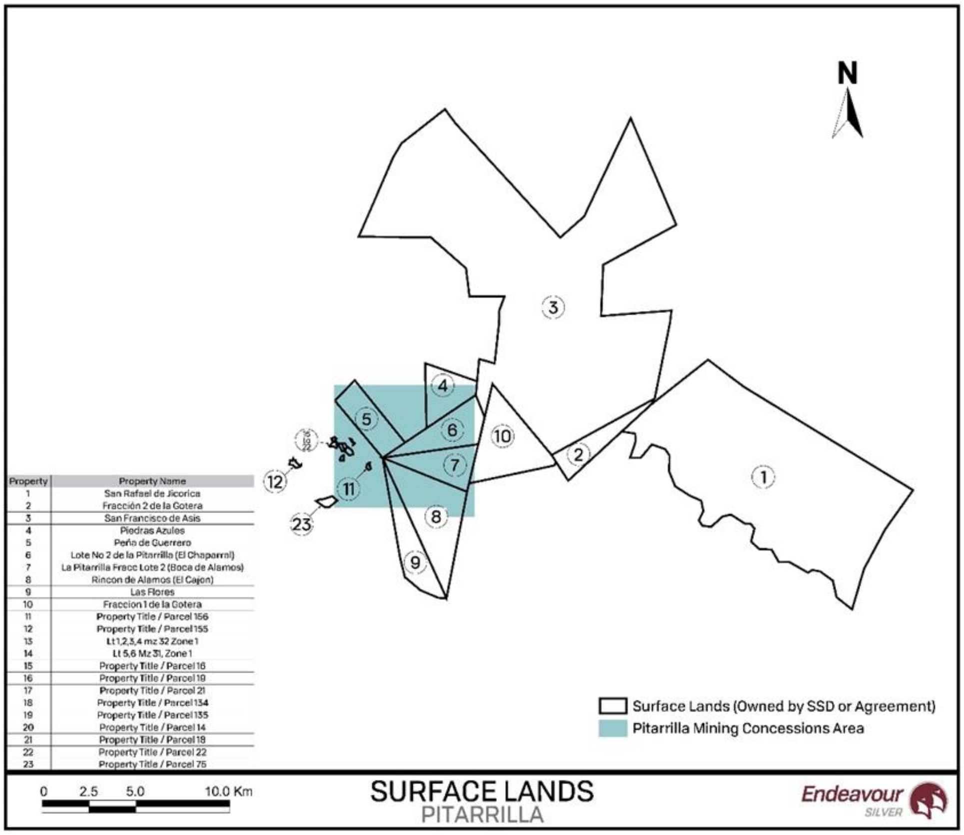


Table 4-2 Ownership of Pitarrilla Surface Properties

Property	Property Name	Owner	Status	Tenure
1	San Rafael de Jicorica	Ejido	Agreement in Place	Ejido
2	Fracción 2 de la Gotera	Victor Manuel Medina Castanos	Agreement in Place	Private
3	San Francisco de Asis	Ejido	Agreement in Place	Ejido
4	Piedras Azules	SSR Durango	Owned by SSD	Private
5	Peña de Guerrero	SSR Durango	Owned by SSD	Private
6	Lote No 2 de la Pitarrilla (El Chaparral)	SSR Durango	Owned by SSD	Private
7	La Pitarrilla Fracc Lote 2 (Boca de Alamos)	SSR Durango	Owned by SSD	Private
8	Rincon de Alamos (El Cajon)	SSR Durango	Owned by SSD	Private
9	Las Flores	Heirs of Enrique Padilla Herrera	Leasing	Private
10	Fraccion 1 de la Gotera	Estela Montes Flores.	Agreement in Place	Private
11	Property Title / Parcel 156	SSR Durango	Owned by SSD	Private
12	Property Title / Parcel 155	SSR Durango	Owned by SSD	Private
13	Lt 1,2,3,4 mz 32 Zone 1	SSR Durango	Owned by SSD	Private
14	Lt 5,6 Mz 31, Zone 1	SSR Durango	Owned by SSD	Private
15	Property Title / Parcel 16	SSR Durango	Owned by SSD	Private

Property	Property Name	Owner	Status	Tenure
16	Property Title / Parcel 19	SSR Durango	Owned by SSD	Private
17	Property Title / Parcel 21	SSR Durango	Owned by SSD	Private
18	Property Title / Parcel 134	SSR Durango	Owned by SSD	Private
19	Property Title / Parcel 135	SSR Durango	Owned by SSD	Private
20	Property Title / Parcel 14	SSR Durango	Owned by SSD	Private
21	Property Title / Parcel 18	SSR Durango	Owned by SSD	Private
22	Property Title / Parcel 22	SSR Durango	Owned by SSD	Private
23	Property Title / Parcel 75	SSR Durango	Owned by SSD	Private

4.5 Underlying Agreements

On January 12, 2022, Endeavour entered into a definitive agreement to purchase the Pitarrilla project by acquiring all of the issued and outstanding shares of SSR Durango, S.A. de C.V. (SSD) from SSR Mining Inc. for a total consideration of US$70 million (consisting of $35 million in Endeavour's shares and a further $35 million in cash or in Endeavour's shares at the election of SSR Mining and as agreed to by Endeavour) and a 1.25% net smelter returns royalty. SSR Mining retains a 1.25% NSR Royalty in Pitarrilla. Endeavour will have matching rights to purchase the NSR Royalty in the event SSR Mining proposes to sell it. The acquisition was completed on July 6, 2022. Total consideration paid included 8,577,380 shares of the Company issued on July 6, 2022 with a deemed value of $34,909,937 and a $35,066,829 cash payment. The shares are subject to a hold period of four months and one day following the date of closing.

4.6 Operating Permits

In accordance with Mexican law certain permits must be acquired in order to commence mineral exploration and mining and construction activities on the Property, the required permits and those that have been obtained for the Property are detailed below.

4.6.1 Environmental Permits, Licenses and Authorizations

The Company has currently processed and obtained a series of permits in environmental matters, which allows planning and developing the activities of the operation under the support of current regulations.

Federally, the Ministry of the Environment and Natural Resources (SEMARNAT) is the institution that sets the tone in state policy for the protection, conservation and use of natural resources, under a regulated scheme established within the concept of sustainable use, in that sense it grants the corresponding permits for the operation of the mining sector.

Attending environmental regulations, the Company has obtained a series of authorizations and/or permits, by presenting the corresponding studies such as: Environmental Impact Statement (MIA), Justifying Technical Study for the Change of Land Use (ETJ). The permitted activities by SEMARNAT and the corresponding permit numbers are listed in Table 4-3.

Concessions for the use and exploitation of water, as well as wastewater discharge permits, are the responsibility of the National Water Commission (CNA), a decentralized organization of SEMARNAT. Permits and/or concessions obtained by CNA are summarized in Table 4-4.

The purchase, storage and consumption of explosive materials is subject to the Federal Law on Firearms and Explosives, which is the responsibility of the Ministry of National Defense (SEDENA), which has granted the revalidation of the term of permit No. 4136-DGO (Table 4-5).

An archaeological survey was carried out by personnel from the National Institute of Anthropology and History (INAH), in order to locate, register and provide technical and legal protection to potential vestiges of pre-hispanic and historical occupation within the project area. Pictorial and petro-engraved evidence were located, for which a study called "Salvamento Arqueológico Pitarrilla" (Pitarrilla Archeological Salvage) was previously carried out, with satisfactory results that allowed the release of ares of the project, being officially through a resolution issued on December 07, 2012 (Table 4-6).

In the Ministry of Environment and Natural Resources (SEMARNAT) of the government of the state of Durango, authorization has been obtained for the operation permit of a Type D sanitary landfill, with a daily deposit of less than 10 tons (Table 4-7).

Permits were obtained from the Municipal authority to operate through the resolution and authorization for the operation and development of the sanitary landfill (Table 4-8).

Table 4-3 Permitted Activities by SEMARNAT

No.	Activity	Land-Use Change	Environmental Impact Study	Disturbance (hectares)	Validity MIA
1	Silver Standard Durango, S.A. de C.V. Preparation for beneficiation plant, large ramp and waste dump "A" y "B", camp, drill pads and access roads. Subterranean mine.	SG/130.2.2/000728/11 April 12, 2011	SG/130.2.1.1/00652/11 Particular modality (MIA-P) April 18, 2011	95.3372	4 years for site preparation and 25 years for operation
2	Auxiliary works project Pitarrilla (ten works)	SG/130.2.2/000332/13 Only 132.91 has, are required for land use change September 20, 2012	SG/130.2.1.1/002642/12 Particular modality (MIA-P) February 05, 2013	193.75	3 years for site preparation and 26 years for operation
3	Aerodrome, Bridge over Nazas river and Telecomunications tower	SG/130.2.2/000332/13 The permit for E.I. for the 11.41 has, is included the official letter No. SG/130.2.1.1/002642/12 January 18, 2013	SG/130.2.1.1/000041/13 Regional modality (MIA-R) Februray 05, 2013	127.74	4 years for site preparation and 26 years for operation

Table 4-4 Permits and/or Concessions by CNA

No.	Title	Validity	Authorized volume	Authorization document number
1	Proof of inclusion in the inventory of the use of groundwater (rancho La Peña)	Permanent June 23, 2007	Volume 36,000 M3 /year. Different uses	Resolution BOO.E.23.1.1/315 Register 07DGO800020/36I MG06
2	concession for the use of national waters. Well LP 1A	Ten years June 14, 2017	Authorized volume 776,101 M3/ year Industrial use	Title 07DGO155182
3	concession for the use of national waters. Well LP 1B	Ten years June 14, 2017	Authorized volume 1,756,555 M3/ year Industrial use	Title 07DGO155180/36F MDL18
4	Concession for the use of national underground waters, Mod A; (L 5 M 32 Casas Blancas)	Thirty years December 05, 2018	Authorized volume 16,000 M3/ year Services use	Title 07DGO159065/36E MDL18
5	Wastewater discharge permit	Thirty years November 15, 2018	Residual water discharge with treatment plant, Casas Blancas Camp, volume 7,300 M3/year	Title 07DGO159023/36E MDL18
6	Mine working water authorization, Pitarrilla ramp	Undetermined permit November 21, 2019	undetermined	BOO.909.04.03-036/1391

Table 4-5 Permit by SEDENA

No.	Title	Validity	Authorized volume	Authorization document number
1	Permission for the purchase, storage and consumption of explosives	Revalidation permit January 01 - December 31, 2022	Various explosive materials	4136-DGO

Table 4-6 Archeological Release Letter by INAH

No.	Title	Validity	Released and authorized area (hectares)	Authorization document number
1	Pitarrilla archeological salvage project	Release opinion December 07, 2012	3075.3304	401.C(4)118.2012/ CID-607-DIR

Table 4-7 Landfill Permit by SEMARNAT Government of the State of Durango

No	Title	Permit No.	Authorization
1	Type D Landfill	SRNyMA.SMA.1080.2013 November 11, 2013	Authorization for a final disposal site Less than 10 Ton/day

Table 4-8 Landfill Permit by Municipal Government of El Oro

No	Title	Permit No.	authorization
1	Resolution and authorization for the operation and development of a sanitary ladfill	0189/ 25-07-2013 July 25, 2013	Type D landfill operation according to NOM-083-SEMARNAT-2013
2	Land use licence	0195/ 28-08-2013	Land use licence

4.7 Other Relevant Factors

The Project has no outstanding environmental liabilities from prior mining activities. The Author is unaware of any other significant factors and risks that may affect access, title, or the right, or ability to perform exploration work recommended for the Property.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 Accessibility

The Property is currently accessible through a network of public roadways in the region. From Durango, access is gained by traveling north along paved highway 45 for 235 km, then south west on paved highway 30 to El Palmeto and then south on unpaved public roads to Casa Blancas. The main access to the Project site is planned to be along the approximate 47 km of public and private dirt roadways, from the junction with paved Highway 45, to the Project's southeast gate. The primary site access road will utilize the existing roadway serving the nearby local community of San Francisco de Asís, with secondary access via the existing road to Casas Blancas. Improvements are required for the main road, the most significant of which is the addition of a permanent bridge over the Nazas River, approximately 11 km from the Property site.

The Project and all parts of the deposit area, from the main project facilities, is road accessible and can be accessed by pickup truck, larger supply trucks, truck and low-bed (float) trailer carrying mine equipment and drill equipment, and self-driven mine trucks.

5.2 Local Resources

Mexico has a large mining economic sector and well-trained human resources are available in the country. It is planned that human resources required to operate a mine at the Project will be sourced mainly from Durango, Coahuila, Chihuahua and Zacatecas states, and that these people will work rotating shifts.

Located 160 km southwest of the Property is the city of Victoria de Durango, the state capital of Durango, with a population of approximately 660 thousand. Additionally, the city of Torreón, the capital of Coahuila state and with a population of approximately 1.5 million, is located approximately 160 km to the east. There are large active mines and developed mining infrastructure in the states of Durango and Coahuila. Both the state capitals have sufficient populations and support services to adequately provide the Pitarrilla Project with general goods, services and labour.

The closest population centers to the Property are San Francisco de Asís (located 12km to the northeast) and Casas Blancas (situated in the northeast portion of the Project concessions). San Francisco de Asís has a population of about 800 and Casas Blancas has a population of approximately 120.

5.3 Infrastructure

Power for the Project is available from the national power grid at the Subestacion Electrica Canatlán II (substation) located approximately 139 km south of the plant site. The power will be provided by the national power utility, CFE.

Fresh make-up water to the project will be provided from several wells located on the property near the Nazas River, approximately 10 km from the Project site. Water from the wells will be pumped to a booster tank and, from there, be pumped to Project water consumers.

There is a well-established camp for the Project (Figure 5-1). The camp is in the southern area of the town of Casas Blancas and includes the following facilities: general offices, welding workshop, mechanical workshop, general warehouse, clinic-medical services, as well as six core storage facilities. The camp provides accommodation for a capacity of 101 personnel, as well as dining facilities with a capacity for 110 people.

Figure 5-1 Panoramic View of the Pitarrilla Camp (view to the north)

5.4 Climate

The area of Pitarrilla falls in an area of characterised as a steppe (that is, grassland plains without trees, except at water sources). Typically, the climate at Pitarrilla is dry, winter days are cool with minimum temperatures dropping slightly below 0° C before warming to daily maximums of about 23°C. From May to the beginning of July the daytime maximum temperatures rise to a maximum of about 35°C before the onset of a wet season that lasts until about mid-September. After mid-September there is another short hot dry period before cool autumn days begin in mid-October.

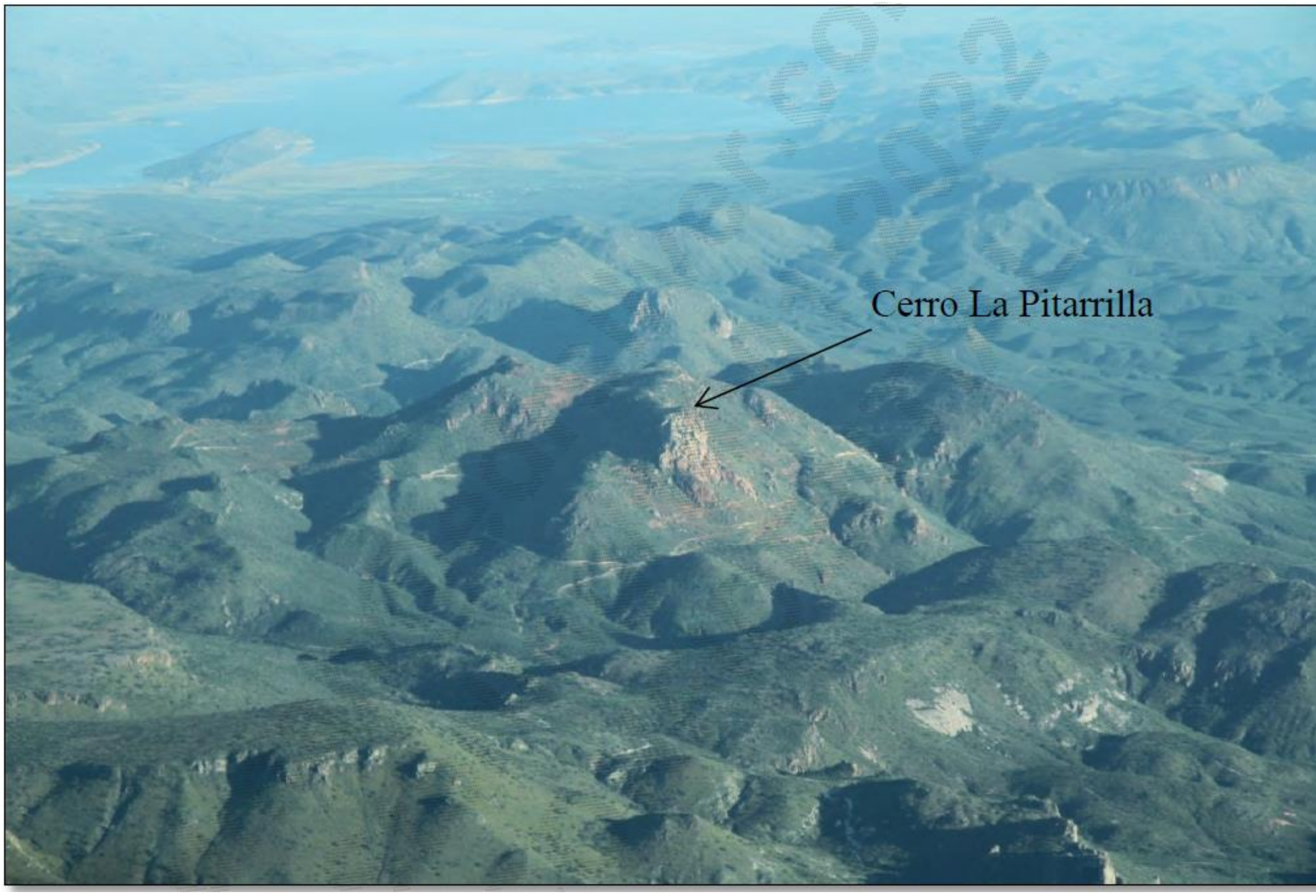
The total annual precipitation varies between 375 to 405 mm, based on public weather stations. The local station has an annual average precipitation of 407 mm. Hail, snow and electrical storms occur in the region which can be impacted by tropical storms or depressions but would be on the edge of the hurricane trajectories and is too far inland to be adversely affected by intense winds. It is however, from these storm systems that the region typically receives the bulk of its annual rainfall. The local weather station has registered wind velocities averaging 3.9 m/s with gusts up to about 30 m/s. Winds are generally from the east and are strongest in the months of April and May.

A mine at Pitarrilla will have a 12-month operating season. As well, exploration can be conducted year-round.

5.5 Physiography

The physiography in the immediate area of Project is rugged (Figure 5-2), with rocky cliffs and steep walled gullies, with surficial soil conditions represented by shallow soils and weathered bedrock. Elevations on the property range from about 1600 masl in the valley floors to 2140 masl at the top of Cerro La Pitarrilla.

Figure 5-2 Aerial View of the Pitarrilla Project, Showing Landforms (view to the north) (Silver Standard, 2012)



5.6 Vegetation

The Project is located in the high plains (Altiplano) region of Mexico, a large area noted for its high altitude and low winter temperatures. The region is comparable to high desert and can include vegetation such as chaparral, mesquite-grassland, or arid tropical scrub. There are a considerable number of endemic species within the Altiplano.

A vegetation baseline study was completed by Centro de Ecología Regional A.C. (2010). Three vegetation types were identified in the Project area: 1) pine and oak forest, 2) "matorral xerofilo", which includes high desert-chaparral, and 3) riparian forest, which is a forested area adjacent to a water source.

An inventory of the vegetation types included 29 plant families and 66 species. The most abundant families present are Asteraceae (commonly referred to as the aster, daisy, or sunflower family) and Cactaceae (cactus family). Three species (Mamillaria marksiana, Pinus pinceana, and Thelocactus heterochromus) are classified as at risk per the Mexican regulation NOM-059-SEMARNAT-2010, which lists native species and their risk status. An additional 14 species were considered of special interest due to potential for commercial or decorative use, or due to the difficulty to propagate the species.

The relative importance of the species was calculated based on the species value. The species with the highest value were ocotillo, cat claw mimosa, acacia, and mesquite. The calculated species diversity was 1.791, which is considered to be low. It is attributed to the degradation experienced by the area due to decades of use for agriculture and grazing.

6 HISTORY

Available records of mineral exploration conducted on the Property and immediately adjacent ground date back to 1996.

6.1 Historical Exploration

A summary the exploration work conducted at Pitarrilla between 1996 and 2002, before Silver Standard acquired the property is presented in Table 6-1. Exploration work completed by Silver Standard between 2002 and 2012 is presented in Sections 9 and 10 as this data, especially drilling data, forms the main database for the current MRE.

Recognition of the mineral potential of the Pitarrilla area was first established by F. Hillemeyer and P. Durning of LCI, while conducting regional reconnaissance gold exploration for Monarch Resources de Mexico (Monarch) in 1996. Based on encouraging prospecting results obtained by LCI, Monarch stake-claimed the Pitarrilla concessions and commenced exploration in the area. Rock-chip and grid-controlled soil sampling programs were completed along with the collection of stream-sediment samples. Monarch's soil geochemistry survey identified a gold anomaly to the southeast of Cerro La Pitarrilla, which the company tested with an RC drilling program. Monarch's drillholes are not located within the area of the current Ag-Pb-Zn resource.

Due to the relatively weak assay results for gold that were obtained by its drilling program, Monarch returned the mineral rights for the claims back to LCI. In the following years, until 1999, Hillemeyer and Durning returned to the Property on a number of occasions to prospect the area on behalf of companies potentially interested in acquiring the claims from LCI.

In 1999, LCI conducted a comprehensive evaluation of the Property for the Mexican subsidiary of Hecla Mining Company ("Hecla"), which involved the excavation, mapping and sampling of shallow trenches mostly located on the northeastern slopes of Cerro La Pitarrilla. Notwithstanding the sporadic gold anomalies in trench samples, Hecla was not sufficiently encouraged by the results of the property evaluation to acquire the mineral rights to the property from LCI. A few months after Hecla's evaluation, LCI decided to allow the exploration licenses for the Pitarrilla claims to expire.

In 2002, Silver Standard contracted LCI to acquire mineral properties in Mexico which showed good exploration potential for silver. One of the first areas LCI recommended for claiming was the ground covered by the former Pitarrilla claim group. Between November 2002 and March 2003, a total of 12 concessions covering 136,191 ha were claimed by Exploминerals, S.A. de C.V. on behalf of Silver Standard. Beginning in late 2002 and continuing until about May 2003, Silver Standard, using the services of Exploминerals, carried out extensive rock-chip sampling over the slopes of Pitarrilla hill. Silver anomalies were identified on the western slope of the hill (Cordon Colorado prospect) and this became Silver Standard's first drilling target defined on the property. Drilling commenced in September 2003 and continued intermittently until the middle of 2008. Silver Standard issued a NI 43-101 technical report on the project as prepared by P&E Mining Consultants Inc. (2008) and Silver Standard and Wardrop Engineering completed a prefeasibility study on the project in 2009. Resource definition and infill drilling re-commenced in 2011 and continued into 2012. A Feasibility study was initiated in December of 2011.

Table 6-1 Summary of Work: Pitarrilla Property 1996 to 2002 (Silver Standard, 2012)

1996	Monarch Resources de Mexico, S.A. de C.V. completed rock-chip sampling along with soil and stream-sediment surveys (Durning and Hillemeyer, 2002). Monarch completed a 22 Reverse Circulation (RC) holes program, totaling 2,842 m (Durning and Hillemeyer, 1997b). Monarch's exploration was concentrated outside of the current Ag-Pb-Zn resource.
1997	La Cuesta International, Inc. (LCI) re-acquired the Pitarrilla concessions from Monarch and collected a total of 30 rock-chip samples in a follow-up program (Durning and Hillemeyer, 1997a).
1998	LCI collected 14 channel and grab samples. The samples were sent to Chemex Labs, Inc. for chemical analysis (Thurow, 1998).
1999	LCI conducted additional reconnaissance rock sampling and basic geological mapping. Seven trenches, between 60 m and 200 m in length, were excavated and mapped in detail. A total of 637 samples were sent to Bondar-Clegg in Hermosillo, Sonora for multi-element analysis (Durning and Hillemeyer, 1999).
2002	Explominerals, S.A. de C.V. acquired Pitarrilla concessions on behalf of Silver Standard, and together with LCI, collected 34 rock-chip samples in a work program (Durning and Hillemeyer, 2002).
Jan.-May 2003	Silver Standard collected 335 rock-chip samples which were sent to Inspectorate Labs for analysis (Lozano, 2003).
June 2003	On-site access road construction commenced (and has been on-going since). Throughout road construction, 42 road-cut chip samples were collected and submitted for multi-element geochemical analysis to Chemex laboratory.
July 2003	LCI collected five rock-chip and eight stream-sediment samples in a work program for Silver Standard to test the Casas Blancas ASTER anomaly. The samples were sent to Inspectorate for analysis (Durning and Hillemeyer, 2003).
Sept. 2003-Apr. 2004	Silver Standard completed four phases of drilling. A total of 101 RC holes were completed, totaling 11,355m, this drill programme discovered and partly defined the Cordon Colorado and Peña Dyke zones of oxidized silver mineralization. Rock-chip sampling was completed at these two zones where they were exposed at the surface.
March 2004	Rock-chip sampling for was completed on the Cordon Colorado portion of the property.
May-June 2004	Silver Standard completed phases the fifth and sixth drilling campaigns for an additional 29 RC holes for 3,040 m (the property total at this time was 130 RC holes for 14,395m of RC drilling).
August 2004	Silver Standard completed a seventh drilling program, with eight RC holes completed for 1,219 m to give a property total of 138 RC holes for 15,614 m of RC drilling.
April 2005	Silver Standard reported the discovery of two new zones of silver mineralization: Breccia Ridge and Javelina Creek.
July 2005	Silver Standard reported the discovery of a new zone of silver mineralization: South Ridge.
December 2005	Silver Standard completed an eighth drilling campaign, consisting of 73 diamond drill holes for 17,389m and 48 RC holes for 5,005 m, to give a property total of 38,008 m drilled, with a final total of 20,619 m of RC drilling in 186 holes.

January - December 2006	Phase nine drilling commenced in January 2006, 107 diamond drill holes were completed for 36,985 m to give a property total of 74,993 m.
January - December 2007	Phase 9 drilling continued through 2007, 110 diamond drill holes were completed for 77,143 m to give a property total of 152,136 m. Hydrological monitoring began in this period with the drilling of piezometers and water wells.
January - December 2008	Phase 9 Drilling continued into 2008, 74 diamond drill holes including 33 condemnation and 9 metallurgical holes were drilled for a total of 53,647 m to give a property total of 205,784 m. Hydrological monitoring, geotechnical drilling for site construction began in this period with the drilling of piezometers, water wells and geotechnical holes. In order to augment the drilling data at the Breccia Ridge Zone, Silver Standard initiated a program of underground ramp development. By December 2008, a total of 1,236 m of ramping had been completed: 1,069 m along the original strike direction and 167 m along a branch to the northwest.
January - December 2009	September 2009 Silver Standard and Wardrop Engineering Inc. completed and published a Pre-feasibility Study for the Pitarrilla project.
January - December 2010	Seven geotechnical triple tube diamond holes were drilled for 5,906m. In addition to these, water monitoring and water wells were drilled.
January - December 2011	Resource definition drilling continued during the period with 63 diamond drill holes drilled for 11,357m. An additional four PQ diamond core holes for 14,840 m were drilled for communition test work and16 geotechnical triple tube diamond holes were drilled for 2710.35m. A Feasibility study was initiated in December of 2011.
May - June 2012	33 closely-spaced diamond drillholes totaling 8,914 m were completed as part of a study to investigate the short distance variability of oxide and transitional silver mineralization in the upper 200-250 m of the Pitarrilla deposit.

6.2 Historical Mineral Resource Estimates

The Property has seen exploration since 1996, however, specific zones of mineralization have only recently been documented; Cordon Colorado and Peña Dyke were discovered in 2003, Javelina Creek and Breccia Ridge were discovered in April 2005, and South Ridge was discovered by drill holes completed in 2005. There are no historic resource estimates prior to Silver Standard’s work. Table 6-2 summarises the reported historical resource estimates in existing NI 43-101 technical reports (McCrea, 2004, 2006, 2006b, and 2007; and P&E Mining Consultants, 2008). Note that the resource estimates presented in Table 6-2 are considered historical by Endeavour. Endeavour is not treating the historical estimate as current mineral resources or mineral reserves. These historical resource estimates have been superseded by an updated historical MRE by Silver Standard for the Property following completion of the 2012 drilling program (see section 6.2.1 below), which has subsequently been superseded by the Indicated and Inferred MRE for the Deposit reported in Section 14 of this report. The MRE presented in section 14 is considered current with respect to Endeavour.

Table 6-2 Summary of Historical Resource Estimates by Silver Standard on Pitarrilla Property 2004 - 2008

Date	Summary
McCrea April 16, 2004	A 3D block model resource estimate was completed for the Cordon Colorado and Peña Dyke zones. Resources for the Pitarrilla property, using a 40 gram per tonne Ag cut-off, were 10.3 million tonnes at 114.0 grams per tonne silver in the indicated category and 3.4 million tonnes at 110.99 grams per tonne silver in the inferred category. Total resources in all categories at a 40 gram per tonne Ag cut-off were reported to be 13.7 million tonnes at 113.25 grams per tonne silver.
McCrea March 13, 2006	An updated 3D block model resource estimate was completed for the Cordon Colorado, Peña Dyke, Javelina Creek and South Ridge zones. Resources for the Pitarrilla property (cut), using a 40-gram per tonne Ag cut-off, were reported to be 18.6 million tonnes at 112.4 grams of per tonne silver in the indicated category and 32.4 million tonnes at 124.8 grams of per tonne silver in the inferred category. Total resources in all categories at a 40-gram per tonne Ag cut-off were reported as 51.0 million tonnes at 120.30 grams per tonne silver.
McCrea September 28, 2006	McCrea completed an updated 3D block model resource estimate for the South Ridge, South Ridge East and Breccia Ridge zones with the Cordon Colorado, Peña Dyke and Javelina Creek zones re-classified since the March 13, 2006 update. Resources for the Pitarrilla property (cut), using a 40-gram per tonne Ag cut-off, were: 27.2 million tonnes at 120.6 grams of silver per tonne in the measured category, 35.6 million tonnes at 112.5 grams of silver per tonne in the indicated category and 64.4 million tonnes at 92.7 grams of silver per tonne in the inferred category. Total resources in all categories at a 40-gram per tonne Ag cut-off were reported to be 127.2 million tonnes at 104.2 grams per tonne silver.
McCrea May 21, 2007	McCrea prepared an updated 3D block model resource estimate for the Breccia Ridge Zone using a 40 gram silver Equivalent cut-off which was calculated using US$7.00/oz silver, US$0.65/lb zinc, US$0.37/lb lead and US$1.48 copper. Total resources in all categories at a 40-gram per tonne Ag cut-off were 192.3 million tonnes at 88.0 grams per tonne silver.
Puritch August 3, 2008	Eugene Puritch of P&E Mining Consultants Inc. prepared an updated 3D block model resource estimate for the Breccia Ridge Zone using a 20 g/t Ag Eq cut-off for an open pit resource of 105.6 Mt at 95 g/t Ag Eq for approximately 216 Moz of contained Ag in the Indicated category and 5.5 Mt at 103g/t Ag Eq for 13 Moz contained Ag in the Inferred category; and a a 65 g/t Ag Eq cut-off for an underground resource of 67 Mt at 166 g/t Ag Eq for a total of 194 Moz contained Ag in the Measured and Indicated categories, and 19.3 Mt at 111 g/t Ag Eq for approximately 32 Moz contained Ag in the Inferred category. Total combined mineral resources were estimated at 172.6 Mt at 122 g/t Ag Eq for 409 Moz contained Ag in the Measured and Indicated categories, and 24.8 Mt at 109 g/t Ag Eq for 45 Moz contained Ag in the Inferred category. Metal prices used in the equivalence calculation were: $11/oz Ag; $2/lb Cu; $0.75/lb Pb; and $1.05/lb Zn with the following recoveries used: Ag – 90%; Cu – 60%; Pb – 60%; and Zn –60%.

6.2.1 2012 Historical Mineral Resource Estimate

Silver Standard prepared an updated MRE for the Property following completion of the 2012 drilling program. The MRE had an effective date of December 4, 2012 and was at the time classified in accordance with CIM (2010) Definition Standards and was prepared and disclosed in compliance with disclosure requirements for mineral resources or reserves set out in the NI 43-101 Standards of Disclosure for Mineral Projects (2011) (Table 6-3 and Table 6-4). The historical MRE was based on all available drilling data since 2003 for the Pitarrilla Project, including the results from over 15,000 m of drilling completed at the Property during 2012.

This updated MRE completed by Silver Standard in 2012 is considered historical in nature and Endeavour is not treating the historical resource as current. The historical resource has been superseded by the Indicated and Inferred MRE for the Deposit reported in Section 14 of this report. As there has been no additional drilling completed on the Property since 2012, the MRE presented in Section 14 utilizes the same drill database and mineralization domain solids as were used in 2012.

This historical MRE is based on all available drilling data since 2003 for the Project, including the results from over 15,000 m of drilling completed at the Property during 2012. The historic MRE is based on 19 mineralization domain solids (Figure 6-1) constructed in Gemcom GEMS software and Leapfrog for oxide, transition and sulphide mineralization. Grade selection was based on a 20 g/t total silver cut-off over a minimum length of 7.5 m. A second grade filter, based on a 100 g/t total silver cut-off over a minimum length of 7.5 m, was combined with the lithology and oxidation filters and was used to identify zones of continuous high-grade silver mineralization.

Ag was estimated using Localised Uniform Conditioning (LUC); Pb and Zn were estimated using Ordinary Kriging (OK). Estimates of Pb and Zn are not classified as Measured to account for the added uncertainty introduced by the volume-variance effect when using different estimation techniques (Ag by LUC; Pb and Zn by OK). High grade capping was done on 1.5 m composite data. Density data averages were used in domains where there were few conditioning data, taking oxidation code into account where possible, and density was estimated using Ordinary Kriging by lithology and mineralization domain, where sufficient conditioning data so allowed.

A silver cut-off grade of 30 g/t Ag was considered at the time to be the most likely economic cut-off grade for large-scale open-pit mining of the Pitarrilla deposit. Mineral Resources situated below an open-pit shell design was considered potentially economically viable in an underground mining scenario, and were therefore included in the total reported historical MRE. A Preliminary Economic Assessment (PEA) or higher level study validating the economics of the underground mining scenario was not undertaken at the time.

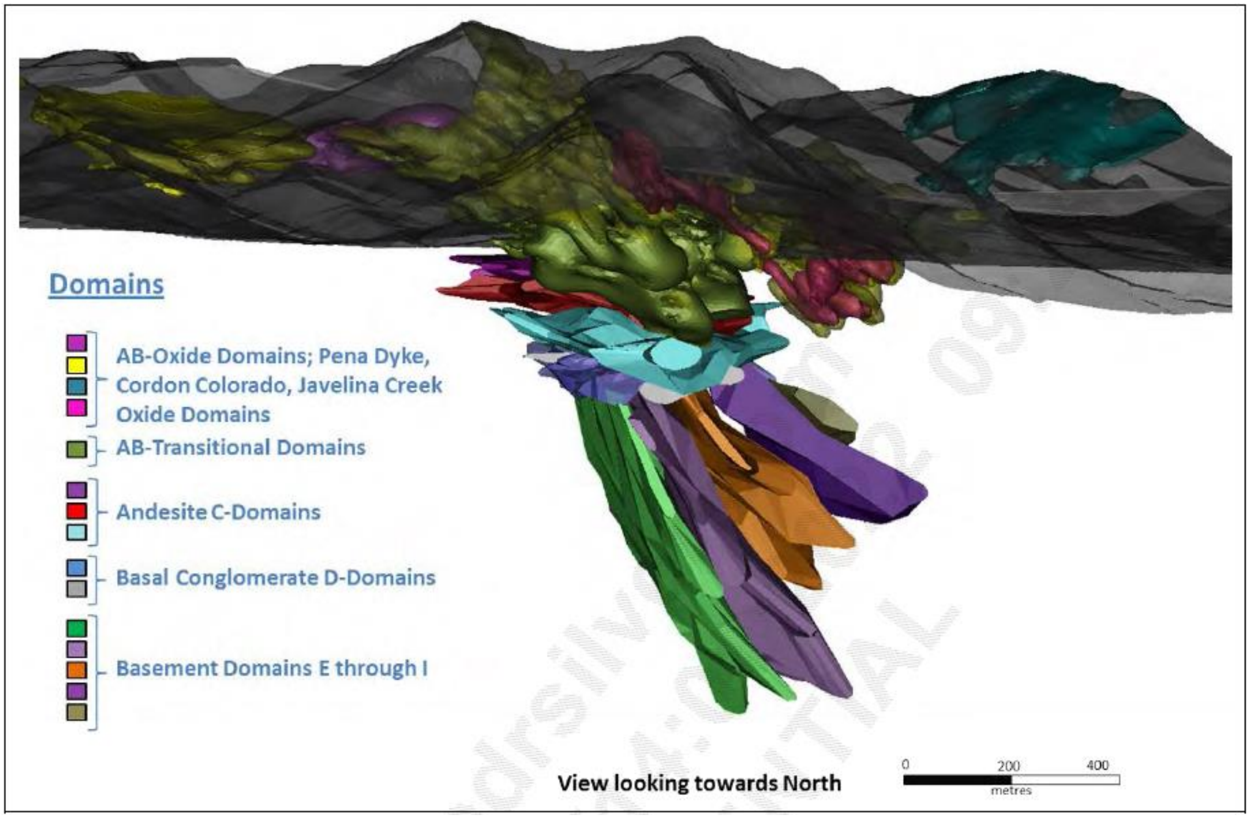
Table 6-3 Pitarrilla December 4, 2012 Global Mineral Resources (Silver Standard, 2012)

Classification	Cut-off Ag (g/t)	Tonnes (Mt)	Ag (g/t)	Pb (%)	Zn (%)	Ag Moz	Pb (Mlbs)	Zn (Mlbs)
Measured	20.0	23.62	85.56	-	-	65	-	-
	30.0	**20.31**	**95.42**	**-**	**-**	**62**	**-**	**-**
	40.0	16.90	107.62	-	-	58	-	-
Indicated	20.0	268.73	75.89	-	-	656	-	-
	30.0	**240.00**	**81.94**	**-**	**-**	**632**	**-**	**-**
	40.0	199.61	91.41	-	-	587	-	-
	20.0	292.35	-	0.31	0.71	-	2,009	4,581
	30.0	**260.31**	**-**	**0.32**	**0.72**	**-**	**1,815**	**4,146**
	40.0	216.51	-	0.33	0.75	-	1,574	3,590
Measured + Indicated	20	292.35	76.67	0.31	0.71	721	2,009	4,581
	30	**260.31**	**82.99**	**0.32**	**0.72**	**695**	**1,815**	**4,146**
	40	216.51	92.68	0.33	0.75	645	1,574	3,590
Inferred	20	26.48	55.98	0.21	0.48	48	123	281
	30	**22.08**	**62.12**	**0.21**	**0.49**	**44**	**101**	**236**
	40	17.09	70.00	0.21	0.49	38	79	186

Table 6-4 Pitarrilla December 4, 2012 Global Mineral Resources by Mineralization Style (Silver Standard, 2012)

Material Type	Classification	Ag Cut-off (g/t)	Tonnes (Mt)	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)
Oxide	Measured	30	-	-	-	-	-	-	-
	Indicated	30	118.19	80.45	0.10	0.34	306	268	891
	Measured + Indicated	**30**	**118.19**	**80.45**	**0.10**	**0.34**	**306**	**268**	**891**
	Inferred	30	12.97	59.96	0.06	0.19	25	17	56
Transitional	Measured	30	-	-	-	-	-	-	-
	Indicated	30	57.57	74.13	0.28	0.60	137	351	763
	Measured + Indicated	**30**	**57.57**	**74.13**	**0.28**	**0.60**	**137**	**351**	**763**
	Inferred	30	4.92	67.28	0.15	0.60	11	16	65
Sulphide	Measured	30	20.31	95.42	-	-	62	-	-
	Indicated	30	64.24	91.68	-	-	189	-	-
	Indicated	30	84.55	-	0.64	1.34	-	1,196	2,492
	Measured + Indicated	**30**	**84.55**	**92.58**	**0.64**	**1.34**	**252**	**1,196**	**2,492**
	Inferred	30	4.19	62.73	0.73	1.25	8	67	116

Figure 6-1 Pitarrilla December 4, 2012 Mineralization Domain Solids (Silver Standard, 2012)



6.3 Underground Development

In order to augment the drilling data at the Breccia Ridge Zone, Silver Standard initiated a program of underground ramp development. By December 2008, a total of 1,236 m of ramping had been completed: 1,069 m along the original strike direction and 167 m along a branch to the northwest.

6.4 Historical Mining

No historical mining has occurred on the property.

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The Pitarrilla mineral property is located on the eastern flank of the Sierra Madre Occidental (SMO) mountain range that extends for more than 1,500 km in a north-westerly direction through the northern half of Mexico. This mountain range is the erosional remnant of one of the Earth's most voluminous accumulations of intermediate to felsic volcanic rocks, which formed a calc-alkaline magmatic arc that was built during Eocene to early Miocene time, roughly 52 to 25 million years ago, in response to subduction of the Farallón tectonic plate beneath North America (Figure 7-1, Ferrari et al., 2007). A large number of medium to high-level hydrothermal systems variably enriched in Ag, Au, Pb, Zn and to a lesser extent Cu, Sb, As, Hg and F were intermittently generated during this extended period of volcanism, including the epithermal mineral systems that formed the Mexican silver mining districts at Guanajuato, Zacatecas, Fresnillo, and Santa Barbara-San Francisco del Oro (Figure 7-2). The silver-lead-zinc mineralization found on the Pitarrilla property is situated in the central section of the globally important Central Mexican Silver Belt, a north-westerly aligned, 900 kilometer-long metallogenic province defined by the four previously noted silver mining districts along with the mining districts of Parral, Santa Maria del Oro, and Sombrerete-Chalchihuites.

Figure 7-1 Geographic Extent of Igneous Complexes in the Sierra Madre Occidental and Location of Pitarrilla Ag-Pb-Zn Deposit Shown As Red Star (M3, 2012)

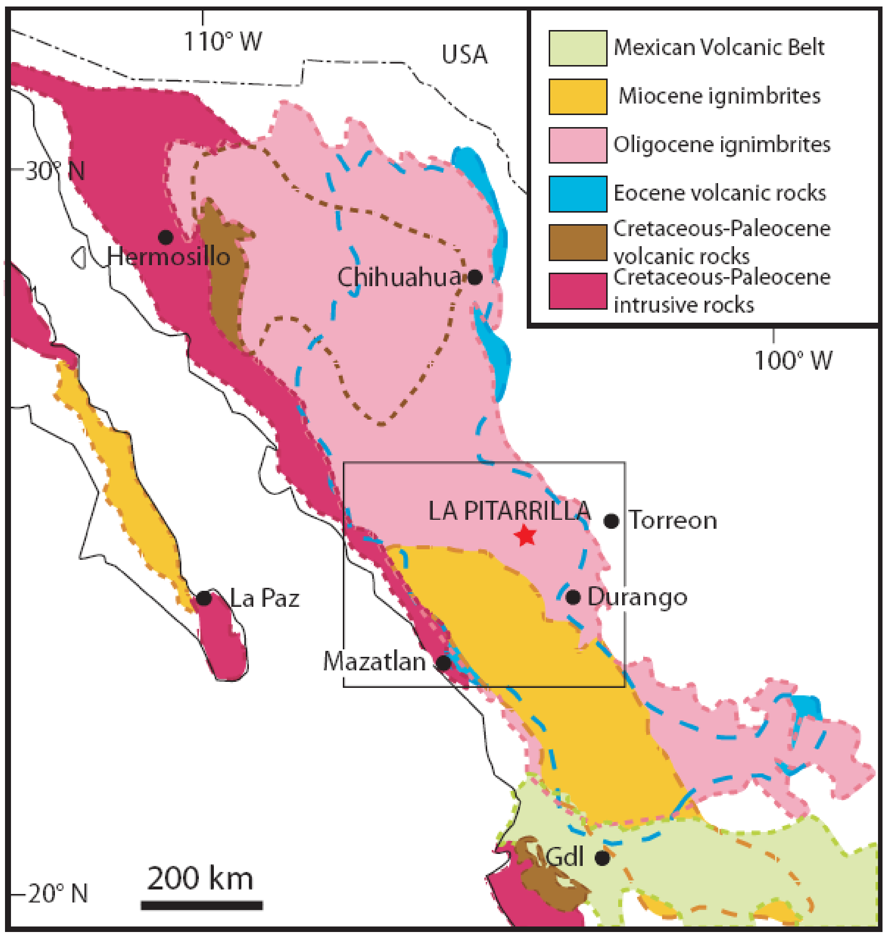
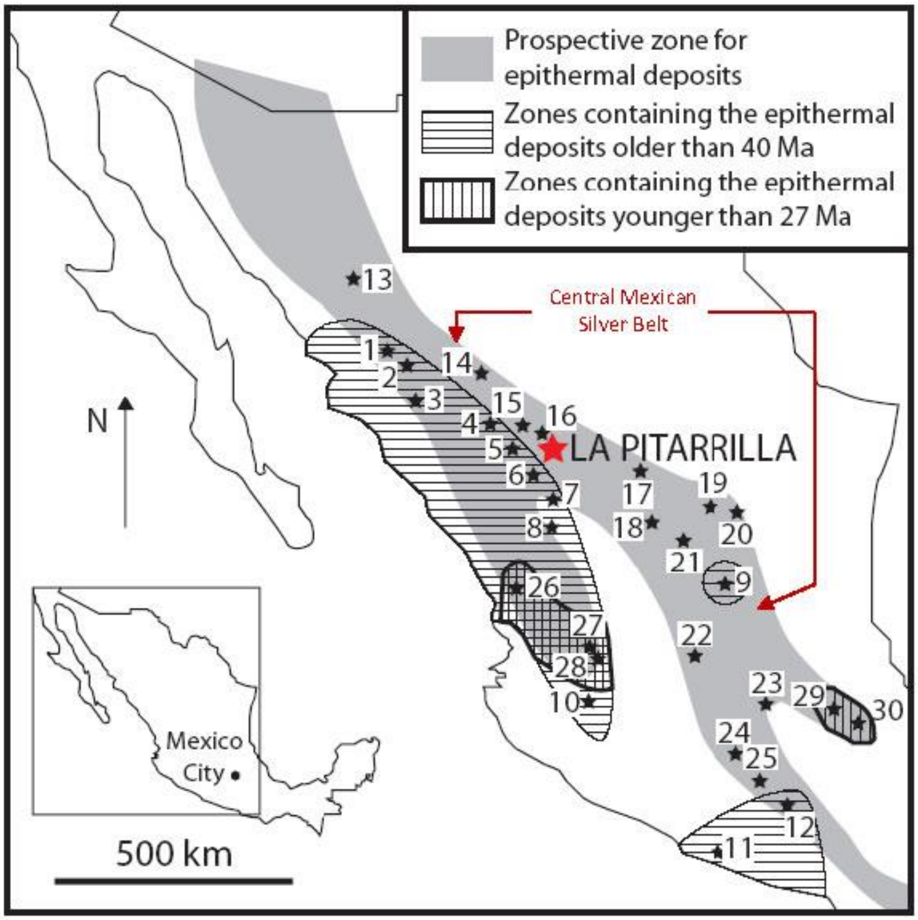


Figure 7-2 Location of the Pitarrilla Ag-Pb-Zn Deposit in Relation To Other Silver Mining Districts and Deposits in Central Mexico (Silver Standard, 2012)



1: Batopilas, 2: Los Angeles, 3: Guanacevi, 4: Topia, 5: Orion, 6: San Dimas (Tayoltita), 7: Mala Noche, 8: Lluvia de Oro, 9: Real de Angeles, 10: El Barqueño, 11: Real de Guadalupe, 12: Taxco, 13: Ocampo, 14: San Fransico del Oro, 15: La Ciénega, 16: Bacis, 17: Velardeña, 18: Sombrerete, 19: Real de Cartorce, 20: La Paz, 21: Fresnillo, 22: Guanajuato, 23: San Martin, 24: El Oro-Tlapujahua, 25: Temascaltepec (La Guitarra), 26: El Indio-Huajicori, 27: Bolaños, 28: San Martin de Bolaños, 29: Pachuca, 30: Ixtacamacaxtitlan.

In the area of the Pitarrilla property, the Tertiary volcanic rocks of the SMO overlie marine sedimentary rocks that were deposited in a back-arc basin from early to middle Cretaceous time. These marine sediments suffered compressional deformation during the Laramide Orogeny which peaked during the late Cretaceous. A major unconformity separates the deformed Cretaceous sedimentary rocks from the overlying Eocene to Oligocene volcanic and volcaniclastic rocks. Along the eastern margin of the SMO, this unconformity is commonly marked by the presence of continental clastic sedimentary rocks, mainly conglomerates and sandstones. Eocene (52 to 40 Ma) andesitic flows and domes, as well as minor silicic lavas and ignimbrites generally form the lower volcanic stratigraphy of the SMO (Ferrari et al., 2007). Following a hiatus in arc magmatism at the end of the Eocene, extensive volcanism in the SMO resumed, with voluminous Oligocene (32 to 28 Ma; Ferrari et al., 2007) silicic ignimbrites and rhyolitic domes deposited. Basaltic-andesitic volcanism followed most of the major ignimbritic episodes, as evidenced by mafic flows locally overlying the Oligocene sequences (Aguirre-Díaz and McDowell, 1993).

The core of the SMO can be viewed as a relatively un-extended crustal block that separates two NNW-SSE trending belts, marked by extensional deformation, which occur along its western and eastern flanks (Henry and Aranda-Gómez, 1992). The eastern flank of the central sector of the SMO, where the Pitarrilla deposit is located, is interpreted as having undergone two major extension events. The first event, directed ENE-WSW, occurred during the early Oligocene (32.3 to 30.6 Ma) at about the same time as the main episode of ignimbritic volcanism (Luhr et al., 2001). A subsequent, late Oligocene ENE-WSW directed extension began around 24 million years ago, post-dating the Oligocene silicic volcanism but coinciding with a mafic, alkaline volcanic event (Aguirre-Díaz and McDowell, 1993; Luhr et al., 2001). NW-trending faults generated during early Miocene extension are interpreted to be reactivated early Oligocene structures (Aranda-Gómez and McDowell, 1998).

7.2 Property Geology

The geology of the Pitarrilla property is presented in the geology map shown in Figure 7-3. Overall, the Ag-Pb-Zn mineralization is spatially associated with a Tertiary rhyolite dome complex that was emplaced over a moderately thick sequence of intermediate to felsic volcaniclastics and pyroclastics which were deposited on a Cretaceous marine sedimentary basement. The Pitarrilla stratigraphy (modified from Somers et al., 2010), is schematically displayed in Figure 7-4. Four informal formations are defined at Pitarrilla, which from oldest to youngest are the Peña Ranch, Pitarrilla, Cardenas, and Casas Blancas formations, these are described in detail below.

7.2.1 The Peña Ranch Formation

The Peña Ranch Formation is dominated by thinly inter-bedded Cretaceous mudstone and siltstone with lesser limestone and pebble conglomerate lithofacies. Economically significant Ag-Pb-Zn mineralization occurs in this formation in the form of disseminated and fracture-filling sulphides, which in order of abundance include pyrite, sphalerite, pyrrhotite, galena, chalcopyrite, arsenopyrite, stibnite, and tetrahedrite.

7.2.2 Pitarrilla Formation

The Pitarrilla Formation unconformably overlies the Peña Ranch Formation and consists of well-stratified, heterolithic, volcaniclastic lithofacies and a single massive lava flow of presumed Eocene age. Immediately overlying the Cretaceous-Tertiary unconformity is a polymictic conglomerate unit, referred to as the Manto Rico member (Somers et al., 2010) that is marked by abrupt lateral variations in thickness, from less than 5 meters up to a maximum of 90 meters, and which contains cobbles of micritic limestone along with clasts of siltstone and variously textured andesitic rocks. This conglomerate is a key lithology because it hosts important semi-massive replacement mineralization composed of varying combinations of pyrrhotite, sphalerite, pyrite/marcasite, chalcopyrite and lesser galena.

Overlying the basal conglomerate is a mainly volcaniclastic succession, up to 550 meters thick, where the composition of lapilli-size clasts and tuffaceous matrices in the lower members is overall andesitic while upper members are more dacitic. Intercalated with the heterolithic volcaniclastic units are thinner deposits of primary pyroclastic ejecta sourced from Eocene arc eruptions.

In the central part of the Pitarrilla Formation is a massive, fine-grained intermediate volcanic flow, the Coherent dacite unit in the stratigraphic section defined by C. Somers et al. (2010), which is strongly altered and brecciated close to zones of mineralization.

The various members and lithofacies of the Pitarrilla Formation are interpreted to have been deposited in a back-arc sedimentary basin that had formed along the eastern flank of the Eocene volcanic arc now represented by the Sierra Madre Occidental. Silver mineralization hosted by volcaniclastics and pyroclastics of the Pitarrilla Formation is extensive, typically being associated with disseminated sulphide and sulphosalt phases at lower elevations below the level of supergene oxidation and with disseminated hematite ± goethite, limonite and manganese oxides in oxidized rocks closer to surface.

7.2.3 The Cardenas Formation

The Cardenas Formation unconformably overlies the Pitarrilla Formation and consists predominantly of sub-aerial, crystal-rich, non-welded to welded ignimbrites and surge deposits of presumed Oligocene age. Following the eruption and emplacement of the felsic pyroclastics, the ignimbrite and surge deposits were eroded and the depositional environment returned to a shallow marine or lacustrine one, in which the stratified lithofacies of the Cardenas Formation were deposited. The Cardenas formation rocks have undergone extensive weathering and silver mineralization is associated with disseminated hematite ± manganese oxides occurring in units of the Cardenas Formation in two areas, at the Javelina Creek Zone and at the South Ridge Zone.

7.2.4 The Casas Blancas Formation

The Casas Blancas Formation unconformably overlies the Cardenas Formation and is composed of heterolithic, volcaniclastic lithofacies and an overlying rhyolitic flow-dome, referred to as the Encino member, also of presumed Oligocene age. The flow-dome crops out on the eastern ridge of Pitarrilla hill (Cerro Pitarrilla). Field observations suggest the rhyolitic flow-dome was emplaced a relatively short time before the main hydrothermal event that deposited the Ag-Pb-Zn mineralization, although the rocks forming the dome only rarely contain geochemically significant concentrations of silver or associated base metals.

7.2.5 Intrusives

Two andesitic sills intrude the volcaniclastic-pyroclastic succession hosting the Pitarrilla deposit; the larger of the two, 100 to 130 meters thick, was intruded into the basal section of the Pitarrilla Formation, whereas the smaller one occurs at the base of the Casas Blancas Formation (Figure 7-4). The larger mafic sill is an important host to disseminated and veinlet sulphide mineralization containing silver. In addition, sub-horizontal lenses of semi-massive to massive, silver-rich base metal mineralization occur at or close to the upper and lower contacts of the larger sill. These mineralized lenses, or mantos, have lateral extents of tens to hundreds of metres and are a few meters thick. Sulphide phases found in the lenses include, in order of decreasing abundance, pyrite, sphalerite, chalcopyrite, pyrrhotite, galena, arsenopyrite and tetrahedrite.

Quartz-feldspar porphyry (felsic) dyke cross-cut all strata at Pitarrilla except the Encino dome and are interpreted to be the igneous ‘feeders’ that supplied magma to the flow-dome. The felsic dyke also fed a large sill that was emplaced into the Pitarrilla Formation beneath the western flank of Cerro La Pitarrilla (Figure 7-5). The felsic dyke have two preferred strike orientations: NE-SW and NNW-SSE, parallel to the orientation of two main fault sets. The felsic dyke and sills are concentrated and converge at the highest elevation of Pitarrilla hill where the Encino rhyolitic flow-dome occurs. The felsic dyke and sills are important hosts to silver mineralization.

Figure 7-3 Surface geology map of the area of the Pitarrilla Ag-Pb-Zn deposit (Silver Standard, 2012)

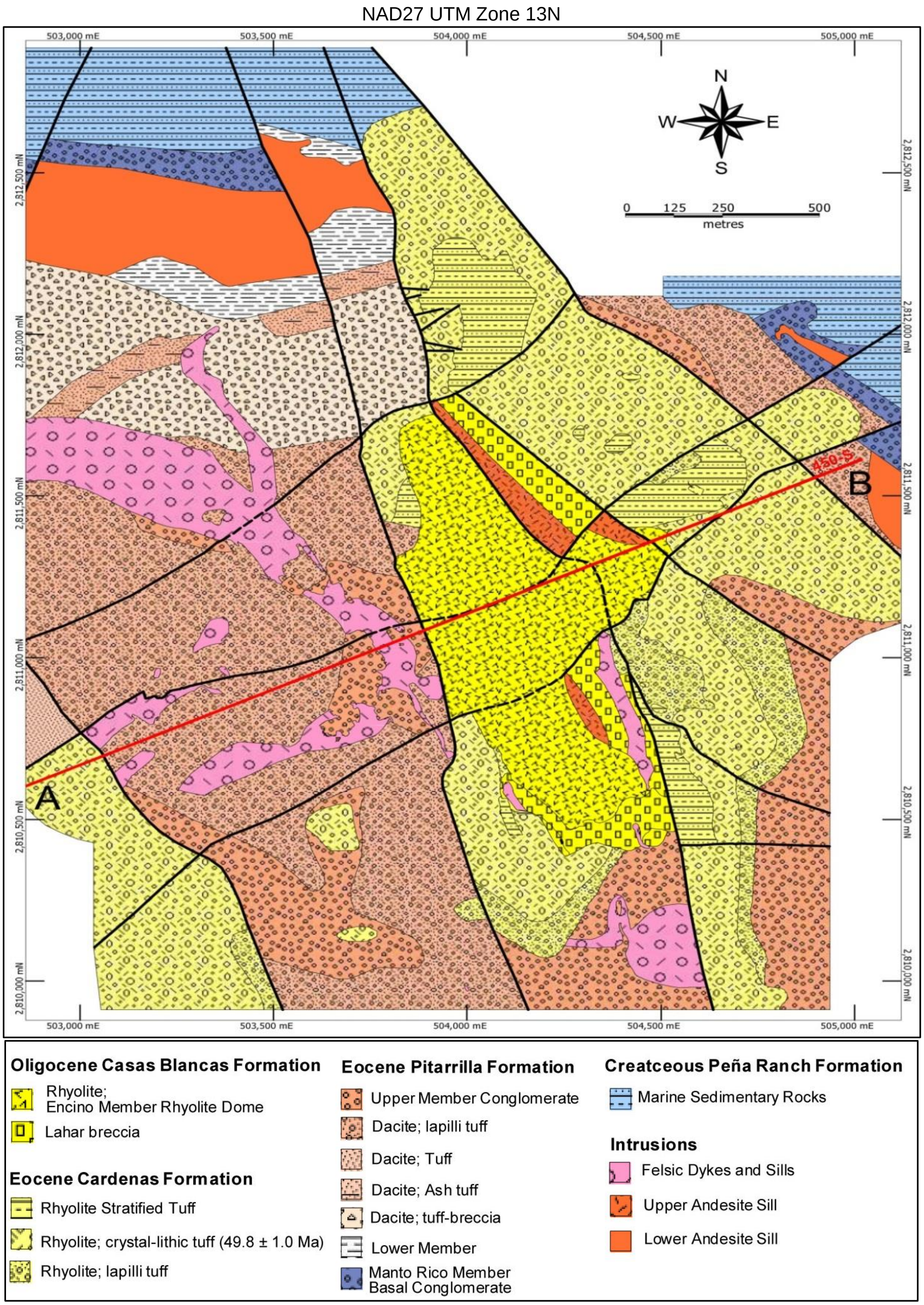


Figure 7-4 Idealized Pitarrilla Stratigraphic Section Hosting the Ag-Pb-Zn deposit (M3, 2012)

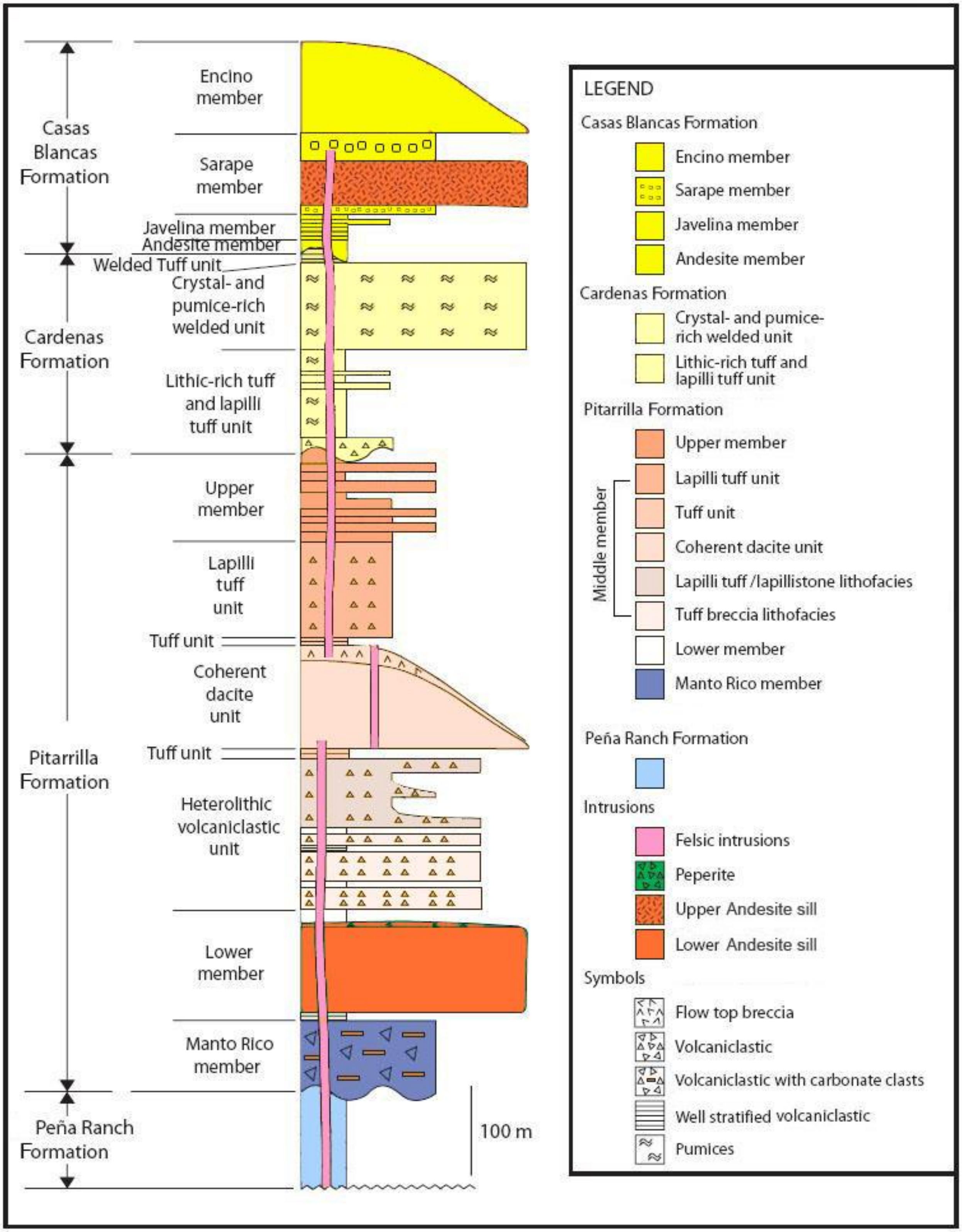
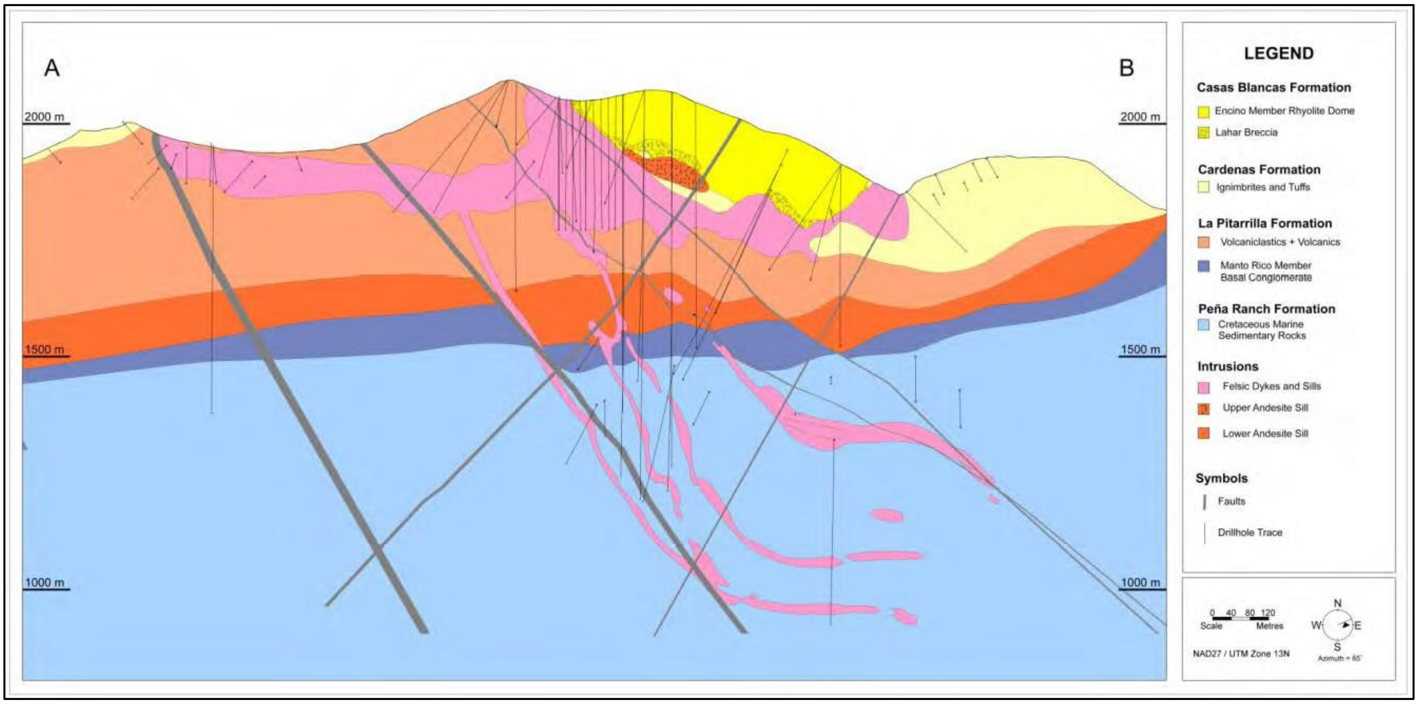


Figure 7-5 ENE-WSW Cross-Section Showing the Interpreted Pitarrilla Geology, Selected Faults, and Drillhole Traces (M3, 2012)



7.3 Structural Geology

At Pitarrilla, two erosional events and one protracted extensional structural event are recognised as having taken place during the Tertiary age (Somers, 2010). Compressional structural features are developed only in the Cretaceous sedimentary rocks of the Peña Ranch Formation. These include upright folds, listric reverse faults, probable thrust faults, and intense fracturing. These structural features are believed to be related to the Laramide Orogeny (80 to 55 mya) (Somers et al., 2010). They are not discussed in this report as they do not appear to play a significant role in the localization of the Pitarrilla Ag-Pb-Zn deposit.

The first major erosional event is represented by a well-defined angular unconformity between folded Cretaceous sedimentary basement rocks belonging to the Peña Ranch Formation and the shallowly dipping Pitarrilla Formation of Eocene age. The unconformity is generally defined by the presence of Manto Rico conglomerate. Moderate to shallow dipping faults define the main structural setting at Pitarrilla, with three principal fault sets recognised:

- NE-striking, NW- dipping faults
- NNW-striking, NE- dipping faults (Figure 7-3 and Figure 7-5)
- NNW-striking, SW-dipping faults

Moderately dipping NNW-striking faults tilt the originally sub-horizontal strata of the Pitarrilla and Cardenas Formations up to 35° to the southwest, whereas the NE-striking faults tilt these same strata up to 28° to the south-southeast. Offsets of 20 to 150 m of the shallow dipping strata of the Pitarrilla and Cardenas Formations along the interpreted faults indicate mainly normal displacement. Horizontal slip-components along the principal faults appear to be minor.

The relatively flat-lying Casas Blancas Formation overlies the faulted and tilted Cardenas Formation and its emplacement appears to have post-dated the faulting that inclined and displaced the older formations.

The contact between these two formations is marked by an erosional unconformity that is much less pronounced than the Cretaceous-Tertiary unconformity.

The felsic dykes at Pitarrilla, interpreted as feeders for the rhyolitic Encino dome, have essentially the same trends as the two main fault sets, suggesting that these faults, or ancillary parallel structures, were reactivated during the volcanism that deposited the Casas Blancas Formation and served as structural conduits for the felsic magma.

7.4 Pitarrilla Geological Model

In order to generate a practical geological model of the Pitarrilla deposit, the lithologies and litho-facies identified at Pitarrilla were grouped into the rock packages that together make up the Pitarrilla Mine Sequence shown in Table 7-1.

Using the lithological groupings of the Pitarrilla Mine Sequence and Leapfrog software (Version 2.4.5.17), Silver Standard generated a three-dimensional model of the main rock formations found at Pitarrilla. A cross-section of the Pitarrilla geological model is shown in Figure 7-5. Co-incident with the modeling of the Pitarrilla geological mine sequence, three dimensional (wire-frame) models of interpreted faults in the area of the deposit were created using Minesight software (version 7.0-3) and identified drillhole intercepts of faulted rock.

Given the importance of accounting for faults in pit-wall design, a seismic reflection geophysical survey was carried out in the area of the Pitarrilla deposit in order to validate the wire-frame fault models and to test for unrecognised structures. Silver Standard contracted Frontier Geosciences Inc. to survey along five lines with a combined length of 7,024 m. The seismic work validated the position of interpreted faults and helped to locate two additional west dipping structures.

Table 7-1 Simplified Pitarrilla Mine Sequence (M3, 2012)

Formation Name	Member Name	Attributes
Casas Blancas	Encino	Rhyolite Flow Dome
Cassas Blancas	Sarape	Volcaniclastics and Tuffs
Cardenas	many	Felsic ignimbrite tuff and volcaniclastics
Pitarrilla	many	Andesitic to dacitic volcaniclastics and flows
Pitarrilla	Manto Rico	Polymictic conglomerate , limestone clasts
Peña Ranch		Highly Deformed marine sediments
Intrusions		Felsic Sills and Dykes: Intrude all other Lithologies
Intrusions		Andesite Upper Sill: Intrudes Cardenas Formation
Intrusions		Andesite Lower Sill: Intrudes base of Pitarrilla Formation

7.5 Pitarrilla Mineralization Model

Ag-Zn-Pb mineralization at Pitarrilla occurs as a vertically stacked mineralised system centered on rhyolitic dykes and sills that constitute the feeder system for an early Oligocene volcanic centre manifest by a rhyolitic dome. Mineralization is interpreted to have occurred during or shortly after emplacement of this dome. Ag-Zn-Pb mineralization is rooted in the basement Cretaceous sediments where it is represented by an aerially restricted but vertically extensive zone of disseminated and veinlet Ag-Zn-Pb (-Cu-As-Sb) sulphide-associated mineralization. Overlying the Cretaceous basement, strata-bound massive replacement mineralization occurs within a polymictic conglomerate at the Cretaceous-Eocene unconformity. The hypogene (fresh) or sulphide-associated mineralization extends into the overlying Eocene to Oligocene, volcanic and volcaniclastic rocks as well as felsic and intermediate sills, where it grades into partly weathered, or transitional mineralization, and a more laterally extensive zone of disseminated highly weathered, or oxide-associated, mineralization.

Sulphide-associated mineralization at Pitarilla was weathered under near surface oxidising conditions, resulting in the destruction of primary sulphide and sulphosalt minerals and liberation of ions into the weathering environment where they re-precipitated as secondary mineral phases. The destruction of pyrite resulted in the release of iron and sulphuric acid. The released iron was re-precipitated as iron oxide species including limonite and goethite. Argentiferous galena was broken down as a result of weathering and silver was liberated to re-form in minerals such as acanthite and silver halides (chlorargyrite, iodargyrite, bromargyrite; LeCouteur, 2006) which deposited along with the iron (and manganese) oxides thus producing oxide-associated mineralization.

Typically, the oxide-associated mineralization is accompanied by pervasive argillization of the originally feldspathic intrusive and volcanic host rocks. The felsic intrusive rocks and near surface dacitic volcaniclastics that make up the bulk of the mineralised rocks in the zones of oxide-associated silver mineralization show evidence of moderate to strong acid-leaching and consequent mass reduction. Acid-leaching is inferred to have affected these rocks on the basis of their highly depleted levels of calcium, sodium, and magnesium as well as their highly porous and commonly ‘vuggy’ textures. The leaching is believed to have resulted from the acidification of weakly acidic oxidised meteoric waters as the weathering of pyrite resulted in the production of sulphuric acid.

Weathering of the host rocks and mineralization was gradational, in places remnant sulphide species remained surrounded by minerals precipitated as a result of the oxidation process. Mixed oxide and sulphide mineral species form a material type that is called transitional mineralization.

In summary, for metallurgical treatment purposes three main silver bearing material types are recognised at the Pitarrilla Ag-Pb-Zn deposit, these are called Oxide, Transitional, and Sulphide mineralization. It is important to note that the total Mineral Resources and Mineral Reserves defined as part of the Pitarrilla Feasibility Study (M3, 2012) are formed by a combination of these three mineralization types. The following sections provide an overview of the distribution and characteristics of the defined zones or domains of mineralization.

The total extent of the oxide-associated mineralization is considerable, about 1.9 km in the NNW-SSE direction and 2.9 km in the NE-SW direction. The six zones of oxide-associated mineralization are, in chronological order of discovery, Cordon Colorado, Peña Dyke, Javelina Creek, Breccia Ridge, South Ridge and South Ridge East (Figure 7-6 and Figure 7-7).

Based on host-rock lithologies and style of mineralization, one transitional mineralised domain and three sulphide mineralised domain were outlined at depth beneath Breccia Ridge Zone, with a number of subdomains designated in each of these four domains. Each subdomain within the Transitional and Sulphide domains represents a separate Mineral Resource domain as defined in Section 14.

Figure 7-6 Pitarrilla Distribution of Three Main Types of Ag Mineralization (M3, 2012)

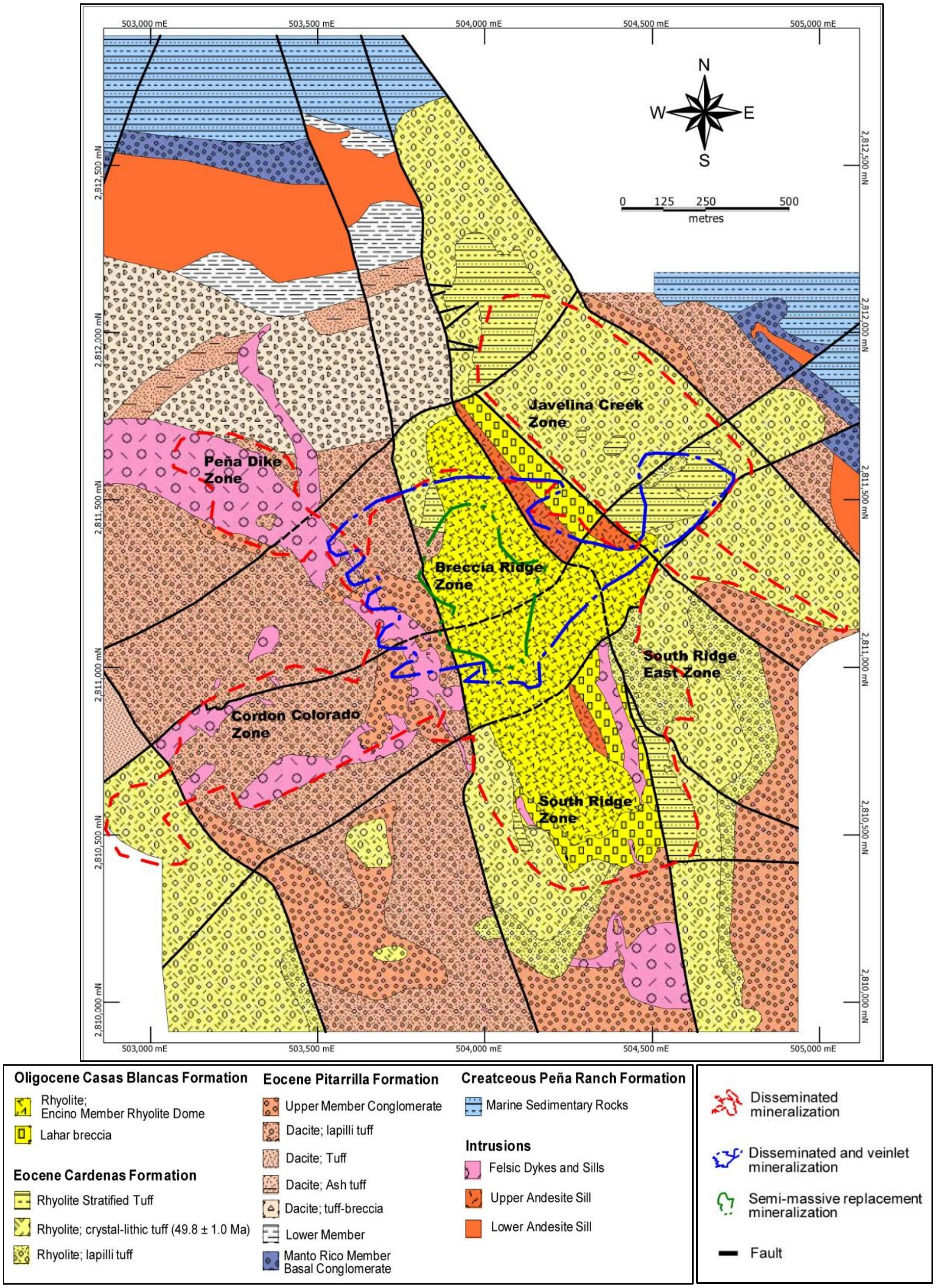
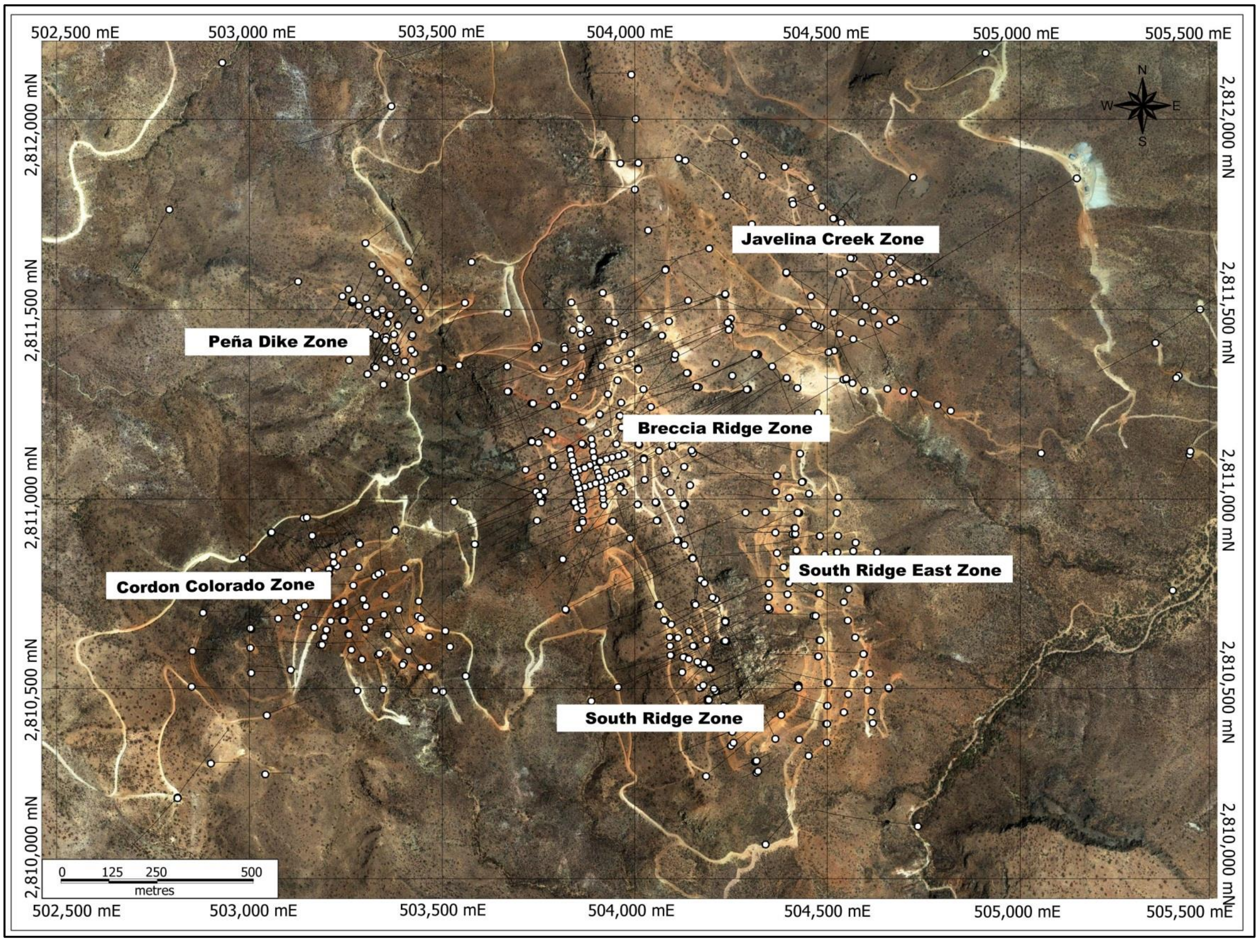


Figure 7-7 Plan Showing Five Main Mineralized Zones that are Centered on the Pitarrilla hill with Drillhole Collars and Traces (M3, 2012)

(NAD27 UTM Zone13N)



7.5.1 Cordon Colorado Zone

The Cordon Colorado Zone is relatively flat-lying and the mineralization lies close to surface. The NE-SW axis of maximum length is approximately 575 m, with the NW-SE axis being about 400 m. The deposit ranges in thickness from 30 to 85 m, with the average being about 50 m. Disseminated oxide silver mineralization is hosted entirely within a massive, fine-grained and weakly quartz feldspar-porphyritic felsic sill. Silver is the only metal of economic interest in this zone. Lead and zinc concentrations are typically low.

7.5.2 7.5.2 Peña Dyke Zone

The Peña Dyke Zone lies 500 m north of Cordon Colorado beneath a northwesterly trending ridge that extends from the western peak of Cerro La Pitarrilla. The length of the zone is approximately 500 m, with the width averaging 125 m. Mineralization crops out; however, the silver-rich core of the deposit lies roughly 60 m below surface. The disseminated oxide silver mineralization occurs within a weakly quartz feldspar-porphyritic felsic intrusive. Silver is the only metal of economic interest.

7.5.3 Javelina Creek Zone

In the Javelina Creek Zone, disseminated oxide silver mineralization occurs in two separate sub-zones that are sub-conformable to the southwest dipping volcanic strata; the upper sub-zone is hosted by thinly bedded, well-stratified tuffs of the Javelina member of the Casas Blancas Formation, while the lower sub-zone is found in quartz crystal and pumice rich tuff of the Cardenas Formation. The oxide mineralization crops-out, the total length of the combined zone is approximately 600 m NS, with the combined width averaging 300 m and an overall average thickness of 80 m.

7.5.4 Breccia Ridge Oxide and South Ridge Oxide Zones

Together, the Breccia Ridge Oxide and South Ridge Oxide zones extend in the NNW-SSE direction for approximately 1,300 m, with an average width in the WSW-ENE direction of approximately 600 m.

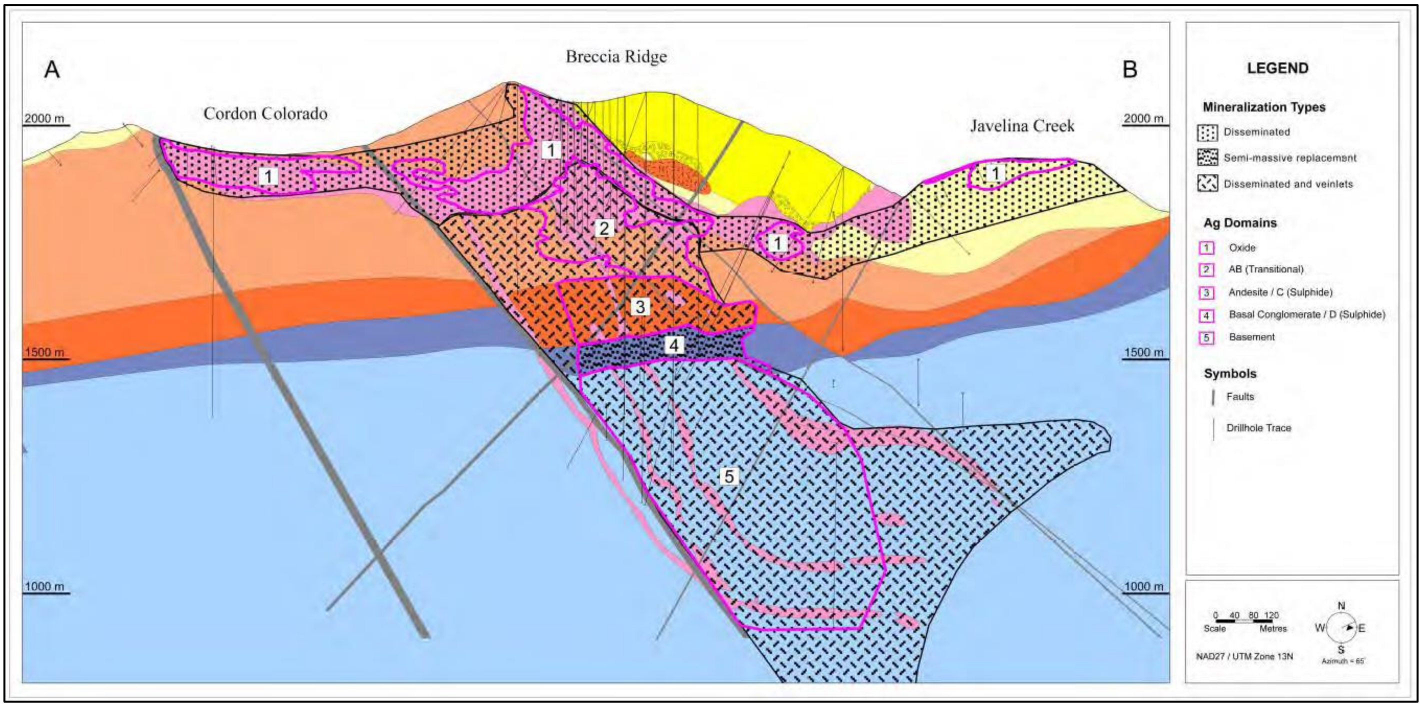
The cross-section of Figure 7-8 shows the complex of felsic dykes and sills that converge beneath the Encino flow dome at Breccia Ridge. It is predominantly in these intrusive rocks that the disseminated, oxide silver mineralization occurs. Volcaniclastic rocks of the Pitarrilla Formation also contain oxide and transitional mineralization, where these rocks are proximal to the contacts with the felsic dykes and sills. The oxide silver mineralization of the Breccia Ridge Oxide Zone grades downwards into transitional mineralization, and with increasing depth into true sulphide mineralization.

The core of mineralization within the South Ridge Oxide Zone is situated about 600 m south-southeast of the peak of Cerro La Pitarrilla Vertical thickness of the South Ridge Oxide Zone mineralization varies considerably, from less than 20 m up to more than 100 m. Felsic dykes and sills are the most important host rock for mineralization in the South Ridge Oxide Zone, with the lahar breccia and stratified tuff litho-facies of the Casas Blancas Formation also locally mineralised. Along the eastern part of South Ridge, disseminated, oxide silver mineralization is hosted by crystal and pumice rich welded tuff of the Cardenas Formation and by volcaniclastics of the upper Pitarrilla Formation. Silver is the only metal of economic importance in the Breccia Ridge Oxide and South Ridge Oxide zones.

7.5.5 Breccia Ridge Transitional and Sulphide Domains

There are four main domains of transitional and sulphide silver mineralization in the Pitarrilla Ag-Pb-Zn deposit, which together, define a vertically-stacked mineralised system that is centered on the cluster of felsic dykes and sills representing the feeder complex and vent area for the Encino rhyolitic flow dome (Figure 7-8). From highest to lowest in the system, the four domains consist of the AB domain (transitional), the Andesite (C) domain (sulphide), the Basal Conglomerate (D) domain (sulphide), and the Basement domain (sulphide), as discussed below. Figure 7-8 is a NE-SW cross-section through the Pitarrilla deposit showing the distribution of oxide disseminated, silver mineralization, transitional mineralization, and three types of sulphide Ag-Pb-Zn mineralization.

Figure 7-8 Cross-Section of the Pitarrilla Ag-Pb-Zn Deposit – Zones of Mineralization and Ag Domains (Silver Standard, 2012)



7.5.6 AB Domain (Transitional)

The AB Domain encompasses mineralization with both oxide and sulphide characteristics, i.e., incomplete weathering of sulphide mineralization. When the limits of the AB Domain are projected to surface it has a maximum known lateral extent of approximately 1,000 m in the NW-SE direction, extending from the northern boundary of Breccia Ridge to approximately 300 m north of the southern margin of South Ridge. It extends approximately 625 m laterally in the NE-SW direction. The top of the AB Domain ranges from approximately 20 m to 200 m below the surface. The contact between the base of the Breccia Ridge Oxide and South Ridge Oxide Zones and the top of the AB Domain is highly irregular and isolated pods of AB Zone transitional material are present within the oxide mineralization near the surface. The base of the AB Domain is generally considered to be the upper contact of the Lower Andesite Sill which intrudes the lower strata of the Pitarrilla Formation (Figure 7-6). The interpretation of the AB Domain relies upon detailed work undertaken by Silver Standard to understand the weathering of the deposit, which is discussed in detail in Section 7.6.1.

There are two sub-domains within the AB Domain, with each sub-domain of mineralization corresponding to resource domains described in Section 4.Sub-domain 20, which is based upon silver grades above a 20 g/t cut-off, comprises volumetrically 96% of the AB Domain. Subdomain 21 is contained wholly within Sub-domain 20 and encapsulates a small zone of highgrade silver mineralization that exists directly beneath Pitarrilla hill. Sub-domain 21 is defined by a grade shell of 100 g/t silver.

7.5.7 Andesite (C) Domain

Andesite-hosted mineralization has been subdivided into four subdomains: the C, C-1, C-2 (NW) and C-2 (SE) subzones (Note: mineralised subzones correspond to resource domains described in Section 4.3). The mineralization forming these subdomains generally consists of disseminated aggregates and stockwork veinlets of the same sulphide phases found elsewhere in the deposit. The exception is the C subzone, which in addition to having the disseminated and fracture-filling sulphides contains a sub-horizontal body of massive, relatively coarse-grained base metal sulphides, mainly pyrite, chalcopyrite, sphalerite, with lesser amounts of pyrrhotite, galena, arsenopyrite and tetrahedrite. Only minor amounts of hydrothermal gangue minerals, mostly quartz and calcite, are mixed with the sulphides. The massive sulphide mineralization of the C subdomain, which can attain thicknesses of up to 5 m, has the appearance of a vein; however, it is also possible that it represents a body of pervasive sulphide replacement which was localised along the upper contact of the andesite sill. In terms of size, the C subdomain has lateral dimensions of 350 m in the NNW-SSE direction, about 400 m in the NE-SW direction, and reaches a maximum thickness of about 20 m. Beneath the C subzone and lying just above the lower contact of the andesite sill is the C-1 subdomain. This subdomain of disseminated and veinlet sulphide mineralization is 15 to 40 m thick and has maximum lateral dimensions of 520 m and 420 m in the NNW-SSE and NE-SW directions, respectively. Lying between the C and C-1 subdomains within the central part of the andesite sill are the C-2 (NW) and C-2 (SE) subdomains. Although they are contiguous, the two C-2 subdomains have been distinguished on the basis of metal grades and dip orientations; the C-2 (NW) subdomain contains lower grade mineralization and lies sub-horizontally, while the C-2 (SE) subdomain is richer in Ag, Zn and Pb, and dips moderately to the southeast. Viewed together, the C-2 subdomains have a NNW-SSE dimension of 800 m and a 600 m extent in the NE-SW direction.

7.5.8 Basal Conglomerate (D) Domain

The Basal Conglomerate or D domain is probably the most important mineralised domain at Pitarrilla, as it contains some of the highest grade silver bearing base metal sulphide mineralization presently known on the property. It is stratabound within the Manto Rico and is characterised by replacement style mineralization. The D domain generally has a thickness of between 15 to 25 m but attains a maximum thickness of 65 m in its central part. Drillhole intersections of this domain have determined that the maximum lateral dimension is about 800 m. Sulphide phases found in the Basal Conglomerate (D) Domain, in order of abundance; include pyrite, sphalerite, galena, arsenopyrite, pyrrhotite, stibnite and tetrahedrite.

7.5.9 Basement Domain

Multiple, lenticular bodies of disseminated and stockwork veinlet sulphide mineralization have been delineated below the Cretaceous-Tertiary unconformity, which represent the deepest part of the Pitarrilla Ag-Pb-Zn ore system and together constitute the Basement domain. They are sub-parallel and with an average strike of 330° and dip 55° to 70° to the east. Weakly porphyritic felsic dykes typically separate the mineralised lenses of the Basement Zone, with the dykes having strike and dip orientations that mimic those of the mineralised bodies. Silver-bearing, disseminated and fracture-controlled sulphides are found within the felsic dykes, typically close to their contacts, but the bulk of the Basement Zone mineralization (>95%) is hosted by the thinly inter-bedded siltstone, sandstone, and minor pebble conglomerate strata of the Peña Ranch Formation. Disseminated mineralization tends to favour the more porous litho-facies such as pebble conglomerate and sandstone, while the beds of siltstone and shale commonly contain sulphide veinlets millimetres to centimetres thick, along with volumetrically restricted zones of mineralised hydrothermal breccia. Sulphide phases found in the Basement domain, in order of abundance, include pyrite, sphalerite, galena, arsenopyrite, pyrrhotite, stibnite and tetrahedrite. The veinlets contain relatively minor amounts of gangue minerals, mostly quartz, calcite and chlorite.

Five separate lenses of mineralization were outlined as sub-domains within the Basement domain, and these represent different resource domains in the Cretaceous basement rocks. From west to east, they have been designated as the G, F, E, H and I subzones. The G, F, and E subdomains have comparable strike lengths, 450 to 520 m, whereas the H and I subdomains are 100 to 150 m in length. Down-dip extents range from 690 m for the F subdomain to about 250 m for the subdomains. Maximum thicknesses of the subdomains range from 60 to about 100 m, with only a few tens of metres separating adjacent subzones. The down-dip limits to the mineralization of the Basement domain have not been determined due to the considerable depths below surface that would need to be drilled.

7.6 Hydrothermal Alteration

At surface and within areas of Oxide silver mineralization, the most obvious form of alteration at Pitarrilla is represented by relatively abundant disseminated and fracture-controlled hematite and lesser amounts of limonite-goethite and manganese oxide minerals, including pyrolusite and psilomelane. The oxide phases formed upon the weathering of disseminated and fracture-filling sulphide and sulphosalt mineral species. During the weathering of sulphide and sulphosalt mineralization, silver was liberated from hypogene ore minerals, probably argentiferous galena and to a lesser degree freiburgite and other Ag-sulphosalts. It then formed mineral phases that are stable under the physio-chemical conditions of the near surface environment. Acanthite, a silver sulphide, and the silver halides of chlorargyrite, iodargyrite and bromargyrite are the dominant secondary silver minerals in the Pitarrilla deposit to have formed this way (LeCouteur, 2006a). Evidence for Oxide silver mineralization being derived from the weathering of primary sulphide-sulphosalt mineralization exists in the geochemically anomalous concentrations of Zn, Pb, As and Sb that are commonly detected in the Oxide mineralization type, where the highest concentrations of these base and trace metals occur in oxidized rocks lying directly above the stacked zones of Sulphide silver mineralization identified at depth below Pitarrilla hill.

Rocks hosting Oxide silver mineralization, predominantly felsic intrusive rocks and dacitic volcaniclastics, typically show evidence of moderate to strong acid-leaching and consequent mass-reduction. The altered, originally feldspathic rocks have highly depleted concentrations of calcium, sodium and magnesium, are generally porous and locally display vuggy textures. Acidleaching is inferred to have resulted from the acidification of meteoric water as the weathering of sulphides released sulfuric acid. The acidified meteoric water reacted with rock-forming minerals, converted them to clays and in the process released calcium, sodium, magnesium and probably some potassium.

Because evidence of acid-leaching or low-pH alteration minerals has not been identified in the deposit's zones of Sulphide mineralization, it is concluded that the primary ore-forming hydrothermal fluids were near neutral in composition and fairly typical of intermediate- to lowsulphidation epithermal fluids. As noted above, the felsic intrusive and intermediate volcaniclastic rocks that host the bulk of the Oxide silver mineralization are generally marked by pervasive argillic alteration. Geochemical analyses of these rocks consistently show them to be strongly depleted in Ca, Na and Mg, while having relatively high K contents, suggesting that KAl clays such as kaolinite, dickite and illite formed in the altered and mineralized rocks mainly at the expense of plagioclase. Strong to moderate clay alteration is also seen in rocks immediately surrounding the zones of Oxide mineralization; however, the degree of Ca-Na-Mg depletion shown by these rocks is markedly less than that which characterizes the mineralized rocks. The secondary clay minerals which formed in the argillically altered but weakly or non-mineralized, mainly volcaniclastic rocks, were determined to be smectite and montmorillonite, with lesser amounts of halloysite, illite and kaolinite, based on spectrographic analyses made with a Terraspec© mineral analyzer (Somers 2012).

Potassium concentrations of mineralized felsic intrusive rocks and dacitic volcaniclastics of the Pitarrilla Formation are commonly two to four times greater than what is typically found in unaltered equivalents of these lithologies. This would suggest that potassium was introduced into the rocks. However, the high K concentrations in these rocks, particularly in the mineralized felsic rocks, are more likely the result of hydrothermally induced mass loss through Ca-Na-Mg depletion, as described above. On the other hand, mineralized felsic porphyry sills and dykes do in fact contain abundant K-feldspar, up to 55% by volume, as determined by petrographic analyses (Leitch, 2005). Approximately what proportion of the K-feldspar in the felsic intrusive rocks is of primary origin (original mineral component of the rock) and what is secondary (a product of hydrothermal alteration) could not be conclusively established by the petrographic analyses (Leitch, 2005). Possible evidence for secondary feldspar having formed in altered and locally mineralized rhyolites is perhaps best found in the occurrence in these rocks of the relatively rare feldspar, buddingtonite. This feldspar forms when the K+ ion in the mineral structure of potassium feldspars (orthoclase, adularia, sanidine) is replaced by the ammonia NH4 + ion which may have been introduced into the rocks at Pitarrilla by hydrothermal fluids or, more likely, vapors. Buddingtonite occurs within several geological environments; it is found as an authigenic mineral in sedimentary rocks (Ramseyer, 1993) and it is recognized in epithermal deposits (Soechting, 2008) as well as in active geothermal systems (White and Roberson, 1962). The nitrogen required to form buddingtonite in the mineralized system at Pitarrilla was possibly sourced from the Cretaceous marine sedimentary rocks.

Many of the drillholes that pass through the Breccia Ridge Oxide Zone and the underlying AB Zone of Transitional silver mineralization intersect a strongly-brecciated, fine-grained intermediate volcanic rock that is interpreted to be a lava flow, the Coherent dacite lithofacies of Somers (2010) in the Pitarrilla Formation (see Figure 3-4). The brecciation of this massive unit is presumed to be of a phreatic origin, with the explosive event having occurred prior to, and possibly overlapping with the emplacement of the felsic dyke complex (Somers et al., 2010). In addition to its characteristic 'jigsaw-fit' structural texture, this breccia is characterized by forms of hydrothermal alteration not evident in other rock types at Pitarrilla. The clasts of fine-grained dacite/andesite are typically clay altered and commonly show patchy replacement growths of tan-coloured, fine-grained iron carbonate (siderite ± ankerite). Locally, particularly close to the felsic dykes contacts with the breccia, the matrix of the fragmental rock is replaced by blackish fine-grained intergrowths of quartz, K-feldspar, tourmaline and minor pyrite. Within the Breccia Ridge Oxide Zone, the breccia generally has silver concentrations in the 30-60 ppm Ag range, whereas within the AB Domain the brecciated and altered rock contains minor disseminated and clast-rimming sulphides (pyrite, sphalerite, and traces of galena, stibnite, arsenopyrite) with silver contents tending to be low (<30 ppm Ag).

The Pitarrilla lithology most strongly affected by the ore-forming hydrothermal fluids and consequently displaying the most intensely developed alteration is the polymictic conglomerate of the Manto Rico member at the base of the Pitarrilla Formation.. Along with the iron and base metal sulphides that replace the clasts and sandy matrix, mineralized Manto Rico conglomerate characteristically contains intergrowths of chlorite and iron carbonates that partially to entirely replace the matrix of the coarsely clastic rock.

Chlorite ± Fe carbonate alteration is also seen forming thin halos to some of the veins and veinlets of base metal mineralization hosted by the lower andesite sill in the Andesite (C) Domain and by the Createaceous sedimentary rocks found in the mineralized sub-domains of the Basement Zone. Silicification, i.e. the introduction of significant amounts of silica into hydrothermally altered rocks, is not widespread or well-developed in the various mineralized zones defined in the Pitarrilla deposit.

Very few silver or base metal mineralized quartz veins have been observed in the Pitarrilla Ag-Pb-Zn deposit. While rocks with Oxide mineralization commonly have a 'siliceous' nature, this feature is thought to reflect the high proportion of residual silica that is derived from the chemical breakdown of plagioclase and other silicates caused by acidified meteoric water, as previously discussed. Some of these rocks also have K-feldspar and buddingtonite as major mineral components and obtain their 'siliceous' nature from these silicates. It should be noted that quartz veining is not entirely unknown on the Pitarrilla property. For example, the Santa Cecelia Vein, which occurs about 1,300 m NNW of the Javelina Creek Zone is a +400 m long, 50 to 150 cm wide quartz vein that is enriched in gold, arsenic and sporadically silver. This vein, however, is considered to be genetically distinct from the Ag-Pb-Zn mineralization that forms the Pitarrilla deposit.

In order to understand the spatial distribution of hydrothermal alteration at Pitarrilla, an alteration study was conducted in 2012. A hand portable TerraSpec mineral spectrometer was used to identify the alteration minerals present in drillcore samples for a selected 26 drillholes distributed on NS and EW sections throughout the deposit, at a spacing of approximately one TerraSpec measurement every 20 m down the lengths of the drillholes, with 801 measurements in total. The results of this study enabled the definition of five main types of hydrothermal alteration and determined their distribution in relation to zones of silver and base metal mineralization. Existing PIMA spectrographic analyses from the PhD study of C. Somers (Somers, 2010) were also incorporated into this study.

The TerraSpec and PIMA analyses of the drillcores resulted in the definition of five alteration types, which from oldest to youngest have been designated as the quartz-tourmaline (Qz-To), smectite-chlorite (Smec-Chl), illite-chlorite (Ill-Chl), siderite-chlorite (Sid-Chl), and buddingtonite ± kaolinite (Budd±Kaol) alteration types. These alteration types are characterised by particular suites of secondary minerals, with each assemblage dominated by two phases which define the respective alteration type. Some of the key aspects of the distribution of hydrothermal alteration at the Pitarrilla Project are:

- Quartz-Tourmaline: Designated as the Qz-To type, occurred prior to the main Ag-Pb-Zn mineralization event and the emplacement of the felsic dykes. The quartz-tourmaline alteration is apparently associated with the formation of a phreatomagmatic breccia at core of the Pitarrilla magmatic hydrothermal system.
- Smectite-Chlorite: This type of alteration is found at the outer edges of the deposit in weakly or non-mineralised rocks. The rocks showing smectite-chlorite alteration are composed largely of low-temperature clay minerals, predominantly layered smectite-illite and montmorillonite, along with chlorite, minor quartz and accessory iron oxides.
- Illite-Chlorite: This type of alteration is the dominant form of alteration throughout the deposit, affecting most of the lithologies hosting both the oxide and sulphide types of silver mineralization.
- Siderite-Chlorite: In the deeper levels of the deposit, especially within the Basal Conglomerate, iron carbonate and chlorite alteration, defined as the Sid-Chl alteration type, accompanied the deposition of iron and base metal sulphides.
- Buddingtonite-Kaolinite: Felsic dykes and sills and the felsic tuffs in the upper parts of the volcanic pile contain the secondary minerals kaolinite, illite, ammonium illite, dickite and ammonium feldspar (buddingtonite).
- Rocks that have undergone weathering typically contain disseminated and fracture-controlled hematite, limonite-goethite and lesser amounts of manganese oxides, with these oxides in total forming a few percent of the rock composition, by volume. The oxides are mostly derived from the weathering of sulphide and sulphosalt minerals.

7.6.1 State of Oxidation

Weathering of host rocks at the Pitarrilla Ag-Pb-Zn deposit has resulted in the partial to complete destruction of primary sulphide and sulphosalt minerals as well as the hydrolysis, hydration, and oxidation of the main rock-forming minerals. Through these processes, metals of economic interest were variably mobilized and re-distributed into secondary minerals that formed under supergene conditions.

The weathering of the primary rock-forming minerals such as plagioclase, K-feldspar and amphibole to assemblages of clay minerals and chlorite generally results in the physical weakening of the rock mass. The intensity of weathering that a mineralized rock displays may be reflected in the degree or efficiency of metal extraction during ore processing and in the mechanical strength of the rock. Consequently, determining the degree to which a rock is weathered, is important in the design of an open-pit mine (for establishing cost-effective and safe pit-wall angles) and in the selection of the metallurgical processes that are to be employed by the planned operation.

A spatial model of the state of oxidation of the rocks in the Pitarrilla deposit was created inhouse. The first step in the building of this model was a review of the digital logs of Pitarrilla drillholes, specifically the information on the weathering of the rocks that was recorded when the drillholes were logged. This review determined that there were inconsistencies in the logging of the degree of oxidation displayed by drillcores, undoubtedly a consequence of several different geologists with different levels of experience logging the cores over the course of several drilling campaigns. To rectify the inconsistency in this qualitative data, the majority of the Pitarrilla drillholes were re-logged by a single geologist. Instead of re-logging the actual cores in the field, it was possible to log the degree of weathering of the rocks by careful examination of the digital drillcore photographs that are available for all the Pitarrilla diamond drill-holes. In total, 135,800 m of drillcore was re-examined using the digital photographs of the cores.

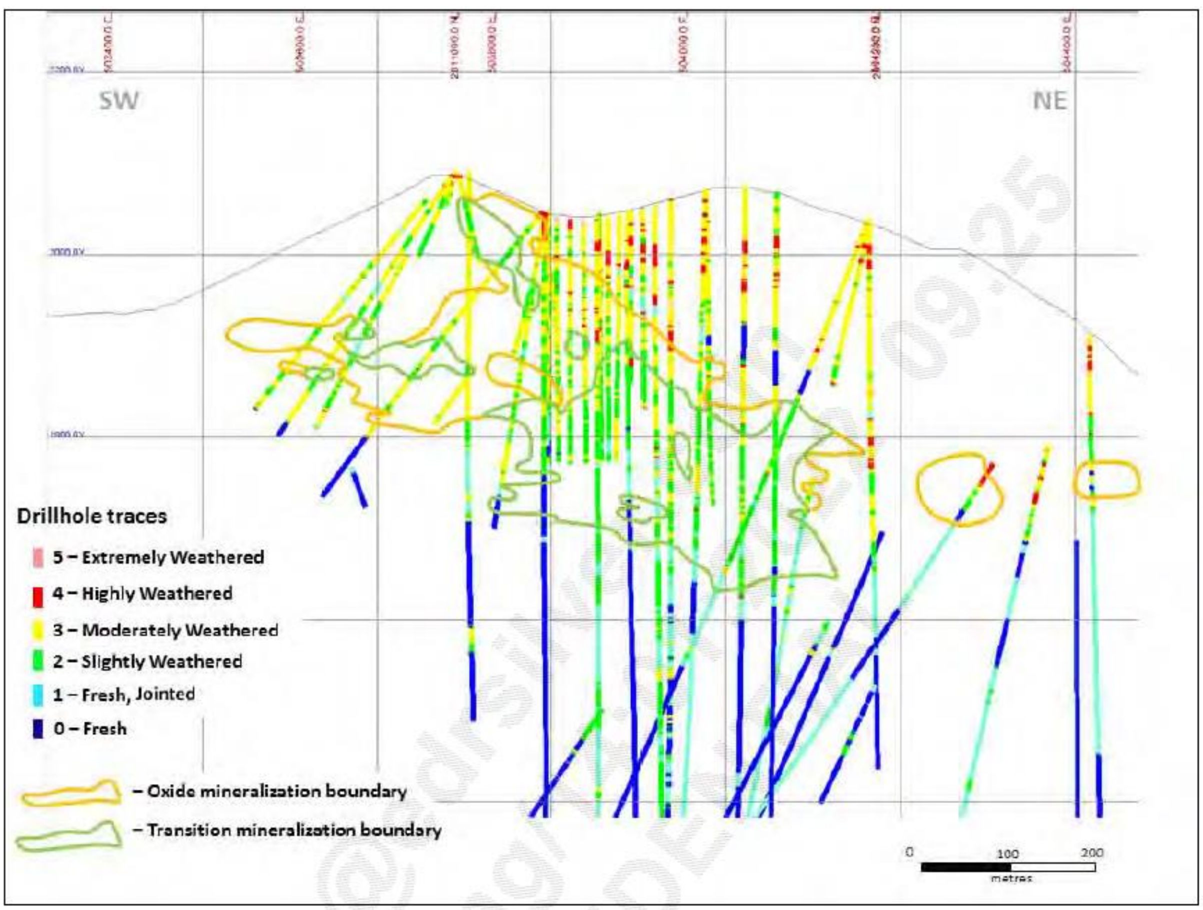
Drillhole intervals were assigned state of oxidation values of 5 through 0 on a six point scale (Table 7-2) to denote the intensity of weathering.

Figure 7-9 shows a typical cross section with drillholes color coded by state of oxidation state and interpreted boundaries for transitional (A-B domain) and oxide Ag mineralization at a 20 g/t cutoff grade.

Table 7-2 Pitarrilla State of Oxidation Logging Scale Used to Record Intensities of Weathering Shown by Variably Oxidised Rocks (Silver Standard, 2012)

Code	Label	Rock Description
5	Extremely Weathered	Decomposed; discolored; resembles a soil; original rock textures may be preserved.
4	Highly Weathered	Discoloration throughout; rock is friable but hard; cores remain intact; rock textures may be preserved.
3	Moderately Weathered	Discoloration extends from fractures generally throughout the rock; the rock is not friable; rock textures are preserved.
2	Slightly Weathered	Discoloration extends out from fractures into the rock; discoloration affects less than 40% of rock, or very weak pervasive iron staining.
1	Fresh Jointed	Discoloration or oxidation is limited to surfaces of, or for short distances from fractures; less than 10% of rock is discolored; rock rings when struck with hammer.
0	Fresh	No discoloration; rock rings when struck with hammer.

Figure 7-9 ENE-WSW Cross-section through the Breccia Ridge Oxide Zone, with the Traces of Drillholes Colour-coded by Oxide State (Silver Standard, 2012)



8 DEPOSIT TYPES

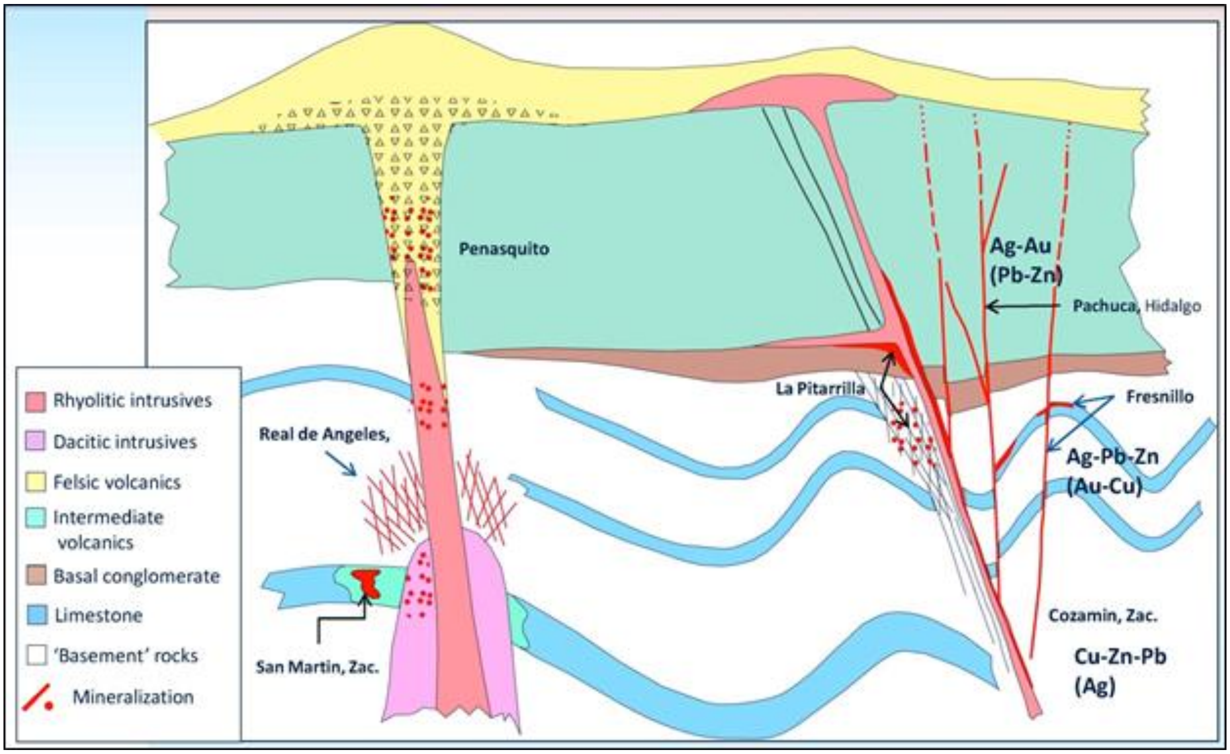
The Pitarrilla property is centrally located within the Central Mexican Silver Belt, which is defined by numerous Ag-Pb-Zn (±Au ±Cu) deposits that are classified as intermediate sulphidation epithermal deposits (Hedenquist et al., 2000), including the world class silver ore systems at Fresnillo, Zacatecas and Guanajuato (Silver Standard, 2012). These Mexican polymetallic silver deposits consist mainly of vein systems that occupy faults and major fractures affecting Mesozoic sedimentary and marine volcanic rocks and to a lesser degree unconformably overlying Tertiary volcaniclastics and pyroclastics. It is to be noted that the sequences of Tertiary volcanic and volcaniclastic formations found in the majority of the historic Mexican silver districts are significantly less voluminous, i.e., less well preserved than the Eocene-Oligocene succession that is mapped at Pitarrilla.

The Mexican intermediate sulphidation vein deposits are characterized by economically significant concentrations of Ag, Zn, Pb, Au, and occasionally Cu, with these metals occurring in base metal sulphides, accessory amounts of acanthite-argentite, freiburgite, pyrargyrite, tetrahedrite-tennantite, trace amounts of electrum and a variety of Ag-Pb-As-Sb-Cu sulphosalts. Where the hypogene mineralization has been weathered, the sulphides and sulphosalts are replaced by iron oxides, most notably hematite, which are accompanied by minor amounts of various Zn, Cu and Pb carbonates, hydroxides and sulphates along with the low-temperature silver sulphide, acanthite, silver halides and trace amounts of native silver and gold. Gangue minerals in the veins include, in order of decreasing abundance, quartz, chalcedony, calcite, pyrite, adularia, barite, fluorite, Ca-Mg-Mn-Fe carbonates (e.g. rhodochrosite, siderite), amethyst, sericite and chlorite. Characteristic vein textures include multiple stages of brecciation, colloform banding and crustiform crystallization. Hydrothermal alteration of wall-rocks is generally restricted to vein halos a few metres in width, where silicification occurs immediately next to the veins and grades outwards into an assemblage of sericite-illite-kaolinite, then illite-smectite-montmorillonite and finally a low-temperature alteration assemblage dominated by smectite-chlorite. Larger veins have kilometres of strike-length, are several metres wide and have vertical extents in the hundreds of metres, with a few cases of veins extending more than one kilometre below surface. Vertical metal zonation is a common feature of larger veins, with three principal mineralization zones, from shallowest to deepest, being defined by the following metal suites: Ag-(Au)-As-Sb-Hg, Ag-Pb-Zn-(Cu-Au), and Pb-Zn(Ag). Age dating and Pb isotope studies indicate that the Ag-Pb-Zn(Au-Cu) vein deposits of the Central Mexican Silver Belt are mainly Tertiary in age (36 to 28 Ma), and are genetically related to rhyolitic magmatism which in the mineral districts is manifested as relatively small porphyry stocks, dike systems and/or flow-dome complexes.

Superficially, the Pitarrilla Ag-Pb-Zn deposit does not display features generally considered to be characteristic of intermediate sulphidation epithermal deposits, especially when one compares the deposit's near-surface zones of oxide silver mineralization to the Mexican vein deposits. However, when the different forms of sulphide mineralization found in the Andesite, Basal Conglomerate, and Basement Zones of the Pitarrilla deposit are examined in some detail, ones does recognize that these bodies of sulphide silver mineralization do in fact share mineralogical features with the major polymetallic vein deposits in Mexico and elsewhere in the world. Specifically, the sulphide mineral suite of pyrite/marcasite-sphalerite-galena-chalcopyrite-pyrrhotite-arsenopyrite-tetrahedrite(-freiburgite) that is found in all of the hypogene mineral zones at Pitarrilla is fairly diagnostic of the intermediate sulphidation subclass of epithermal deposits (Hedenquist et al., 2000). The fact that the mineral resources and reserves at Pitarrilla are not defined on major veins, except perhaps for the C domain or subzone of the Andesite Zone, does not necessarily preclude the Pitarrilla deposit from being classified as an intermediate sulphidation type of epithermal deposit, since there are analogies of the Pitarrilla mineralized zones in a number of deposits within the Central Mexican Silver Belt. For example, the Ag-Pb-Zn ore that was mined at the Real de Angeles open-pit mine in Zacatecas State (Pearson et al., 1988) is quite similar, in terms of host rock and styles of mineralization, to the mineralization forming the resource domains (subzones) defined in the Basement Zone at Pitarrilla. As well, the replacement style sulphide mineralization of the Basal Conglomerate (D) Zone is presumed to be comparable to the manto ores that were historically mined at Fresnillo (Ruvalcaba-Ruiz and Thompson, 1988). Furthermore, while recognizing that hydrothermal phases such as quartz, calcite, barite, and fluorite, which form gangue minerals in most Mexican epithermal veins, are only minor to accessory components in the sulphide ores at Pitarrilla, it should be noted that unmineralized calcite veins, barite veins and fluorite veins do exist on the Pitarrilla property, even proximal to zones of silver mineralization. Thus, while not representing a "classic" example of an intermediate sulphidation epithermal mineral system, the zones of sulphide mineralization at Pitarrilla do have a mineralogical signature that is consistent with these zones belonging to this subclass of epithermal deposit. Moreover, the overall geological setting at Pitarrilla and the perceived genetic association of the Ag-Pb-Zn mineralization with middle Tertiary felsic magmatism are again consistent with the deposit being classified as an intermediate sulphidation epithermal deposit.

Figure 8-1 shows a schematic geological cross-section illustrating various settings of intermediate sulphidation epithermal deposits found in the Central Mexican Silver Belt.

Figure 8-1 Schematic Geological Cross-Section Showing Geological Settings of Some Mexican Silver Deposits, Including the Pitarrilla Ag-Pb-Zn Deposit (Silver Standard, 2012)



9 EXPLORATION

The following is a description of Exploration on the Property by Silver Standard. Endeavour has yet to complete exploration on the Property.

9.1 Rock Chip Sampling Programs

In 2002, Silver Standard contracted F. Hillemeyer and P. Durning of LCI to acquire mineral properties in Mexico that exhibited good exploration potential for silver. One of the first areas LCI recommended for staking was the ground covered by the Pitarrilla claim group previously held and explored by LCI as described in Section 6.1. Between November 2002 and March 2003, a total of 12 concessions covering 136,191 hectares were claimed by Explominerals, S.A. de C.V. on behalf of Silver Standard. Beginning in late 2002 and continuing until May 2003, Silver Standard, using the services of Explominerals, carried out extensive rock-chip sampling over the slopes of Cerro La Pitarrilla. Silver anomalies were identified on the western slope of the hill (Cordon Colorado prospect) and this became Silver Standard's first drilling target defined on the Property.

Beginning in 2002, several programs of rock-chip sampling were completed over the core of the property, where multiple zones of silver mineralization eventually came to be outlined. In the Cordon Colorado and Javelina Creek Zones, chip samples were collected along a grid pattern with an approximate sample spacing of 20 m. At each sampling location, samples were collected over an area approximately 4 m2 in size and comprised chips totaling between 1 to 2 kg. In the Peña Dyke Zone, chip samples were taken in the same manner, but were not taken along a systematic grid pattern. In the Breccia Ridge Zone, chip sampling was focused along topographic contours around the exposed rhyolite dome (Burk, pers. comm., 2012). The quality of the sampling was considered to be sufficient for target delineation, but chip samples are not considered truly representative due to issues with sample delimitation and extraction. The chip samples collected during these programs were not used as part of the December 4, 2012 Mineral Resource estimation. In July 2003, Silver Standard tested the Casas Blancas ASTER anomaly identified by Durning and Hillemeyer (2003) approximately three km to the southwest of Cerro La Pitarrilla by taking five rock-chip and eight stream-sediment samples.

In 2004, road-cut chip sampling, along with additional surface chip sampling, was completed along the La Colorado area of the property, to the northwest of the Cordon Colorado Zone. The surface samples were vertical channels cut at intervals along the northwest face of the ridge (McCrea, 2007). More than 5,500 rock-chip samples were collected and geochemically analyzed. The bulk of these samples were analyzed by ALS Chemex Laboratories in North Vancouver, Canada, with sample preparation and some assaying done at this laboratory's sample preparation facilities in Chihuahua, Mexico. The majority of the surface rock samples were analyzed for concentrations of 31 trace and minor elements using the inductively coupled plasma mass spectrometry ("ICP-MS") analytical method. Samples thatyielded silver values greater than 100 ppm were re-assayed using the fire assay plus atomic absorption spectrometry ("AAS") method. Gold analyses were not carried out on a large percentage of the samples as it was determined early on that the mineral system at Pitarrilla lacked economically significant gold mineralization. When the analytical results of geochemical sampling programs were compiled and plotted on property maps, areas of rock exposures with anomalous concentrations of silver, arsenic, antimony, lead and zinc were outlined, with these trace metal 'anomalies' representing exploration targets that were eventually drill-tested, resulting in the discovery of the five zones of oxide silver mineralization that form the upper part of the Pitarrilla deposit.

9.2 Geophysical Surveys

A number of geophysical surveys were completed on and over the Property, although none of these surveys were instrumental in the discovery of the deposit. In 2007, a helicopter-facilitated radiometrics (K, Th, U and total gamma count) plus magnetics survey was undertaken by Servicio Geológico Mexicano ("SGM"). The area covered by the survey extended eastwards beyond the boundary of the Pitarrilla claim group.

In 2010, Zonge Engineering Inc. of Tucson, USA, performed ground-based geophysical surveys in NW to NE trending lines over an area of approximately two km NW and three km NE extending NW from a central point on Cerro La Pitarrilla. Zonge collected induced polarization chargeability and resistivity responses as well as magnetotelluric ("NSAMT"), magnetic and gravimetric data. These geophysical surveys failed to discover any previously undefined zones of mineralization.

A seismic reflection study, conducted by Frontier Geosciences Inc. of North Vancouver, Canada, was completed in 2012 in order to enhance the understanding of the structural geology of the Pitarrilla deposit. This involved seismic reflection data collection and interpretation, with the objective of delineating major fault planes that cut through and locally displace the Pitarrilla stratigraphy. This geophysical survey was employed as an aid to identify faults with potentially major influences on mine design and future pit stability. The seismic survey consisted of 7.024 linear km of surveying and was conducted along five survey lines. The methodology employed, and quality of the geophysical data obtained from the survey are excerpted from the report completed by Frontier (2012).

> *"The seismic reflection investigation was carried out with three Geometrics Geodes, 24 channel signal enhancement seismographs, and Mark Products Ltd. 4.5 Hz geophones. Energy input was provided by small dynamite charges. In this survey, an 'at end' configuration was used with the energy source located at the end of an array of 48 geophone receivers. This receiver array spanned a survey line length of 235 metres and captured a broad spatial range of energy reflected from the horizons at depth. The survey procedure entailed collection of a 48 geophone record, then advancing the energy source 5 metres down the survey line and repeating the discharge and record process. This method, known as the common mid-point gather (CMP) technique, provides a very high degree of redundancy of sampling of the energy received from a given reflector at depth. The redundancy is used during the data processing procedure to develop an image of the subsurface reflectors of high fidelity. The seismic data acquired in this survey was generally of "good to excellent quality".*

Cross-section seismic profiles were generated and interpreted (Frontier, 2012). Cliff lines prevented the continuity of two of the seismic traverses. As such, the resulting seismic profiles have gaps, however, the application of the seismic survey data to the geological model of the Pitarrilla Project confirmed the position of faults previously recognised and helped define faults in another key orientation, which were difficult to recognize due to the spatial arrangement of drillholes that were optimised for intersecting mineralization.

9.3 Alteration Study

In terms of the geological understanding of the Pitarrilla property, several individuals have contributed their ideas and data to the project, including but not limited to Silver Standard geologists Guillermo Lozano, Ron Burk, Martin Samilpa, consultant Paul Bowen, and Claire Somers who in 2010 completed a Ph.D. study at Laurentian University, Ontario, Canada on the geological setting of the Pitarrilla silver-lead-zinc deposits and the nature of the mineralization (Somers, 2010). Ms. Somers, with the assistance of R. Burk, M. Samilpa and P. Bowen, identified the Pitarrilla lithologies and stratigraphy, and ultimately produced a geology map of the core of the property at 1:2,000 scale.

In order to obtain a three-dimensional understanding of the main types of hydrothermal alteration seen at Pitarrilla, a mineralogical study of 980 drillcore samples was conducted in 2012 by C. Somers and P. Bowen (Somers, 2012). The representative samples were collected from 26 drillholes distributed throughout the deposit at approximately 20 metre intervals down the lengths of the boreholes. Alteration minerals were identified in these samples using TerraSpec© and PIMA© mineral analyzers. The results of this study enabled the definition of the five main types of hydrothermal alteration in the deposit and determined their distribution in relation to the different zones of silver and base metal mineralization.

10 DRILLING

The following is a description of drilling completed on the Property by Silver Standard. Endeavour has yet to complete exploration on the Property.

A total of 852 diamond and RC drillholes totaling 258,658 m have been completed on the Property. Figure 10-1 summarizes the number of holes drilled and the total meterage by year (Silver Standard, 2012). Appendix A lists the RC and Diamond Drill Holes in the current database. Appendix B contains a list of significant drill hole intercepts.

Monarch Resources de Mexico, S.A. de C.V. completed a Phase I drilling program on the Fluorite Mine Target in 1996, including 22 RC drillholes totalling 2,842 m. The drilling was on the Property, but not in the area of the current Mineral Resource (Figure 10 1).

The greatest amount of exploration-related data has come from the several campaigns of reverse circulation and diamond drilling completed by Silver Standard on the Property between September 2003 and July 2012.

From September 2003 until October 2005, 186 reverse circulation holes with a combined length of 20,619 m were drilled on the Property. The RC drillholes targeted oxide mineralization in the Cordon Colorado, Peña Dyke, and Javelina Creek Zones (Figure 10 2 and Figure 10 3).

Between 2005 and July 2012, 428 diamond drillholes were drilled for exploration and resource infill purposes, with a total of 183,358 m being completed (Figure 10 4 and Figure 10 5). The majority of the drillcore was of HQ diameter, though core samples from depths below surface greater than about 450 m were generally of NQ diameter. To provide a sufficient amount of core from different types of mineralization for metallurgical testing, nine drillholes of HQ diameter were cored into the deposit in 2008 for a total of 6,126 m. An additional four holes of PQ diameter were drilled into four of the five zones of oxide silver mineralization to obtain core samples for communition tests. In the area of the deposit, 31 drillholes (including re-drills), totalling 12,834 m, were drilled for mining-related geotechnical information between 2010 and 2012. Condemnation, water well, piezometer, and short geotechnical holes drilled for the investigation of foundations for site facilities were also completed during the history of the project.

Most recently, during May and June of 2012, 33 closely-spaced diamond drillholes totaling 8,914 m were completed as part of a study to investigate the short distance variability of oxide and transitional silver mineralization in the upper 200-250 m of the Pitarrilla deposit. These holes were drilled along three control lines, two oriented ENE-WSW with the third line crossing the other two lines perpendicular to them (Figure 10 4). The orientation of drillholes varied in order to drill perpendicular to the interpreted orientation of the mineralised bodies. The dips of all drillholes were between 45° and 90°. In the Breccia Ridge Zone, drillholes were generally oriented vertically or at azimuths of 240° dipping at an average of 55°. In the South Ridge Zone, the drillholes were oriented at 100° and 274° with dips averaging 60°. In the Peña Dyke Zone, drillholes were drilled at azimuths of 200° and 025° degrees with dips at 60°. In the Cordon Colorado and Javelina Creek Zones, there were no preferred drillhole orientations.

Figure 10-6 and Figure 10-7 illustrate typical sections through the deposit.

Table 10-1 Summary of Property Diamond and RC Drillholes by Year

Drilling Method	Reason	Planned By	Prefix	No of Holes	Meters Drilled	Years
Reverse Circulation (RC)	Monarch	Monarch	BDA	22	2,842	1996
Reverse Circulation	Exploration	Silver Standard	RC	186	20,619	2003 - 2005
Diamond	Exploration/Resource	Silver Standard	DDH	428	183,358	2005 - 2012
Diamond	Statistical	Silver Standard	DDH	33	8,914	2012
Diamond	Condemnation	Silver Standard	DDH	33	14,840	2008
Diamond	Metallurgy	Silver Standard	DDH-M	9	6,126	2008
Diamond Triple Tube	Geotechnical	KPL	BPG	32 (incl. 5 redrills)	13,361	2010 - 2012
Diamond and RC	Piezometers	KPL	PZ	11	213	2007 + 2008
Diamond	Piezometers	KPL	MW08	3	73	2008
Diamond Triple Tube	Geotechnical Site Construction	KPL	DH	18	582	2008
RC/Tricone	Water Wells	KPL	WW	16	2,644	2008
Diamond	Tailing Site Condemnation	MWH	BPT	17	1,120	2010
Diamond	Water Wells	MWH	WW10	6	2,486	2010
Diamond	Monitoring Well	MWH	MW10	4	164	2010
Diamond	Geotechnical Site Construction	MWH	BPB	5	61	2010
Diamond	Tailing Site Geotechnical	MWH	BPP	3	38	2010
Diamond	Communition	Silver Standard	BPC	4	541	2011
Diamond Triple Tube	Plant and Waste Dump Geotech	KPL	BPG	12	231	2012
Diamond	Tailing Site Geotechnical	Tierra Group	TGI-12	10	445	2012
Total:				**852**	**258,658**	

Figure 10-1 Plan View: Distribution of 1996 RC Drill Holes on the Pitarrilla Property

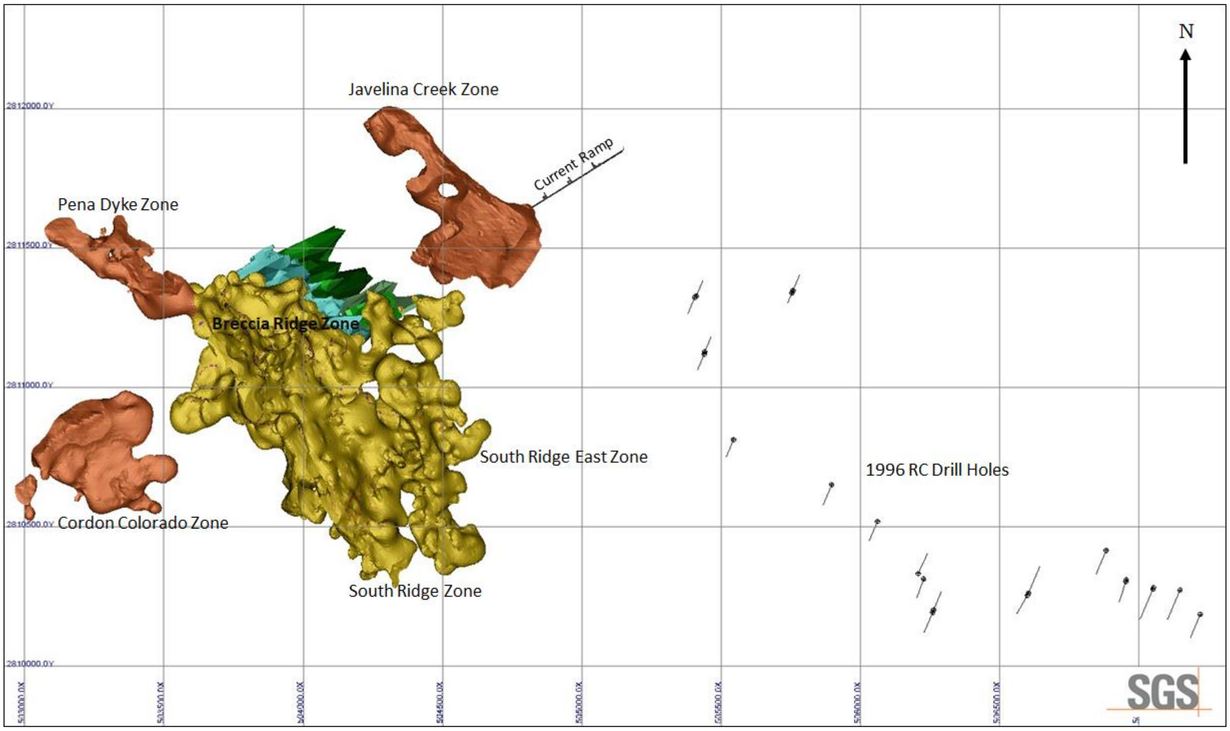


Figure 10-2 Plan View: Distribution of 2003 - 2005 RC Drill Holes on the Pitarrilla Property

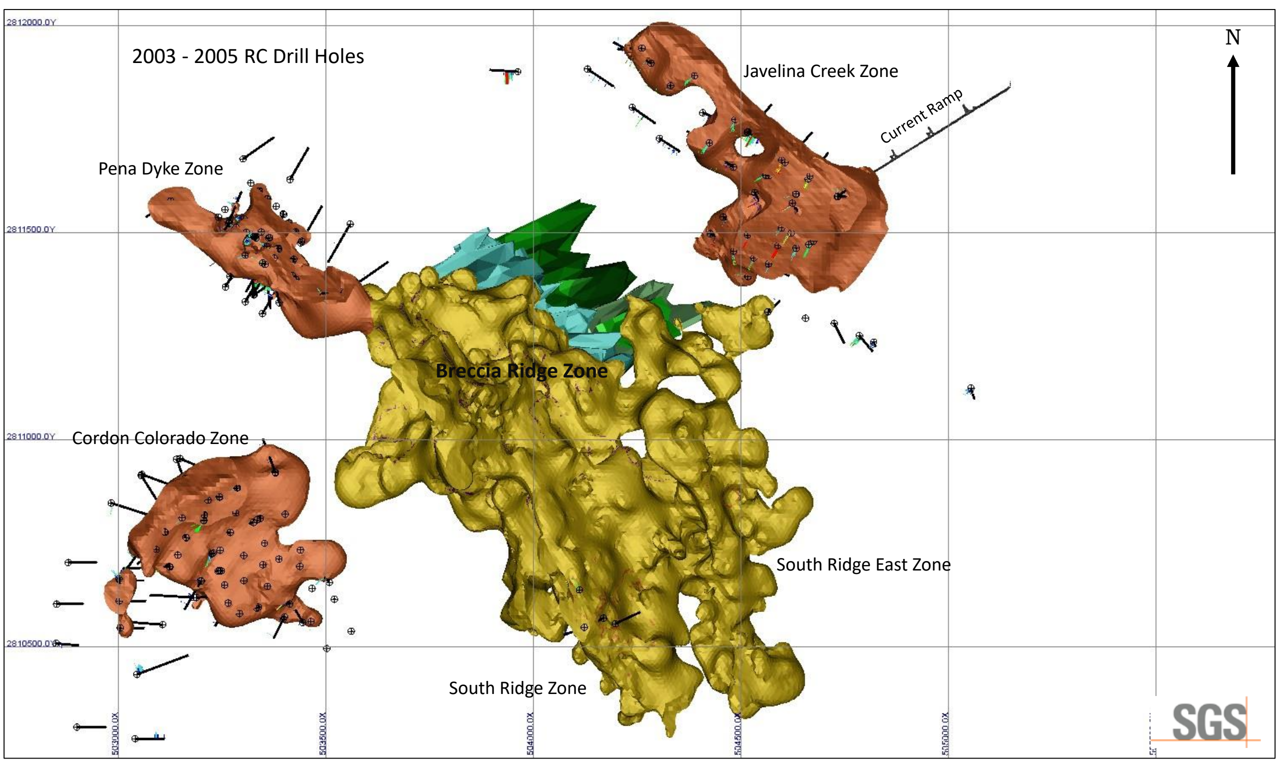


Figure 10-3 Isometric View Looking Northwest: Distribution of 2003 - 2005 RC Drill Holes on the Pitarrilla Property

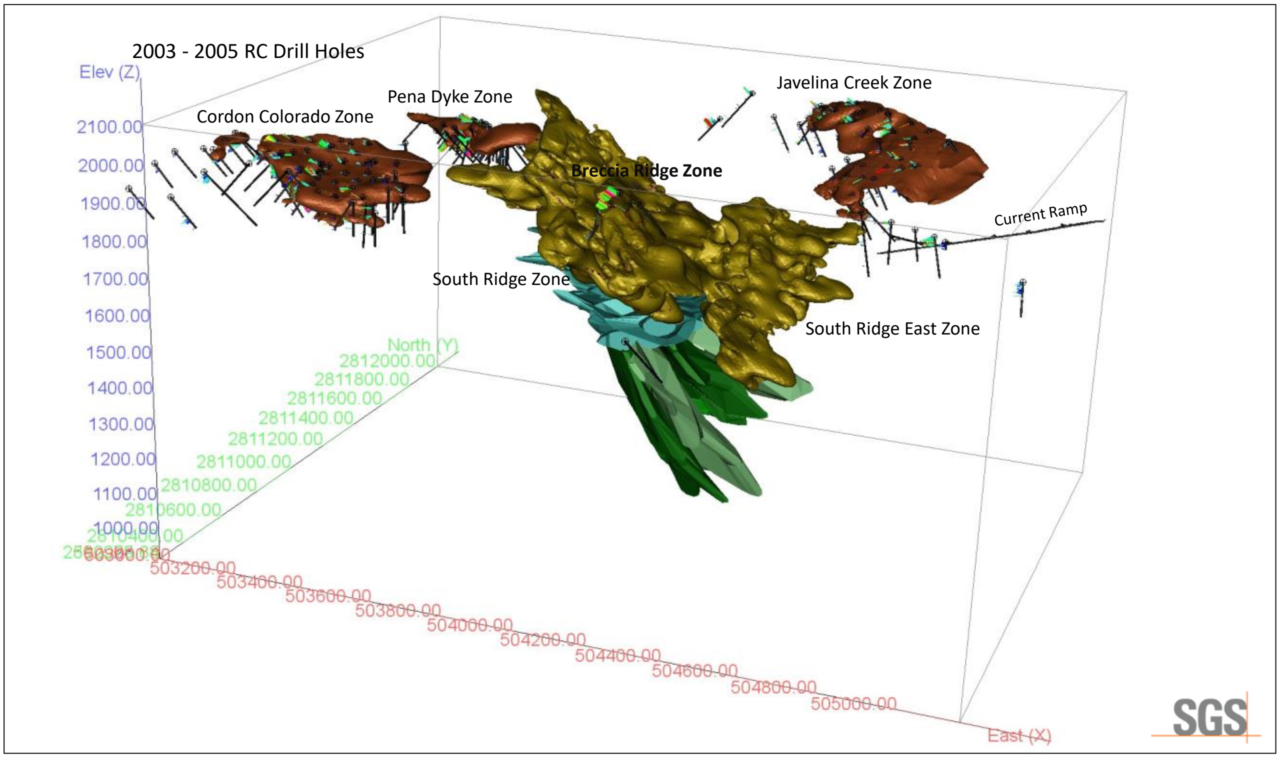


Figure 10-4 Plan View: Distribution of 2005 - 2012 Diamond Drill Holes on the Pitarrilla Property

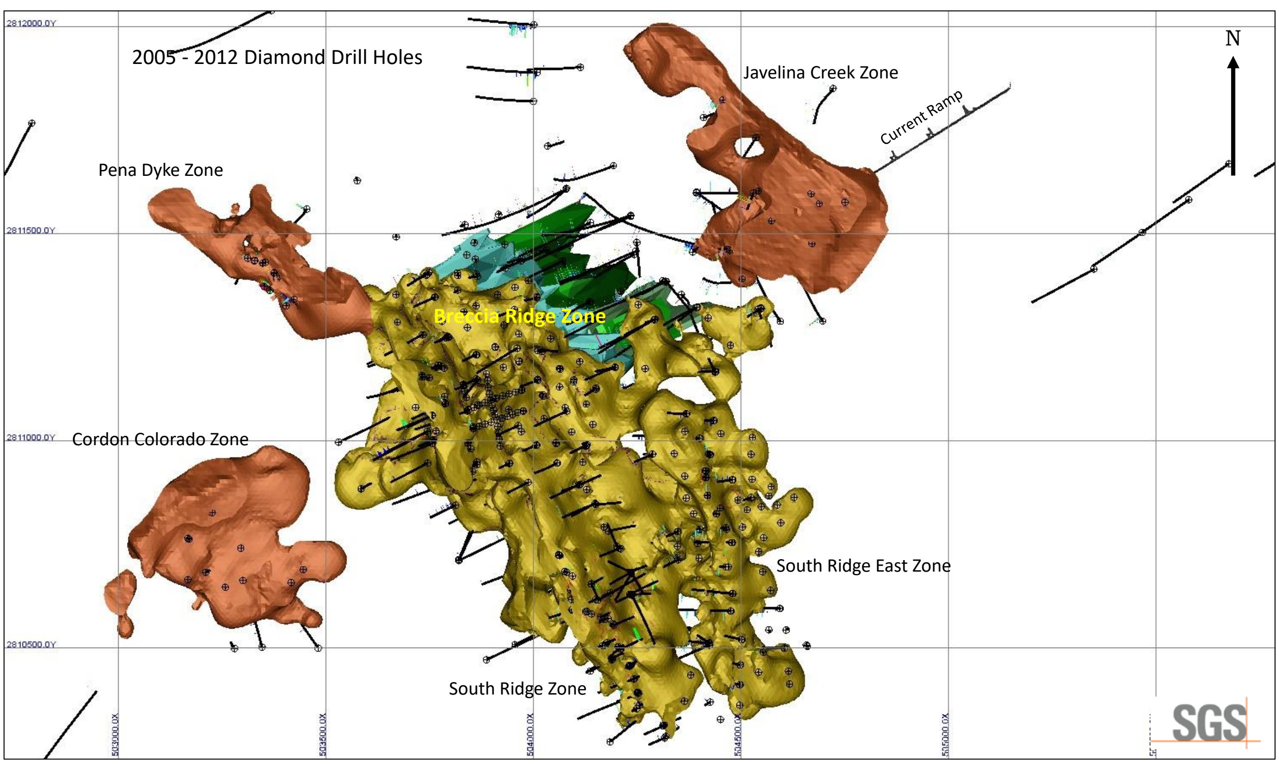


Figure 10-5 Isometric View Looking Northwest: Distribution of 2005 - 2012 Diamond Drill Holes on the Pitarrilla Property

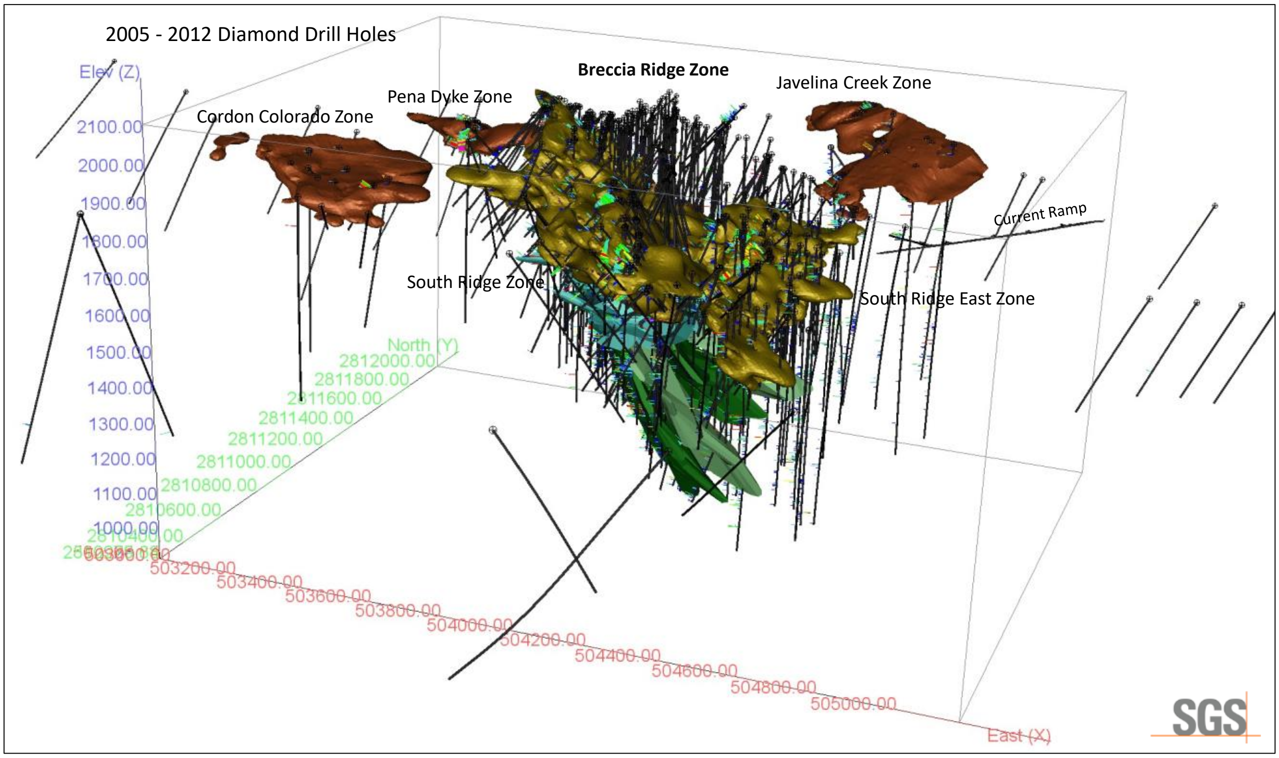


Figure 10-6 Typical Drill Section N-S Showing Interpreted Geology, and Drillhole Traces with Ag ppm Grades (Silver Standard, 2012)

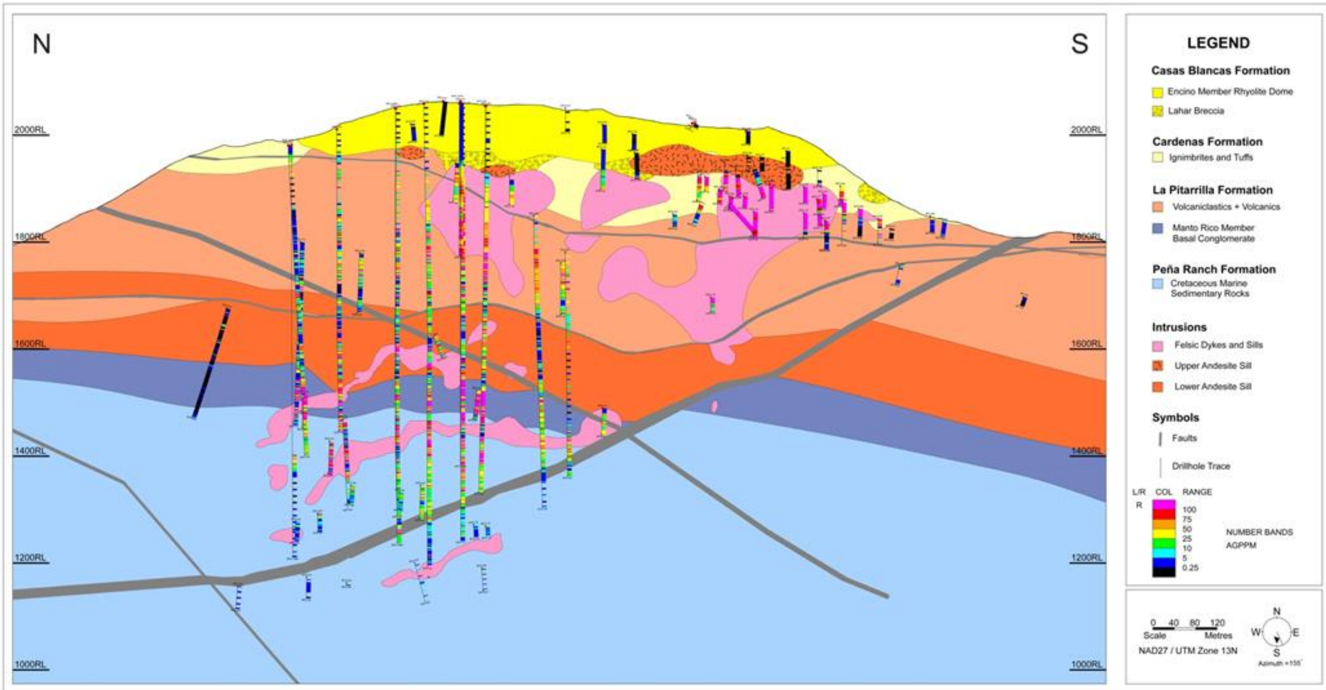
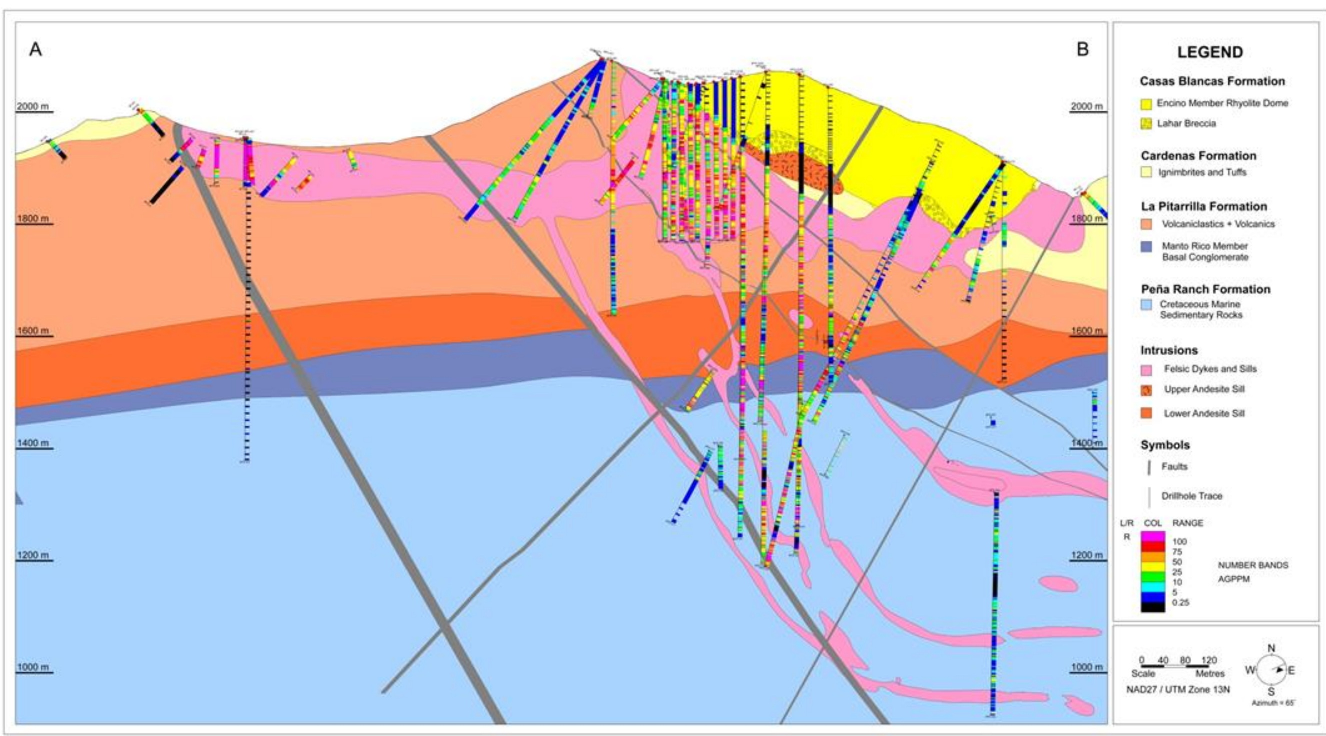


Figure 10-7 Typical Drill Section A-B Cordon Colorado (West) and Breccia Ridge (Centre) Showing Interpreted Geology and Drillhole Traces with Ag ppm Grades (Silver Standard, 2012)



10.1 Drillhole Collar Survey by Licensed Surveyor

The positions of all drillhole collars were surveyed in the co-ordinate system NAD 27 UTM Zone 13N, by licensed surveyors employed by Silver Standard, using differential GPS. The survey co-ordinates generated were added to the electronic data files for the Pitarrilla Project.

10.2 Downhole Surveys

All diamond drillholes were surveyed using downhole survey tools at 50 m intervals downhole, where it was possible to do so. The downhole survey information was passed from the drilling contractor, Major Drilling, to the geologists daily for incorporation into electronic data files.

10.3 Drilling Contractor

Major Drilling was the drilling contractor used for all drilling on the Property.

10.4 Drill Collar Monuments

Concrete monuments with the drillhole identification and co-ordinates in NAD 27 UTM Zone 13N, were placed around the drillhole collar of each hole drilled.

10.5 Potential Drilling, Sampling or Recovery Factors

The recovery from diamond drilling is generally very good with the average drilling recovery of 98.5%. There are no obvious drilling, sampling, or recovery factors that would materially affect the reliability of the samples.

10.6 QP's Comments

In the Author's opinion, based on a review of all possible information, the drilling procedures put in place by Silver Standard meet acceptable industry standards and that the information can and has been used for geological and resource modeling.

11 SAMPLE PREPARATION, ANALYSES, AND SECURITY

Endeavour has yet to complete exploration on the Property. The following description of the sample preparation, analyses and security by previous operators for the Property. The Author is independent of all laboratories contracted by Silver Standard for drill core sample analysis from 2002 to 2012.

11.1 2003 To 2008 Drilling Programs

11.1.1 RC Drillhole Samples

RC drillhole samples were collected at the drill site at 1 m lengths, from the collar, down to the final drillhole depth. Sampling intervals were dependent on the drilling equipment selected and not based on geological controls or other features of the zone of interest. The RC samples were split three times using a Jones splitter down to 1/8 of the original weight. The sample weight ranged from approximately two to 10 kg, with every 20th sample taken as a field duplicate. The samples were collected in numbered, heavy duty plastic bags along with sample tickets, which carried numbers referring back to a digital data file of drillhole identification, sample number and sample intervals. All samples were stored in the company warehouse in Casas Blancas prior to shipping. Periodically, staff from ALS laboratories collected and transported the samples to Guadalajara for sample preparation. After mid-August of 2005 (after BP-179), the samples were shipped by Silver Standard personnel to Chihuahua for sample preparation, prior to analysis at the ALS laboratory in North Vancouver, BC, Canada. Once analyzed, remaining pulps and coarse rejects were returned from ALS and catalogued and stored in a secured warehouse in the city of Parral, Chihuahua, located 180 km north-northwest of Pitarrilla.

11.1.2 Diamond Core Drillhole Samples

Digital core photographs were taken after the core was cleaned and measured in the core boxes. After geological logging, diamond core samples were marked by the geologist and then split using a diamond saw. Sample lengths were approximately 1.52 m. Geological contacts were generally respected during sampling. The maximum sample length was just over 3 m in zones considered to be weakly mineralized or un-mineralized. The half core samples were put in numbered heavy duty plastic bags, along with sample tickets. The sample tickets carried a number which referred back to a digital data file of drillhole identification and sample intervals. The bags were labelled with sample numbers and collected into rice sacks, which were sealed with a tamper proof seal and labelled prior to shipment. The geologists on site completed sample shipment and tracking forms, such that the reported assays could be tracked through the transport and analytical system and matched back to the appropriate drillhole identification and sample interval. Field duplicates comprised quarter core samples. Staff from ALS laboratories collected the samples and transported them to Guadalajara. After mid-August of 2005 (after BPD-037), the samples were shipped to Chihuahua by either ALS or Silver Standard personnel for sample preparation prior to analysis at the ALS laboratory in North Vancouver.

11.1.3 Geotechnical Drilling and Oriented Core

Geotechnical diamond drillholes were drilled by Major Drilling using triple tube wireline techniques. The drillcore was transported from the drilling rig in core boxes and taken to the core logging shed in a secure compound near the Casa Blancas village. Digital core photographs were taken after the core was cleaned and measured in the core boxes. It was then logged for geotechnical features by a trained geotechnical engineer or geologist from Knight Piésold Consulting. The geotechnical diamond drillholes were additionally logged for geological information by a Silver Standard geologist who defined sample intervals for geochemical analysis. Sampling followed the procedure for non-oriented diamond drillcore described in Section 11.1.2.

11.1.4 Sample Preparation

Samples were received at the laboratory, given bar codes, and then entered into the ALS laboratory information management system for tracking purposes. Samples were then weighed, dried, and crushed to >70% passing -2 mm (ALS Code: CRU-31) screen. The crushed material was then riffle-split (ALS Code: SPL-21) to produce a representative 250 g split sample for pulverization to >85% passing 75 µm (ALS Code: PUL-31) screen. The pulps were then shipped to the ALS laboratory in North Vancouver for digestion and analysis. The ALS sample preparation facilities in Guadalajara and Chihuahua have maintained ISO 9001 certification for sample preparation since 1998.

11.1.5 Sample Analysis

Digestion and analyses were completed on a standard 30 g split of the 250 g pulverised sample. At the ALS laboratory in North Vancouver, samples were digested using the four-acid “near total” digestion, followed by inductively coupled plasma atomic emission spectroscopy (“ICP-AES”) analysis for 27 elements (ALS Code: ME-ICP61). Mercury was added to the standard package and analyzed by cold vapour atomic absorption (“AA”) following digestion in aqua regia (ALS Code: Hg-CV41). Sample values above the analytical detection limit (over limit) were re-run by atomic absorption for zinc, lead, and copper, and fire assay with a gravimetric finish for silver. These provided upper detection limits of 30% for zinc, 20% for lead, 40% for copper (all overlimit samples used ALS Code: –OG62), and 1,500 ppm for silver (ALS Code: AgGRA21). Gold analyses were requested during the early stages of the program, but were dropped for lack of results. Gold analyses were occasionally requested in deep drillholes in base metal zones. The ALS Chemex facility in North Vancouver was ISO 9001 certified between 2003 and 2005, and then obtained ISO 17025 certification in 2005 for the analytical procedures described in this section.

11.1.6 Silver Standard Quality Assurance/Quality Control (QAQC) Samples

Silver Standard initiated and implemented a QAQC program in November 2005. It utilized standard reference material, blanks, field duplicates, and third party check laboratories, where every tenth sample submitted was a QAQC sample (either a standard or a blank). To monitor precision field duplicates were inserted at a rate of one in 20. Samples for analysis by a check laboratory totaled 5% of the original number of assays.

11.1.7 Property Reference Materials

Silver Standard used eight reference materials to monitor laboratory accuracy, which were composed of coarse reject material left over from the initial RC drilling program. Each batch of reference material was given a number and called Standard 1, Standard 2, and Standard 6 through Standard 11. (Standard 3 through Standard 5 were reference materials certified by WMC Minerals (Lloyd Twaites Registered Assayers; Section 11.1.4.2). Early results showed a number of samples falling outside of the three standard deviation tolerance limit of the certified mean value. After review, the scattered results were attributed to mislabelling of standards and blanks.

In 2008, P&E Mining Consultants Inc. (P&E, 2008) determined that the number of samples in each round robin characterization of the certified property reference standards was found to be too few to provide a representative mean. As the data set provided by Silver Standard contained between 200 and 700 samples, P&E (2008) recalibrated the mean for each of the property standards using this larger dataset. They determined a revised mean and standard deviation for each standard by using all available analyses for each one (P&E, 2008). All values greater or less than two standard deviations from the calculated mean were removed from the data set. With these data points removed, a new mean and standard deviation were calculated. Results from this were graphed in order to view the warning limits (±2 standard deviations from the mean) and the tolerance limits (±3 standard deviations from the mean). All values falling within the warning limits were considered acceptable and those falling outside the tolerance limits were declared failures (P&E, 2008). All results from the 2005 through 2008 drilling programs were using the recalibrated property standard reference values (and standard deviations), which are summarized in Table 11-1.

Standard 7, Standard 10, and Standard 11 continued to exhibit an unacceptable failure rate after recalibration, suggesting that insufficient homogenization of the material before round robin testing was responsible for the high failure rate.

Table 11-1 Results of 2005 through 2008 Property Standard Samples after Recalibration (Silver Standard, 2012)

	Ag		Pb		Zn	
	No. Samples	No. Failed	No. Samples	No. Failed	No. Samples	No. Failed
STD-1	276	6	276	4	276	4
STD-2	211	5	211	2	211	2
STD-6	206	6	206	4	206	1
STD-7	869	22	870	9	870	5
STD-8	234	6	234	6	234	2
STD-9	859	2	859	18	859	18
STD-10	819	14	819	7	819	14
STD-11	857	20	857	18	857	21
Total	**4,331**	**81**	**4,332**	**67**	**4,332**	**68**

11.1.8 Certified Reference Materials

Silver Standard purchased three reference material standards certified by WMC Minerals (Lloyd Twaites Registered Assayers), which were interspersed with the property standards. These were designated as Standard 3, Standard 4, and Standard 5. The initial round robin characterization of these standards, such that they could be used to monitor laboratory accuracy, was also found to be inadequate by P&E (2008), as it involved only two laboratories using between five and 16 samples. In June 2008, P&E (2008) recalibrated these standards following the procedure outlined in Section 11.1.7. All results from the 2005 through 2008 drilling programs were since analyzed using the recalibrated property standard reference values (and standard deviations), which are summarized in Table 11-2.

Standard 3 and Standard 4 results plotted within acceptable tolerance limits, but Standard 5 results continued to exhibit a high failure rate. Silver Standard was recommended by P&E to reduce the number of reference standards to three, as 11 in total were considered to be more than necessary (P&E, 2008).

Silver Standard's Senior Geologist, Jeremy D. Vincent, P.Geo., has reviewed the procedure followed by P&E (2008) to recalibrate the certified reference standards and considers the work to have been conducted in accordance with acceptable industry standards.

Table 11-2 Results of 2005 through 2008 Certified Reference Samples after Recalibration (Silver Standard, 2012)

	Ag		Pb		Zn	
	No. Samples	No. Failed	No. Samples	No. Failed	No. Samples	No. Failed
STD-3	175	1	175	4	175	2
STD-4	121	0	121	1	121	0
STD-5	170	7	170	3	169	2
Total	**466**	**8**	**466**	**8**	**465**	**4**

11.1.9 Blank Samples

Silver Standard used three different blanks throughout the drill programs from 2003 to 2008. The material used as a source for Blank 1 came from an area immediately west of the South Ridge Zone and immediately south of the Breccia Ridge Zone, before these zones were discovered. After this material was found to return values greater than three times the detection level for Ag, Pb, and Zn, Blank 1 was discarded. Silver Standard procured a second blank material (Blank 2) in 2007, from a dacite tuff located approximately 3.8 km west of the mineralized areas. The third blank material (Blank 3) was sourced in 2008, from an intermediate volcanic located approximately 6 km west of the mineralized areas. Results from Blank 2 and Blank 3 also returned a wide range of silver values (upwards of 100 g/t Ag). Although some mislabeling of samples had been identified, these poorly performing blanks returned values that did not match any of those of the certified reference material. It was therefore assumed that they were either sourced from mineralized material, or resulted from cross-contamination.

11.1.10 Field Duplicate Samples

Silver Standard's early quality control program included shipping field duplicates of RC drillhole samples to BSI Inspectorate in Victoria de Durango (Section 11.1.5). Diamond drillhole field duplicates (quartered drillcore) were inserted at a rate of approximately one in 20.

Silver Standard evaluated duplicate (paired) sample data for bias through analysis of quantile-quantile (QQ) plots, X-Y scatter plots, and cumulative distribution function ("CDF") plots. Precision was monitored through analysis of ranked half absolute relative difference ("HARD") plots, paired precision plots, and half absolute difference ("HAD") plots. Field duplicate results are summarized in Table 11-3. Taking into account the style of mineralization, the elements of interest, and the volume difference between the half-core original sample and quarter-core duplicate sample, the expected ranked HARD statistic for a field duplicate, which is selected at the 90th percentile of the duplicate data distribution, should be lower than approximately 20-25% (i.e., 90% of the paired data should vary by less than 20-25%). Values greater than this threshold may indicate that incorrect sampling error (as opposed to correct sampling error, which cannot be controlled by the sampler) is becoming more significant in the sampling process.

Table 11-3 Results of 2005 through 2008 Field Duplicate Samples (Silver Standard, 2012)

Years	No. Samples	Ranked HARD statistic (90th Percentile)	Bias
2005-2006	1,112	Ag:33%	None
		Pb:32%	
		Zn:27%	
2007	2,487	Ag:42%	None
		Pb:42%	
		Zn:37%	
2008	1,135	Ag:45%	None
		Pb:39%	
		Zn:29%	

11.1.11 Umpire Laboratories

Umpire laboratories are employed as an additional check on the accuracy of the primary laboratory. Silver Standard has employed several laboratories during the course of the QAQC program

BSI Inspectorate/Rocky Mountain Geochemical

In the early part of Silver Standard's quality control program, every 20th RC drill sample was split twice. The second was sent to BSI Inspectorate de Mexico, S.A. de C.V ("BSI") in Victoria de Durango, Mexico for preparation. Samples were crushed to -10 mesh and split with a riffle splitter (McCrea, 2006). A 300 g pulp was prepared and then shipped to Rocky Mountain Geochemical ("Rocky Mountain") in Sparks, Nevada for digestion in aqua regia and analysis by multi-element ICP. The samples were analyzed for a total of eight elements. Overlimit silver samples were re-run by fire assay with a gravimetric finish. Mercury was added to the analysis package and was analyzed by cold vapour atomic absorption. Rocky Mountain is a part of the BSI group of companies and obtained an ISO 9001:2000 certification, between 2004 and 2005 (McCrea, 2006). At the time of writing, Silver Standard has been unable to locate and verify these results.

Assayers Canada

Assayers Canada, located in Vancouver, BC was used for check sample submission for diamond drillcore in 2007 and 2008. The laboratory had an ISO 9001:2008 certification and also held certificates for Laboratory Proficiency from the Standards Council of Canada for precious and base metals analysis.

Check samples revealed generally poor levels of precision in comparison to the original samples (Table 11-4), as the ranked HARD statistics for pulp duplicates are expected demonstrate precision better than 10% at the 90th percentile (i.e., 90% of the data should vary by less than 10%). The value for lead was caused by poor precision results from approximately 230 samples. This precision issue did not appear to affect the silver or zinc results.

Table 11-4 Results of 2006-2008 Diamond Drillcore Pulp Duplicate Samples (Silver Standard, 2012)

Years	No. Samples	Ranked HARD statistic (90th Percentile)	Bias
2006-2008	1,853	Ag:14%	None
		Pb:35%	
		Zn:14%	

ALS Quality Control Samples

In light of quality control results generated between 2005 and 2008, Silver Standard requested the results of ALS's internal quality control samples to assess sample bias, accuracy, precision, and evidence of cross-contamination. ALS employed 42 different standards for silver, lead, and zinc during these years. The analytical results of the standard samples did not indicate any significant source of bias or deviation outside of accepted thresholds. A review of the internal blank sample results indicated no evidence of cross-contamination, suggesting the blank material used in Silver Standard's quality control program was sourced from mineralised rock, and not adequately confirmed to be barren of mineralization before use. ALS sample duplicates for silver did not exhibit evidence of sampling bias, while precision levels were within acceptable industry limits (Table 11-5).

Though ALS's quality control samples were not "blind", they demonstrate strong analytical control over the assay results they were supporting. This suggests an ineffective implementation of the QAQC program by Silver Standard during these years, not an inherent problem with the quality of the assay data generated by the laboratory.

Table 11-5 Results of ALS internal QC Duplicate Samples (Silver Standard, 2012)

Years	No. Samples	Ranked HARD statistic (90th Percentile)	Bias
2005-2008	3,767	Ag:6%	None

11.1.12 Sample Security

Drillcore samples were in Silver Standard's custody from collection and bagging until pickup by an ALS transport vehicle from the warehouse in Casas Blancas. Samples were transported to the ALS sample preparation facility in Guadalajara until mid-August 2005. After this date they were shipped to the ALS sample preparation facility in Chihuahua by Silver Standard personnel. Upon arrival at the laboratory, each sample was given a bar code label and logged into the laboratory information management system. This permitted sample tracking and provided a complete chain of custody record after receipt at the laboratory. Sample bags were sealed on site and none of the seals were reported tampered by the receiving analytical laboratory. Silver Standard is not aware of any deliberate attempts to compromise samples.

11.2 2010 To 2012 Drilling Programs

11.2.1 Sampling of Diamond Core Drillholes

Sampling of diamond core drillholes followed the procedure outlined in Section 11.1.2. The plastic sample bags were then placed in larger labelled rice bags, then sealed, and then sent by Silver Standard trucks to the ALS Chemex facility in Zacatecas, Mexico.

11.2.2 11.2.2 Sample Preparation

The sample preparation facility in Zacatecas has maintained ISO 9001 certification since 2012. Sample preparation followed the procedure outlined in Section 11.1.4.

11.2.3 Sample Analysis

Sample analysis followed the procedures outlined in Section 11.1.5, with the exception that mercury and gold were not analyzed.

11.2.4 Silver Standard QAQC Samples

QC sample data were monitored on a monthly basis to ensure that sample batches with control sample data outside of acceptable limits were re-submitted for analysis in a timely manner.

11.2.5 Certified Reference Materials

Silver Standard utilised three reference standards during the drilling campaigns from 2010-2012. These covered a range of medium and high grade silver and zinc values. Two reference standards (STD-13 and STD-14) were created for the Pitarrilla deposit by CDN Resources Laboratories Ltd., and certified by Smee & Associates Consulting Ltd. following a round robin analysis at five independent analytical laboratories. One reference standard (STD-12) was created for the Pitarrilla deposit by Minerals Exploration & Environmental Geochemistry following a round robin analysis at six independent laboratories; however, this reference material has not been certified.

Silver Standard has reviewed the results of the three certified standards from the 2010 through 2012 drilling programs. A total of 1,293 standard samples were submitted during this time representing a rate of one standard for each 20 assay samples. In total there were seven failed Ag results, four failures for Zn, and two failures for Pb. No significant evidence of bias was observed.

11.2.6 **Blank Samples**

Sample blank material comprised unmineralized sand sourced from the Casas Blancas area. A total of 1,291 sample blanks were inserted throughout the drilling campaigns between 2010 and 2012, representing a rate of one blank sample for each 20 assay samples. A threshold of 10 times the analytical detection limit of Ag (i.e., a threshold of 5 ppm) was used discriminate samples showing evidence of cross-contamination. Results of field blank control samples indicated that there was no significant source of cross-contamination during analytical work during Silver Standard's 2010 to 2012 drilling campaigns.

11.2.7 **Field Duplicate Samples**

Between 2010 and 2012 Silver Standard inserted approximately 1,285 field duplicate samples, which equates to a rate of one field duplicate in 20 assay samples (Table 11-6). Silver Standard analyzed the field duplicate data for bias and precision using the methodology outlined in Section 11.1.10. The field duplicate ranked HARD statistic precision value at the 90th percentile was within acceptable industry standards of approximately 20%. No significant evidence of bias was observed.

Table 11-6 Results of 2010 through 2012 Field Duplicate Samples

Years	No. Samples	Ranked HARD statistic (90^{th} Percentile)	Bias
2010-2012	1,285	Ag:19%	None
		Pb:21%	
		Zn:17%	

11.2.8 **Umpire Laboratory – Assayers Canada**

Silver Standard sends 5% of assay pulps to the Assayers Canada laboratory (now SGS Canada) in Vancouver for an independent third party check. The ranked HARD statistic at the 90th percentile indicated levels of precision within industry limits (better than 10%) for pulp duplicates (Table 11-7).

Table 11-7 Results of 2010-2011 Diamond Drillcore Pulp Duplicate Samples

Years	No. Samples	Ranked HARD statistic (90^{th} Percentile)	Bias
2010-2011	363	Ag:8%	Weak (5% high, original vs duplicate
		Pb:8%	
		Zn:9%	

11.2.9 **Sample Security**

Drillhole core samples were in Silver Standard's custody from collection and bagging until delivered to the ALS Chemex sample preparation facility in Zacatecas. Upon arrival, each sample was given a bar code label and logged into the laboratory information management system. This permitted sample tracking and provided a complete chain of custody record after receipt at the laboratory. Sample bags were sealed on site with tamper proof seals. None of the seals were reported tampered by the receiving analytical laboratory. Silver Standard is not aware of any deliberate attempts to compromise samples.

11.2.10 **QP's Comments**

It is the Author's opinion, based on a review of all possible information, that the sample preparation, analyses and security used on the Project by Silver Standard meet acceptable industry standards (past and current) and the drill data can and has been used for geological and resource modeling, and resource estimation of Indicated and Inferred mineral resources.

12 DATA VERIFICATION

The following section summarise the data verification procedures that were carried out and completed and documented by the Author for this technical report.

As part of the verification process, the Author reviewed all geological data and databases as well as past in-house and public technical reports.

Endeavour has yet to complete surface exploration on the Property, including drilling. All previous drilling has been completed by other issuers and is described in Section 6: History and Section 10: Drilling.

Armitage conducted an independent verification of the assay data in the drill sample database. Digital assay records were randomly selected and checked against the available laboratory assay certificate reports by Armitage. Assay certificates were available for all diamond drilling completed by SSR from 2005 to 2012. Assay certificates for RC drilling completed prior to 2005 were not available. All deposit areas have been diamond drilled and the results of the diamond drilling completed by SSR is considered representative of the Deposit.

Armitage reviewed the assay database for errors, including overlaps and gapping in intervals and typographical errors in assay values. In general, the database was in good shape and no adjustments were required to be made to the assay values contained in the assay database.

Verifications were also carried out on drill hole locations, down hole surveys, lithology, SG and topography information. Minor errors were noted and corrected during the validation process but have no material impact on the 2022 MRE presented in the current report. The database is of sufficient quality to be used for the current MRE.

The Author has reviewed the sample preparation, analyses and security completed by previous operators for the Property. It is the Author’s opinion, based on a review of all possible information, that the sample preparation, analyses and security used on the Project by Silver Standard meet acceptable industry standards (past and current) and the drill data can be used for geological and resource modeling, and resource estimation of Measured, Indicated and Inferred mineral resources.

Armitage reviewed the historical metallurgical work reports made available (see Section 13) and notes that they come from reputable metallurgical laboratories, and that their results are plausible within the bounds of this type of mineralisation. Armitage is of the opinion that the metallurgical test work is representative of the deposit.

In addition, as described below, Armitage conducted a site visit to better evaluate the veracity of the data.

The Property is currently at an advanced stage of exploration project. The project has had numerous studies completed, and has had numerous past authors complete site visits, data verification programs, and complete internal mineral resource estimates and mineral resource estimate reviews of various parts of the Deposit (WSP, SSR, Wardrop, P&E Mining Consultants Inc.). As such, the Author did not deem it necessary to collect check samples.

12.1 September 2022 Site Inspection and Data Verification

Armitage completed a site visit to the Property on September 12 and 13, 2022, accompanied by Alejandro Alegria of Endeavour. Armitage visited the camp, offices, dining area and core storage and core logging facilities. The Author participated in a field tour of the Pitarrilla Property to become familiar with conditions on the Property (road access), to observe and gain an understanding of the geology and various styles mineralization, and to verify the work done including surface drilling and underground development (decline). At the time of the site visit the existing decline was not accessible to the Author.

At the time of the site visit, there was no active exploration on the Property and Endeavour has completed no exploration on the Property to date. Current mining activities on the Property is limited to improving access in the existing decline for the purposes of future underground drilling.

Armitage had the opportunity to examine a number of selected mineralized core intervals from more recent diamond drill holes from the Project, including core from the Cordon Colorado and Breccia Ridge Zones (BPD-014, BPD-239, BPD-018, BPD-226, BPD-152). Armitage examined assay certificates and assays were examined against the drill core mineralized zones. All core boxes were well labelled with DDH number, depths and properly stored in core racks inside warehouses. Sample numbers for drill holes were written on the core boxes and it was possible to validate sample intervals and confirm the presence of mineralization in witness half-core samples from the mineralized zones.

On September 14, Armitage was able to visit the Endeavour office in Durango to discuss with Luis R Castro Valdez, VP Exploration the project geology and mineralization, past exploration, deposit modeling and mineral resources, and to discuss future plans for the project.

As a result of the site visit, the Author was able to become familiar with conditions on the Property, was able to observe and gain an understanding of the geology and various styles mineralization, was able to verify the work done and, on that basis, is able to review and recommend to Endeavour an appropriate exploration or development program.

The Author considers the site visit current, per Section 6.2 of NI 43-101CP. To the Authors knowledge there is no new material scientific or technical information about the Property since that personal inspection. The technical report contains all material information about the Property.

12.2 Conclusion

All geological data has been reviewed and verified by the Author as being accurate to the extent possible and to the extent possible all geologic information was reviewed and confirmed. There were no significant or material errors or issues identified with the database. Based on a review of all possible information, the Author is of the opinion that the database is of sufficient quality to be used for the current Indicated and Inferred MRE.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

The follow is a description of the Mineral Processing and Metallurgical Testing for the Property. Endeavour has yet to complete mineral processing and metallurgical testing on the Property.

13.1 General

In 2004, Silver Standard initiated testwork to provide a better understanding of the Pitarrilla deposit metallurgy and to establish design criteria for the mineral extraction process. The test programs have included initial scoping studies, flotation process development for sulphide ore, cyanide leaching development for oxide ore, and a combination of processes for the transitional (located between sulphide and oxide ore zones) and sulphide ores. Within the testwork, four pilot flotation tests of sulphide ore were completed. The test results are reported in the following documents and relevant tests are summarized below.

13.1.1 Initial Testwork Performed On All Ore Types - 2004 to 2007

- “Pitarrilla Metallurgical Testwork, Project No 0401902, February 24, 2005, Process Research Associates Ltd, Richmond, British Columbia, Canada.
- “Metallurgical Studies Pitarrilla Project, Project No 0503804”, February 27, 2006, Process Research Associates Ltd, Richmond, British Columbia, Canada.
- “Pressure Leach Study of Silver Bearing Samples Pitarrilla Project, Mexico, Project 0507810”, January 22, 2007, Process Research Associates Ltd, Richmond, British Columbia, Canada.

13.1.2 Process Testwork Performed On Sulphide Ore Types - 2008 to 2012

- “Preliminary Cyanidation and Flotation studies Breccia Ridge, Project No 0604906”, March 11, 2008. Process Research Associates Ltd., Richmond, British Columbia, Canada.
- “A Preliminary Assessment of Metallurgical Response, Pitarrilla Project – Breccia Ridge Zone, Durango State, Mexico, KM1889”, January 5, 2007, G&T Metallurgical Services Ltd., Kamloops, British Columbia, Canada.
- “Flotation Process Design and Metallurgical Response, Pitarrilla Project, Durango State, Mexico, KM1971”, April 30, 2007, G&T Metallurgical Services Ltd., Kamloops, British Columbia, Canada.
- “Metallurgical Response – Pitarrilla Project, Silver Standard Resources Inc., Pitarrilla Project, Durango State, Mexico, KM2056”, March 13, 2008, G&T Metallurgical Services Ltd., Kamloops, British Columbia, Canada.
- “Advanced Process Design Studies, Silver Standard Resources Inc. Pitarrilla Project, Durango State, Mexico, KM2232”, January 30, 2009, G&T Metallurgical Services Ltd., Kamloops, British Columbia, Canada.
- “An Investigation Into La Pitarrilla, Prepared for Silver Standard Resources, Project 50014-001 – Final Report”, May 14, 2009, SGS Canada Inc., Vancouver, British Columbia, Canada.
- “A Laboratory Investigation into the Recovery of Lead, Zinc and Silver from Pitarrilla Samples, Project 12526-001 Final Report”, April 11, 2011, SGS Canada Inc., Lakefield, Ontario, Canada.
- “Dacite Test KM 3433”, October 11, 2012, G&T Metallurgical Services Ltd., Kamloops, British Columbia, Canada.

13.1.3 Mineralogy Reports On Oxide Ore Types - 2006 to 2012

- "Deportment of Silver in BP-29 Ore Composite from Pitarrilla", May 23, 2006, AMTEL, London, Ontario, Canada.
- "Mineralogical Assessment Of A Silver Ore Sample, KM 3017", August 23, 2011, G&T Metallurgical Services Ltd., Kamloops, British Columbia, Canada.
- "The Mineralogical Characteristics of Two Composites and A Cyanide Leached Tails Sample, Project 50141-101", March 7, 2012, SGS Canada, Vancouver, British Columbia, Canada.
- "Diagnostic Leach Report" August 20, 2012, Kemetco Research, Richmond, British Columbia, Canada.

13.1.4 Process Testwork Performed On Oxide Ore Types – 2011 to 2012

- "La Pitarrilla Project Report of Metallurgical Testwork AVR and Detoxification Studies", December 11, 2011, Kappas, Cassidy and Associates, Reno, Nevada, USA.
- "Flocculant Screening, Gravity Sedimentation, Pulp Rheology, Vacuum Filtration And Pressure Filtration Studies Conducted For McClelland/Pitarrilla Project", July 2011, Pocock Industrial Inc., Salt Lake City, Utah, USA.
- "Report on Ore Variability and Optimisation Testing, Pitarrilla Drill Core Composites", Report No. 3553, March 12, 2012, McClelland Laboratories, Sparks, Nevada, USA.
- "Determinar La Cinetica De Extraction De Ag A Neuve Meustrars De McClelland Labs", August 2012, SGS de Mexico, Victoria de Durango, Durango, Mexico.
- "Report on Follow-up Bottle Roll Testing, 8 Drill Core Composites from the Pitarrilla Project", Report No. 3553-01, September 2012, McClelland Laboratories, Sparks, Nevada, USA.

13.1.5 Process Testwork Performed On Transition Ore Types – 2012

- "Determinar La Suceptibilidad De 118 Meustras Al Proceso Lixivication, EDTA Y Analisis De S", June 2012, SGS de Mexico, Victoria de Durango, Durango, Mexico.
- "Cyanidation of Flotation Tailings from the Pitarrilla Deposit", September 7, 2012, SGS Canada Inc., Lakefield, Ontario, Canada.
- "Transition Tests KM3513", October 15, 2012, G&T Metallurgical Services Ltd., Kamloops, British Columbia, Canada.

13.2 Summary of Results

13.2.1 Process Research Associates – Project No 0401902 - 2005

These metallurgical studies were conducted upon 14 representative composite samples of the mineralization. The objective of these test programs was to evaluate processes to recover silver. The program included evaluation of leaching, gravity separation, magnetic separation, and froth flotation processes. The first lot of samples consisted of ten samples, differentiated as either silver or zinc mineralised material, in the form of coarse drill core assay reject samples.

The results of this test program indicated that the samples represented material refractory to direct cyanide leaching methods and did not upgrade using typical mineral processing procedures.

The results of diagnostic leaching procedures indicated that silver mineralization is either within manganese minerals that will require dissolution or within clay silicate minerals that will require fine grinding.

13.2.2 Process Research Associates – Project No 0503804 - 2006

These metallurgical studies were conducted upon 15 representative composite samples of the mineralization in the form of coarse drillcore assay reject samples. The objective of the test program was to evaluate processes to recover silver. The program included evaluation of leaching under both direct and pre-treatment leaching procedures, gravity separation, magnetic separation, and froth flotation processes.

This results of this test program indicated that concentration procedures using gravity separation, magnetic separation, or flotation techniques were only partially successful. Poor silver extraction was indicated to be the result of silver being encapsulated in alumino-silcate clay type minerals. Procedures attempted to deal with these clay minerals was ineffective.

13.2.3 Process Research Associates – Project No 0507810 - 2007

These metallurgical studies were conducted upon 11 representative composite samples of the mineralization. Existing samples from the previous test program (0503804) were supplemented with new samples to create a new combined set of samples to be tested. The previously completed test programs had shown that the application of caustic pressure treatment, before cyanide leaching, gave the best extraction rates. The objective of the test program was to evaluate pressure leaching conditions such as pressure and temperature, caustic addition, slurry solids density, and chemical additives to optimize silver extraction.

The results of this test program indicated that alkaline pressure leaching effectively liberated refractory silver components from the samples. The key factor in the process is the attack of silicate minerals by high concentrations of caustic solution at process temperatures above 180°C. The lime boil technique was indicated to reliably precipitate silica from the pressure leach solution and regenerate the caustic.

Cyanide leaching, after pressure leaching with caustic, resulted in silver extraction ranging from 46% to 95%.

13.2.4 Process Research Associates – Project No 0604906 - 2008

These metallurgical studies were conducted upon 14 samples and four master composites samples. Cyanide leaching and flotation were the techniques investigated for extracting silver from the samples. Samples are described as split, diamond drillcore intervals originating primarily from an oxidised cap and sulphide transition interval, both located within the Breccia Ridge Zone.

The results of this test program were as follows:

- The mixture of oxides and sulphides in the material tested, as well as other mineralogical characteristics, complicated the selection of a single optimum process.
- Whole rock cyanidation on the oxide composite samples gave silver recoveries between 33% and 84%.
- Cyanidation of sulphide concentrates and flotation tailings gave a similar variation in response.
- Bulk flotation provided silver recoveries of over 90% for the two samples that exhibited the highest sulphide content and the lowest degree of sulphide oxidation. However, as the sulphide content decreased and extent of oxidation increased, the flotation response worsened for both silver and base metals recovery.
- Further laboratory studies of mineralised samples from the oxide and transitional zones are warranted in conjunction with the process development and advancement of the project as a whole.

13.2.5 G&T Test Program – KM 1889 - 2007

These metallurgical studies were conducted on nine representative ore composites. The composite samples were prepared from diamond drillcore from the Breccia Ridge Zone. The shipment was subdivided into 26 sub-samples. All samples were clearly identified in terms of source by drillhole and geological designation. The samples were segregated into nine groups according to instructions provided by Silver Standard, with each group corresponding to a drillhole and a specific geological horizon.
The objectives of the metallurgical test program were to:

- Conduct chemical, mineralogical and modal analyses of nine composites; and
- Determine mineral compositions and mineral fragmentation profiles, and thereby assess the flotation treatment options of these composites, in order to maximize silver recoveries; and
- Perform kinetic tests and open circuit batch cleaner tests to outline some of the details of the treatment scheme. The general approach to treating these materials, which was based on the observed mineral compositions of the samples, was to sequentially produce bulk copper-lead and zinc flotation concentrates; and
- Attempt to produce saleable grade lead and zinc concentrates. Determine the minor element contents of typical examples of these flotation concentrates, with particular attention being given to deleterious components, which might influence smelter acceptance.

The following observations can be made regarding the sulphide mineral contents of these samples:

- No specific silver sulphide mineral carriers were evident in the preliminary scans performed during the mineral search routines. It was concluded that most of the silver was probably present either in solid solution within one or more of the sulphide minerals, or occurred as disseminated submicroscopic inclusions.
- The dominant sulphide mineral present in all samples, and accounting for about 10% by weight of the average sample, was pyrite. Other iron sulphide minerals, which were detected, were pyrrhotite and arsenopyrite, which tended to be present in similar amounts. Traces of the iron oxides goethite/limonite were noted in most samples, as was a minor but pervasive carbonaceous component.
- A relatively low, interstitial iron content sphalerite was present as an ancillary sulphide mineral, as was galena. Preliminary estimates suggested that the sphalerite had an average interstitial iron content of about 3% by weight in the nine samples tested. This implies a stoichiometric limit for the zinc concentrate grade of 64% by weight zinc. As a generalization, the sphalerite content of the samples was appreciably higher than that of galena.
- Copper was present in all samples and occurred dominantly as chalcopyrite. Tetrahedrite group minerals were an ancillary mineral carrier for copper and possibly arsenic and antimony. Traces of enargite and chalcocite/covellite were recorded in some of the samples.

Statistical analysis of flotation test products indicated that there is an excellent correlation between lead content and silver content. It was recommended that lead concentrate grades of the order of 45% to 50% by weight lead content will ensure silver grades in the range of 6,000 g/t to 8,000 g/t for most of the samples examined. There was no evidence to suggest that a significant fraction of the silver in any of the samples was associated with any other mineral.

Mineral Fragmentation

Samples were ground in the laboratory to approximately an 80% by weight passing 100µm size distribution (P_{80}), and the modal assessments were conducted.

About 95% liberation of the gangue was achieved at a nominal sizing of about 100 P80 µm for this suite of samples. Further, extrapolations of the mineral fragmentation data revealed that still coarser flotation feed sizings might be more economically appropriate for processing these materials. Based on limited data, the practical envelope of feed size for economic flotation of these materials could be in the range of 150 to 200 P80 µm.

At the nominal 100 P_{80} µm sizing, average galena and sphalerite liberation levels approached 50% to 60% when assessed in two dimensions. In G&T's experience, these liberation values are considered well within the usual range for a successful, sequential flotation separation of galena and sphalerite.

Of the un-liberated minerals present in these ground flotation feed samples, a significant fraction of the chalcopyrite was locked with sphalerite. Galena and sphalerite did not display a great affinity for each other. Typically less than 10% of the galena in these samples was locked with sphalerite. The majority of the un-liberated galena and sphalerite, in all samples, was locked with non-sulphide gangue in binary and multiphase composites.

Flotation Test Results

Based on the sample mineralogy, a simple lead-zinc sequential separation flow-sheet was devised for treating these materials. The flow-sheet employed a flotation feed sizing of approximately 100 P_{80} µm and included regrinding stages, sited ahead of dilution cleaning, in both lead and zinc cleaner circuits.

A conventional lead-zinc reagent regime, based on a lime modulated process pH control strategy, was used to maximize and maintain the flotation differential between the sulphide minerals. For some samples, a pre-flotation stage, sited ahead of the lead flotation circuit, was included in the flow-sheet to remove a carbonaceous, but often silver-rich, component.

The averaged metallurgical balances, calculated for the best cleaner flotation tests, indicated a lead concentrate grade of 56% by weight lead and 8,000 g/t of silver. Lead recovery was highly variable for the samples evaluated in this program. Between 20% and 95% of the lead in the samples was recovered into the lead concentrate and similar recoveries for silver were achieved. On average, approximately 87% of the lead and 85% of the silver in the samples were recovered into the lead concentrate.

A zinc concentrate extensively diluted by pyrite and assaying 45% by weight zinc and containing 600 g/t silver was also produced. The zinc concentrate contained an estimated 75% of the zinc and approximately 5% of the silver contained in the samples. Definitive estimates of process metallurgy will depend upon the results of replicate locked cycle tests being conducted at some point in the future.

Concentrate Quality

Minor element scans were conducted on composite samples of the lead and zinc flotation concentrates produced in the open circuit cleaner tests conducted in this program. The following notes may be of interest when considering marketing these concentrates to conventional lead and zinc smelters worldwide:

- The lead concentrates, which contained 56% by weight lead, 4% by weight copper and 5% by weight zinc, are comparable to concentrates produced and marketed elsewhere in Mexico. The high silver content of 8,000 g/t of this product could offset many concerns about lead grade.
- The selenium, arsenic, bismuth and antimony contents of the concentrates are elevated beyond the thresholds at which some smelters may impose penalties. However, the deleterious element concentrations for Pitarrilla concentrates are comparable to those routinely observed in flotation concentrates from Mexican lead-silver producers.

13.2.6 G&T Test Program – KM1971 - 2007

These metallurgical studies were conducted on three composites representing the lithologies of the deposit. Drillcore from the G&T Test Program-KM 1889 was re-processed to make composites representing the Breccia Contact, the Basal Conglomerate, and the Sediments lithologies that were used in this test program. The objectives of the metallurgical test program were to:

- Conduct chemical, mineralogical and modal analyses on the three composites. Determine mineral compositions and mineral fragmentation profiles and thereby assess the flotation treatment options of these composites in order to maximize silver recovery; and
- Perform kinetic rougher flotation tests, open circuit batch cleaner flotation tests, and locked cycle flotation tests to outline some of the details of the flotation treatment scheme; and
- Perform rougher flotation concentrate regrind tests and cleaner flotation tests to investigate the effect on concentrate grades and metal recovery; and
- Determine the minor element contents of typical examples of flotation concentrates; and
- Investigate silver recovery from flotation tailings using cyanide leaching technology.

All three composites represented low sulphide content mineralization in which pyrite and a moderate interstitial iron sphalerite were the dominant sulphides. Analysis of high grade zinc concentrate samples generated by flotation testing indicates 8% to 9% by weight interstitial iron in the sphalerite lattice. Galena and a range of copper sulphides including chalcopyrite and tetrahedrite were present as ancillary minerals. Trace amounts of pyrrhotite, arsenopyrite and iron oxide minerals were also recorded in all composites.

Mineral Fragmentation

The results of liberation assessment determined at simulated, flotation feed sizings of approximately 130 P_{80} µm indicate that flotation feed sizings in the range of 150 P_{80} µm to 200 P_{80} µm will provide adequate mineral liberation for the design of a successful two-product flotation flow sheet for the separation of galena and sphalerite. Also, mutual interlocking of galena and sphalerite in these samples was a relatively rare occurrence. Binaries of this particular class accounted for about 5% of the galena but less than 1% of the sphalerite in these samples. Furthermore, instances of interlocking between galena and copper sulphides were very rare.

Silver Occurrences

Statistical analyses of assay data from key flotation test products were used to relate silver deportment to that of the carrier minerals. The results of these statistical exercises for the three lithologies indicated the following trends in silver deportment:

- Almost all of the silver in the three composites tracked galena through all stages of the flotation separation process; and
- There was no statistical evidence to indicate that silver is associated with, or behaved like any other mineral, in the mineralisation matrix; and
- The selection of treatment conditions designed to maximize galena recovery will automatically maximize silver recovery into the lead concentrate.

Flotation Test Results

Rougher flotation kinetic tests were initially conducted to assess reagent demand for the samples. Additional rougher tests were executed in which the principal variable probed was the effect of flotation feed size on response.

The test data revealed that, within the nominal flotation feed size range, 100 to 190 P_{80} µm flotation performance was essentially constant. Further, these same tests showed that solids mass-pulls to the lead rougher concentrate of about 5% were sufficient to ensure 90% lead recovery into that stream. In the zinc rougher circuit, solids mass-pulls of 6% to 10%, dependent upon the sample, were required to approach 90% zinc recovery.

The cleaner circuit testwork was initially focused upon determining the reagent balance required in the cleaner stages to maximize the flotation selectivity between galena and sphalerite. More critical to process design was the outcome of testwork performed at a later date which was focused upon optimization of the lead and zinc regrinding stages. The results of this work indicated that the lead regrind product size should be about 20 P_{80} µm to optimize lead circuit performance, and the zinc regrind product sizing should be about 30 P_{80} µm.

Using the suite of treatment conditions identified in both the kinetic and batch cleaner tests, replicate locked cycle testwork was executed on all three lithologies. The Sediments composite required the use of a pre-flotation stage to remove a naturally floatable component from the rock ahead of lead rougher flotation, but it was not necessary for the successful flotation treatment of the Basal Conglomerate or the Breccia Contact composites. All three types responded favorably to the locked cycle procedures and concentrate quality was acceptable.

Residual silver contained in the pyrite-rich tailings streams from the two-product separation process accounted for about 15% of the silver in the rock. Samples of the process tailings were subjected to limited cyanidation leaching studies to determine if any additional silver could be recovered using this technique.

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Concentrate Quality

The lead and zinc concentrates produced in selected locked cycle tests were subjected to minor element scans. The mineral compositions of the lead and zinc flotation concentrates were determined using standard modal techniques. The results of these mineral composition assessments indicated that:

- The lead concentrates typically contained about 60% by weight galena. The remainder of the lead concentrate mass was occupied principally by chalcopyrite and sphalerite with lesser amounts of gangue and pyrite.
- The zinc concentrates assayed 50% by weight zinc, but they typically contained about 85% by weight sphalerite, principally because of the higher interstitial iron content of the sphalerite. The dominant diluents were pyrite and non-sulphide gangue together with smaller quantities of chalcopyrite and galena.

13.2.7 G&T Test Program – KM2056 – 2008

These metallurgical studies were conducted on drillcore and assay reject samples to provide information for treatment of five composites representing Basal Conglomerate, C-Horizon (Lower Andesite), and Sediments (Peña Ranch Fm) rock types. Test procedures included rougher flotation, open circuit batch cleaner flotation, and locked cycle flotation.

Samples were analyzed to determine mineral composition, mineral liberation, and silver occurrence.

The mineral composition for five of the composites was investigated by modal analysis techniques. The analysis indicated that galena, sphalerite, and copper sulphide minerals were present with pyrite.

Silver Occurrence

Statistical analysis of flotation data indicates that copper sulphide and galena are the dominant silver carriers. Also, that the proportion of silver associated with the copper sulphide minerals and galena varies by composite.

Mineral Fragmentation

The mineral fragmentation profile for the composites was determined using standard methodologies. Mineral deportment by class of association was determined at a nominal flotation feed sizing of 120 P_{80} µm.

The analysis indicated that:

- The majority of the non-sulphide gangue host minerals are very effectively liberated from the sulphide minerals at a nominal size of 80% by weight passing P120 µm and in all of the samples, except one composite (with high copper) , the galena and sphalerite liberation levels exceeded the sulphide liberation levels typically exhibited at successfully operating lead-zinc flotation plants; and
- Regrinding of rougher flotation concentrates will liberate galena and sphalerite from non-sulphide gangue and improve cleaner concentrate grades; and
- Interlocking of galena and sphalerite accounts for a small fraction of these mineral occurrences.

Flotation Test Results

The flotation response of the five composite samples was assessed using three laboratory flotation test types: batch rougher flotation tests, open circuit batch cleaner tests, and locked cycle tests.

Rougher flotation test results indicated that between 94% and 97% of lead was recovered into a lead rougher concentrate containing about 8% of the feed mass. Tests conducted on Composite B indicated that 92% and 95% of the copper and lead sulphides, respectively, were recovered into a bulk concentrate containing about 16% of the feed mass.

Rougher flotation tests were also performed on two composites that were determined to be oxide material. These tests yielded poor flotation results and have not been included in the sulphide rock evaluation. Cleaner flotation testing indicated that the process will successfully produce saleable grade lead and zinc concentrates from most of the composites. On average, 91% of the lead and 85% of the zinc were recovered into lead and zinc concentrates assaying 64% by weight lead and 51% by weight zinc, respectively. The lead concentrate contained variable amounts of copper, ranging between 1.3% and 4.2% by weight. Silver contents in the lead concentrates were high, averaging 10,000 g/t.

The exception to the above findings was in the results for the concentrate produced from composite B, a high copper composite. In this case, a true, bulk copper-lead concentrate was produced assaying about 40% by weight, combined copper and lead.

Locked cycle testing indicated that:

- Except for the test results of testing composite sample B, more than 90% of the lead was recovered into a lead concentrate, assaying about 68% by weight lead and 10,500 g/t silver.
- Except for the test results of testing composite sample B, more than 90% of the zinc was recovered into a zinc concentrate, assaying about 50% by weight zinc and 796 g/t silver.
- For one composite (with high copper), 92% of the lead and 86% of the copper was recovered into a lead (bulk) concentrate, assaying 19% by weight lead, 19% by weight copper, 6.9% by weight zinc, and 4,200 g/t silver. In addition, 64% of the zinc was recovered into a zinc concentrate, assaying 25% by weight zinc and 285 g/t silver.

13.2.8 G&T Test Program – KM2232 - 2009

These metallurgical studies were conducted on multiple samples to further advance the development of the metallurgical treatment scheme for Pitarrilla rock. The objectives of the metallurgical test program were to:

- Optimize the treatment parameters and flow sheet to produce saleable grade lead and zinc concentrates;
- Conduct pilot scale simulation for the flotation process to verify laboratory bench test results and to produce concentrate samples for further evaluation; and
- Investigate variability in results across mineralized mine zones with respect to rock hardness and flotation response.

The mineral compositions of the Andesite, Basal Conglomerate, C-Horizon, and Sediments composite samples were investigated by modal analysis techniques. The analysis indicated that galena, sphalerite, and copper sulphide minerals were present with pyrite.

Silver Occurrence

Analysis of Basal Conglomerate flotation test products indicated that slightly more than half of the silver in a bulk copper-zinc concentrate behaved like copper sulphide minerals through the flotation process. The remainder of the silver followed the principal lead mineral, galena.

Mineral Fragmentation

The mineral fragmentation profile for the composites was determined using standard methodologies. Mineral deportment by class of association was determined at a normal flotation feed sizing of 150 P_{80} µm. The usual target mineral liberation of about 50% was achieved, or was exceeded. Further, gangue liberation easily surpassed the rougher flotation design threshold of 90%. The data indicates that mineral liberation was scarcely influenced by flotation feed sizing within the range of 100 P_{80} µm to 300 P_{80} µm.

Of equal importance was that interlocking between galena and sphalerite was limited, with galena-sphalerite binaries typically containing 60% galena.

Rock Hardness

Tests were performed to determine the Bond ball mill work index for the four rock type composites. Additional rock hardness test-work was performed on the variability testing samples. This work was done using a comparative grindability technique. The relatively small scatter of the comparative index data indicates consistency in grindability across the major mineralized zones.

Flotation Test Results

Flotation response was examined for each of the four major rock composite samples. The laboratory flotation test types included examination of the rougher flotation rate (or kinetic test), the open circuit batch cleaner test and the locked cycle test.

The kinetic flotation tests were used primarily to link solids mass-pulls, for lead and zinc circuits, to determine metal recoveries in the associated rougher concentrates. These tests are designed to probe a range of variables which might include flotation feed sizing, flotation time and reagent dosages. Specifically, the kinetic flotation test results here indicated that:

- For all composites, variations in the flotation feed size exerted very little influence on the flotation performance in either the lead or the zinc rougher circuits;
- In the rougher circuit, an average lead recovery of 85% to 90% was achieved at solids mass-pull of about 3% of the flotation feed mass into the lead rougher flotation concentrate. The Sediments and the Basal Conglomerate samples produced the best results in that they averaged about 10% better lead recovery than the other composites, at an equivalent solids mass-pull; and
- In the zinc rougher circuit, zinc recovery of 90% was achieved, at a solids mass-pull of 6% to 8% of the flotation feed mass into the zinc rougher flotation concentrate. The solids mass-pull recovery data has been normalised to the metal contained in the zinc rougher feed stream. The Sediments and Basal Conglomerate samples produced the best results of the samples tested. Considering all samples tested, the difference between the response extremes was equivalent to about 5% zinc recovery.

The data collected from the open circuit batch cleaner test indicated that:

- Flotation results from the Sediments and Basal Conglomerates samples were better than results from the Andesite and C Horizon samples;
- The lead and the zinc grade recovery relationships indicated that no mineralogical constraints, especially mineral inter-locking, were adversely impacted by the upgrading process;
- The lead rougher concentrates were upgraded from an average of about 15% by weight lead to about 60% by weight lead. Lead losses in the lead cleaners were 7% to 10%; and
- The zinc rougher concentrates averaged 15% by weight zinc content and were readily upgraded to 50% by weight zinc. Zinc losses in the zinc cleaners were about 5%.

Locked cycle tests were performed to test flotation parameters and response in a continuous flotation separation process. The cycle tests were conducted using flotation nominal process feed sizes of 200 P_{80} µm and regrind product sizes between 15 P_{80} µm and 30 P_{80} µm.

Locked cycle test data indicated that:

- Despite the variations in metal contents and the flotation responses in preliminary tests, process metallurgy is consistent for all four composite types;
- Lead concentrates, marginally contaminated by copper sulphides, were an average of 50% to 65% by weight lead and 5,500 to 7,000 g/t silver. Lead and silver recoveries, ranged from 70% to 87%, and 60% to 75%, respectively; and
- The grade of the zinc concentrates were approximately an average of 48% by weight zinc. In all cases, the combined copper and lead contents were below the usual combined smelter penalty threshold of 3% by weight. Silver content ranged from 275 to 700 g/t. Zinc recoveries to the zinc concentrates ranged from approximately 80% to greater than 90%. Approximately 10% to 20% of the silver content of the composites was captured into the zinc concentrates.

Variability Testwork

Determinations of flotation response in a variability program were conducted by running all of the variability composite samples through a standard open circuit batch cleaner test. In this case, the batch cleaner test involved constant grinding power input, sequential lead and zinc flotation stages, regrinding of the rougher concentrates using fixed power input, and three stages of open circuit dilution cleaning.

The results of the lead circuit variability testing indicated that:

- The average lead flotation results were similar across all six composites;
- The lead concentrates assayed between 40% and 55% by weight lead and 4,000 g/t to 10,000 g/t silver. Average lead and silver recoveries approximated 65% and 55%, respectively (not accounting for recovery or loss in the open circuit batch cleaner tailing streams);
- The lead concentrates and particularly those from the C-Horizon samples, contained elevated copper levels; and
- Generally, antimony levels were high and arsenic was recorded in perceptible amounts in all lead concentrates.

The results of the zinc circuit variability testing indicated that:

- The zinc concentrate grade consistently averaged approximately 45% by weight zinc and contained approximately 70% of the zinc content from the raw composite samples;
- The zinc concentrates contained between 200 and 1,000 g/t silver, equivalent to approximately 12% silver recovery; and
- The combined copper and lead content of the zinc concentrates was, in most cases, well below the smelter penalty threshold of 3% by weight combined metals. The combined arsenic and antimony contents of the zinc concentrates were in excess of 0.3% by weight.

Phase II – Pilot Plant Operation

Several individual pilot plant test runs, each of eight to ten hours duration, were conducted on the four composite samples from KM2232. The results of these pilot scale runs confirmed that the basic treatment protocols developed in the laboratory scale testing could be used in plant operation.

The test results indicated that:

- The lead concentrates assayed about 55% by weight lead, 3% by weight copper, and 6,000 g/t silver on average. Average lead and silver recoveries were approximately 85% and 75%, respectively;
- The zinc concentrates assayed about 46% by weight zinc and 350 to 500 g/t silver. Copper and lead in the zinc concentrate assayed less than 3% by weight combined. Average zinc and silver recoveries were approximately 90% and less than 15%, respectively; and
- Analyses of the grade-recovery relationships for both lead and zinc flotation circuits indicated that concentrate grade can be balanced against metal recovery.

Lead flotation concentrates produced in the pilot plant, from the Basal Conglomerate composite, were used in a lead-copper flotation separation test. In this test, galena flotation was suppressed and the copper bearing sulphide minerals were floated.

The results indicated that:

- The copper concentrate contained 24% by weight copper and about 15% by weight combined lead and zinc. The concentrate also contained about 85% of the copper originally recovered into the lead-copper concentrate; and
- The lead concentrate was largely devoid of copper sulphide minerals and much of the silver was removed. This indicates that a significant amount of the silver is associated with the copper sulphide minerals.
- These tests indicate that the final lead concentrate would assay 57.5% by weight lead and about 0.4% by weight copper, and it would contain better than 95% of the galena and about 60% of the silver that was in the lead-copper concentrate.

13.2.9 McClelland Laboratories Test Program – 3553 and 3553-01 2012

A total of 168 individual diamond drillcore interval samples were selected to prepare 45 variability composite samples based on grade and location. The locations tested were Cordon Colorado, Peña Dyke, South Ridge, East South Ridge, Breccia Ridge and Javelina Creek.

Two phases of grind size optimization testing were completed. The initial phase was performed upon both the location composite samples and the Master composite sample. Grind sizes that were tested were P_{80} 75µm, 53µm, 38µm and 25 µm.

The second phase of grind size optimization testing was performed at coarser grinding sizes. Grind sizes tested were P_{80} 150 µm, 106 µm, and 75 µm.

Additional tests were performed to explore the effect of leach solution cyanide concentration on silver extraction. Tests were performed at a grind size distribution of P_{80} 38 µm and cyanide solution concentrations of 0.5, 1, and 5 grams per litre for the master composite sample and 1, 2, and 5 grams per litre for the location composite samples.

The results from the bottle roll tests were used to assess the kinetics of silver leaching. In nearly every test, the leach extraction was determined at the 2, 4, 8, 24, 48, 72 and 96 hour leach time period and the leach time was often extended to 120 hours. In nearly every case, the shape of the silver extraction versus time plot resulted in a consistently shaped graph. The graph indicates a rapid initial extraction rate for the first 12 hours, reaching a maximum extraction value during the first 24 hours of leaching, and finishing with very little additional extraction to the completion of the test.

With the mineralogical understanding of the oxide mineralisation (containing coarse and fine silver halides and very fine sulphides), the kinetic leaching profile is logical. The initial, fast leaching silver is recovered from the coarse silver halide minerals and then, the much slower leaching silver is recovered from the finer, partially liberated, silver halides. The locked, very fine silver sulphides are not leached. The proportion of locked, silver in fine sulphides, limits the maximum recovery.

In addition to silver assaying and 32-element ICP analysis by drillhole interval, an additional analytical method known as a “cyanide shake test” or “Hot CN” was used. The test is described by an ALS-Chemex laboratory procedure identified by the analysis code “Ag-AA13HY”.

The cyanide shake test method uses a pulverised sample that is leached at 60°C in a cyanide/caustic solution for a duration of six hours. The leach solution is then analysed for silver by atomic absorption spectroscopy. The direct comparison of any sample’s silver content (Ag-ppm) and the corresponding Ag-AA13HY solution result (Ag-ppm) gives an indication of the possible maximum silver recovery.

An important result of all the leaching testwork was the determination of the “recovery factor”, which would convert the Ag-AA13HY drill interval result to the corresponding bottle roll recovery result at the plant design operating point (grind size/leach solution cyanide strength/leach time). The “recovery factor” was variable with grind size, cyanide strength, and leach duration. The hot cyanide extraction determined by Ag-AA13HY for the samples was plotted versus the extraction determined from bottle roll tests (run at 75 µm grind size, one gram per liter cyanide solution strength, and 48-hours leach time). The equation for the best fit line through the data points indicates a correlation of 0.9508.

13.2.10 **SGS Test Programs – 40-12 and 22-12 2012**

These metallurgical studies were conducted on multiple samples to further advance the understanding of the metallurgical performance for Pitarrilla rock. The objectives of the metallurgical test program were to test, by using the Pitarrilla standard flotation and cyanide leaching conditions, variability samples from six drillholes.

The variability samples were generated from ten metre intervals from six drillholes. These drillholes were selected such that they represented spatially the entire deposit. The first intervals’ depth location was selected based upon the geologic logging records and the assigned oxidation code.

Cyanide leaching testwork.

For every composite sample that contained silver greater than 20 g/t, a cyanide leaching test was performed. The test conditions were consistent with the Pitarrilla cyanide leach test standard conditions.

All the results demonstrated that silver recovery by cyanide leaching varied both by head grade, and by depth. The effect of a third variable, oxidation code, upon silver recovery, was tested. The oxidation code is a 0 to 5 scale, where 0 is fresh sulphide, and 5 is highly weathered ‘oxide’ material.

Flotation Testwork

For every composite sample that contained silver greater than 20 g/t, a rougher flotation test was performed. The test conditions were consistent with the Pitarrilla flotation standard conditions. A total of 118 tests were completed. All the results demonstrated that total silver recovery by flotation varied both by head grade, and by depth. The effect of a third variable, oxidation code, upon silver recovery, was also evaluated.

13.2.11 **G&T Test Program – KM3433 2012**

These metallurgical studies were conducted on multiple samples to further advance the understanding of the metallurgical performance for Pitarrilla rock. The objectives were to test, by using the Pitarrilla standard flotation and flotation tailings cyanide leaching conditions, master composites and variability samples from the Dacite, Intrusive and Transitional rock types.

The samples were identified by rock type: Dacite Oxide, Dacite Fresh, Intrusive Shallow, and Intrusive Deep.

These variability samples were also used to create the Master composites for the rock types: Oxide, Fresh, Shallow, and Deep.

The chemical and mineral compositions of the Oxide, Fresh, Shallow, and Deep composite samples were investigated by modal analysis techniques. The analysis indicated that galena, sphalerite, zinc oxides and copper sulphide minerals were present with pyrite.

Flotation Variability Testwork

Determinations of flotation response in a variability program were conducted by testing the variability composite samples by a standard rougher test, a batch cleaner test, and for three master composites, a complete Locked cycle batch flotation tests.

Variability Batch Standard Rougher Test Summary

The results of rougher kinetic tests on the master composites are summarized below:

- For the Deep, Fresh, and Shallow Master Composites, lead recovery to the bulk circuit rougher concentrate ranged from about 65% to 90%.
- Under all conditions tested, for the Oxide Master Composite, lead recovery was poor, ranging from about 10% to 20%, and zinc recovery ranged from about 20% to 35%.
- Zinc recovery, to the combined bulk and zinc rougher concentrates, ranged between 45% and 90% for the Deep, Fresh, and Shallow Master Composites. Between 20% to 30% of this reported to the bulk rougher concentrate.
- Silver recovery, to the bulk rougher concentrate, ranged from about 45% to 90% for the four master composites tested.

Variability Batch Cleaner Test Summary

Open circuit batch cleaner flotation test results, for the master composites are summarized as follows:

- For the Deep, Fresh, and Shallow Master Composites, lead recovery to the final bulk concentrate ranged from about 40% to 60%. At these recovery levels, lead content, in the final bulk concentrate, ranged from about 40% to 60%. Lead recovery for the Oxide Master Composite was very poor at about 10 % and at a grade of 10% lead.
- Silver recovery, to the final bulk concentrate, ranged from about 35% to 65%, with silver grades ranging between about 5,000 to 10,000 g/t. The Oxide Master Composite had the lowest silver recovery and grade, at 35% and about 5,000 g/t, respectively.
- The Deep Master Composite had the best zinc metallurgical performance, with about 60% zinc recovery at 50% zinc grade. The Fresh and Shallow Master Composites had the lower zinc recoveries to the final zinc concentrate, ranging between about 30% to 60% at zinc grades ranging from about 30% to 40%. The Oxide Master Composite had less than 10% zinc recovery at less than 10% zinc grade.

Master Composite Complete Locked Cycle with Cyanide Leaching of Tailings Summary

A single locked cycle flotation test was completed on each of the Deep, Shallow and Fresh Master Composites. The zinc rougher tail from each test was further treated using a cyanidation bottle roll test. The results of these tests are discussed below:

- Between about 50% and 70% of the lead in the feed was recovered to the final bulk concentrate at lead grades between about 40% and 60%. Silver recovery, to the concentrate, ranged between 59% to 68% at silver grades ranging from 7,000 g/t and 8,500 g/t.
- Zinc recovery to the zinc final concentrate ranged between about 50% to 80%, at zinc grades ranging between 44% to 48%. For the Shallow Master Composite, most of the zinc losses were in the zinc rougher tail, at about 42%.
- • After 24 hours of cyanidation, from 65% to 75% of the silver in the zinc rougher tailings' was extracted to solution. The best extraction, at about 75%, was achieved on the zinc rougher tail from the Fresh Master Composite.

13.2.12 G&T Test Program – KM3513 2012

These metallurgical studies were conducted on multiple samples to further advance the understanding of the metallurgical performance for Pitarrilla rock. The objectives of the metallurgical test program were to:

- Test, by using the Pitarrilla standard rougher flotation conditions, all variability samples; and
- Test, by using the Pitarrilla standard cyanidation conditions, all variability rougher flotation tailings.

The samples were identified by rock type: Dacite Oxide 2 (5 samples), Dacite Oxide 3 (5 samples), Cordon Colorado Oxide 2 (5 samples), Cordon Colorado Oxide 3 (5 samples) and Intrusive Oxide 3 (5 samples).

These varability samples were also used to create the Master composites for the rock types: Dacite Oxide 2, Dacite Oxide 3, Cordon Colorado Oxide 2, Cordon Colorado Oxide 3 and Intrusive Oxide 3.

The chemical and mineral compositions of the Dacite Oxide 2 and 3, Cordon Colorado Oxide 2 and 3, and Intrusive Oxide 3 composite samples were investigated by modal analysis techniques. The analysis indicated that galena, sphalerite, zinc oxides and copper sulphide minerals were present with minor pyrite.

Variability Batch Rougher Test Summary

The flowsheets used in this test program are discussed with the following comments:

- The target primary grind sizing for the rougher flotation tests was 150 P80 µm.. Actual grind sizings ranged between 118 P80 µm to 151 P80 µm.
- Cytec 3418A was used as the main sulphide mineral collector in the bulk flotation circuit. Sodium cyanide was added to the primary grind to depress zinc flotation in the bulk circuit.
- Flotation in the bulk circuit was conducted at a target pH of between 9.1 and 9.5.
- Copper sulphate was used to activate zinc flotation in the zinc rougher circuit. Sodium Isopropyl Xanthate ("SIPX") was used to collect zinc to the zinc rougher concentrate. Zinc rougher flotation was completed at a pH of 11.5.
- The zinc rougher tailings, from each flotation test, was cyanide bottle roll leached for 24 hours with interval sampling at 2, 6 and 24 hours. The target sodium cyanide concentration was 1,000 ppm.

The pH was maintained at 11.5 during the cyanidation test.

Variability, Cyanide Leaching of Batch Rougher Flotation Tailings

The cyanidation bottle roll test data showed:

- The 24 hour silver extractions ranged about 21% to 76%. The average 24 hour silver extraction for all 25 variability composites was about 59%. Three of the Cordon Colorado 3 Oxide composites, V2, V3 and V5, had much lower 24 hour silver extractions than the bulk of the samples tested.

- There is a trend between the calculated silver content in the feed and the silver grade in the cyanidation tailings. The samples with lower silver feed grades produced the lowest silver grades in the cyanide tailings.
- There does not appear to be any relationship between the flotation feed primary grind size and the silver assay in the cyanidation tailings. This comment applies only across the range of primary grind sizings generated in these tests (120 to 150 µm) and is a comment about global performance across the 25 samples tested.
- There was significant variation between silver assayed in the zinc rougher tailings and back calculated in the cyanidation feed. These variances could not be confirmed through check assays.

13.2.13 **SGS Test Program – 50014-001 2009**

These metallurgical studies were conducted on multiple samples to provide information on comminution design, flotation and cyanide leaching metallurgy, solid-liquid separation, and environmental stability of flotation tailings. The flotation testing was primarily performed to prepare products for the solid-liquid separation and environmental tests. Cyanide leaching tests were also performed on flotation tailings from flotation tests of an oxide sample.

Environmental testing included standard static and kinetic testing of flotation tailings samples.

Comminution Results

Coarse size samples of Sediments and Basal Conglomerate rock types were composited into two samples for JK drop weight testing. The JK drop test compares rock fragmentation in a standardized test to model the comminution circuit. The test evaluation results in the determination of characteristic parameters which are used in a proprietary software package to predict comminution requirements. The JK drop test modeling indicated a SAG mill-ball mill circuit could be used to grind the rock to flotation feed size.

Cyanidation Testing

Ten cyanidation tests were conducted on flotation tailings from the oxide samples. Each of the tests was performed under the same test conditions to generate a suitable amount of tailings material for solid-liquid separation testing. Silver extraction averaged 36% for these tests. The metallurgical response of the oxide material was not investigated in detail in this testwork because processing of the oxide material is considered to be an opportunity for future consideration.

13.2.13.3 Solid-Liquid Separation Testing

Flocculant screening, conventional (static) and dynamic (high-capacity) thickening, pulp rheology, pressure filtration and vacuum filtration tests were conducted on flotation tailings and cyanide residue samples.

Flocculant screening procedures indicated that flotation tailings could be flocculated with approximately 15 g/t to 30 g/t of a medium to high molecular weight, 15% charge density, anionic polyacrylamide flocculant. Leach residue could be flocculated with approximately 25 g/t to 30 g/t of a medium to high molecular weight 7% charge density anionic polyacrylamide flocculant.

Minimum unit area requirements assumed feed solids concentrations in the optimum range of 15% to 20% by weight for all materials, and with flocculant dosed in the most effective range and concentration. It should be noted that high rate thickener sizing for the 200 µm materials was estimated based on static thickening test results.

Minimum possible pressure filter cake moisture contents for all materials were in the range of 10.8% to 15.7% by weight, and normal design cake moisture contents were in the range of 12% to 16.8% by weight for all materials. Vacuum filtration test results indicated achievable horizontal belt production rates. All reported production rates are for 10 mm cake thickness, and maximum dischargeable cake moistures based on a minimum 0.5 minute dry time.

Cake moisture contents for the maximum vacuum filter production rates were in the range of 17.4% to 27.0% by weight for all materials with no flocculant addition, and in the range of 24.4% to 31.7% by weight with flocculant addition. Vacuum filter cakes with flocculant addition were higher in moisture content, but discharged more easily than cakes without flocculant addition, and were considered stackable (whereas cakes without flocculant addition were not considered stackable, in most cases, at maximum dischargeable moisture contents).

13.3 Interpretation of Testwork

The testwork has covered most of the possible process options, but until now, it was difficult to predict metallurgical performance based on material type and location. The historic representation of a simple oxide and sulphide deposit has become better defined as an ore body with a method to locally identify the rock oxidation state.

Laboratory and pilot scale testing on sulphide composite samples demonstrated that the sulphide mineralization was readily amenable to flotation process treatment. A conventional lead-zinc sequential flotation separation flow sheet can be the basis of the process design. The variability flotation testwork indicated that the sulphide mineralized zones are relatively similar in terms of rock grindability, chemical and mineral compositions, and flotation response. Galena and most of the copper sulphide minerals can be recovered in a lead flotation concentrate that will also contain the majority of the silver in the rock. The tailings from the lead-copper flotation circuit can then be processed by flotation to recover most of the sphalerite mineral in a zinc flotation concentrate.

Laboratory testing on oxide composite samples demonstrated that the oxide mineralization was amenable to the cyanide leach process for the extraction of silver. A conventional cyanide leach circuit flow sheet can be the basis of the process design. The variability leaching testwork indicated that the oxide mineralized zones are relatively similar in terms of rock grindability, chemical and mineral compositions, and cyanide leaching response.

Laboratory testing on transitional composite samples demonstrated that the transition mineralization was amenable to flotation process treatment and the flotation tailings were amenable to the cyanide leach process for the extraction of silver. The circuit proposed for the sulphide mineral flotation process would perform acceptably for the transition material and the cyanide leach circuit proposed for the oxide leaching circuit would also perform acceptably for the transition material. The variability testwork indicated that the transition mineralized zones are relatively similar in terms of rock grindability, chemical and mineral compositions, and leach response.

Identifying the mineralized material by oxidation code has allowed the metallurgical test results to be understood. The results were categorized to develop a predictive model of metallurgical performance for each material type. The models for sulphide material treated by the flotation process are conventional metal head grade to recovery relationships. For the transition material that will be processed by flotation and cyanide leaching, the sulphide flotation models can be used. The predicted performance from the sulphide model can then be reduced by increasing amounts based upon the oxidation code for a particular block of material. The flotation model cannot be used for material with an oxidation code above 3.5 (i.e. more oxidized). The models for cyanide leaching of the flotation tailings and the oxide material are based on a grade recovery relationships indicated from the test results.

The overall modeling logic for flotation includes three, separate mathematical units:

- Firstly, for each metal, a basic head grade to rougher recovery relationship;
- Secondly, an adjustment factor to this recovery to account for degree of oxidation; and
- Thirdly, a cleaning stage recovery applied to the oxidation adjusted rougher recovery.

The flotation tests results were combined into one larger data set for all rock types on the basis that the sulphide mineralogy is consistent across the rock types. The drillhole and sample intervals used to generate each metallurgically tested sample or composite were identified. For each interval, the geological oxidation code was recorded against the sample or composite and therefore each flotation test can be identified by an oxidation code value. All tests with particle sizes significantly finer or coarser than the plant design grind size distribution of 150 P80 µm have not been included. The results of pilot plant tests have been included.

The combined data set for oxidation codes 0 to 2 (i.e. sulphide material) contains the results of some 130 individual rougher tests, 113 tests with cleaning stages, plus the four pilot plant campaigns. The raw data was sorted or “binned” into short grade ranges of metal values (i.e. silver, lead, zinc and copper) and then averaged. The binned averages were then analyzed by making scatter plots of comparative data, for example “percent lead head grade” versus “recovery of lead in lead rougher flotation”. A “best-fit” three-term polynomial curve was fitted to each scatter plot. The apogee of a curve fitting the “percent lead head grade” and the “recovery of lead in lead rougher flotation” data points defines the value above which recovery is fixed at a maximum value. The data for lead, silver, copper, and zinc in the lead rougher flotation concentrate, the equations describing the recovery values, and the maximum recovery values are show in Figure 13-1 to Figure 13-4.

The data for lead, silver, copper, and zinc in the zinc rougher flotation concentrate, the equations describing the recovery values, and the maximum recovery values are shown in Figure 13-5 to Figure 13-8.

Figure 13-1 Percent Lead (Pb) Head Grade versus Percent Recovery of Pb in Pb Rougher Flotation (Maximum 91.4% Recovery) (M3, 2012)

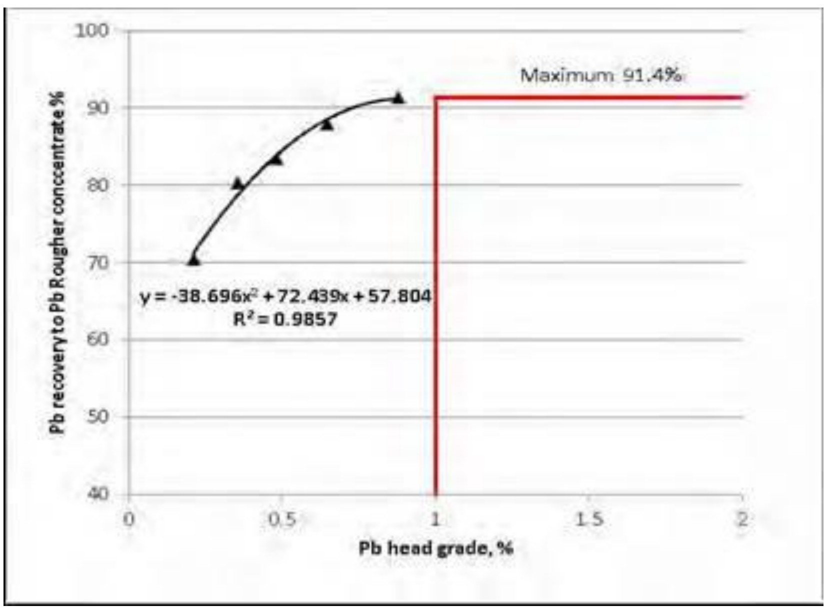


Figure 13-2 Silver (Ag) Head Grade versus Percent Recovery of Ag in Pb Rougher Flotation (Maximum 85.8% Recovery) (M3, 2012)

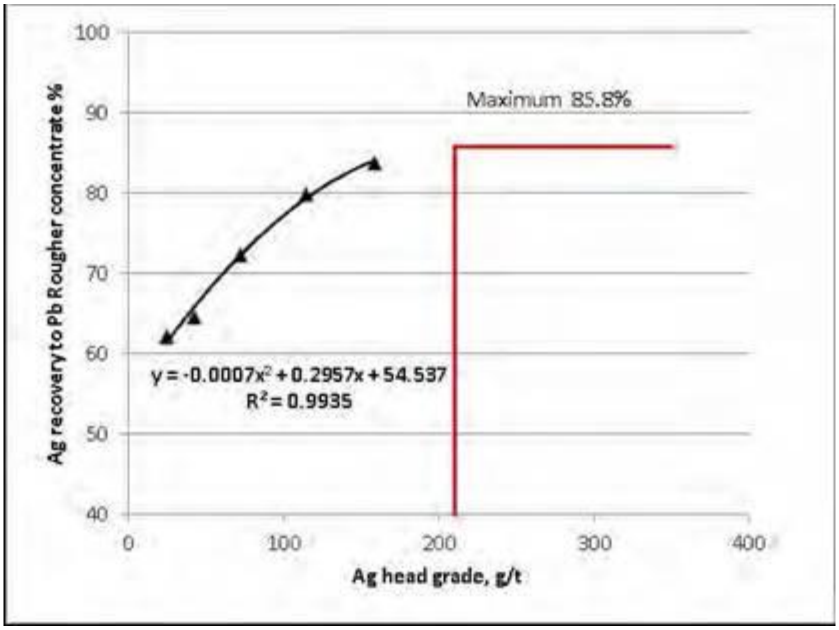


Figure 13-3 Percent Copper (Cu) Head Grade versus Percent Recovery of Cu in Pb Rougher Flotation (Maximum 60% Recovery) (M3, 2012)

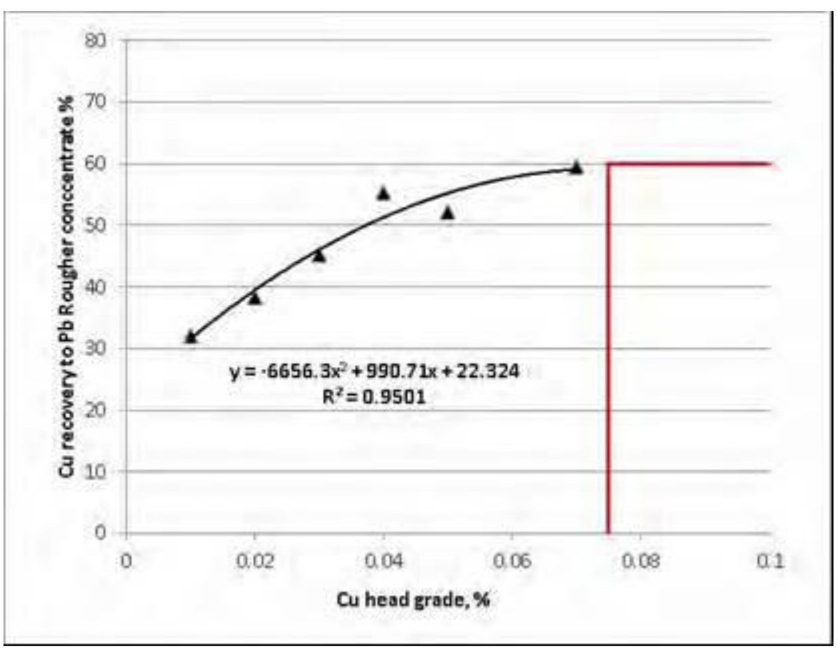


Figure 13-4 Percent Zinc (Zn) Head Grade versus Percent Recovery of Zn in Pb Rougher Flotation (Maximum 22% Recovery) (M3, 2012)

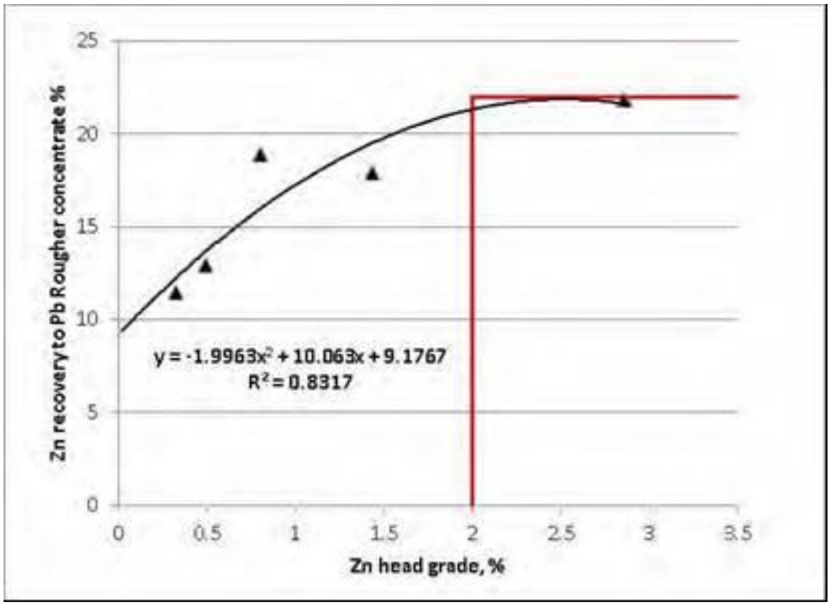


Figure 13-5 Percent Zinc (Zn) Head Grade versus Percent Recovery of Zn in Zn Rougher Flotation (Maximum 85% Recovery) (M3, 2012)

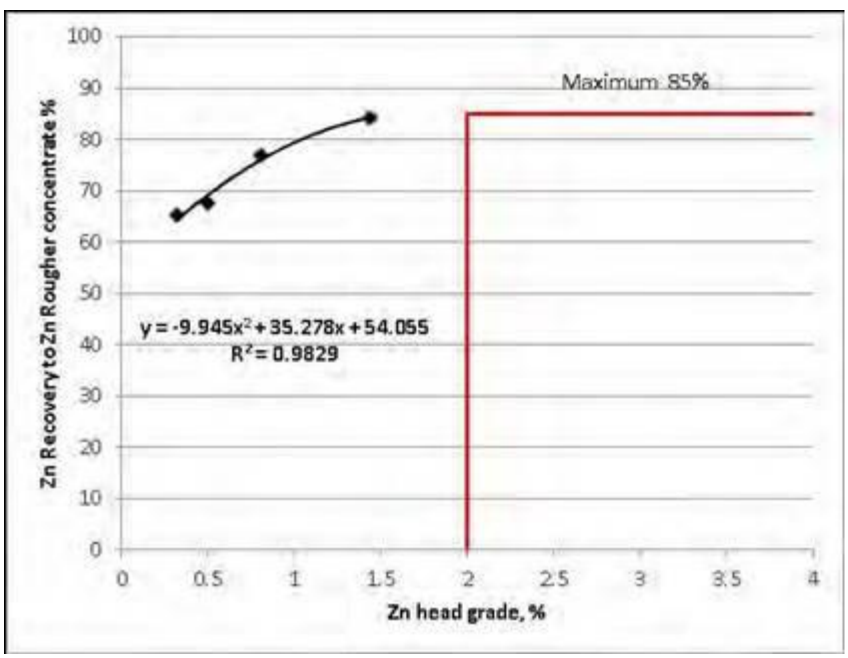


Figure 13-6 Silver (Ag) Head Grade versus Percent Recovery of Ag in Zn Rougher Flotation (Minimum 14.6% Recovery) (M3, 2012)

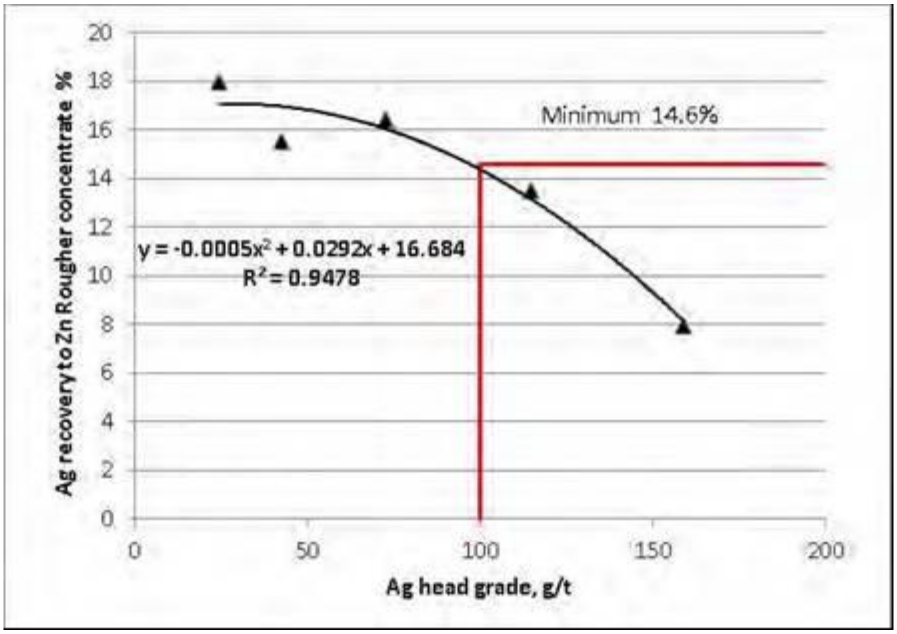


Figure 13-7 Percent Lead Head Grade versus Percent Recovery of Pb in Zn Rougher Flotation (Minimum 5.8% Recovery)

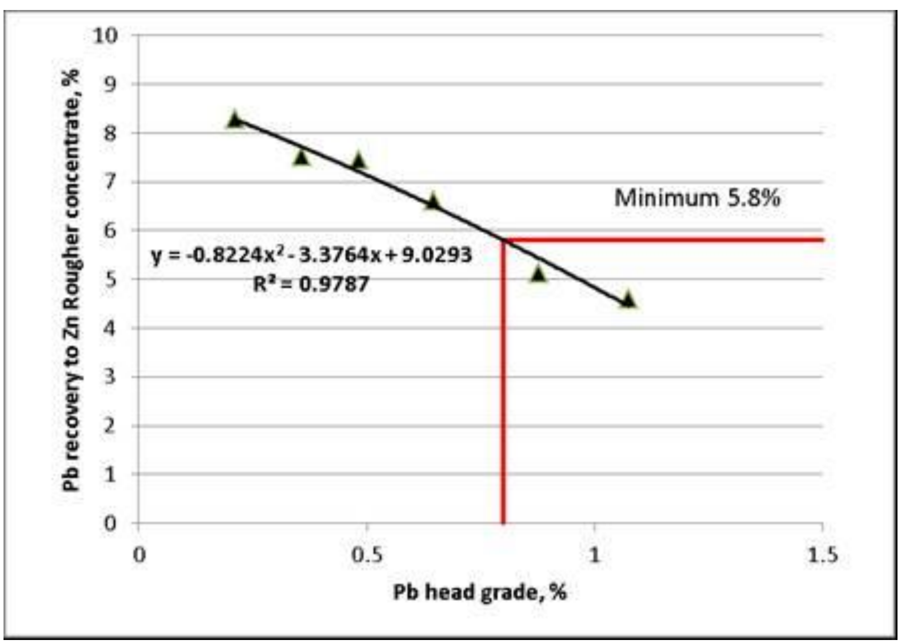
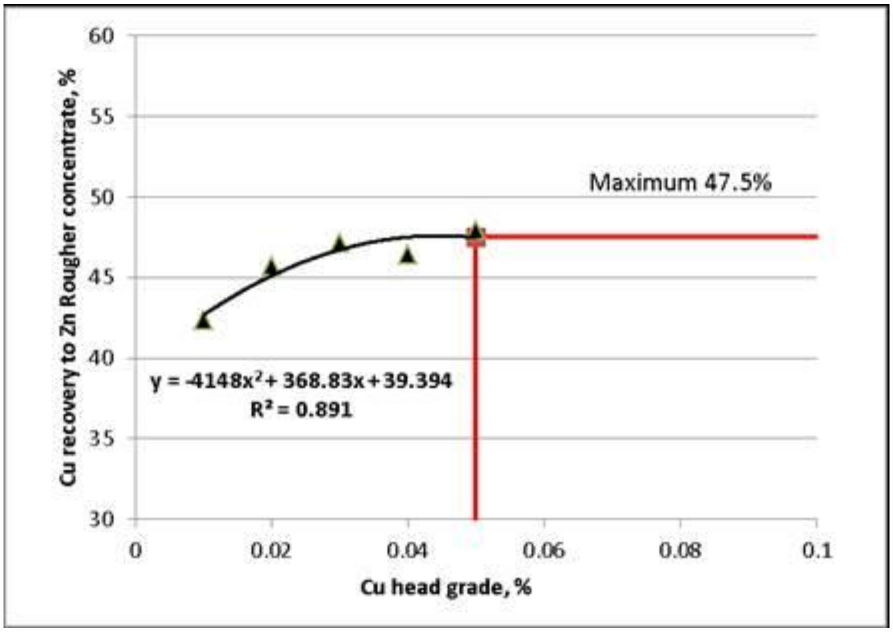


Figure 13-8 Percent Copper (Cu) Head Grade versus Percent Recovery of Cu in Zn Rougher Flotation (Maximum 47.5% Recovery)



Tonnage and grade data by rock type from the Mineral Reserve estimate (block model) were used to plot a metal head grade versus the cumulative frequency of that head grade for lead, zinc, and silver.

The graphs of cumulative frequency of occurrence versus metal head grade are presented in Figure 13-9 to Figure 13-11. Also displayed as a vertical line, is the rougher recovery modeling apogee grade. Any grades above this value are assigned a fixed maximum recovery value. For the deposit, 2.77% of lead grade assays are at a value greater than 1% lead, 6.2 % of zinc grade assays are at a value greater than 2.0% zinc, and 2.35% of the silver grade assays are at a value greater than 210 g/t silver. It is considered that the small amounts of blocks limited by the maximum recovery are not significant to affecting the final estimated average recovery.

Testwork data sets were used to develop cleaner flotation stage recovery values based on mass pull values. Mass pull is defined as the percentage of plant feed tonnage that reports to the respective concentrate. For either of the two flotation concentrates, lead or zinc, the principle driver of concentrate mass is either the lead or zinc head grade. The head grades versus mass pull values were plotted to obtain a curve and an equation that can be used to predict concentrate production based on head grade. The graphs are presented in Figure 13-12 and Figure 13-13 for lead and zinc, respectively. Two stages of lead cleaner flotation and three stages of zinc cleaner flotation correspond to the proposed plant design criteria.

Figure 13-9 Percent Lead (Pb) Head Grade versus Cumulative Frequency of Occurrence of Pb Grade Value in the Deposit (M3, 2012)

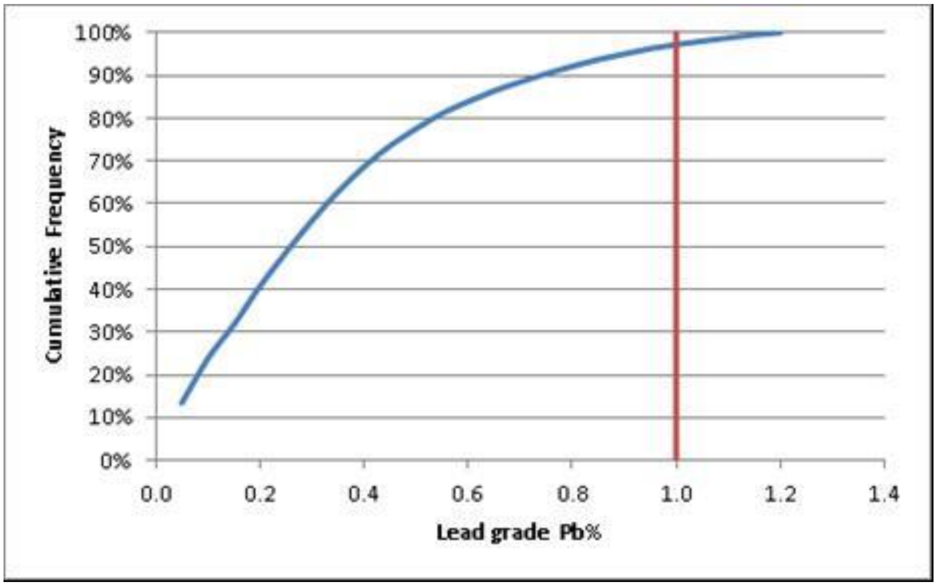


Figure 13-10 Percent Zinc (Zn) Head Grade versus Cumulative Frequency of Occurrence of Zn Grade Value in the Deposit

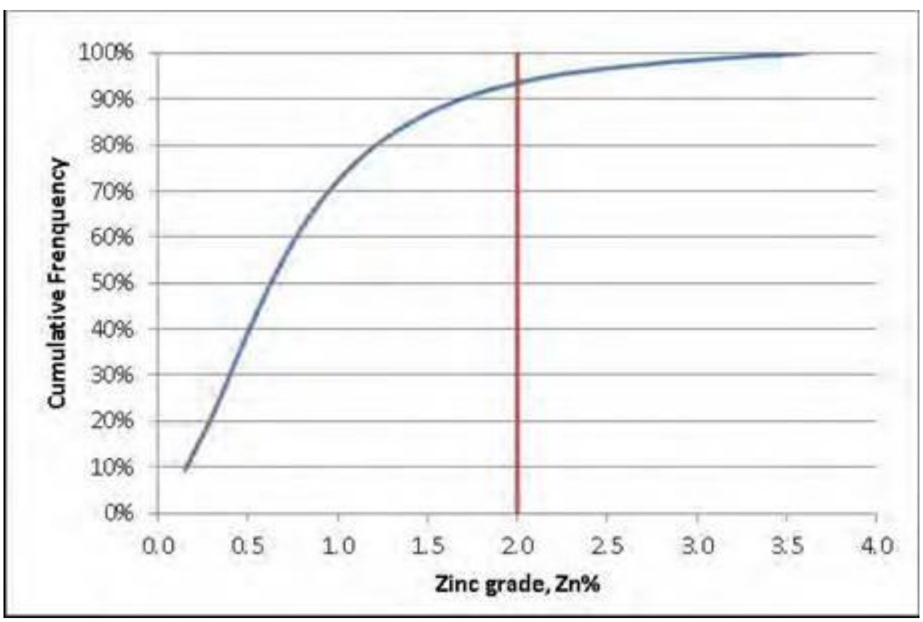


Figure 13-11 Silver (Ag) Head Grade versus Cumulative Frequency of Occurrence of Ag Grade Value in the Deposit

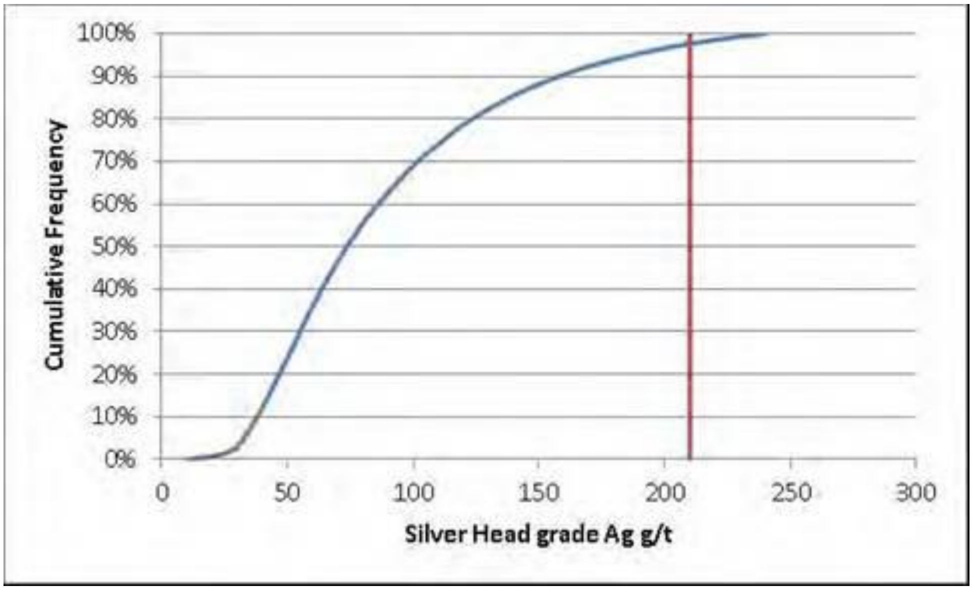


Figure 13-12 Percent Lead (Pb) Head Grade versus Pb Concentrate Mass Pull

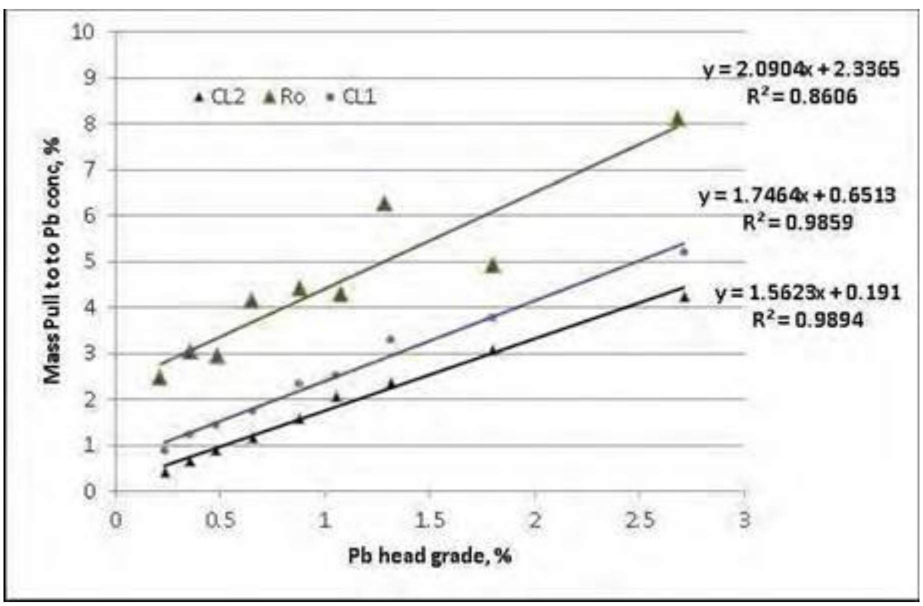
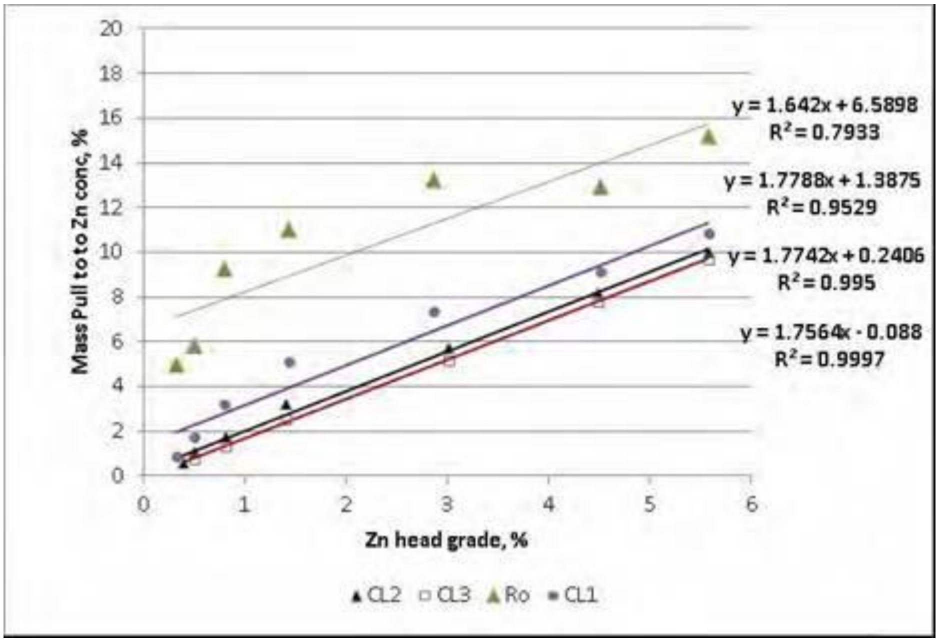


Figure 13-13 Percent Zinc (Zn) Head Grade versus Zn Concentrate Mass Pull



The flotation test results obtained from testing composites with varying, identified oxidation states has been previously described. Using the head grade to rougher recovery relationship, the predicted rougher recovery, by metal, was calculated for lead and zinc concentrate of eachcomposite. Each individual test result was compared to the predicted value to obtain an "Oxidation Recovery Factor" which is given by:

$$\frac{\text{Rougher Recovery Value Determined by Test}}{\text{Rougher Recovery Value Determined by Formula}}$$

The resulting data was binned by oxidation code and plotted as a series of scatter plots of Oxidation Recovery Factor versus oxidation code. A fitted linear line was then generated to describe how the Oxidation Recovery Factor varied with oxidation code. Overall, the greater the oxidation code (indicating the material is more oxidised), the lower the resulting Oxidation Recovery Factor value. This analysis is presented in Figure 13-14 to Figure 13-21.

Figure 13-14 Oxidation Code versus Lead to Lead Rougher Concentrate Oxidation Recovery Factor (Applied to Oxidation Codes 1.7 and Higher) (M3, 2012)

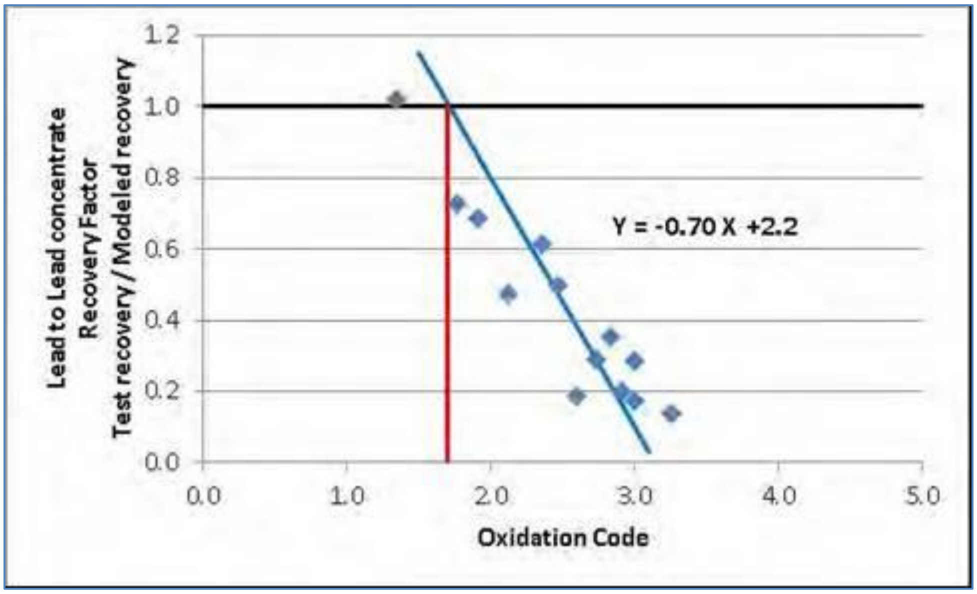


Figure 13-15 Oxidation Code versus Silver to Lead Rougher Concentrate Oxidation Recovery Factor (Applied to Oxidation Codes 1.8 and Higher) (M3, 2012)

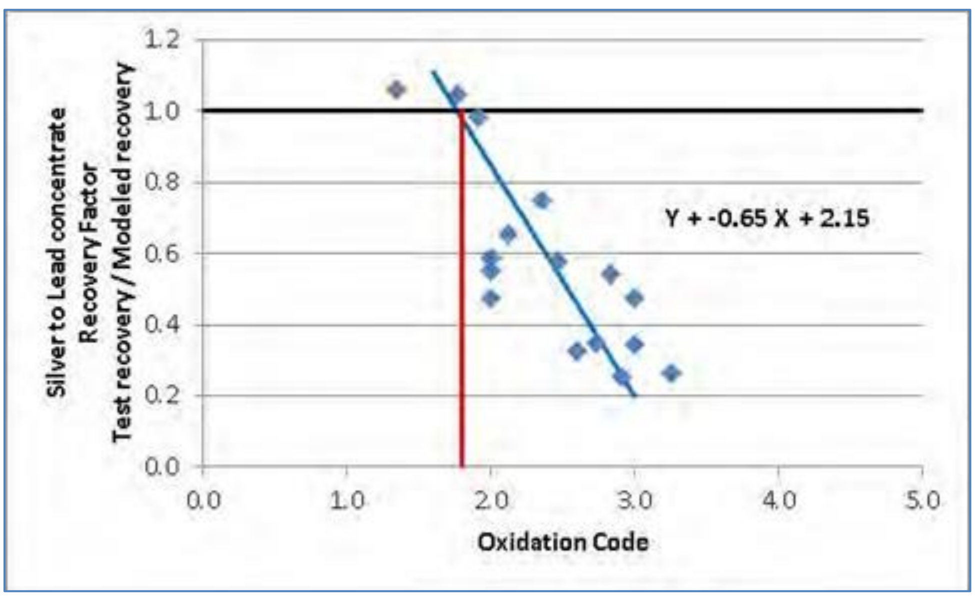


Figure 13-16 Oxidation Code versus Copper to Lead Rougher Concentrate Oxidation Recovery Factor (Applied to Oxidation Codes 1.8 and Higher) (M3, 2012)

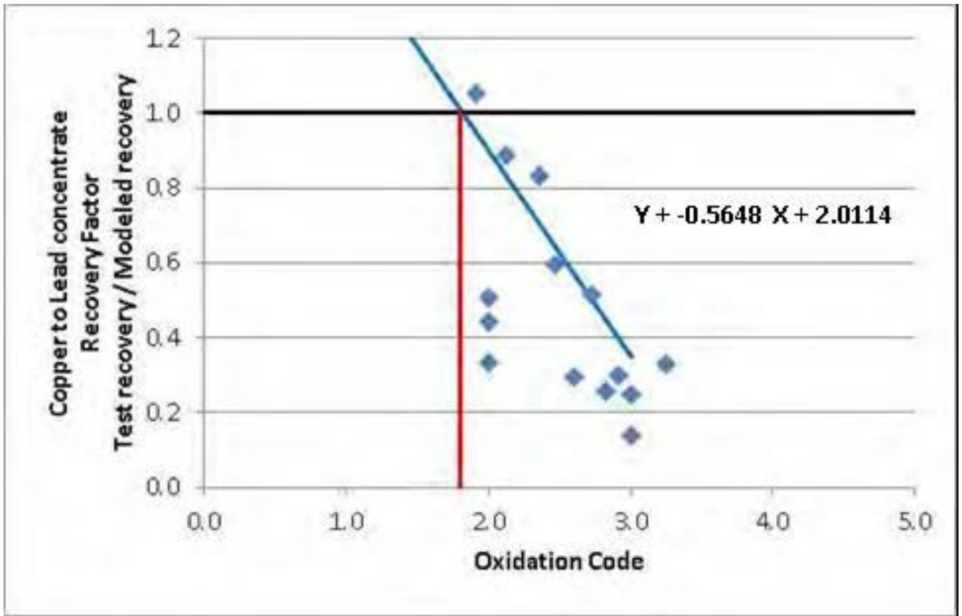


Figure 13-17 Figure 13-28: Oxidation Code versus Zinc to Lead Rougher Concentrate Oxidation Recovery Factor (Applied to Oxidation Codes 1.8 and Higher) (M3, 2012)

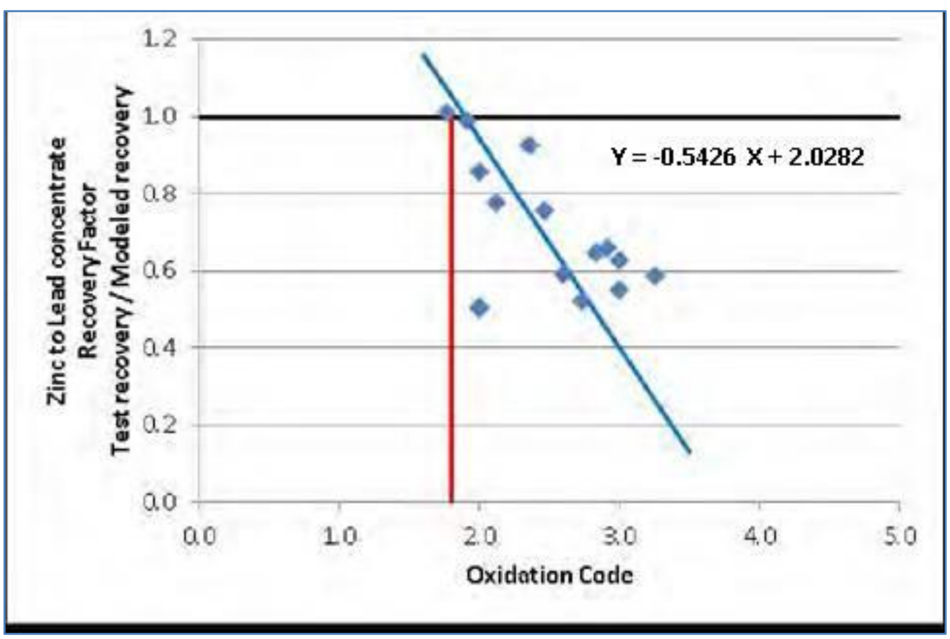


Figure 13-18 Figure 13-29: Oxidation Code versus Lead to Zinc Rougher Concentrate Oxidation Recovery Factor (Applied to Oxidation Codes 1.7 and Higher) (M3, 2012)

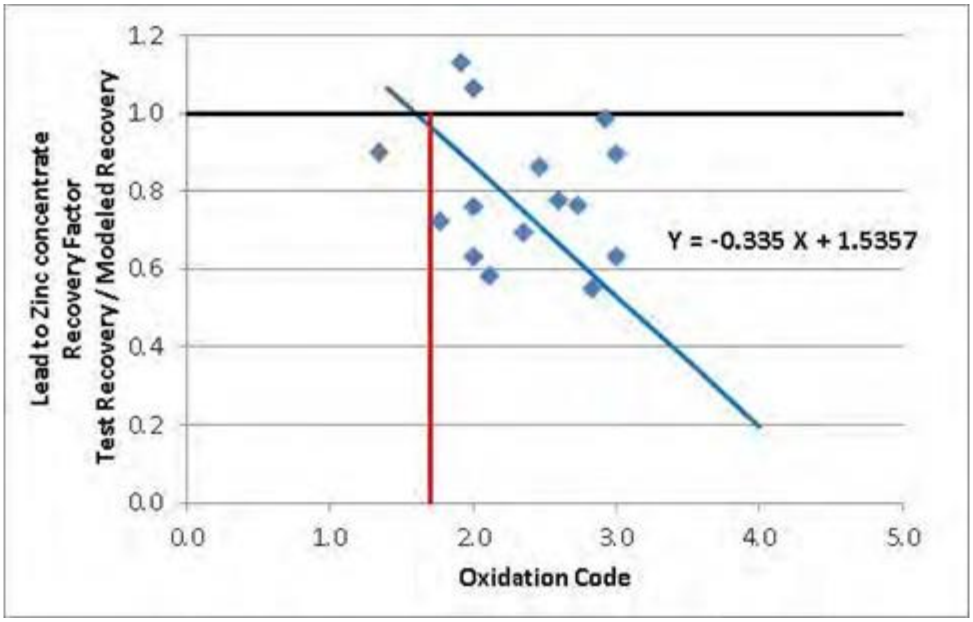


Figure 13-19 Oxidation Code versus Silver to Zinc Rougher Concentrate Oxidation Recovery Factor (Applied to Oxidation Codes 1.0 and Higher) (M3, 2012)

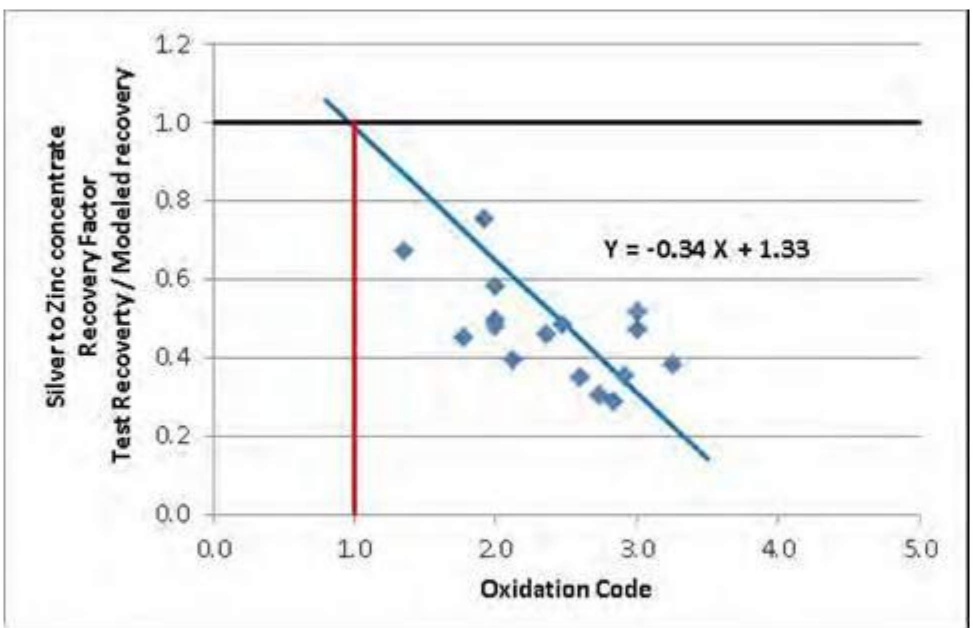


Figure 13-20 Oxidation Code versus Copper to Zinc Rougher Concentrate Oxidation Recovery Factor (Applied to Oxidation Codes 1.0 and Higher) (M3, 2012)

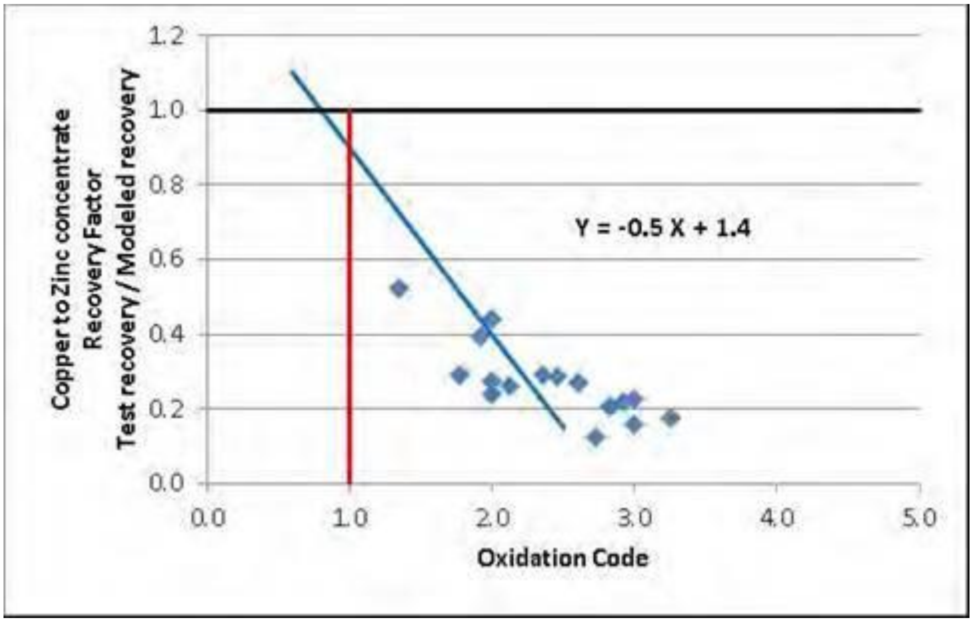
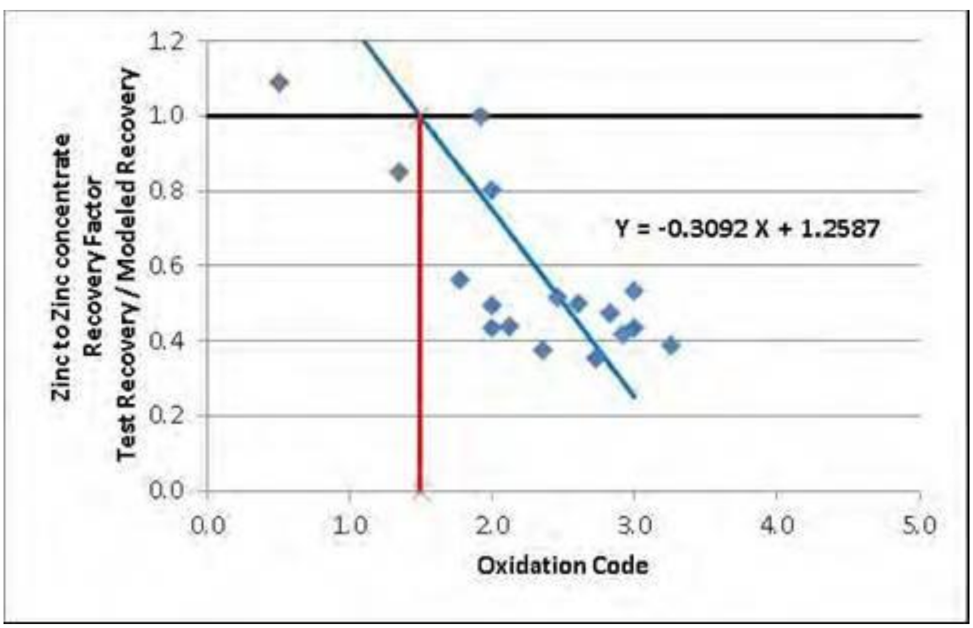


Figure 13-21 Oxidation Code versus Zinc to Zinc Rougher Concentrate Oxidation Recovery Factor (Applied to Oxidation Codes 1.5 and Higher) (M3, 2012)



The predicted metal recovery value for the rougher flotation process can be obtained by applying the following equation:

(Rougher Recovery Value Based on Head Grade) x (Oxidation Recovery Factor)
= (Predicted Rougher Recovery Value)

To obtain a final prediction for the metal recovery value, the Rougher Recovery Value must be adjusted by the expected performance of the rougher flotation concentrate cleaner flotation treatment stages. The lead rougher concentrate will be reground and cleaned by two stages of flotation. These cleaning stages incur a recovery loss of valuable metals to cleaner tailings that can be quantified by predicting a cleaner flotation process stage recovery. The cleaning stage recovery values from the testwork were used to generate the stage recovery for each metal for both lead and zinc concentrate.

In general terms, the greater the metal feed grade, the greater the cleaning stage recovery to cleaner concentrate. This is logical as it is easier to upgrade higher grade material to final concentrate grade than lower grade material. Similarly, in the cleaning of lead rougher concentrate, the cleaner stage recovery value for zinc is low. The zinc recovered in the lead rougher flotation concentrate is often locked with lead mineral particles. The regrinding process for the lead rougher concentrate liberates the zinc particles and they can be rejected to the lead cleaner flotation tailings.

The combined data set for Oxidation Codes 0 to 2 (i.e. sulphide material) contains the results of 113 tests with cleaning stages. The raw data was sorted or "binned" into short grade ranges of metal values (i.e. silver, lead, zinc and copper) and then averaged. The binned averages were then analyzed by making scatter plots of comparative data, for example "percent lead head grade" versus "recovery of lead in lead cleaner flotation". A "best-fit" three-term polynomial curve was fitted to each scatter plot. The associated lead head grade above which the maximum is applied is the same value as was determined for the rougher flotation recovery maximum. The data for lead, silver, copper, and zinc in the lead cleaner flotation concentrate, the equations describing the recovery values, and the maximum recovery values are shown in Figure 13-22 to Figure 13-25. The data for zinc, silver, lead, and copper in the zinc cleaner flotation concentrate, the equations describing the recovery values, and the maximum recovery values are shown in Figure 13-26 to Figure 13-29.

Figure 13-22 Percent Lead Head Grade versus Cleaner Flotation Recovery Factor for Lead in Lead Cleaner Flotation (Maximum Recovery 94.5%) (M3, 2012)

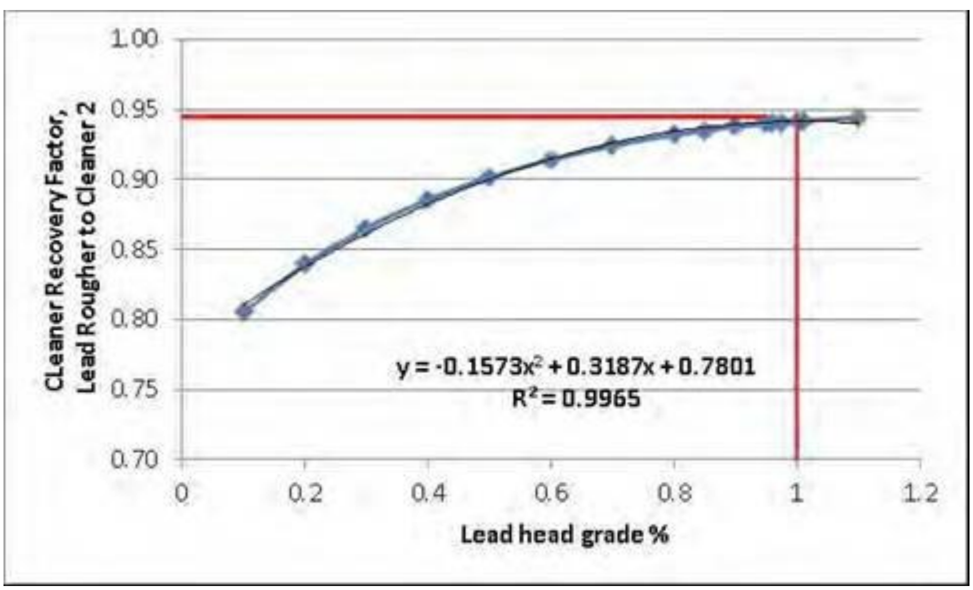


Figure 13-23 Percent Silver Head Grade versus Cleaner Flotation Recovery Factor for Silver in Lead Cleaner Flotation (Maximum Recovery 97.5%) (M3, 2012)

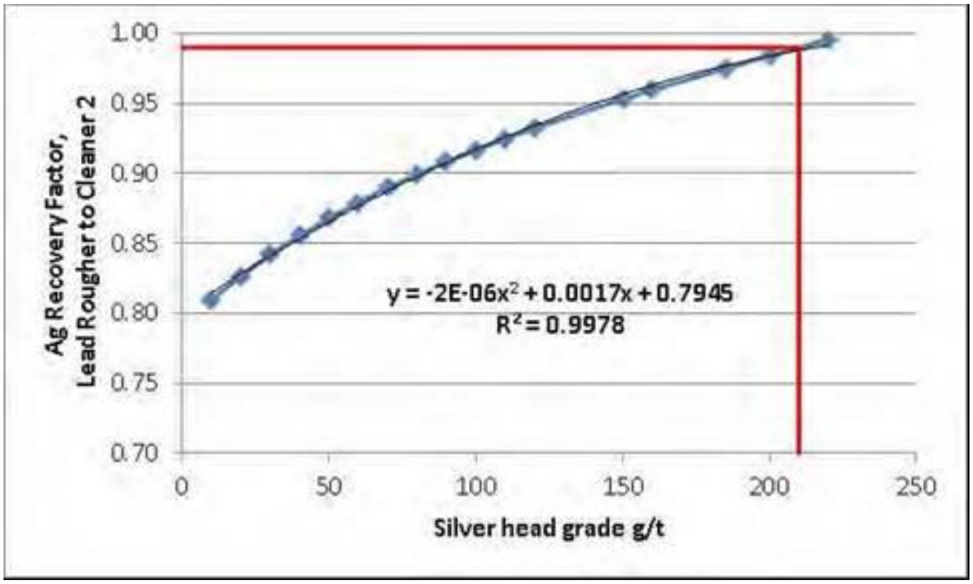


Figure 13-24 Percent Zinc Head Grade versus Cleaner Flotation Recovery Factor for Zinc in Lead Cleaner Flotation (Maximum Recovery 38.0% (M3, 2012)

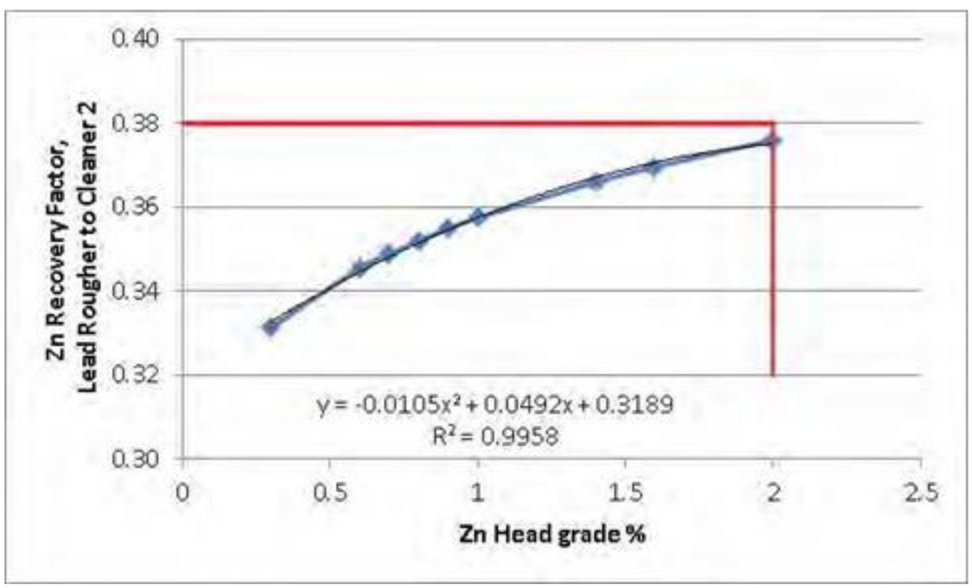


Figure 13-25 Percent Copper Head Grade versus Cleaner Flotation Recovery Factor for Copper in Lead Cleaner Flotation (Maximum Recovery 85.0%) (M3, 2012)

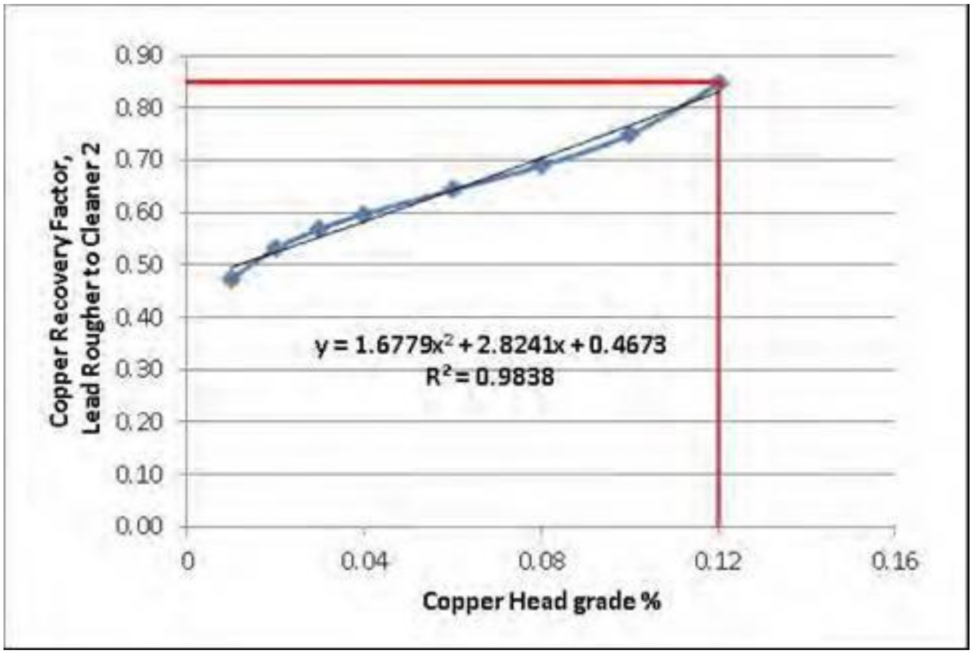


Figure 13-26 Percent Zinc Head Grade versus Cleaner Flotation Recovery Factor for Zinc in Zinc Cleaner Flotation (Maximum Recovery 98.7%) (M3, 2012)

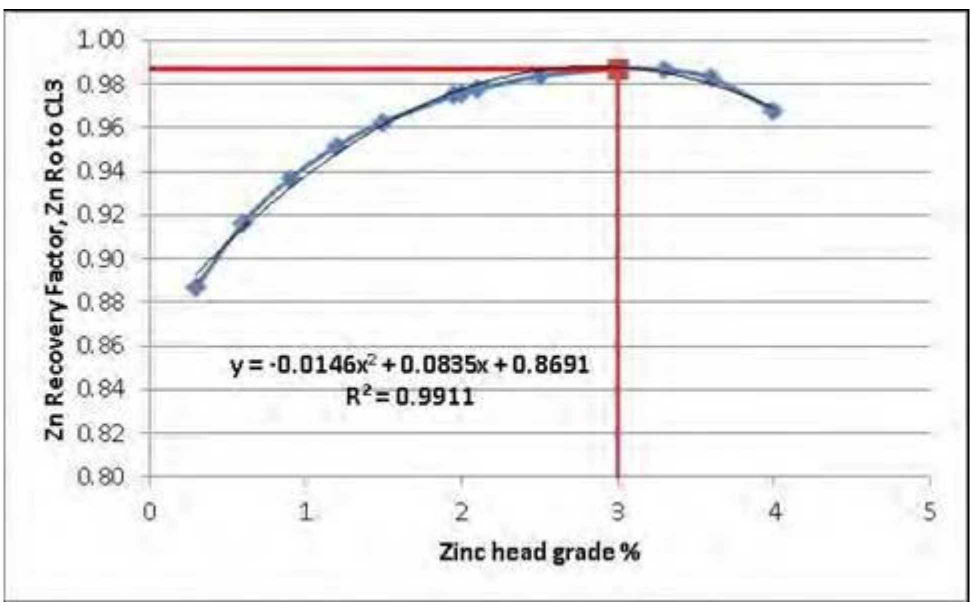


Figure 13-27 Percent Silver Head Grade versus Cleaner Flotation Recovery Factor for Silver in Zinc Cleaner Flotation (Minimum Recovery 77.0%) (M3, 2012)

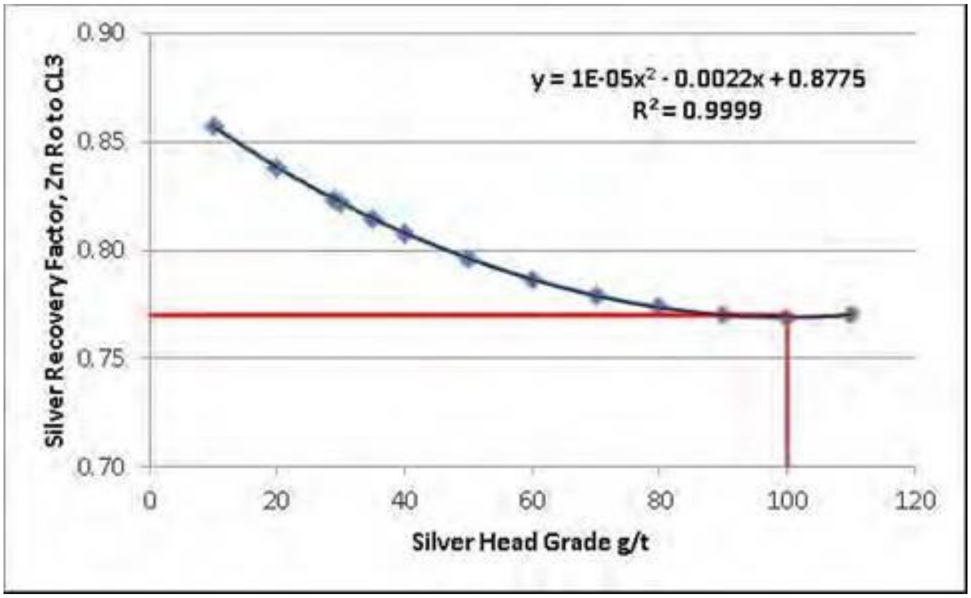


Figure 13-28 Percent Lead Head Grade versus Cleaner Flotation Recovery Factor for Lead in Zinc Cleaner Flotation (Maximum Recovery 58.0%) (M3, 2012)

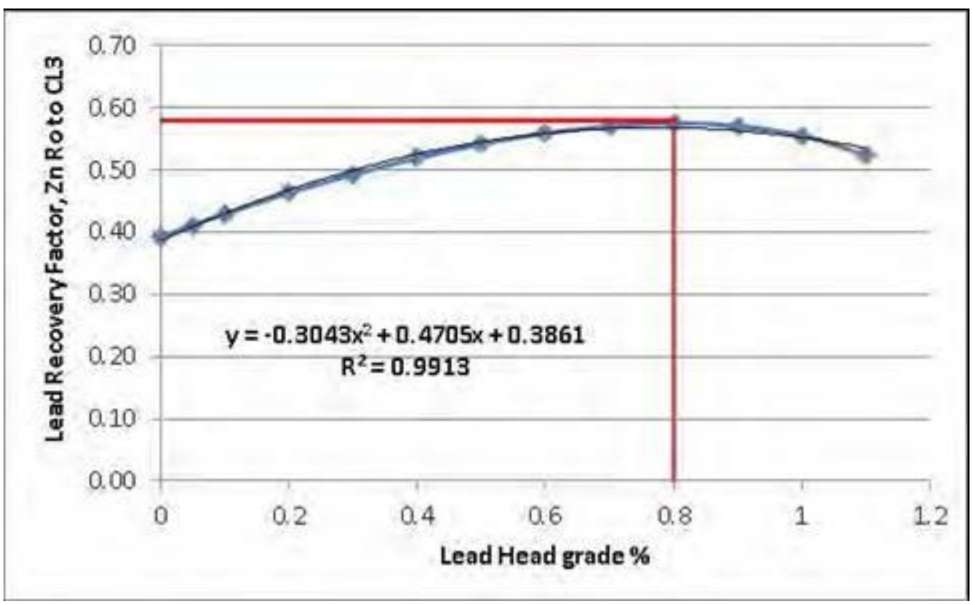
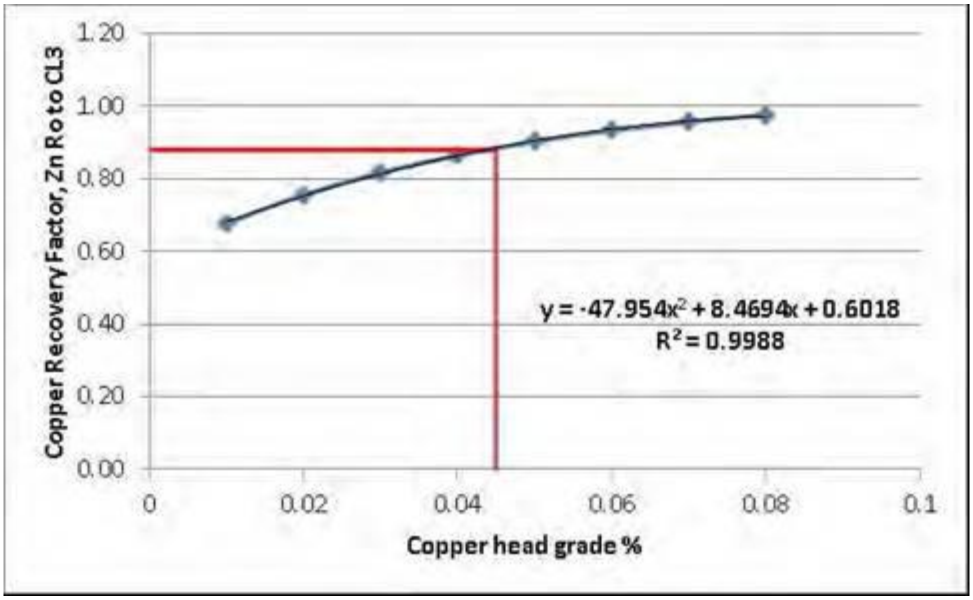


Figure 13-29 Percent Copper Head Grade versus Cleaner Flotation Recovery Factor for Copper in Zinc Cleaner Flotation (Maximum Recovery 86.5%) (M3, 2012)



The “Transitional’ rock type is a mixture of sulphide and oxide rock types. To predict the metal recovery value requires the consideration of the recovery values predicted for both sulphide and oxide materials. The overall silver recovery for flotation is first applied; thus the calculated silver grade in the flotation tailings can be used to predict the additional silver recovery, by cyanide leaching of these flotation tailings.

The extraction factor for silver from the flotation tailings has two forms. The first is an extraction factor based on testwork results obtained from cyanide leach tests of flotation tailings. The second extraction factor is based on the results of the hot cyanide silver assay (Ag-AA13HY) procedure of the feed to the flotation-cyanidation process. Two predictions of the silver metal extraction can be calculated, and the lowest value is used in the economic analysis.

A plot of data points from the flotation tailings leach tests of the values of flotation tailings assay versus silver extracted during the test was performed. The best fit line from the data plotted indicates that an extraction factor of 35% can be used to predict the silver extraction value from leaching of flotation tailings. The plot of the data and the best fit line are presented in Figure 13-30.

The second extraction value determination is done by multiplying the result of bottle roll leach tests for the rock type processed by a leach extraction factor. The leach extraction factor was determined by plotting leach test data leach time (in hours) versus leach extraction factors (bottle roll leach test recovery divided by the hot cyanide extraction value) from the test data. The factor to apply is selected from the point indicated at the design process circuit leach time. The leach extraction factor for flotation leach tailings is presented with the plotted data in Figure 13-31.

To predict the metal recovery value for oxide material, bottle roll test data, hot cyanide assay values, and leach time have been used to determine a leach extraction factor. The extraction value determination is done by multiplying extraction values from bottle roll leach tests performed on the rock type processed by the leach extraction factor. The leach extraction factor was determined by plotting leach time (in hours) versus leach extraction factors (bottle roll leach test recovery divided by the hot cyanide extraction value) from test data. The factor to apply is selected from the point indicated at the design process circuit leach time. The leach extraction factor for oxide material is presented with the plotted data in Figure 13-43.

Figure 13-30 Flotation Tailings Ag Assay (g/t) versus Ag Recovered by Leaching (g/t) (M3, 2012)

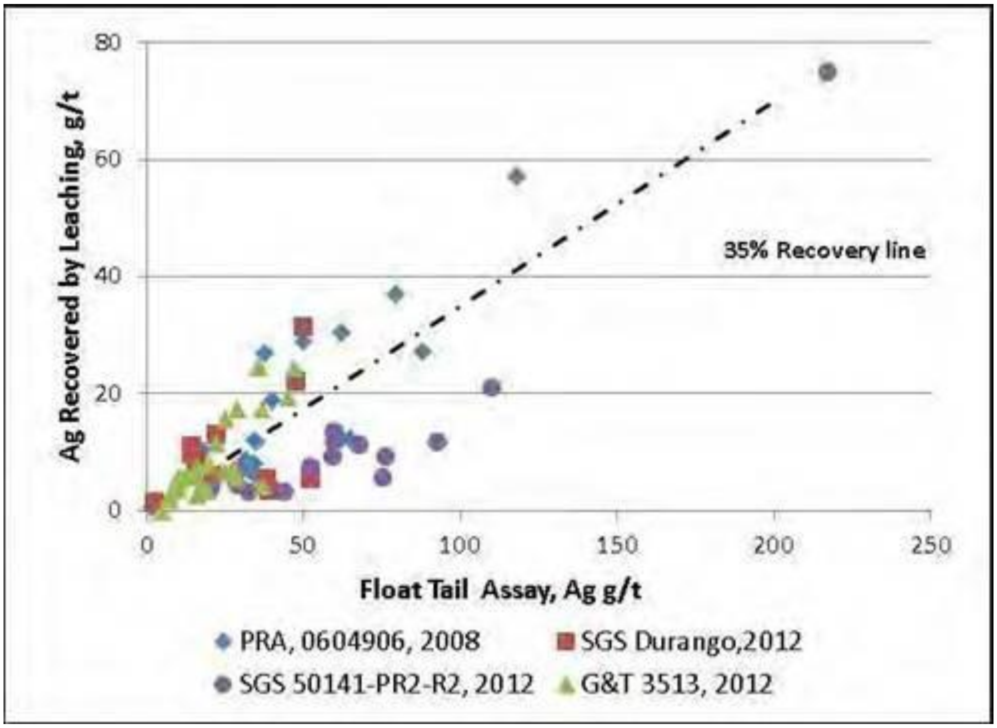


Figure 13-31 Flotation Tailings Leach Time (hours) versus Leach Recovery Factor (M3, 2012)

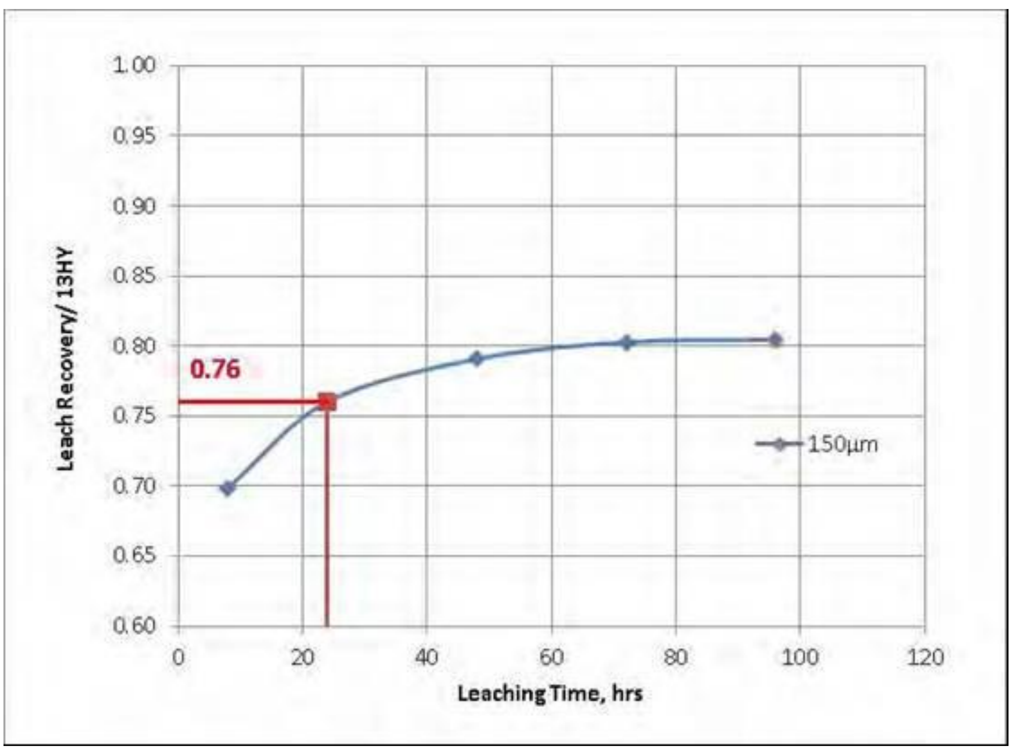
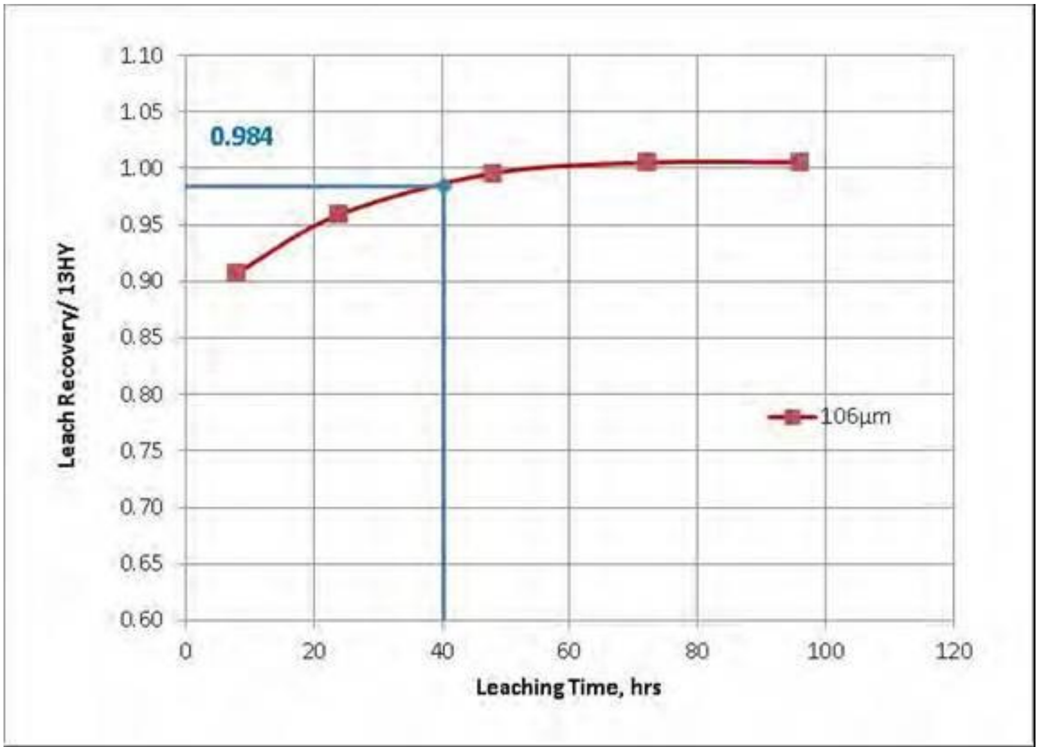


Figure 13-32 Oxide Material Leach Time (hours) versus Leach Extraction Factor



13.4 Reagent Consumption & Consumables

Reagent consumption rates for the full scale plant operation have been estimated from the results of all testwork used for plant design.

13.4.1 Flotation Circuits

The reagents used are standard additives for the flotation of lead and zinc minerals. The general practice in treatment of lead-zinc mineralisation is to use reagents to float the lead concentrate first, while depressing the zinc minerals. After lead flotation, the zinc minerals are reactivated with copper sulphate and the zinc concentrate is floated. The selection of reagents for treating the Pitarrilla rock has been made based on laboratory testing and work reasonably well. Other reagent, reagent combinations, reagent dosage rates, or the order of addition may be investigated by additional testing or during plant trials to improve selectivity in the lead and zinc separation or to improve recovery.

In the lead mineral flotation circuit, flotation of the lead concentrate will be done at natural slurry alkalinity (estimated to be in the range of pH 7 to 8). Slurry alkalinity in the zinc flotation circuit will be adjusted to pH 10.5 and maintained by the addition of lime. Sodium cyanide will be added to the lead circuit to depress zinc minerals and pyrite while the lead minerals float to the

concentrate. The flotation mineral collecting reagent will be the promoter Aerophine 3418A in the lead circuit and SIPX in the zinc circuits. Copper sulphate will be added after lead flotation and to activate the zinc minerals before zinc mineral flotation.

During plant operation there will be a carry back of lime from the tailing pond in the recycled process water which will reduce the consumption rate indicated in the testwork. Recent testwork indicates that Sediments and Basal Conglomerate rock types, which are the dominant rock types, required 1,480 g/t and 1,600 g/t of lime respectively for pH adjustment in flotation. Therefore 1,500 g/t dosage rate is recommended for the operating budget.

Early testwork used a xanthate reagent for the mineral collecting reagent. All flotation testwork after 2008 has indicated that using Cytec Aerophine 3418A improves the lead concentrate grade without a detrimental effect on lead recovery. A dosage rate of 50 g/t is recommended for the operating budget.

The dosage rate of 30 g/t for sodium cyanide has not been investigated for optimization. In addition to zinc and iron mineral depression, cyanide may be beneficial in activating the lead mineral (galena) due to cleaning action on the galena particle surfaces. The dosage rate of 30 g/t is recommended for the operating budget.

Copper sulphate dosage is based on the general rule of thumb that a dosage of 75 g/t of copper sulphate is appropriate for each percent of zinc content in the rock. For the estimated average zinc or grade of 1.31% zinc, the dosage rate of 98.5 g/t is recommended for the operating budget.

During all flotation testwork, SIPX was used as the zinc collector. A dosage rate of 30 g/t is recommended for the operating budget.

During all the flotation testwork, Methyl Isobutyl Carbinol (MIBC) was used as the primary frother. A high addition rate of 80 g/t has been used for design. A secondary frother (F-549) was used in some testwork as a stronger frother, this is no longer commercially available; an alternate Dowfroth 1012 is recommended at a dosage rate of 50 g/t.

Estimating the plant dosage rate of frother from laboratory test procedure data is not done with reasonable accuracy. A dosage rate of 80 g/t (which should be sufficient based on a manufacturer’s historical information from operating plants) is recommended for the operating budget.

The flotation circuits estimated reagent consumption rates are presented in Table 13-1.

Table 13-1 Estimated Flotation Reagent Consumption Rates

Item	Rate (g/t)
Promoter, 3418A (lead and silver)	50
Collector, SIPX (zinc)	30
Frother MIBC	80
Frother Dowfroth 1012	50
pH Modifier, Lime	1,500
Depressant, Sodium Cyanide	30
Activator, Copper Sulphate	98.5

13.4.2 Cyanide Leaching

The reagents used are standard additives for the cyanide leaching and Merrill-Crowe processes for the recovery of silver.

The leaching circuit will be employed in two manners: firstly to cyanide leach Direct Leach rock, and secondly to cyanide leach the tailings from the flotation process.

There has been considerable cyanide leaching testwork to optimise the combination of particle size, leaching time, and cyanide strength. The recommended cyanide strength is one gram per litre sodium cyanide in the process slurry. At this cyanide strength, the consumption of sodium cyanide is 1,000 g/t for

Direct Leach rock, and 700 g/t for flotation tailings. The estimated reagent consumption rates in cyanide leaching circuit are listed in Table Table 13-2.

Table 13-2 Estimated Leaching Reagent Consumption Rates

Item	Rate (g/t)
Lime (leaching)	2,000
Lime (cyanide destruction)	1,000
Sodium cyanide (direct leach)	1,000
Sodium cyanide (flotation tailings)	700
Flocculant	180
Sulphur (cyanide destruction)	570

14 MINERAL RESOURCE ESTIMATES

14.1 Introduction

Completion of the current MRE for the Property involved the assessment of a drill hole database, which included all data for surface drilling completed through the end of 2012, as well as three-dimensional (3D) mineral resource models (resource domains), 3D geological models, 3D surface models of fault structures, a 3D topographic surface model, and available written reports.

Inverse Distance Squared ("ID^2") calculation method restricted to mineralized domains was used to interpolate grades for Ag (g/t), Pb (ppm) and Zn (ppm) into a block model.

Indicated and Inferred mineral resources are reported in the summary tables in Section **Error! Reference source not found.**. The current MRE takes into consideration that the Pitarrilla deposit may be mined by open pit and underground mining methods.

14.2 Drill Hole Database

In order to complete the MRE for the Pitarrilla deposit, a database comprising a series of comma delimited spreadsheets containing surface RC and diamond drill hole information was provided by Endeavour. The database included hole location information, down-hole survey data, assay data, lithology data and density data. The data in the assay table included assays for Ag (g/t), Pb (ppm) and Zn (ppm), as well as Cu (ppm) As (ppm), S (%), Ca (%) and AgCN (ppm). After review of the database, the data was then imported into GEOVIA GEMS version 6.8.3 software ("GEMS") for statistical analysis, block modeling and resource estimation.

The original database provided by Endeavour included data for 831 surface RC and diamond drill holes, including 804 drill holes completed by Silver Standard between 2003 and 2012. Thus the database used for the current MRE comprises data for 804 surface RC and diamond drill holes which total 254,386 m (Figure 14-1 and Figure 14-2). The database totals 134,441 assay intervals for 188,816 m.

The database was checked for typographical errors in drill hole locations, down hole surveys, lithology, assay values and supporting information on source of assay values. Overlaps and gapping in survey, lithology and assay values in intervals were checked. All assays had analytical values for Ag (g/t), Pb (ppm) and Zn (ppm).

Figure 14-1 Plan View: Distribution of Surface and Underground Drill Holes on the Pitarrilla Property in Local Mine Grid

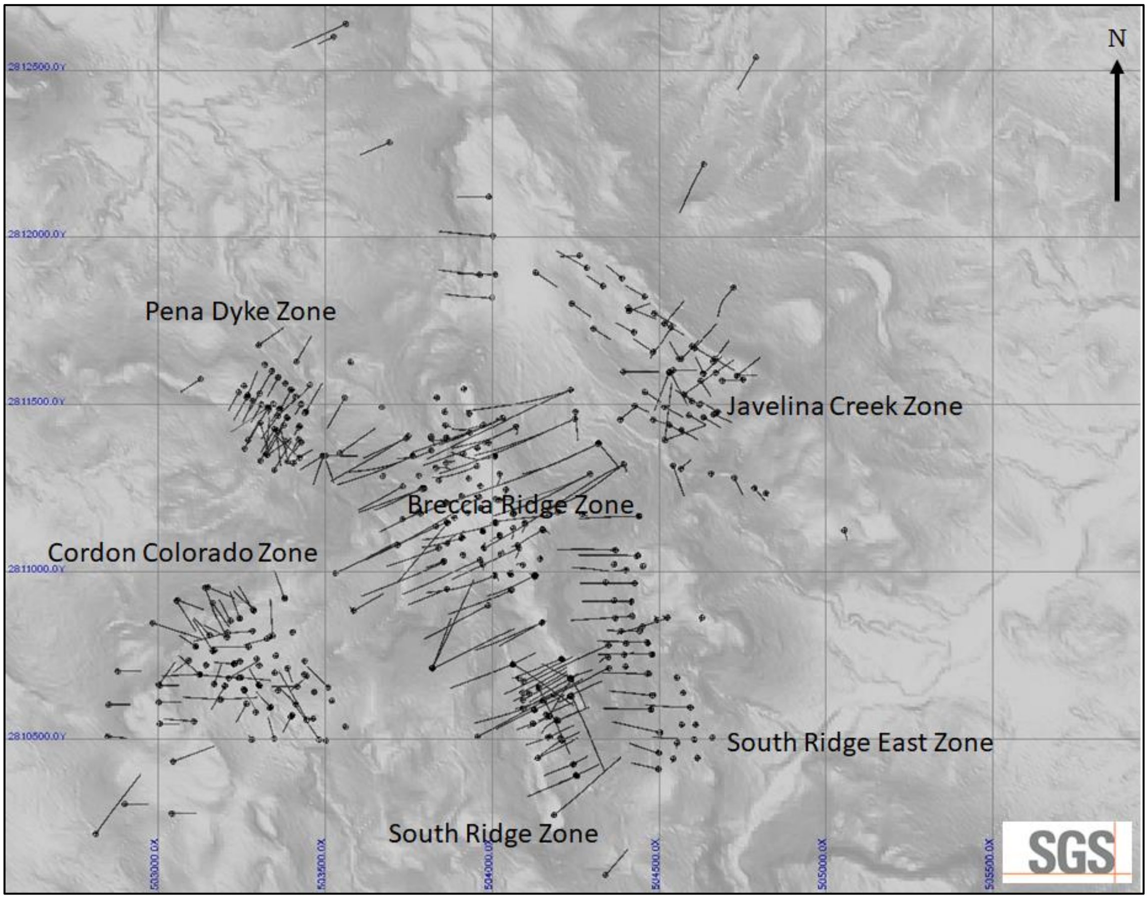
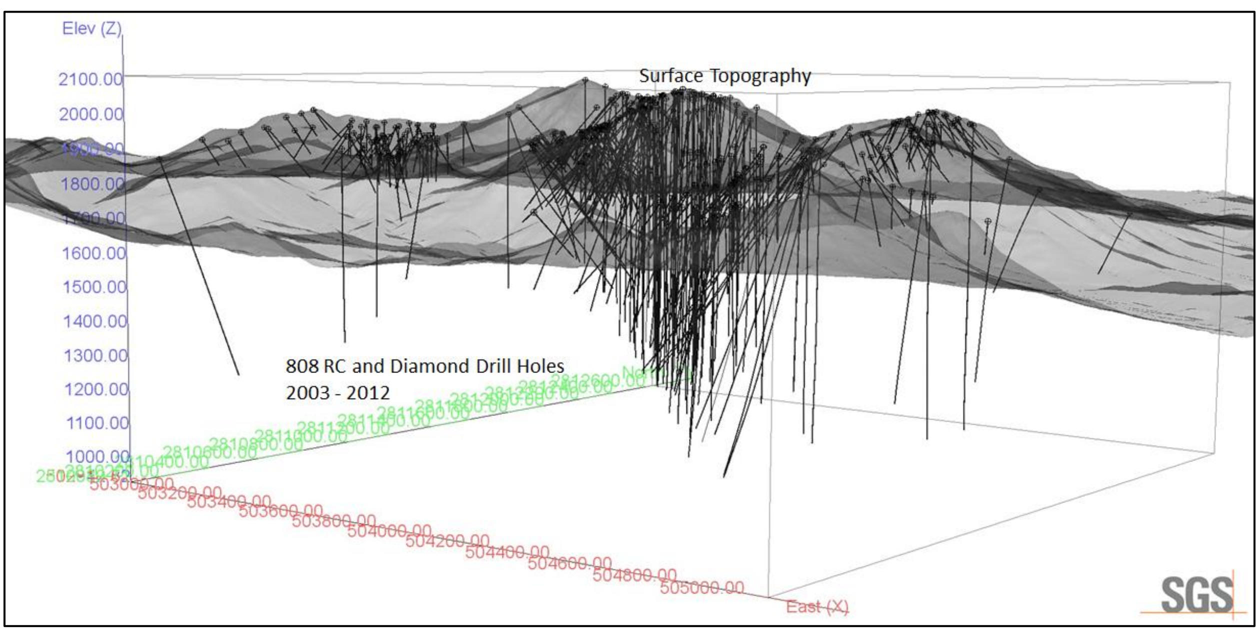


Figure 14-2 Isometric View Looking Northwest: Distribution of Surface Drill Holes on the Pitarrilla Property



14.3 Mineral Resource Modelling and Wireframing

The Author was provided with a total of 19 3D Resource models (mineral domains), to be used for the current MRE (Figure 14-4), as well as 9 lithological 3D solids (Figure 14-4 and Figure 14-5) and a digital elevation surface model. All models were constructed by Silver Standard for the 2012 historical MRE (Silver Standard, 2012).

The Author has reviewed the resource models on section and in the Author's opinion the models provided are very well constructed and fairly accurately represents the distribution of the various styles of mineralization, i.e. high grade vs low grade mineralization; oxide, transition and sulphide mineralization; and, steep breccia/quartz vein and horizontal manto style sulphide mineralization. No re-modeling of the deposits is recommended at this time. Limited sporadic mineralization exists outside of these wireframes, as well as along strike and at depth. With additional drilling, some areas of scattered mineralization may get incorporated into the mineral domains.

The main Pitarrilla deposit generally strikes 330° to 335° and dips/plunges steeply east-northeast (-60° to -65°). Additional oxide mineralization in the Cordon Colorado and Javelina Creek Zones extend for 700 to 900 m southwest and northeast of the main Breccia Ridge Zone.

Table 14-1 summarizes the mineral domains. All mineral domains are clipped to topography. A description of the geological and mineralogical domain interpretation and solid generation completed by Silver Standard is presented below in section 14.3.1.

Figure 14-3 Isometric View Looking Northwest: Pitarrilla Mineral Resource Models

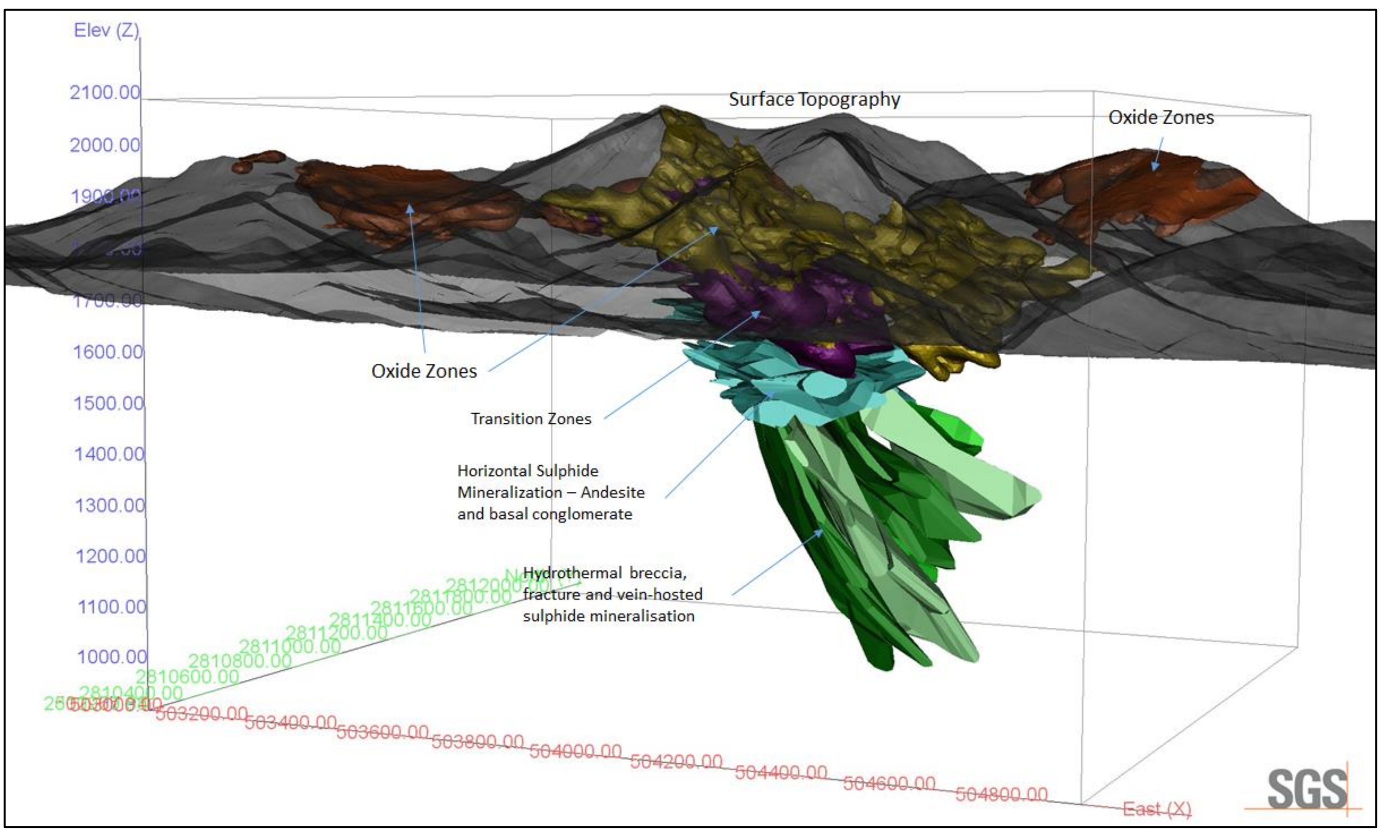


Figure 14-4 Isometric View Looking Northwest: Pitarrilla Geologic Models

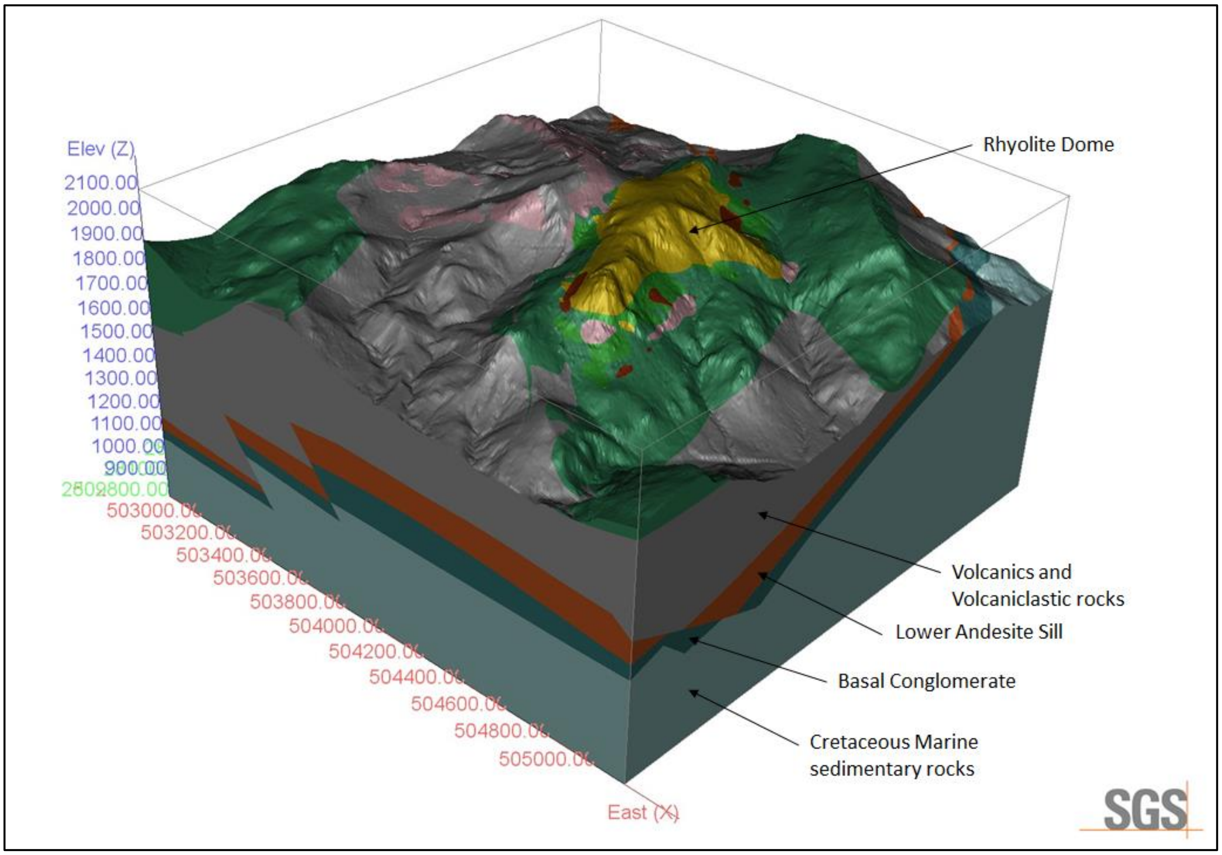


Figure 14-5 Isometric View Looking Northwest: Felsic Dyke and Sill Models

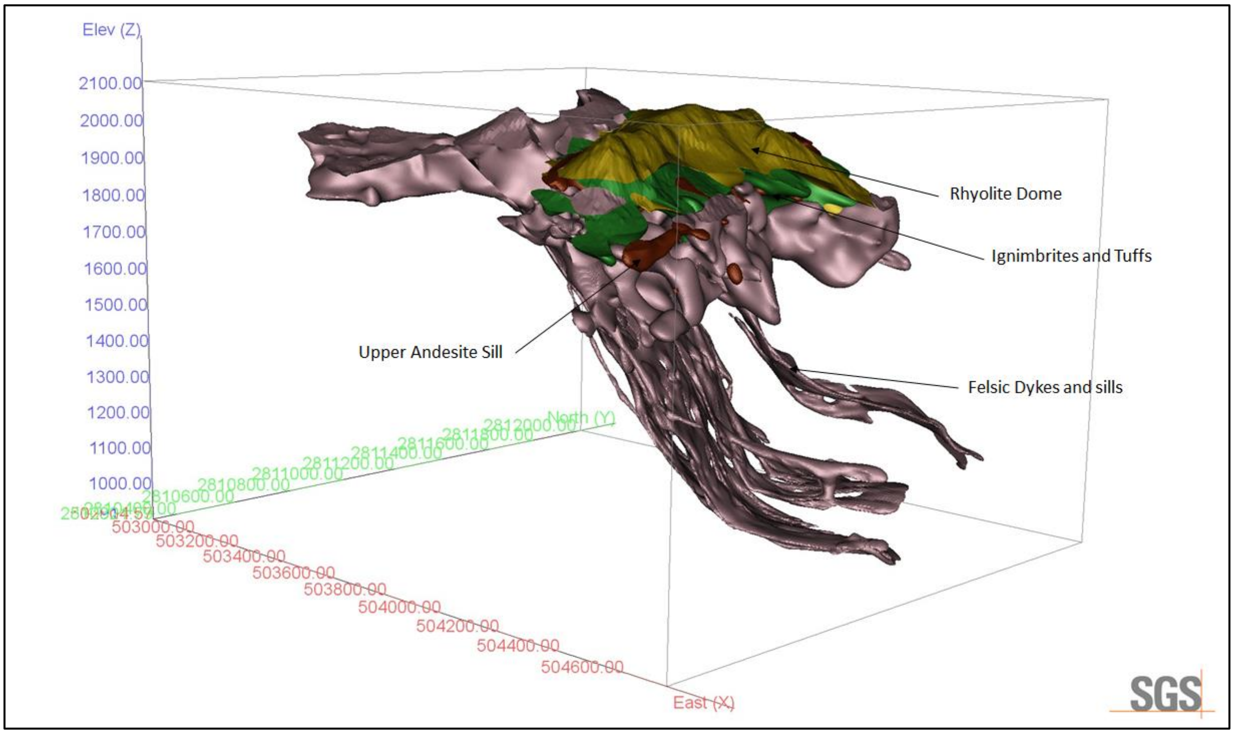


Table 14-1 Pitarrilla Property Domain Descriptions

Domain	Description	Rock Code	Block Rock Code	Volume (m^3)	Density	Tonnes
Dom3_BR_LF_Ag100_Final	Oxide - high grade: sits within domain 10	3	3	5,961,719	2.25	13,413,868
Dom6_CC_LF_Ag20_Final	Oxide	6	6	7,771,932	1.97	15,310,706
Dom4_PD_LF_Ag20_Final	Oxide	4	4	3,395,504	2.19	7,436,154
Doms2_10_LF_Ag20_Final	Oxide	10	10	43,646,923	2.24	97,769,108
Dom8_JC_LF_Ag20_Final	Oxide	8	8	6,428,269	2.28	14,656,453
Dom20_BR_LF_Ag20_Final	Transition: sits within domain 10	20	20	29,573,857	2.39	70,681,518
Dom21_BR_LF_Ag100_Final	Transition - high grade: sits within domain 20	21	21	1,348,522	2.45	3,303,879
BR_C_30	Sulphide - manto style	30	30	2,042,492	2.62	5,351,329
BR_C-1_40	Sulphide - manto style	40	40	4,721,342	2.56	12,086,636
BR_C-2_51	Sulphide - manto style	51	51	1,552,231	2.57	3,989,234
BR_C-2_50	Sulphide - manto style	50	50	2,232,049	2.56	5,714,045
BR_D_60	Sulphide - manto style	60	60	5,587,803	2.74	15,310,580
Zn_Halo_65	Sulphide - manto style	65	65	491,231	2.81	1,380,359
BR_E_70	Sulphide Breccia Zones	70	70	4,154,360	2.6	10,801,336
BR_E_71	Sulphide Breccia Zones	71	71	5,900,444	2.62	15,459,163
BR_F_80	Sulphide Breccia Zones	80	80	10,189,845	2.62	26,697,394
BR_G_90	Sulphide Breccia Zones	90	90	6,387,371	2.61	16,671,038
BR_H_100	Sulphide Breccia Zones	100	100	2,442,235	2.66	6,496,345
BR_I_110	Sulphide Breccia Zones	110	110	605,004	2.68	1,621,411
				144,433,133		344,150,556
Note: 'BR_' prefix stands for Breccia Ridge Zone; 'PD' stands for Peña Dyke Zone; 'CC' stands for Cordon Colorado Zone; 'JC' stands for Javelina Creek Zone.						
1_FelsInt_Domain_Export Boundary		9000	9000	117,054,909	2.29	268,055,742
2_AndSill_Lower_Domain_Export		8000	8000	520,152,894	2.54	1,321,188,351
2_AndSill_Upper_Domain_Export		7000	7000	**5,555,589**	2.15	11,944,516
3_RhyDome_Domain_Export		6000	6000	32314735	2.14	69,153,533
4_Lahars_Domain_Export		5000	5000	11260020	2.11	23,758,642
5_Tuffs_Domain_Export		4000	4000	210895673	2.17	457,643,610
6_Dacite_Domain_Export		3000	3000	1022203968	2.35	2,402,179,325
7_Congl_Domain_Export		2000	2000	308264920	2.58	795,323,494
8_CretSeds_Domain_Export		1000	1000	3699070915	2.61	9,654,575,088

Table 14-2 Pitarrilla Mineralization Domain Details (Silver Standard, 2012)

Domain	Details
3	Breccia Ridge/South Ridge Zone: High grade (Ag>100 g/t) Oxide mineralization hosted primarily by the felsic intrusive and the volcaniclastic tuff units (Cardenas Fm), wholly contained within Domain 10. Domain also defined by OXCODE>2.5 from oxidation logging.
4	Peña Dyke Zone: Oxide mineralization hosted by the felsic intrusive.
6	Cordon Colorado Zone: Oxide mineralization hosted by the felsic intrusive.
8	Javelina Creek Zone: Disseminated Oxide mineralization hosted by volcaniclastic tuff units (Pitarrilla Fm).
10	Breccia Ridge and South Ridge Zone: Oxide mineralization hosted primarily by the felsic intrusive and volcaniclastic tuff units (Cardenas Fm). Domain also defined by OXCODE>2.5 from oxidation logging.
20	AB domain: Disseminated Transitional domain hosted by rhyodacitic volcaniclastics (Pitarrilla Fm). Domain defined by OXCODE < 2.5 from oxidation logging.
21	AB domain: Disseminated high grade Transitional domain (Ag>100 g/t) hosted by rhyodacitic volcaniclastics (Pitarrilla Fm), wholly contained within Domain 20. Domain defined by OXCODE<2.5 from oxidation logging.
30	C domain: Horizontal Sulphide mineralization in lower andesite sill
40	C-1 domain: Horizontal Sulphide mineralization in lower andesite sill.

Domain	Details
50	C-2 domain (NW): Horizontal Sulphide mineralization in lower andesite sill (low grade NW part).
51	C-2 domain (SE): Horizontal Sulphide mineralization in lower andesite sill (higher grade SE part).
60	D domain: Basal Conglomerate Zone (highest grade Sulphide mineralization; Manto Rico Member).
65	D domain: Basal Conglomerate Zone extensions (Sulphide mineralization; high in Zn, low in Ag, Cu and Pb; Manto Rico Member).
70	E domain (SE): hydrothermal breccia, fracture and vein-hosted Sulphide mineralization adjacent to and inside felsic dykes intruded in shales and siltstones (low grade SE part) (Peña Ranch Fm)
71	E domain (NW): hydrothermal breccia, fracture and vein-hosted Sulphide mineralization adjacent to and inside felsic dykes intruded in shales and siltstones (higher grade NW part)
80	F domain: hydrothermal breccia, fracture and vein-hosted Sulphide mineralization adjacent to and inside felsic dykes intruded in shales and siltstones (Peña Ranch Fm)
90	G domain: hydrothermal breccia, fracture and vein-hosted Sulphide mineralization adjacent to and inside felsic dykes intruded in shales and siltstones (Peña Ranch Fm)
100	H domain: hydrothermal breccia, fracture and vein-hosted Sulphide mineralization adjacent to and inside felsic dykes intruded in shales and siltstones (Peña Ranch Fm)
110	I domain: hydrothermal breccia, fracture and vein-hosted Sulphide mineralization adjacent to and inside felsic dykes intruded in shales and siltstones (Peña Ranch Fm)

14.3.1 Geological and Mineralogical Domain Interpretation and Solid Generation

Lithology

In 2012, Silver Standard prepared an updated geological interpretation representing the rock formations at Pitarrilla (Silver Standard, 2012). Cross-sectional interpretations were first generated on paper and used to assist the modelling process using Aranz Leapfrog software version 2.4.5.17 (“Leapfrog”). Silver Standard undertook modelling of fault surfaces as a part of study to further understand structural controls within the deposit. Fault surfaces that exhibited the most displacement were chosen for incorporation into the lithological model. These were the Peña, Peña2, Peña5, PeñaWest2, and Regional West 3 faults (Figure 14-6). Following the work of Somers et al. (2010), individual lithologies were grouped into geological units within the five fault-bounded blocks for geological modelling.

State of Oxidation

Due to a demonstrated relationship of increasing cyanide-leach and flotation metallurgical recovery with increasing depth (most likely associated with the transition from oxidised to primary sulphide material), and testwork relating oxidation state of test samples and metallurgical performance, Silver Standard elected to re-log a total of 135.8 km of core (from drillhole core photographs) into a six point qualitative oxide logging code to better understand the nature of the oxidation profile, and to provide a model basis for developing metallurgical performance for the entire drill tested block model volume. The following OXCODE data bins therefore resulted, and were used as equivalent to the 0-5 classification scheme (see section 7.6.1 above):

- = 0.00-0.49 Fresh
- = 0.50-1.49
- = 1.50-2.49
- = 2.50-3.49
- = 3.50-4.49
- = 4.50-5.49 Extremely weathered

Mineralization Domains

In 2010 a detailed review was conducted by Silver Standard on the August 2008 sulphide domain solids completed by P&E (2008) using an updated drillhole database and an updated geological interpretation that had been completed in-house that year. Based on this review Silver Standard decided to reinterpret the grade domain boundaries within the constraints of the geological interpretation, using the previous oxide and sulphide domains as a base.

A series of low grade (<20 g/t Ag), medium grade (20-100 g/t Ag) and high grade (>100 g/t Ag) mineralization domains were interpreted by Silver Standard within the constraints of the revised geological interpretation, and incorporating drillhole information not available at the time of the August 2008 Mineral Resource update, using Gemcom GEMS software. Interpretations were conducted in a series of vertical cross-sections striking 065°, and spaced at 25 m intervals from southeast to northwest along a bearing of 335°. Polylines were generated on each vertical cross-section for each domain that met the lithological, structural and grade criteria. Mutually exclusive wireframe solids were then generated from the polylines. Clipping was conducted based on the interpreted mineralization model, with domains at successively higher structural positions in the deposit profile taking precedence over deeper domains. Domain codes were assigned to the wireframe solids, and the wireframes verified.

A detailed statistical review of the Ag data within the various interim mineralization domains did not support generation of sub-domains for the 'low grade' mineralization based on grade ranges. A total of ten 'low grade' mineralization domains were therefore generated by Silver Standard and named following the same naming convention used for the underground Pre-Feasibility Study completed in 2009 (P&E, 2008): BR_AB-SU, BR_C, BR_C-1, BR_C-2, BR_D, BR_E, BR_F, BR_G, BR_H, and BR_I.

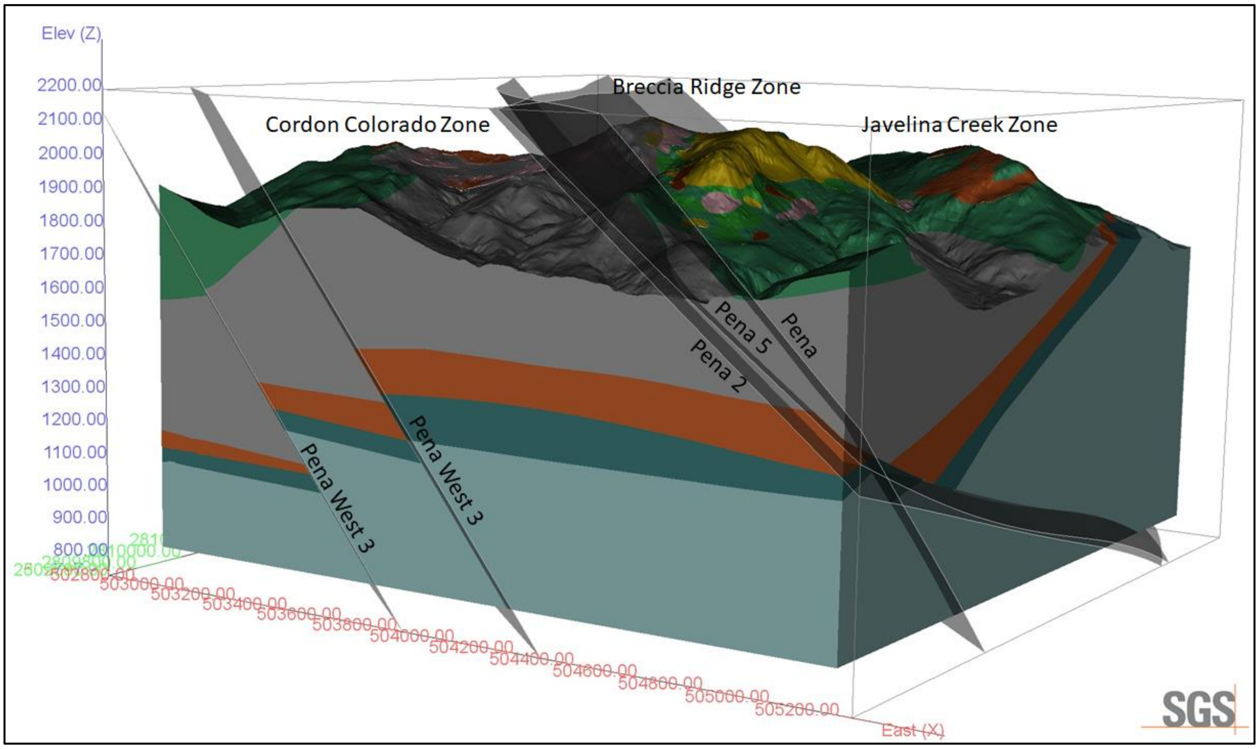
A detailed visual inspection of domain-coded and composited grade data (Ag, and to a lesser extent Pb and Zn) during the exploratory data analysis of these ten domains indicated that sub-domains (based on geographic clustering of high or low grades, and/or based on apparent differences in grade continuity geometry) were possible in the BR_AB-SU, BR_C-2, and BR_E domains. A lower grade and generally sub-horizontal northwestern sub-domain (20) could be differentiated from a higher-grade and generally moderately southeast dipping southeastern sub-domain (21) in the BR_AB-SU domain. Similarly, a lower grade northwestern sub-domain (50) could be differentiated from a higher grade southeastern sub-domain (51) in the BR_C-2 domain. Elevated grades in the northwestern part (71) of domain BR_E could be differentiated from lower grades in the south-eastern part (70) of that domain.

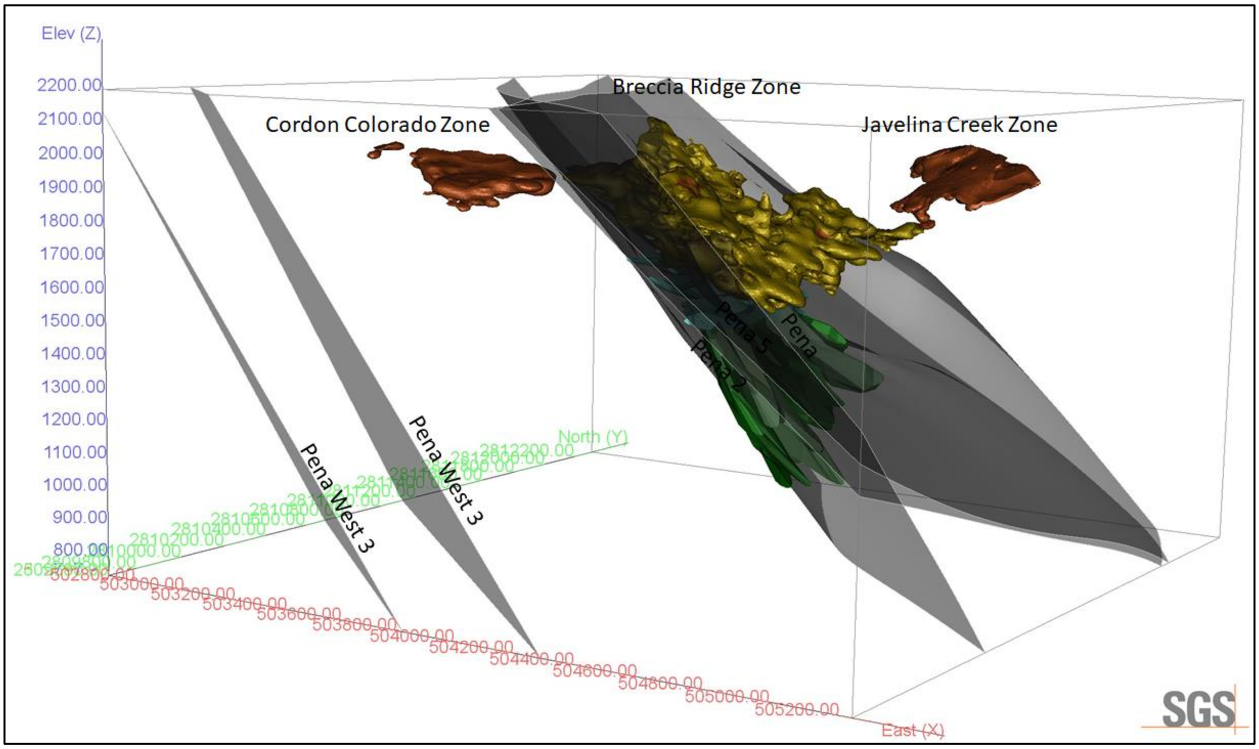
Additionally, Silver Standard noted that Zn grades extended beyond the boundaries of the Ag, Pb, and Cu mineralization in the basal conglomerate (BR_D) horizon. A 'high grade Zn' extension domain (65) was created to capture the high grade Zn intersections outside of the BR_D mineralization domain.

Diamond drilling in 2011 and 2012 primarily focused on the delineation of shallow oxide-associated mineralization in the South Ridge, Cordon Colorado, and Peña Dyke Zones, as well as shallow oxide- and sulphide-associated mineralization in the Breccia Ridge Zone. Based on the latest information after the completion of the 2012 drilling campaign and the updated geological interpretation completed in 2012, a detailed review was conducted by Silver Standard on the Oxide domain wireframes of the South Ridge, Cordon Colorado, and Peña Dyke Zones from McCrea (2006); the Breccia Ridge Oxide (BR-AB_OX, Domain 10) as defined by P&E (2008); and the BR-AB_SU (domains 20 and 21) Sulphide domain wireframes revised by Silver Standard in 2010. Based on this review Silver Standard decided to reinterpret the grade domain boundaries using Leapfrog within the constraints of the geological interpretation, using the previous Oxide and Sulphide domains as a base. Domains within and below the BR_C horizon (i.e., domains 30 through 110) were left unchanged from the 2010 review. Figure 14-3 illustrates the December 4, 2012 mineralization domain solids.

To facilitate mineralization domain definition, several filters were created in Leapfrog to constrain the selection of samples based on lithology, oxidation, and grade. Lithological units were restricted to the Pitarrilla Formation and those units stratigraphically higher (i.e., LITHWF code 3000 through 9000). An OXCODE threshold of 2.5 was set to distinguish oxide material from transitional and sulphide material. Grade selection was based on a 20 g/t total silver cut-off over a minimum length of 7.5 m. A second grade filter, based on a 100 g/t total silver cut-off over a minimum length of 7.5 m, was combined with the lithology and oxidation filters and was used to identify zones of continuous high-grade silver mineralization within the Breccia Ridge and South Ridge Zones. Table 14-1 and Table 14-2 summarizes the updated mineralization domains (3 through 21) and the remaining domains (30 through 110) used in the current MRE.

Figure 14-6 Isometric View Looking Northwest: Pitarrilla Fault Models with Lithologic Models (upper) and Mineralization Models (lower)





14.4 Bulk Density

The Author was provided with a database of 8,535 dry bulk density ("DBD") measurements for the current MRE. DBD measurements were selected to be spatially and geologically representative (i.e., representative of geology, lithology, structure, mineralization, alteration) (Silver Standard, 2012).

The density database was sub-divided by mineralization and waste domain. A total of 5,085 DBD values are from mineralized domains and 3,453 values are from waste domains. Based on a review of the available density data, it was decided that a fixed value be used for each resource model and waste model. The average density used by domain for the current MRE are presented in Table 14-1 above.

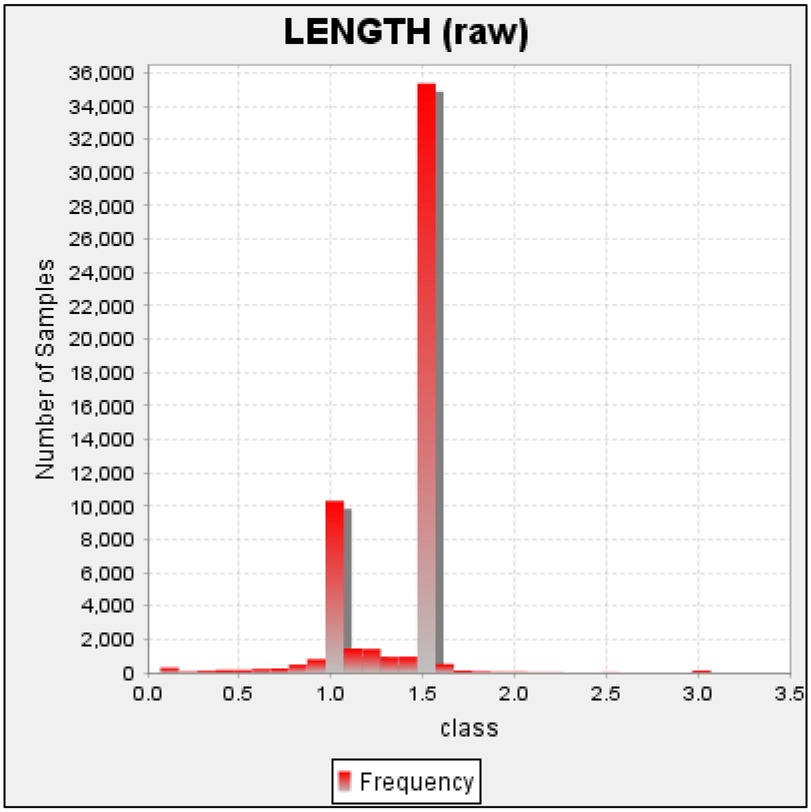
14.5 Compositing

The assay sample database available for the revised resource modelling totalled 134,441 representing 188,816 m of drilling. Of this, a total of 53,758 assays occur within the Pitarrilla deposit mineral domains. A statistical analysis of the assay data from within the mineralized domains, by state of oxidation, is presented in Table 14-3. Average length of the assay sample intervals is 1.33 to 1.45. Of the total assay population approximately 97% are 1.53 m or less with approximately 64% of the samples between 1.50 and 1.53 m and 92 % between 1.00 m and 1.53 m in length and only 8% greater than 1.53 m (Figure 14-7). To minimize the dilution and over smoothing due to compositing, a composite length of 1.50 m was chosen as an appropriate composite length for the current MRE.

Table 14-3 Statistical Analysis of the Drill Assay Data from Within the Pitarrilla Deposit Mineral Domains – Oxide, Transition and sulphide

Variable	Ag g/t	Pb ppm	Zn ppm
	Oxide		
Total # Assay Samples	28,134		
Average Sample Length	1.33 m		
Minimum Grade	0.25	2.00	2.00
Maximum Grade	10,000	132,500	300,000
Mean	92.7	1,035	2,952
Standard Deviation	198	2,784	8,759
Coefficient of variation	2.14	2.69	2.97
97.5 Percentile	339	6,505	19,000
	Transition		
Total # Assay Samples	10,670		
Average Sample Length	1.45 m		
Minimum Grade	0.25	9.00	12.0
Maximum Grade	4,920	271,000	300,000
Mean	73.12	3,365	6,677
Standard Deviation	147	7,421	10,681
Coefficient of variation	2.00	2.21	1.60
97.5 Percentile	327	17,950	32,350
	Sulphide		
Total # Assay Samples	14,954		
Average Sample Length	1.39 m		
Minimum Grade	0.25	1.00	21.0
Maximum Grade	10,000	285,000	300,000
Mean	86.55	6,084	5,935
Standard Deviation	228	12,545	22,473
Coefficient of variation	2.63	2.06	1.68
97.5 Percentile	467	33,850	78,650

Figure 14-7 Sample length histogram for Drill Core Assay Samples from Within the Pitarrilla Deposit Mineral Domains



Composites were generated starting from the collar of each hole. Un-assayed intervals were given a value of 0.0001 for Ag, Pb and Zn. Composites were then constrained to the individual mineral domains. The constrained composites were extracted to point files for statistical analysis and capping studies. The constrained composites were grouped based on the mineral domain (rock code) of the constraining wireframe model.

A total of 49,994 composite sample points occur within the resource wire frame models. A statistical analysis of the composite data from within the mineralized domains, by state of oxidation, is presented in (Table 14-4). These values were used to interpolate grade into resource blocks.

Table 14-4 Statistical Analysis of the 1.5 m composite Data from Within the Pitarrilla Deposit Mineral Domains – Oxide, Transition and sulphide

Variable	Ag g/t	Pb ppm	Zn ppm
	Oxide		
Total # Assay Samples	25,262		
Average Sample Length	1.50 m		
Minimum Grade	0	0	0
Maximum Grade	7,297	126,602	265,893
Mean	89.3	1,056	2,986
Standard Deviation	169	2,458	7,707
Coefficient of variation	1.90	2.33	2.58
97.5 Percentile	322	6,474	18,718
	Transition		
Total # Assay Samples	10,452		
Average Sample Length	1.50 m		
Minimum Grade	0.00	0.00	0.00
Maximum Grade	2,550	146,519	148,540
Mean	70.1	3,203	6,443
Standard Deviation	109	5,531	9,107
Coefficient of variation	1.55	1.73	1.41
97.5 Percentile	293	16,097	29,862
	Sulphide		
Total # Assay Samples	14,280		
Average Sample Length	1.50 m		
Minimum Grade	0.00	0.00	0.00
Maximum Grade	4,453	199,333	233,983
Mean	78.0	5,602	12,335
Standard Deviation	158	9,671	18,619
Coefficient of variation	2.03	1.73	1.51
97.5 Percentile	397	28,302	66,592

14.6 Grade Capping

A statistical analysis of the composite database within the Pitarrilla 3D wireframe models (the "resource" population) was conducted to investigate the presence of high grade outliers which can have a disproportionately large influence on the average grade of a mineral deposit. High grade outliers in the composite data were investigated using statistical data (Table 14-4), histogram plots, and cumulative probability plots of the 1.5 m composite data. The statistical analysis was conducted by domain and by state of oxidation and was completed using GEMS.

After review, it is the Author's opinion that capping of high grade composites to limit their influence during the grade estimation is necessary for Ag, Pb and Zn. A summary of grade capping values within the mineralized domains, by state of oxidation, is presented in Table 14-5. The capped composites are used for grade interpolation into the Shakespeare deposit block model.

Table 14-5 Composite Capping Summary of the Pitarrilla Deposit Mineral Domains – Oxide, Transition and sulphide

Domain	Total # of Composites	Attribute	Capping Value	# Capped	Mean of Raw Composites	Mean of Capped Composites	CoV of Raw Composites	CoV of Capped Composites
Oxide	25,262	Ag g/t	1,850	21	89.3	87.3	1.90	1.38
		Pb ppm	45,000	6	1,056	1,050	2.33	2.18
		Zn ppm	75,000	38	2,986	2,911	2.58	2.16
Transition	10,452	Ag g/t	1,150	14	70.1	69.2	1.55	1.37
		Pb ppm	42,000	24	3,203	3,146	1.73	1.52
		Zn ppm	65,000	35	6,443	6,358	1.41	1.31
Sulphide	14,280	Ag g/t	800 – 1000	67	78.0	74.7	2.03	1.57
		Pb ppm	60,000 – 70,000	49	5,602	5,480	1.73	1.51
		Zn ppm	100,000	120	12,335	12,053	1.51	1.39

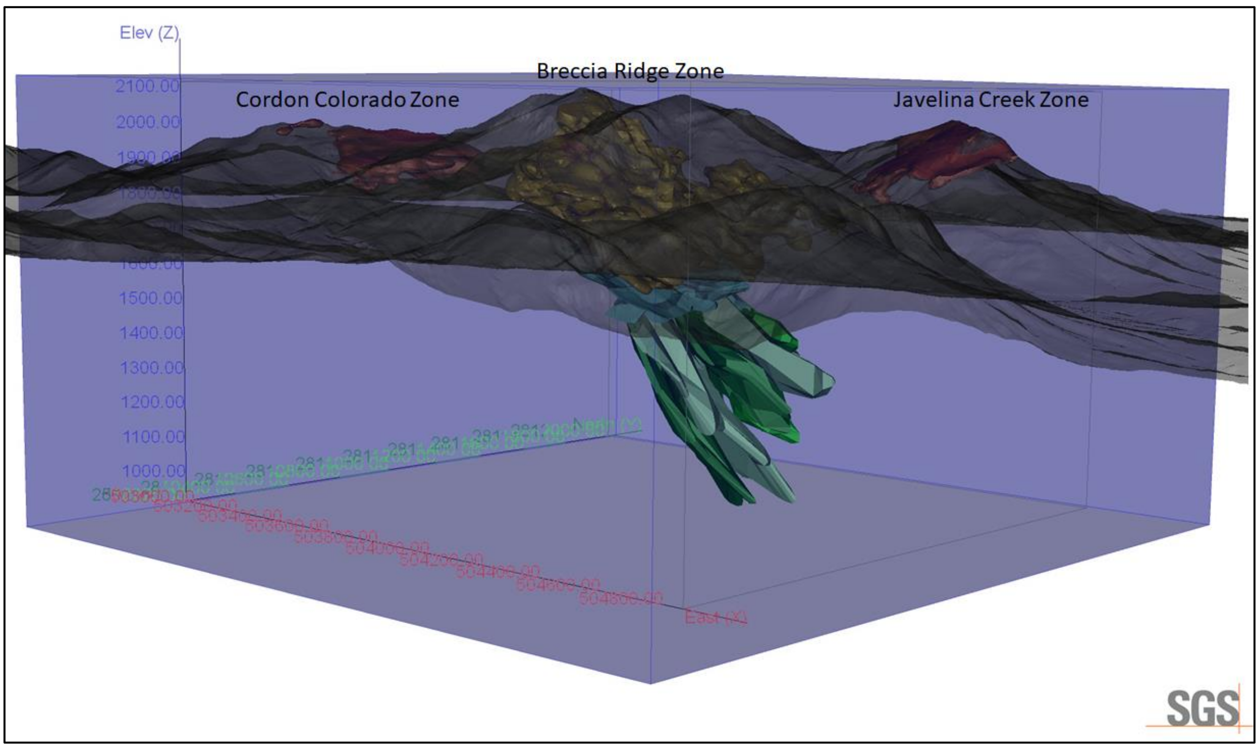
14.7 Block Model Parameters

The Property mineral domains are used to constrain composite values chosen for interpolation, and the mineral blocks reported in the estimate of the Mineral Resource. A block model within UTM coordinate space (no rotation) (Table 14-6 and Figure 14-8) with block dimensions of 10 x 10 x 10 m in the x (east m), y (north m) and z (level m) directions was placed over the grade shells with only that portion of each block inside the shell recorded (as a percentage of the block) as part of the MRE (% Block Model). The block size was selected based on drillhole spacing, composite length, the geometry and shape of the mineralized domains, and the selected mining methods. At the scale of the Pitarrilla deposit this provides a reasonable block size for discerning grade distribution, while still being large enough not to mislead when looking at higher cut-off grade distribution within the model. The model was intersected with surface topography to exclude blocks, or portions of blocks, that extend above the bedrock surface.

Table 14-6 Deposit Block Model Geometry

Block Model	Pitarrilla Property		
	X (East)	Y (North)	Z (Level)
Origin (WGS 84)	502800	2809800	2140 m
Extent	234	243	125
Block Size	10 m	10 m	10 m
Rotation (counter clockwise)	0°		

Figure 14-8 Isometric View Looking Northwest: Pitarrilla Deposit Mineral Resource Block Model and Mineralization Domains



14.8 Grade Interpolation

Silver, lead and zinc were estimated for each mineralization domain in the Pitarrilla deposit. Blocks within each mineralized domain were interpolated using composites assigned to that domain. To generate grade within the blocks, the inverse distance squared (ID^2) interpolation method was used for all domains.

For all domains, the search ellipse used to interpolate grade into the resource blocks was interpreted based on orientation and size of the mineralized domains. The search ellipse axes are generally oriented to reflect the observed preferential long axis (geological trend) of the domain and the observed trend of the mineralization down dip/down plunge (Table 14-7).

Three passes were used to interpolate grade into all of the blocks in the grade shells (Table 14-7). For Pass 1 the search ellipse size (in feet) for all mineralized domains was set at 30 x 30 x 10 in the X, Y, Z direction; for Pass 2 the search ellipse size for each domain was set at 60 x 60 x 20; for Pass 3 the search ellipse size was set at 120 x 120 x 40. Blocks were classified as Indicated if they were populated with grade during Pass 1 and during Pass 2 of the interpolation procedure. The Pass 3 search ellipse size was set to assure all remaining blocks within the wireframe (within the extents of the search ellipse) were assigned a grade. These blocks were classified as Inferred. The pass 3 search was successful with filling all models blocks with grade.

Grades were interpolated into blocks using a minimum of 7 and maximum of 16 composites to generate block grades during Pass 1 (maximum of 3 sample composites per drill hole), 5 and 16 for Pass 2 (maximum of 3 sample composites per drill hole), and a minimum of 5 and maximum of 16 composites to generate block grades during pass 3 (Table 14-7).

Table 14-7 Grade Interpolation Parameters by Domain

Parameter	Domain 3 – high grade oxide			Domain 4 - Oxide			Domain 6 - Oxide		
	Pass 1	Pass 2	Pass 3	Pass 1	Pass 2	Pass 3	Pass 1	Pass 2	Pass 3
	Indicated	Indicated	Inferred	Indicated	Indicated	Inferred	Indicated	Indicated	Inferred
Calculation Method	Inverse Distance squared			Inverse Distance squared			Inverse Distance squared		
Search Type	Ellipsoid			Ellipsoid			Ellipsoid		
Principle Azimuth	75°			45°			140°		
Principle Dip	-40°			-20°			-10°		
Intermediate Azimuth	345°			315°			230°		
Anisotropy X range	30	60	120	30	60	120	30	60	120
Anisotropy Y range	30	60	120	30	60	120	30	60	120
Anisotropy Z range	10	20	40	10	20	40	10	20	40
Min. Samples	7	5	5	7	5	5	7	5	5
Max. Samples	16	16	16	16	16	16	16	16	16
Min. Drill Holes	3	2	1	3	2	1	3	2	1

Parameter	Domain 8 - Oxide			Domain 10 - Oxide			Domain 20, 21 - Transition		
	Pass 1	Pass 2	Pass 3	Pass 1	Pass 2	Pass 3	Pass 1	Pass 2	Pass 3
	Indicated	Indicated	Inferred	Indicated	Indicated	Inferred	Indicated	Indicated	Inferred
Calculation Method	Inverse Distance squared			Inverse Distance squared			Inverse Distance squared		
Search Type	Ellipsoid			Ellipsoid			Ellipsoid		
Principle Azimuth	225°			65°			65°		
Principle Dip	-20°			-35°			-35°		
Intermediate Azimuth	135°			335°			335°		
Anisotropy X range	30	60	120	30	60	120	30	60	120
Anisotropy Y range	30	60	120	30	60	120	30	60	120
Anisotropy Z range	10	20	40	10	20	40	10	20	40
Min. Samples	7	5	5	7	5	5	7	5	5
Max. Samples	16	16	16	16	16	16	16	16	16
Min. Drill Holes	3	2	1	3	2	1	3	2	1

Parameter	Domains 30 to 65 – Manto Style Sulphide			Domains 70 to 110 – Sulphide Breccia		
	Pass 1	Pass 2	Pass 3	Pass 1	Pass 2	Pass 3
	Indicated	Indicated	Inferred	Indicated	Indicated	Inferred
Calculation Method	Inverse Distance squared			Inverse Distance squared		
Search Type	Ellipsoid			Ellipsoid		
Principle Azimuth	65°			60°		
Principle Dip	-5°			-60°		
Intermediate Azimuth	335°			330°		
Anisotropy X range	30	60	120	30	60	120
Anisotropy Y range	30	60	120	30	60	120
Anisotropy Z range	10	20	40	10	20	40
Min. Samples	7	5	5	7	5	5
Max. Samples	16	16	16	16	16	16
Min. Drill Holes	3	2	1	3	2	1

14.9 Mineral Resource Classification Parameters

The MRE presented in this Technical Report was prepared and disclosed in compliance with all current disclosure requirements for mineral resources set out in the NI 43-101 Standards of Disclosure for Mineral Projects (2016). The classification of the current Mineral Resource Estimate into Indicated and Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves, including the critical requirement that all mineral resources "have reasonable prospects for eventual economic extraction".

The current Mineral Resource is sub-divided, in order of increasing geological confidence, into Inferred and Indicated categories. An Inferred Mineral Resource has a lower level of confidence than that applied to an Indicated Mineral Resource. An Indicated Mineral Resource has a higher level of confidence than an Inferred Mineral Resource but has a lower level of confidence than a Measured Mineral Resource. There are no Measured Mineral Resources reported.

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction.

Interpretation of the word 'eventual' in this context may vary depending on the commodity or mineral involved. For example, for some coal, iron, potash deposits and other bulk minerals or commodities, it may be reasonable to envisage 'eventual economic extraction' as covering time periods in excess of 50 years. However, for many gold or base metal deposits, application of the concept would normally be restricted to perhaps 10 to 15 years, and frequently to much shorter periods of time.

The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

Indicated Mineral Resource

An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit.

Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation.

An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

Mineralization may be classified as an Indicated Mineral Resource by the Qualified Person when the nature, quality, quantity and distribution of data are such as to allow confident interpretation of the geological framework and to reasonably assume the continuity of mineralization. The Qualified Person must recognize the importance of the Indicated Mineral Resource category to the advancement of the feasibility of the project. An Indicated Mineral Resource Estimate is of sufficient quality to support a Preliminary Feasibility Study which can serve as the basis for major development decisions

Inferred Mineral Resource

An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity.

An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

An Inferred Mineral Resource is based on limited information and sampling gathered through appropriate sampling techniques from locations such as outcrops, trenches, pits, workings and drill holes. Inferred Mineral Resources must not be included in the economic analysis, production schedules, or estimated mine life in publicly disclosed Pre-Feasibility or Feasibility Studies, or in the Life of Mine plans and cash flow models of developed mines. Inferred Mineral Resources can only be used in economic studies as provided under NI 43-101.

There may be circumstances, where appropriate sampling, testing, and other measurements are sufficient to demonstrate data integrity, geological and grade/quality continuity of a Measured or Indicated Mineral Resource, however, quality assurance and quality control, or other information may not meet all industry norms for the disclosure of an Indicated or Measured Mineral Resource. Under these circumstances, it may be reasonable for the Qualified Person to report an Inferred Mineral Resource if the Qualified Person has taken steps to verify the information meets the requirements of an Inferred Mineral Resource.

14.10 Reasonable Prospects of Eventual Economic Extraction

The general requirement that all Mineral Resources have “reasonable prospects for economic extraction” implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate cut-off grade taking into account extraction scenarios and processing recoveries. In order to meet this requirement, the Author considers that the Pitarrilla deposit mineralization is amenable for open pit and underground extraction.

In order to determine the quantities of material offering “reasonable prospects for economic extraction” by an open pit, Whittle™ pit optimization software 4.7.1 and reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be “reasonably expected” to be mined from an open pit were used. The pit optimization was completed by SGS. The pit optimization parameters used are summarized in Table 14-8. A Whittle pit shell at a revenue factor of 1.0 was selected as the ultimate pit shell for the purposes of this MRE. The optimized pit has been limited to the base of the transition mineralization.

The reader is cautioned that the results from the pit optimization are used solely for the purpose of testing the “reasonable prospects for economic extraction” by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade. A selected base case cut-off grade of 50 g/t AgEq is used to determine the in-pit MRE for the Pitarrilla deposit.

In order to determine the quantities of material offering “reasonable prospects for economic extraction” by underground mining methods, reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be “reasonably expected” to be mined from underground are used. The Pitarrilla sulphide mineralized zones have sufficient widths and continuity suitable for low cost bulk mining methods such as longhole stoping. The average true width of the manto style mineralization is 32 m within a range of 2.4 m and 104 m (90 % of drill intercepts > 10 m true width). The average true width of the breccia style mineralization is 31 m within a range of 1.2 m and 119 m (81 % of drill intercepts > 10 m true width). Based on other Endeavor operations in Mexico, a minimum mining thickness of 0.8 m is required for low cost bulk mining methods such as longhole stoping.

The underground parameters used, based on mining using low cost bulk mining methods, are summarized in Table 14-8. Based on these parameters, underground (below-pit) Mineral Resources are reported at a base case cut-off grade of 150 g/t AgEq. Underground Mineral Resources are estimated from the bottom of the pit (base of transition mineralization). The underground Mineral Resource grade blocks were quantified above the base case cut-off grade of 150 g/t AgEq, below the constraining pit shell and within the 3D constraining mineralized wireframes (the constraining volumes).

14.11 Mineral Resource Statement

The current MRE for the Pitarrilla deposit is presented in

Table 14-9 and includes an in-pit and an underground (below-pit) Mineral Resources (estimated from the bottom of the 2022 pit) (Figure 14-9 and Figure 14-10).

Highlights of the Pitarrilla deposit Mineral Resource Estimate are as follows:

- The in-pit Mineral Resource includes, at a base case cut-off grade of 50 g/t AgEq, 133.9 Mt grading 87.1 g/t Ag (375.1 Moz Ag), 0.19% Pb and 0.48% Zn in the Indicated category, and 25.6 Mt grading 76.4 g/t Ag (63.0 Moz Ag), 0.14% Pb and 0.48% Zn in the Inferred category.
- The below-pit Mineral Resource includes, at a base case cut-off grade of 150 g/t AgEq, 24.8 Mt grading 146.1 g/t Ag (116.5 Moz Ag), 1.01% Pb and 2.14% Zn in the Indicated category, and 9.8 Mt grading 115.5 g/t Ag (36.4 Moz Ag), 0.93% Pb and 1.80% Zn in the Inferred category.

Table 14-8 Whittle™ Pit Optimization Parameters and Parameters used for In-pit and Underground Cut-off Grade Calculation

Parameter	Value	Unit
Silver Price	$22.00	US$ per pound
Zinc Price	$1.30	US$ per pound
Lead Price	$1.00	US$ per pound
In-Pit Mining Cost	$2.50	US$ per tonne mined
Underground Mining Cost	$46.50	US$ per tonne mined
Transportation	$3.00	US$ per tonne milled
Processing Cost (incl. crushing)	$17.40	US$ per tonne milled
In-Pit General and Administrative	$2.00	US$ tonne of feed
Underground General and Administrative	$10.50	US$ tonne of feed
Pit Slope - Oxide	42	Degrees
Pit Slope - Transition/Sulphide	48	Degrees
Silver Recovery - Oxide	75.0	Percent (%)
Lead Recovery - Oxide	70.0	Percent (%)
Zinc Recovery - Oxide	65.0	Percent (%)
Silver Recovery - Transition	75.0	Percent (%)
Lead Recovery - Transition	70.0	Percent (%)
Zinc Recovery - Transition	65.0	Percent (%)
Silver Recovery - Sulphide	86.0	Percent (%)
Lead Recovery - Sulphide	91.0	Percent (%)
Zinc Recovery - Sulphide	85.0	Percent (%)
Mining loss / Dilution (open pit)	5/5	Percent (%) / Percent (%)

Mining loss/Dilution (underground)	10/10	Percent (%) / Percent (%)

Table 14-9 Pitarrilla Deposit In-Pit and Underground (below-pit) Mineral Resource Estimate, October 6, 2022

In Pit (Oxide and Transition)									
Cut-off Grade (AgEq g/t)	**Tonnes**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**AgEq (g/t)**	**Ag (oz)**	**Pb (Mlbs)**	**Zn (Mlbs)**	**AgEq (oz)**
Indicated									
50	133,864,000	87.1	0.19	0.48	112.3	**375,113,000**	547	1,409	483,234,000
Inferred									
50	25,643,000	76.4	0.14	0.48	100.2	**62,958,000**	80	272	82,650,000
Underground (Sulphide)									
Cut-off Grade (AgEq g/t)	**Tonnes**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**AgEq (g/t)**	**Ag (oz)**	**Pb (Mlbs)**	**Zn (Mlbs)**	**AgEq (oz)**
Indicated									
150	24,783,000	146.1	1.01	2.14	264.4	**116,456,000**	551	1,172	210,707,000
Inferred									
150	9,808,000	115.5	0.93	1.80	217.5	**36,424,000**	202	389	68,588,000
Total in-pit and underground (Oxide, Transition and Sulphide)									
Cut-off Grade (AgEq g/t)	**Tonnes**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**AgEq (g/t)**	**Ag (oz)**	**Pb (Mlbs)**	**Zn (Mlbs)**	**AgEq (oz)**
Indicated									
50 and 150	158,647,000	96.4	0.31	0.74	136.0	**491,569,000**	1,098	2,580	693,941,000
Inferred									
50 and 150	35,451,000	87.2	0.36	0.85	132.7	**99,382,000**	281	661	151,238,000

(1) The classification of the current Mineral Resource Estimate into Indicated and Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves.

(2) All figures are rounded to reflect the relative accuracy of the estimate and numbers may not add due to rounding.

(3) All Resources are constrained by continuous 3D wireframe models (constraining volumes), and are considered to have reasonable prospects for eventual economic extraction.

(4) Mineral resources which are not mineral reserves do not have demonstrated economic viability. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

(5) It is envisioned that parts of the Pitarrilla deposit (oxide and transition mineralization) may be mined using open pit mining methods. In-pit mineral resources are reported at a cut-off grade of 50 g/t AgEq within a conceptual pit shell, which has been limited to the base of the transition mineralization.

(6) The results from the pit optimization are used solely for the purpose of testing the "reasonable prospects for economic extraction" by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade.

(7) It is envisioned that parts of the Pitarrilla deposit (sulphide mineralization) may be mined using underground mining methods. Underground (below-pit) Mineral Resources are estimated from the bottom of the pit (base of transition mineralization) and are reported at a base case cut-off grade of 150 g/t AgEq. The underground Mineral Resource grade blocks were quantified above the base case cut-off grade, below the constraining pit shell and within the constraining mineralized wireframes.

(8) Based on the size, shape, location and orientation of the Pitarrilla deposit, it is envisioned that the deposit may be mined using low cost underground bulk mining methods.

(9) High grade capping of Ag, Pb and Zn was done on 1.50 m composite data.

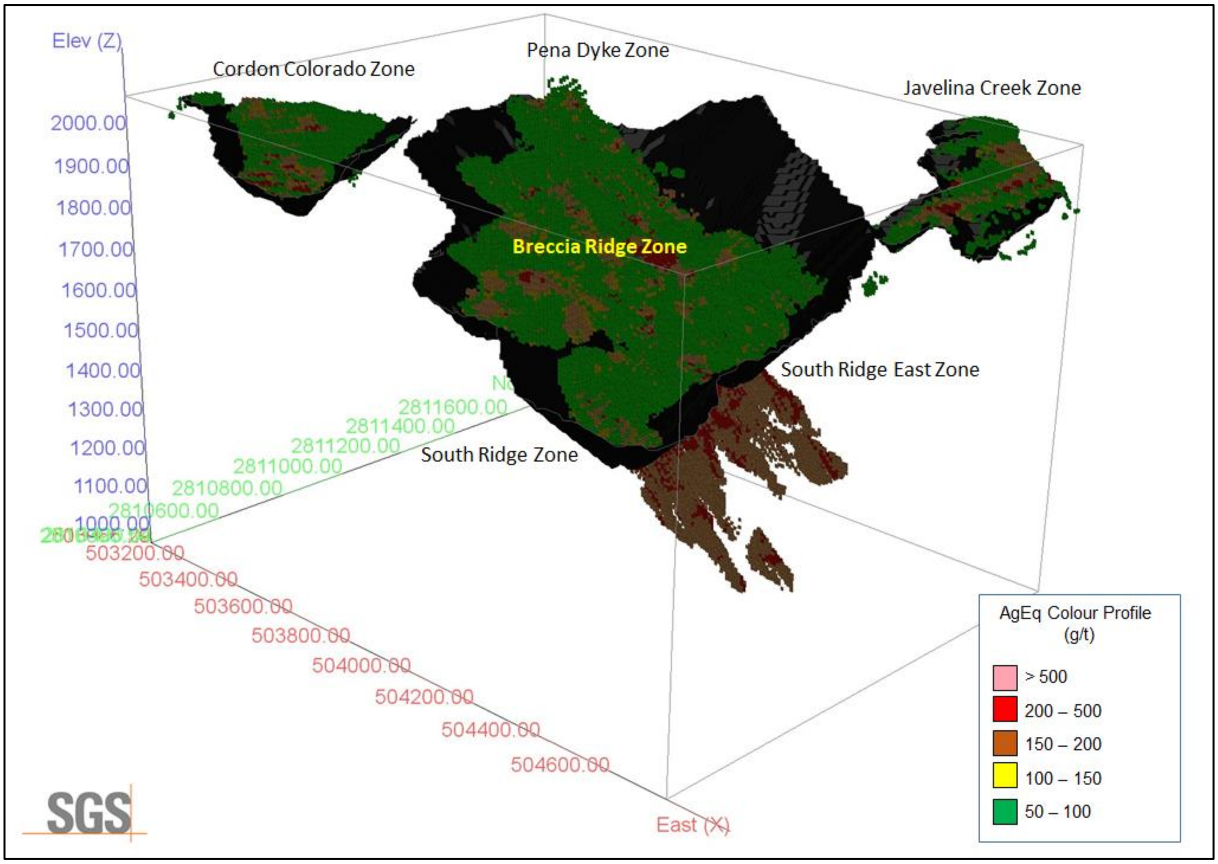
(10) Bulk density values were determined based on physical test work from each deposit model and waste model.

(11) AgEq Cut-off grades consider metal prices of $22.00/oz Ag, $1.00/lb Pb and $1.30/lb Zn and considers variable metal recoveries for Ag, Pb and Zn: oxide and transition mineralization - 75% for silver, 70% for Pb and 65% for Zn; sulphide mineralization - 86% for silver, 91% for Pb and 85% for Zn.

(12) The pit optimization and in-pit base case cut-off grade of 50 g/t AgEq considers a mining cost of US$2.50/t rock and processing, treatment and refining, transportation and G&A cost of US$22.40/t mineralized material, an overall pit slope of 42° for oxide and 48° for transition and metal recoveries. The below-pit base case cut-off grade of 150 g/t AgEq considers a mining cost of US$46.50/t rock and processing, treatment and refining, transportation and G&A cost of US$30.90/t mineralized material.

(13) *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*

Figure 14-9 Isometric View Looking Northwest: Pitarrilla Deposit Mineral Resource Block Grades and Whittle Pit



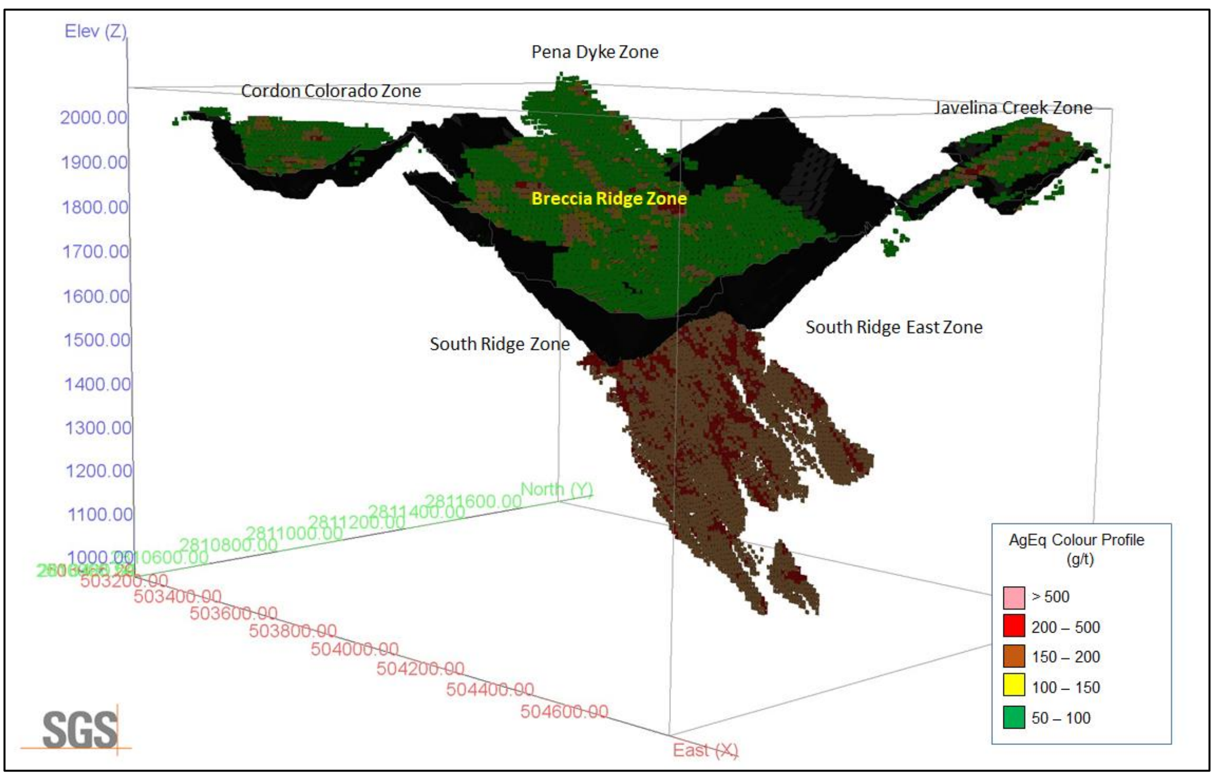
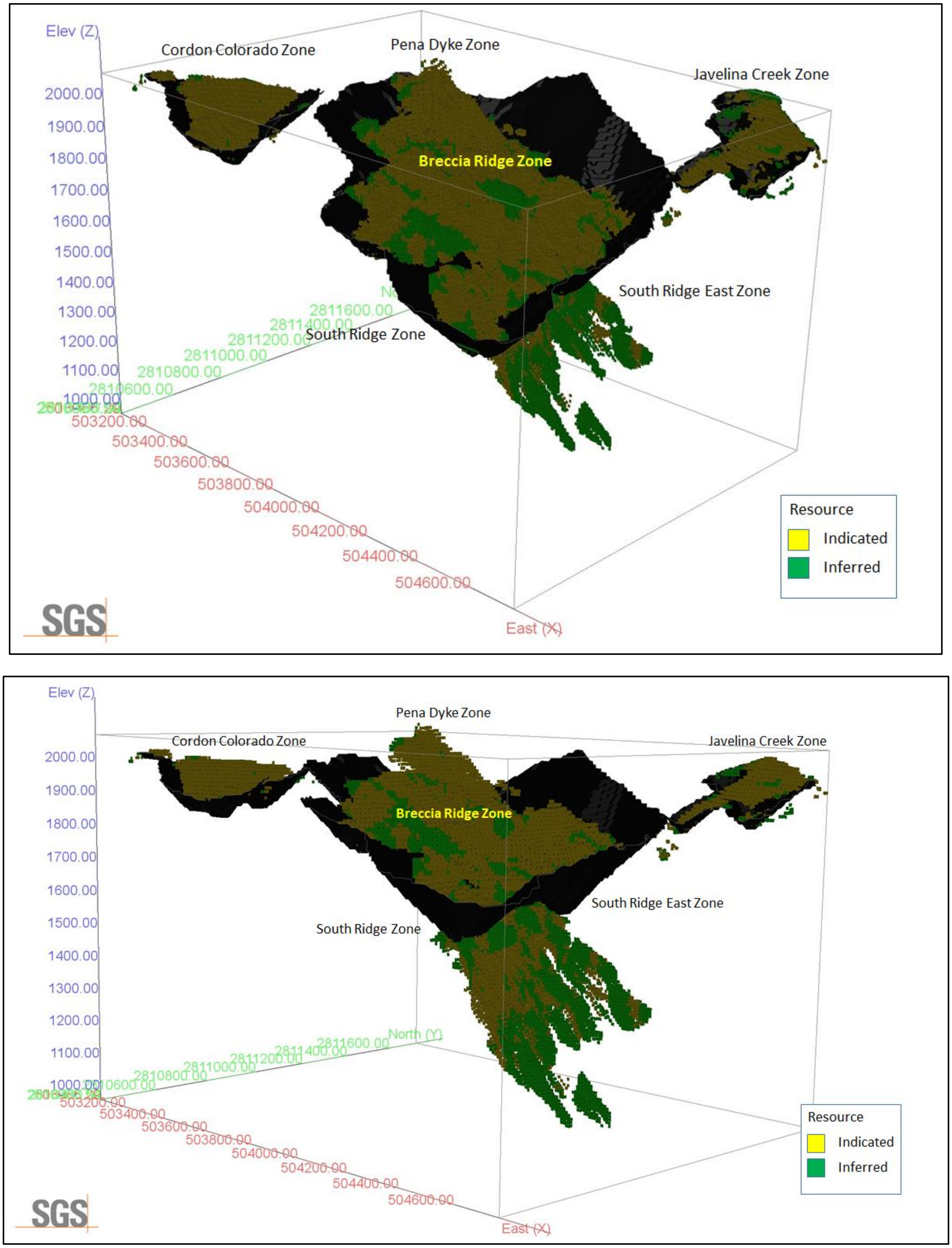


Figure 14-10 Isometric View Looking Northwest: Pitarrilla Deposit Indicated and Inferred Mineral Class Blocks and Revenue Factor 1.0 Whittle Pit



14.12 Model Validation and Sensitivity Analysis

The total volume of the Pitarrilla deposit resource blocks in the Mineral Resource model, at a 0.0% AgEq cut-off grade value compared well to the total volume of the 3D models with the total volume of the block model being 1.10 % lower than the total volume of the mineralized domains (Table 14-10). The slightly higher volume of the domains is the result of parts of overlapping of domains not being counted in the MRE, and the result of limiting the search radius resulting in not all models being filled with blocks. Where solids overlap, GEMS assigns the data to the solid with the higher precedence based on the “Solid Precedence” setting.

Visual checks of block grades gold against the composite data on vertical section showed good correlation between block grades and drill intersections.

A comparison of the average composite grades with the average grades of all the blocks in the block model at a 0.0% AgEq cut-off grade was completed and is presented in Table 14-11. The block model average grades compared well with the composite average grades. The generally lower block grades are likely due to grade smoothing during the interpolation procedure.

For comparison purposes, additional grade models were generated using a varied inverse distance weighting (ID^3) and nearest neighbour (NN) interpolation methods. The results of these models are compared to the chosen models at various cut-off grades in a series of grade/tonnage graphs shown in Figure 14-11. In general, the ID^2 and ID^3 models show similar results and both are more conservative and smoother than the NN model. For models well-constrained by wireframes and well-sampled (close spacing of data), ID^2 should yield very similar results to other interpolation methods such as ID^3 or Ordinary Kriging.

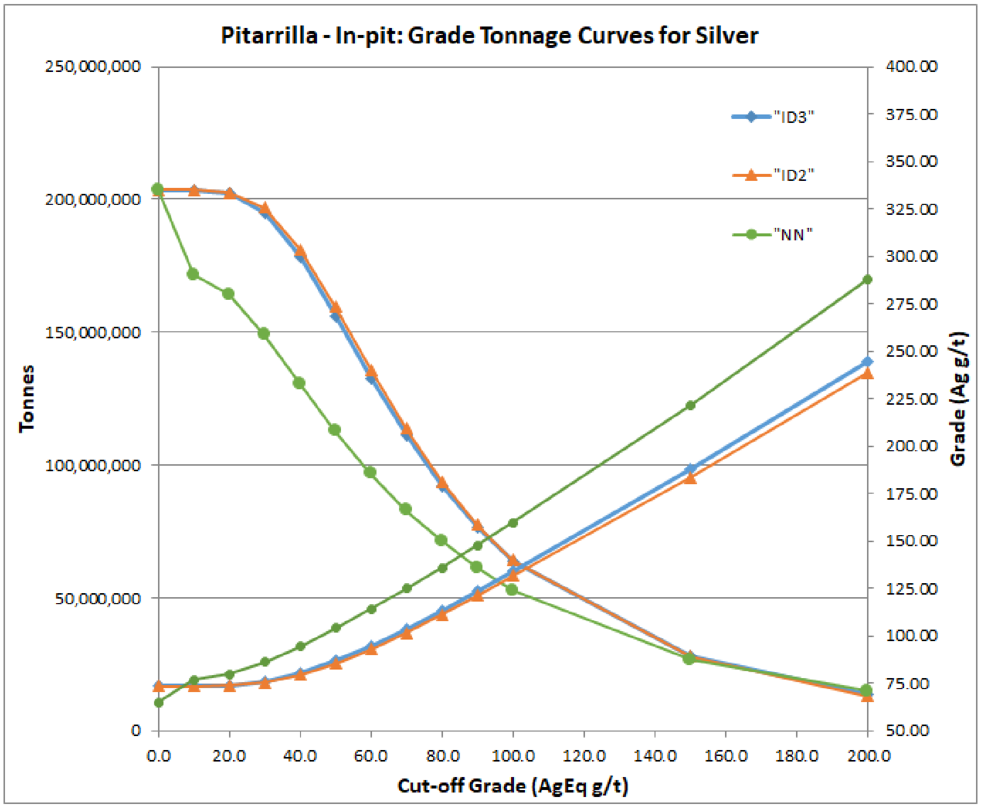
Table 14-10 Comparison of Block Model Volume with the Total Volume of the Deposit 3D Models (before removing mined out material)

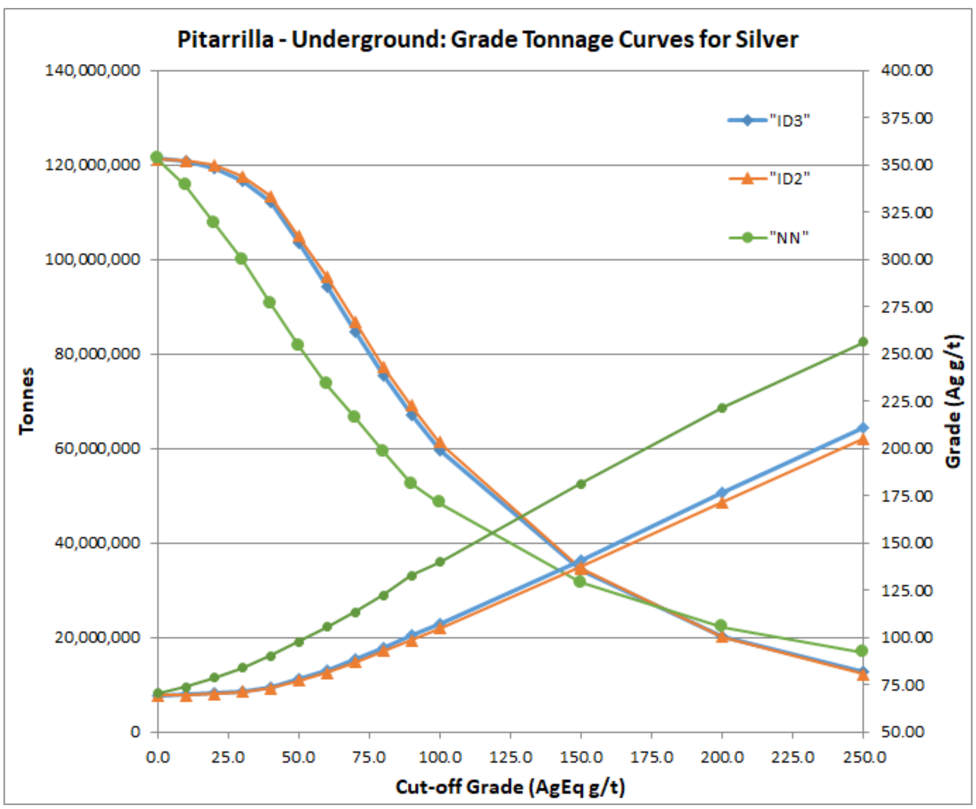
Deposit	Total Domain Volume	Block Model Volume	Difference %
Pitarrilla Deposit	144,433,000 m^3	142,852,000 m^3	1.10 %

Table 14-11 Comparison of Average Composite Grades (based on assayed data) with Block Model Grades

Domain	Variable	Ag g/t	Pb ppm	Zn ppm
Oxide	Composites Capped	87.3	1,050	2,911
	Blocks	73.6	1,085	3,254
Transition	Composites Capped	69.2	3,146	6,358
	Blocks	64.1	2,463	5.559
Sulphide	Composites Capped	74.7	5,480	12,053
	Blocks	69.4	5,421	10,919

Figure 14-11 Comparison of ID³, ID² & NN Models for the Pitarrilla Deposit In-pit and Underground Mineral Resource





14.12.1 Sensitivity to Cut-off Grade

The Pitarrilla deposit Mineral Resource has been estimated at a range of cut-off grades presented in Table 14-12 to demonstrate the sensitivity of the resource to cut-off grades. The current Mineral Resources are reported at a base-case cut-off grade of 50 g/t AgEq within a conceptual pit shell, restricted to oxide and transition mineralization, and below-pit Mineral Resources are reported at a base case cut-off grade of 150 g/t AgEq below the conceptual pit shell, restricted to sulphide mineralization.

Table 14-12 Pitarrilla Deposit Open Pit and Underground Mineral Resource Estimate at Various AgEq Cut-off Grades, October 6, 2022

In Pit (Oxide and Transition)									
Cut-off Grade (AgEq g/t)	**Tonnes**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**AgEq (g/t)**	**Ag (oz)**	**Pb (Mlbs)**	**Zn (Mlbs)**	**AgEq (oz)**
Indicated									
30	163,376,000	77.2	0.17	0.42	99.4	**405,313,000**	600	1,519	522,379,000
40	151,328,000	81.1	0.17	0.44	104.5	**394,641,000**	581	1,481	508,611,000
50	133,864,000	87.1	0.19	0.48	112.3	**375,113,000**	547	1,409	483,234,000
60	114,487,000	94.8	0.20	0.52	122.0	**349,024,000**	503	1,304	448,971,000
70	96,468,000	103.3	0.21	0.56	132.6	**320,533,000**	457	1,185	411,325,000
80	80,075,000	113.0	0.23	0.60	144.4	**291,068,000**	407	1,054	371,875,000
Inferred									
30	33,497,000	66.0	0.12	0.41	86.2	**71,114,000**	88	301	92,897,000
40	29,931,000	70.5	0.13	0.44	92.3	**67,897,000**	84	290	88,830,000
50	25,643,000	76.4	0.14	0.48	100.2	**62,958,000**	80	272	82,650,000
60	21,271,000	83.3	0.16	0.53	109.6	**56,965,000**	73	248	74,951,000
70	17,320,000	91.1	0.17	0.58	119.9	**50,745,000**	64	222	66,756,000
80	13,750,000	99.8	0.19	0.64	131.6	**44,140,000**	56	195	58,204,000
Underground (Sulphide)									
Cut-off Grade (AgEq g/t)	**Tonnes**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**AgEq (g/t)**	**Ag (oz)**	**Pb (Mlbs)**	**Zn (Mlbs)**	**AgEq (oz)**
Indicated									
80	51,955,000	100.1	0.72	1.51	183.9	**167,170,000**	826	1,734	307,204,000
90	46,692,000	106.3	0.76	1.60	195.0	**159,585,000**	785	1,651	292,820,000
100	42,006,000	112.6	0.80	1.69	206.2	**152,065,000**	745	1,567	278,530,000
150	24,783,000	146.1	1.01	2.14	264.4	**116,456,000**	551	1,172	210,707,000
200	15,546,000	178.3	1.19	2.56	319.0	**89,145,000**	408	876	159,447,000
Inferred									
80	25,257,000	78.0	0.68	1.30	151.9	**63,317,000**	380	724	123,396,000
90	22,325,000	82.6	0.72	1.38	160.8	**59,263,000**	354	678	115,398,000
100	19,377,000	88.0	0.75	1.46	170.8	**54,837,000**	322	625	106,422,000
150	9,808,000	115.5	0.93	1.80	217.5	**36,424,000**	202	389	68,588,000
200	4,652,000	149.2	1.08	2.13	269.3	**22,314,000**	111	219	40,282,000

(1) Values in these tables reported above and below the base-case cut-off grades of 50 g/t AgEq within a conceptual pit shell and 150 g/t AgEq for underground (below-pit) Mineral Resources should not be misconstrued with a Mineral Resource Statement. The values are only presented to show the sensitivity of the

block model estimates to the selection of the base case cut-off grade. All values are rounded to reflect the relative accuracy of the estimate and numbers may not add due to rounding.

14.13 Disclosure

All relevant data and information regarding the Project are included in other sections of this Technical Report. There is no other relevant data or information available that is necessary to make the technical report understandable and not misleading.

The Author is not aware of any known mining, processing, metallurgical, environmental, infrastructure, economic, permitting, legal, title, taxation, socio-political, or marketing issues, or any other relevant factors not reported in this technical report, that could materially affect the current Mineral Resource Estimate.

15 MINERAL RESERVE ESTIMATE

There are no Mineral Reserve Estimates for the Property.

16 MINING METHODS

This section does not apply to the Technical Report.

17 RECOVERY METHODS

This section does not apply to the Technical Report.

18 PROJECT INFRASTRUCTURE

This section does not apply to the Technical Report.

19 MARKET STUDIES AND CONTRACTS

This section does not apply to the Technical Report.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

This section does not apply to the Technical Report.

21 CAPITAL AND OPERATING COSTS

This section does not apply to the Technical Report.

22 ECONOMIC ANALYSIS

This section does not apply to the Technical Report.

23 ADJACENT PROPERTIES

There is no information on properties adjacent to the Property necessary to make the technical report understandable and not misleading

24 OTHER RELEVANT DATA AND INFORMATION

There is no other relevant data or information available that is necessary to make the technical report understandable and not misleading. To the Authors' knowledge, there are no significant risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information or MRE.

25 INTERPRETATION AND CONCLUSIONS

SGS Geological Services Inc. was contracted by Endeavour to complete a MRE update for the Pitarrilla Project including the Pitarrilla Silver-Lead-Zinc Deposit, located near Durango State, Mexico, and to prepare a National Instrument 43-101 Technical Report written in support of the MRE.

On January 12, 2022, Endeavour entered into a definitive agreement to purchase the Project by acquiring all of the issued and outstanding shares of SSR Durango S.A. de C.V. (SSD) from SSR Mining Inc. ("SSR") for total consideration of $70 million, consisting of $35 million in common shares and a further $35 million in cash or in common shares at the election of SSR and agreed to by the Company, and a grant of a 1.25% NSR royalty. The acquisition was completed on July 6, 2022. Total consideration paid included 8,577,380 shares of the Company issued on July 6, 2022 with a deemed value of $34,909,937 and a $35,066,829 cash payment.

The Company is engaged in silver mining in Mexico and related activities including property acquisition, exploration, development, mineral extraction, processing, refining and reclamation. The Company is also engaged in exploration activities in Chile and Nevada, USA. Since 2002, the Company's business strategy has been to focus on acquiring advanced-stage silver mining properties in Mexico. Endeavour is headquartered in Vancouver, British Columbia (1130 – 609 Granville Street Vancouver, B.C., Canada, V7Y 1G5) with management offices in Leon, Mexico and Durango, Mexico, and is listed on the Toronto (TSX:EDR), New York (NYSE:EXK) and Frankfurt (FSE:EJD) stock exchanges.

The current report is authored by Allan Armitage, Ph.D., P. Geo., of SGS, and the MRE presented in this report was estimated by Armitage. Armitage is an independent Qualified Person as defined by NI 43-101 and is responsible for all sections of this report.

25.1 Diamond and RC Drilling

A total of 852 diamond and RC drillholes totaling 258,658 m have been completed on the Property.

Monarch Resources de Mexico, S.A. de C.V. completed a Phase I drilling program on the Fluorite Mine Target in 1996, including 22 RC drillholes totalling 2,842 m. The drilling was on the Property, but not in the area of the current Mineral Resource (Figure 10 1).

The greatest amount of exploration-related data has come from the several campaigns of reverse circulation and diamond drilling completed by Silver Standard on the Property between September 2003 and July 2012.

From September 2003 until October 2005, 186 reverse circulation holes with a combined length of 20,619 m were drilled on the Property. The RC drillholes targeted oxide mineralization in the Cordon Colorado, Peña Dyke, and Javelina Creek Zones (Figure 10 2 and Figure 10 3).

Between 2005 and July 2012, 428 diamond drillholes were drilled for exploration and resource infill purposes, with a total of 183,358 m being completed (Figure 10 4 and Figure 10 5). The majority of the drillcore was of HQ diameter, though core samples from depths below surface greater than about 450 m were generally of NQ diameter. To provide a sufficient amount of core from different types of mineralization for metallurgical testing, nine drillholes of HQ diameter were cored into the deposit in 2008 for a total of 6,126 m. An additional four holes of PQ diameter were drilled into four of the five zones of oxide silver mineralization to obtain core samples for communition tests. In the area of the deposit, 31 drillholes (including re-drills), totalling 12,834 m, were drilled for mining-related geotechnical information between 2010 and 2012. Condemnation, water well, piezometer, and short geotechnical holes drilled for the investigation of foundations for site facilities were also completed during the history of the project.

Most recently, during May and June of 2012, 33 closely-spaced diamond drillholes totaling 8,914 m were completed as part of a study to investigate the short distance variability of oxide and transitional silver mineralization in the upper 200-250 m of the Pitarrilla deposit. These holes were drilled along three control lines, two oriented ENE-WSW with the third line crossing the other two lines perpendicular to them (Figure 10 4). The orientation of drillholes varied in order to drill perpendicular to the interpreted orientation of the mineralized bodies. The dips of all drillholes were between 45° and 90°. In the Breccia Ridge Zone, drillholes were generally oriented vertically or at azimuths of 240° dipping at an average of 55°. In the South Ridge Zone, the drillholes were oriented at 100° and 274° with dips averaging 60°. In the Peña Dyke Zone, drillholes were drilled at azimuths of 200° and 025° degrees with dips at 60°. In the Cordon Colorado and Javelina Creek Zones, there were no preferred drillhole orientations.

All geological data has been reviewed and verified by the Author as being accurate to the extent possible and to the extent possible all geologic information was reviewed and confirmed. There were no errors or issues identified with the database. The Author is of the opinion that the database is of sufficient quality to be used for the current Indicated and Inferred MRE.

25.2 Pitarrilla Deposit Mineral Resource Estimate

Completion of the current MRE for the Property involved the assessment of a drill hole database, which included all data for surface drilling completed through the end of 2012, as well as three-dimensional (3D) mineral resource models (resource domains), 3D geological models, 3D surface models of fault structures, a 3D topographic surface model, and available written reports.

Inverse Distance Squared (“ID2”) calculation method restricted to mineralized domains was used to interpolate grades for Ag (g/t), Pb (ppm) and Zn (ppm) into a block model. The current MRE takes into consideration that the Pitarrilla deposit may be mined by open pit and underground mining methods.

In order to complete the MRE for the Pitarrilla deposit, a database comprising a series of comma delimited spreadsheets containing surface RC and diamond drill hole information was provided by Endeavour. The database included hole location information, down-hole survey data, assay data, lithology data and density data. The data in the assay table included assays for Ag (g/t), Pb (ppm) and Zn (ppm), as well as Cu (ppm) As (ppm), S (%), Ca (%) and AgCN (ppm). After review of the database, the data was then imported into GEOVIA GEMS version 6.8.3 software (“GEMS”) for statistical analysis, block modeling and resource estimation.

The original database provided by Endeavour included data for 831 surface RC and diamond drill holes, including 804 drill holes completed by Silver Standard between 2003 and 2012. Thus, the database used for the current MRE comprises data for 804 surface RC and diamond drill holes which total 254,386 m. The database totals 134,441 assay intervals for 188,816 m.

The database was checked for typographical errors in drill hole locations, down hole surveys, lithology, assay values and supporting information on source of assay values. Overlaps and gapping in survey, lithology and assay values in intervals were checked. All assays had analytical values for Ag (g/t), Pb (ppm) and Zn (ppm).

The Author was provided with a total of 19 3D Resource models (mineral domains), to be used for the current MRE, as well as 9 lithological 3D solids and a digital elevation surface model. All models were constructed by Silver Standard for the 2012 historical MRE. All mineral domains are clipped to topography.

The Author has reviewed the resource models on section and in the Author’s opinion the models provided are very well constructed and fairly accurately represents the distribution of the various styles of mineralization, i.e. high grade vs low grade mineralization; oxide, transition and sulphide mineralization; and, steep breccia/quartz vein and horizontal manto style sulphide mineralization. No re-modeling of the deposits is recommended at this time. Limited sporadic mineralization exists outside of these wireframes, as well as along strike and at depth. With additional drilling, some areas of scattered mineralization may get incorporated into the mineral domains.

The main Pitarrilla deposit generally strikes 330° to 335° and dips/plunges steeply east-northeast (-60° to -65°). Additional oxide mineralization in the Cordon Colorado and Javelina Creek Zones extend for 700 to 900 m southwest and northeast of the main Breccia Ridge Zone.

The assay sample database available for the revised resource modelling totalled 134,441 representing 188,816 m of drilling. Of this, a total of 53,758 assays occur within the Pitarrilla deposit mineral domains. A statistical analysis of the assay data from within the mineralized domains, by state of oxidation, is presented in Table 14 3. Average length of the assay sample intervals is 1.33 to 1.45. Of the total assay population approximately 97% are 1.53 m or less with approximately 64% of the samples between 1.50 and 1.53 m and 92 % between 1.00 m and 1.53 m in length and only 8% greater than 1.53 m. To minimize the dilution and over smoothing due to compositing, a composite length of 1.50 m was chosen as an appropriate composite length for the current MRE.

Composites were constrained to the individual mineral domains. The constrained composites were extracted to point files for statistical analysis and capping studies. The constrained composites were grouped based on the mineral domain (rock code) of the constraining wireframe model. A total of 49,994 composite sample points occur within the resource wire frame models. High grade capping of Ag, Pb and Zn was done on 1.50 m composite data.

The Author was provided with a database of 8,535 dry bulk density (“DBD”) measurements for the current MRE. DBD measurements were selected to be spatially and geologically representative (i.e., representative of geology, lithology, structure, mineralization, alteration). The density database was sub-divided by mineralization and waste domain. A total of 5,085 DBD values are from mineralized domains and 3,453 values are from waste domains. Based on a review of the available density data, it was decided that a fixed value be used for each resource model and waste model.

25.2.1 Mineral Resource Statement

The MRE presented in this Technical Report was prepared and disclosed in compliance with all current disclosure requirements for mineral resources set out in the NI 43-101 Standards of Disclosure for Mineral Projects (2016). The classification of the current Mineral Resource Estimate into Indicated and Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves, including the critical requirement that all mineral resources “have reasonable prospects for eventual economic extraction”.

The general requirement that all Mineral Resources have “reasonable prospects for economic extraction” implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate cut-off grade taking into account extraction scenarios and processing recoveries. In order to meet this requirement, the Author considers that the Pitarrilla deposit mineralization is amenable for open pit and underground extraction.

In order to determine the quantities of material offering “reasonable prospects for economic extraction” by an open pit, Whittle™ pit optimization software 4.7.1 and reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be “reasonably expected” to be mined from an open pit were used. The pit optimization was completed by SGS. The pit optimization parameters used are summarized in There is no other relevant data or information available that is necessary to make the technical report understandable and not misleading. The Author is not aware of any known mining, processing, metallurgical, environmental, infrastructure, economic, permitting, legal, title, taxation, socio-political, or marketing issues, or any other relevant factors not reported in this technical report, that could materially affect the current Mineral Resource Estimate.

Table 25-1. A Whittle pit shell at a revenue factor of 1.0 was selected as the ultimate pit shell for the purposes of this MRE. The optimized pit has been limited to the base of the transition mineralization.

The reader is cautioned that the results from the pit optimization are used solely for the purpose of testing the "reasonable prospects for economic extraction" by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade. A selected base case cut-off grade of 50 g/t AgEq is used to determine the in-pit MRE for the Pitarrilla deposit.

In order to determine the quantities of material offering "reasonable prospects for economic extraction" by underground mining methods, reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be "reasonably expected" to be mined from underground are used. The Pitarrilla sulphide mineralized zones have sufficient widths and continuity suitable for low cost bulk mining methods such as longhole stoping. The average true width of the manto style mineralization is 32 m within a range of 2.4 m and 104 m (90 % of drill intercepts > 10 m true width). The average true width of the breccia style mineralization is 31 m within a range of 1.2 m and 119 m (81 % of drill intercepts > 10 m true width). Based on other Endeavor operations in Mexico, a minimum mining thickness of 0.8 m is required for low cost bulk mining methods such as longhole stoping.

The underground parameters used, based on mining using low cost bulk mining methods, are summarized in Table 25-1. Based on these parameters, underground (below-pit) Mineral Resources are reported at a base case cut-off grade of 150 g/t AgEq. Underground Mineral Resources are estimated from the bottom of the pit (base of transition mineralization). The underground Mineral Resource grade blocks were quantified above the base case cut-off grade of 150 g/t AgEq, below the constraining pit shell and within the 3D constraining mineralized wireframes (the constraining volumes).

The current MRE for the Pitarrilla deposit is presented in Table 25-2 and includes an in-pit (oxide and sulphide transition mineralization) and an underground (below-pit) Mineral Resources (restricted to sulphide mineralization).

Highlights of the Pitarrilla deposit Mineral Resource Estimate are as follows:

- The in-pit Mineral Resource includes, at a base case cut-off grade of 50 g/t AgEq, 133.9 Mt grading 87.1 g/t Ag (375.1 Moz Ag), 0.19% Pb and 0.48% Zn in the Indicated category, and 25.6 Mt grading 76.4 g/t Ag (63.0 Moz Ag), 0.14% Pb and 0.48% Zn in the Inferred category.
- The below-pit Mineral Resource includes, at a base case cut-off grade of 150 g/t AgEq, 24.8 Mt grading 146.1 g/t Ag (116.5 Moz Ag), 1.01% Pb and 2.14% Zn in the Indicated category, and 9.8 Mt grading 115.5 g/t Ag (36.4 Moz Ag), 0.93% Pb and 1.80% Zn in the Inferred category.

There is no other relevant data or information available that is necessary to make the technical report understandable and not misleading. The Author is not aware of any known mining, processing, metallurgical, environmental, infrastructure, economic, permitting, legal, title, taxation, socio-political, or marketing issues, or any other relevant factors not reported in this technical report, that could materially affect the current Mineral Resource Estimate.

Table 25-1 Whittle™ Pit Optimization Parameters and Parameters used for In-pit and Underground Cut-off Grade Calculation

Parameter	Value	Unit
Silver Price	$22.00	US$ per pound
Zinc Price	$1.30	US$ per pound
Lead Price	$1.00	US$ per pound
In-Pit Mining Cost	$2.50	US$ per tonne mined
Underground Mining Cost	$46.50	US$ per tonne mined
Transportation	$3.00	US$ per tonne milled
Processing Cost (incl. crushing)	$17.40	US$ per tonne milled
In-Pit General and Administrative	$2.00	US$ tonne of feed
Underground General and Administrative	$10.50	US$ tonne of feed
Pit Slope - Oxide	42	Degrees
Pit Slope - Transition/Sulphide	48	Degrees
Silver Recovery - Oxide	75.0	Percent (%)
Lead Recovery - Oxide	70.0	Percent (%)
Zinc Recovery - Oxide	65.0	Percent (%)
Silver Recovery - Transition	75.0	Percent (%)
Lead Recovery - Transition	70.0	Percent (%)
Zinc Recovery - Transition	65.0	Percent (%)
Silver Recovery - Sulphide	86.0	Percent (%)
Lead Recovery - Sulphide	91.0	Percent (%)
Zinc Recovery - Sulphide	85.0	Percent (%)
Mining loss / Dilution (open pit)	5/5	Percent (%) / Percent (%)
Mining loss/Dilution (underground)	10/10	Percent (%) / Percent (%)

Table 25-2 Pitarrilla Deposit In-Pit and Underground (below-pit) Mineral Resource Estimate, October 6, 2022

In Pit (Oxide and Transition)									
Cut-off Grade (AgEq g/t)	**Tonnes**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**AgEq (g/t)**	**Ag (oz)**	**Pb (Mlbs)**	**Zn (Mlbs)**	**AgEq (oz)**
Indicated									
50	133,864,000	87.1	0.19	0.48	112.3	**375,113,000**	547	1,409	483,234,000
Inferred									
50	25,643,000	76.4	0.14	0.48	100.2	**62,958,000**	80	272	82,650,000
Underground (Sulphide)									
Cut-off Grade (AgEq g/t)	**Tonnes**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**AgEq (g/t)**	**Ag (oz)**	**Pb (Mlbs)**	**Zn (Mlbs)**	**AgEq (oz)**
Indicated									
150	24,783,000	146.1	1.01	2.14	264.4	**116,456,000**	551	1,172	210,707,000
Inferred									
150	9,808,000	115.5	0.93	1.80	217.5	**36,424,000**	202	389	68,588,000
Total in-pit and underground (Oxide, Transition and Sulphide)									
Cut-off Grade (AgEq g/t)	**Tonnes**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**AgEq (g/t)**	**Ag (oz)**	**Pb (Mlbs)**	**Zn (Mlbs)**	**AgEq (oz)**
Indicated									
50 and 150	158,647,000	96.4	0.31	0.74	136.0	**491,569,000**	1,098	2,580	693,941,000
Inferred									
50 and 150	35,451,000	87.2	0.36	0.85	132.7	**99,382,000**	281	661	151,238,000

(1) *The classification of the current Mineral Resource Estimate into Indicated and Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves.*

(2) *All figures are rounded to reflect the relative accuracy of the estimate and numbers may not add due to rounding.*

(3) *All Resources are constrained by continuous 3D wireframe models (constraining volumes), and are considered to have reasonable prospects for eventual economic extraction.*

(4) *Mineral resources which are not mineral reserves do not have demonstrated economic viability. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.*

(5) *It is envisioned that parts of the Pitarrilla deposit (oxide and transition mineralization) may be mined using open pit mining methods. In-pit mineral resources are reported at a cut-off grade of 50 g/t AgEq within a conceptual pit shell, which has been limited to the base of the transition mineralization.*

(6) *The results from the pit optimization are used solely for the purpose of testing the "reasonable prospects for economic extraction" by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade.*

(7) *It is envisioned that parts of the Pitarrilla deposit (sulphide mineralization) may be mined using underground mining methods. Underground (below-pit) Mineral Resources are estimated from the bottom of the pit (base of transition mineralization) and are reported at a base case cut-off grade of 150 g/t AgEq. The underground*

Mineral Resource grade blocks were quantified above the base case cut-off grade, below the constraining pit shell and within the constraining mineralized wireframes. At this base case cut-off grade the deposit shows good deposit continuity with limited orphaned blocks. Any orphaned blocks are connected within the models by lower grade blocks and are included in the MRE.

(8) *Based on the size, shape, location and orientation of the Pitarrilla deposit, it is envisioned that the deposit may be mined using low cost underground bulk mining methods.*

(9) *High grade capping of Ag, Pb and Zn was done on 1.50 m composite data.*

(10) *Bulk density values were determined based on physical test work from each deposit model and waste model.*

(11) *AgEq Cut-off grades consider metal prices of $22.00/oz Ag, $1.00/lb Pb and $1.30/lb Zn and considers variable metal recoveries for Ag, Pb and Zn: oxide and transition mineralization - 75% for silver, 70% for Pb and 65% for Zn; sulphide mineralization - 86% for silver, 91% for Pb and 85% for Zn.*

(12) *The pit optimization and in-pit base case cut-off grade of 50 g/t AgEq considers a mining cost of US$2.50/t rock and processing, treatment and refining, transportation and G&A cost of US$22.40/t mineralized material, an overall pit slope of 42° for oxide and 48° for transition and metal recoveries. The below-pit base case cut-off grade of 150 g/t AgEq considers a mining cost of US$46.50/t rock and processing, treatment and refining, transportation and G&A cost of US$30.90/t mineralized material.*

(13) *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*

25.3 Risk and Opportunities

The following risks and opportunities were identified that could potentially affect the future economic outcome of the project. The following does not include external risks that apply to all exploration and development projects (e.g., changes in metal prices, exchange rates, availability of investment capital, change in government regulations, etc.).

There is no other relevant data or information available that is necessary to make the technical report understandable and not misleading. The Author is not aware of any known mining, processing, metallurgical, environmental, infrastructure, economic, permitting, legal, title, taxation, socio-political, or marketing issues, or any other relevant factors not reported in this technical report, that could materially affect the MRE for the Pitarrilla Property. To the Authors knowledge, there are no additional risks or uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information or MRE.

25.3.1 Risks

25.3.1.1 Mineral Resource Estimate

A portion of the contained metal of the Deposit, at the reported cut-off grades for the current MRE, is in the Inferred Mineral Resource classification (~17%). It is reasonably expected that the majority of Inferred Mineral resources could be upgraded to Indicated Minerals Resources with continued exploration.

The mineralized structures (mineralized domains) in all zones are relatively well understood. However, due to the limited drilling in some areas, all mineralization zones might be of slightly variable shapes from what have been modeled. A different interpretation from the current mineralization models may adversely affect the current MRE. Continued drilling may help define with more precision the shapes of the zones and confirm the geological and grade continuities of the mineralized zones.

25.3.2 Opportunities

25.3.2.1 Mineral Resource Estimate

There is an opportunity in all areas of the Deposit to extend known mineralization at depth and elsewhere on the Property and to potentially convert Inferred Mineral Resources to Indicated or Measured Mineral

Resources. Endeavour's intentions are to extend the current underground ramp towards the Deposit for the purposes of conduction underground drilling to verify the historical data, better define the geological and structural controls on the mineralization, to convert Inferred resources to Indicated and Measured, and to expand on the current underground MRE.

26 RECOMMENDATIONS

The Pitarrilla deposit contains within-pit and underground Indicated and Inferred Mineral Resources that are associated with well-defined mineralized trends and models. The deposit is open along strike and at depth.

Given the prospective nature of the Deposit, it is the Author's opinion that the Project merits further exploration and that a proposed plan for further work by Endeavour is justified. A proposed work program by Endeavour will help advance the Project and will provide key inputs required to evaluate the economic viability of the Project.

The Author is recommending Endeavour conduct further exploration, subject to funding and any other matters which may cause the proposed exploration program to be altered in the normal course of its business activities or alterations which may affect the program as a result of exploration activities themselves.

The total cost of the recommended work program by Endeavour is estimated at C$2.8 million (Table 26-1). The recommended budget should be sufficient to rehabilitate and expand the existing ramp by 500 m, develop cross-cuts and establish underground drill stations. A 5,000 m underground drill program will focus on resource delineation and improve geological interpretation. An updated mineral resource estimate may need to be completed pending results.

Field exploration activities will consist of geological mapping of the Santa Cecilia and El Consuelo areas, while a regional geology program will develop additional exploration targets proximal to the main deposit.

Table 26-1 Recommended 2023 Work Program for the Pitarrilla Project

Project Area	2023 Program		Budget
	Metres	Development	US $
Geology & Surface Sampling			200,000
Underground Drilling[1]	5,000		750,000
Underground Development (Extension – Cross-Cuts & Drill stations)		500	1,250,000
Technical Studies[2]			200,000
Camp and Administration			400,000
Total	**5,000**	**500**	**2,800,000**

[1] Includes sampling cost, assaying, logging, geotechnical, drill management, core storage, travel accommodation, logging facilities, consumables, and data reporting
[2] Includes NI43-101 Technical Reporting

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28 DATE AND SIGNATURE PAGE

This report titled "Mineral Resource Estimate for the Pitarrilla Ag-Pb-Zn Project, Durango State, Mexico" dated March 15, 2023 (the "Amended Technical Report") for Endeavour Silver Corp. was prepared and signed by the following author:

The effective date of the report is October 6, 2022
The date of the report is March 15, 2023.

Signed by:

Qualified Persons	Company
Allan Armitage, Ph.D., P. Geo.,	SGS Geological Services ("SGS")

March 15, 2023

29 CERTIFICATES OF QUALIFIED PERSONS

QP CERTIFICATE – ALLAN ARMITAGE

To accompany the technical report titled **"**Mineral Resource Estimate for the Pitarrilla Ag-Pb-Zn Project, Durango State, Mexico**"** with an effective date of October 6, 2022 (the "Amended Technical Report") prepared for Endeavour Silver Corp. (the "Company").

I, Allan E. Armitage, Ph. D., P. Geol. of 62 River Front Way, Fredericton, New Brunswick, hereby certify that:

1. I am a Senior Resource Geologist with SGS Canada Inc., 10 de la Seigneurie E blvd., Unit 203 Blainville, QC, Canada, J7C 3V5 .
2. I am a graduate of Acadia University having obtained the degree of Bachelor of Science - Honours in Geology in 1989, a graduate of Laurentian University having obtained the degree of Master of Science in Geology in 1992 and a graduate of the University of Western Ontario having obtained a Doctor of Philosophy in Geology in 1998.
3. I have been employed as a geologist for every field season (May - October) from 1987 to 1996. I have been continuously employed as a geologist since March of 1997.
4. I have been involved in mineral exploration and resource modeling at the grass roots to advanced exploration stage, including producing mines, since 1991, including mineral resource estimation and mineral resource and mineral reserve auditing since 2006 in Canada and internationally. I have extensive experience in Archean and Proterozoic load gold deposits, volcanic and sediment hosted base metal massive sulphide deposits, porphyry copper-gold-silver deposits, low and intermediate sulphidation epithermal gold and silver deposits, magmatic Ni-Cu-PGE deposits, and unconformity- and sandstone-hosted uranium deposits.
5. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta and use the title of Professional Geologist (P.Geol.) (License No. 64456; 1999), I am a member of the Association of Professional Engineers and Geoscientists of British Columbia and use the designation (P.Geo.) (Licence No. 38144; 2012), and I am a member of Professional Geoscientists Ontario (PGO) and use the designation (P.Geo.) (Licence No. 2829; 2017), I am a member of the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG) and use the designation (P.Geo.) (Licence No. L4375, 2019).
6. I have read the definition of "Qualified Person" set out in National Instrument 43-101 – Standards of Disclosure for Mineral Projects – ("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.
7. I am the author of the Technical Report and responsible for all sections. I have reviewed all sections and accept professional responsibility for all sections of the Technical Report.
8. I conducted a site visit to the Pitarrilla Property on September 12 and 13, 2022.
9. I have had no prior involvement with the Pitarrilla Property.
10. I am independent of the Company as described in Section 1.5 of NI 43-101.
11. As of 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.

12. I have read NI 43-101 and Form 43-101F1 (the “Form”), and the Technical Report has been prepared in compliance with NI 43-101 and the Form.

Signed and dated March 15, 2023 at Fredericton, New Brunswick.

"Original Signed and Sealed"

Allan Armitage, Ph. D., P. Geo., SGS Canada Inc.