

# **SEC Technical Report Summary Initial Assessment on Mineral Resources San Martín Zacatecas, México**

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**Report Prepared for**

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# Table of Contents

<b>1</b>	<b>Executive Summary</b>	<b>1</b>
1.1	Property Description (Including Mineral Rights) and Ownership	1
1.2	Geology and Mineralization	1
1.3	Status of Exploration, Development and Operations	1
1.4	Mineral Resource Estimates	2
1.4.1	Measured	3
1.4.2	Indicated	3
1.4.3	Inferred	3
1.5	Conclusions and Recommendations	4
1.5.1	Property Description and Ownership	4
1.5.2	Geology and Mineralization	4
1.5.3	Mineral Resource and Mineral Reserve Estimates	5
1.5.4	Recommendations	5
<b>2</b>	<b>Introduction</b>	<b>6</b>
2.1	Registrant for Whom the Technical Report Summary was Prepared	6
2.2	Terms of Reference and Purpose of the Report	6
2.3	Report Version Update	6
2.4	Sources of Information	7
2.5	Details of Inspection	7
2.6	Qualified Person	7
<b>3</b>	<b>San Martín Property Description</b>	<b>9</b>
3.1	Property Location	9
3.2	Mineral Title, Claim, Mineral Right, Lease or Option Disclosure	10
3.3	Mineral Rights Description and How They Were Obtained	14
3.4	Encumbrances	16
3.5	Other Significant Factors and Risks	16
3.6	Royalties or Similar Interest	16
<b>4</b>	<b>Accessibility, Climate, Local Resources, Infrastructure and Physiography</b>	<b>17</b>
4.1	Topography, Elevation and Vegetation	17
4.2	Means of Access	18
4.3	Climate and Length of Operating Season	20
4.4	Infrastructure Availability and Sources	20
4.4.1	Water	20
4.4.2	Electricity	20
4.4.3	Personnel	20

4.4.4	Supplies.....	20
4.4.5	Plant/Tailings .....	21
<b>5</b>	<b>History.....</b>	<b>23</b>
5.1	Previous Operations.....	23
5.2	Exploration and Development of Previous Owners or Operators.....	25
<b>6</b>	<b>Geological Setting, Mineralization, and Deposit .....</b>	<b>26</b>
6.1	Regional, Local and Property Geology .....	26
6.1.1	Regional Geology.....	26
6.1.2	Local Geology .....	28
6.1.3	Property Geology .....	31
6.2	Mineralization.....	35
6.2.1	Mineralization and alteration .....	35
6.2.2	Structural Controls on Mineralization .....	36
6.3	Mineral Deposit .....	38
<b>7</b>	<b>Exploration .....</b>	<b>40</b>
7.1	Exploration Work (Other Than Drilling).....	40
7.1.1	Procedures and Parameters Relating to the Surveys and Investigations.....	40
7.1.2	Sampling Methods and Sample Quality .....	43
7.1.3	Information About the Area Covered.....	46
7.1.4	Significant Results and Interpretation .....	46
7.2	Exploration Drilling .....	47
7.2.1	Drilling Type and Extent .....	47
7.2.2	Drilling, Sampling, or Recovery Factors.....	49
7.2.3	Drilling Results and Interpretation .....	55
7.3	Hydrogeology .....	66
7.4	Geotechnical Data, Testing and Analysis .....	66
7.4.1	Geotechnical Mapping and Laboratory Testing .....	67
7.4.2	Ground Support Practices .....	69
7.4.3	Mining Method and Operational Considerations.....	69
7.4.4	Mine Scale Stability.....	70
7.4.5	Geotechnical Monitoring Program.....	71
7.5	Property Plan View.....	71
7.6	Exploration Target.....	72
<b>8</b>	<b>Sample Preparation, Analysis, and Security .....</b>	<b>73</b>
8.1	Sample Preparation Methods and Quality Control Measures .....	73
8.2	Sample Preparation, Assaying and Analytical Procedures.....	73
8.2.1	Density Analysis .....	73

8.2.2	Sample Preparation – Internal Laboratory .....	74
8.2.3	Chemical Analysis – Internal Laboratory.....	76
8.2.4	Sample Preparation – SGS Laboratory.....	76
8.2.5	Chemical Analysis – SGS Laboratory .....	76
8.3	Quality Control Procedures/Quality Assurance .....	78
8.3.1	Security Measures – Chain of Custody.....	78
8.3.2	Mine Geology Department .....	78
8.3.3	Exploration Department.....	78
8.4	Opinion on Adequacy.....	85
8.5	Non-Conventional Industry Practice .....	85
<b>9</b>	<b>Data Verification.....</b>	<b>86</b>
9.1	Data Verification Procedures .....	86
9.1.1	Results of the Validation Samples .....	86
9.2	Limitations .....	89
9.3	Opinion on Data Adequacy .....	90
<b>10</b>	<b>Mineral Processing and Metallurgical Testing .....</b>	<b>91</b>
10.1	Testing and Procedures .....	91
10.2	Sample Representativeness .....	91
10.3	Laboratories .....	92
10.4	Relevant Results .....	92
10.5	Adequacy of Data and Non-Conventional Industry Practice .....	94
<b>11</b>	<b>Mineral Resource Estimates .....</b>	<b>95</b>
11.1	Key Assumptions, Parameters, and Methods Used .....	95
11.1.1	Mineral Titles and Surface Rights .....	95
11.1.2	Database .....	95
11.2	Geological Model .....	98
11.3	Estimation Domain Analysis .....	102
11.4	Estimation Methodology.....	104
11.5	Assay Capping and Compositing.....	105
11.6	Variogram Analysis .....	107
11.7	Block Model.....	110
11.8	Grade Estimation .....	111
11.9	Density .....	114
11.10	Model Validation.....	114
11.11	Depletion .....	125
11.12	Resource Classification and Criteria.....	125
11.12.1	Measured Resources.....	126

11.12.2	Indicated Resources .....	126
11.12.3	Inferred Resources .....	126
11.13	Uncertainty .....	127
11.14	Cut-Off Grades Estimates .....	130
11.15	Summary Mineral Resources.....	132
11.16	Opinion on Influence for Economic Extraction.....	133
11.17	Comparison to Previous Estimates.....	133
<b>12</b>	<b>Mineral Reserve Estimates.....</b>	<b>135</b>
<b>13</b>	<b>Mining Methods.....</b>	<b>136</b>
<b>14</b>	<b>Processing and Recovery Methods .....</b>	<b>137</b>
<b>15</b>	<b>Infrastructure.....</b>	<b>138</b>
<b>16</b>	<b>Market Studies .....</b>	<b>139</b>
<b>17</b>	<b>Environmental Studies, Permitting, and Plans, Negotiations, or Agreements with Local Individuals or Groups.....</b>	<b>140</b>
<b>18</b>	<b>Capital and Operating Costs.....</b>	<b>141</b>
<b>19</b>	<b>Economic Analysis .....</b>	<b>142</b>
<b>20</b>	<b>Adjacent Properties .....</b>	<b>143</b>
<b>21</b>	<b>Other Relevant Data and Information.....</b>	<b>144</b>
<b>22</b>	<b>Interpretation and Conclusions .....</b>	<b>145</b>
22.1	Geology and Mineralization .....	145
22.2	Mineral Resource and Mineral Reserve Estimates.....	145
<b>23</b>	<b>Recommendations .....</b>	<b>147</b>
23.1	Mineral Resource and Mineral Reserve Estimates.....	147
23.2	Recommended Work Programs.....	147
23.3	Recommended Work Program Costs .....	147
<b>24</b>	<b>References.....</b>	<b>149</b>
<b>25</b>	<b>Reliance on Information Provided by the Registrant.....</b>	<b>150</b>
	<b>Signature Page .....</b>	<b>151</b>

## List of Tables

Table 1-1: San Martín Summary Mineral Resources at End of Fiscal Year Ended December 31, 2023, SRK Consulting (U.S.), Inc. <sup>(1)</sup> .....	4
Table 2-1: Site Visits.....	7
Table 3-1: Land Tenure at San Martín .....	11
Table 5-1: Production Table Summary, San Martín (2002 to 2023) .....	24

Table 7-1: Comparison of Planned vs. Real Tonnages and Grades for 2020 to 2022 .....	47
Table 7-2: Summary of Relevant Results of 2023 Exploration Drilling Campaign .....	61
Table 7-3: Summary of RMR Values Determined Using Bieniawski’s Method .....	67
Table 7-4: Summary of Hoek-Brown Parameters Determined from Mapping.....	67
Table 7-5: Summary of Point Load Strengths by Rock Type .....	68
Table 7-6: Summary of Intact Rock Strength Parameters from Laboratory Testing Program .....	68
Table 7-7: Comparison of Uniaxial Compressive Strength Test Results .....	68
Table 8-1: Specific Gravity Measurements (2022 drilling campaign).....	74
Table 9-1: Validation Rock Samples from Underground Workings.....	87
Table 9-2: Results of the Validation Core Samples (Pulps) and the Original Data - Exploration Drilling .....	88
Table 10-1: Metallurgical Performance 2020 to June 2023.....	93
Table 10-2: Cumulative Recovery used for Cut-Off Grade Analysis.....	94
Table 11-1: Summary of Drillholes by Year.....	96
Table 11-2: Summary of Underground Rock Samples by Year .....	97
Table 11-3: Summary Statistics of Raw Sampling per Domain .....	103
Table 11-4: Block Models Origin, Extents, and Block Sizes.....	111
Table 11-5: Search Parameters .....	113
Table 11-6: Comparative Statistics – OK/ID2 Grade Estimates vs. NN Estimates.....	119
Table 11-7: Sources and Degree of Uncertainty .....	129
Table 11-8: Price Assumptions.....	131
Table 11-9: Metallurgical Recovery Assumptions (Recovery in Payable concentrates).....	131
Table 11-10: NSR Adjustment Factors.....	131
Table 11-11: Operating Unit Cost.....	132
Table 11-12: San Martín Summary Mineral Resources at End of Fiscal Year Ended December 31, 2023 – SRK Consulting (U.S.), Inc. <sup>(1)</sup> .....	133
Table 11-13: Comparison IMMSA December 31, 2022, versus December 31, 2023 Mineral Resources Statement for San Martín Mine, SRK Consulting (U.S.), Inc.....	134
Table 23-1: Recommended Work Program Costs .....	148
Table 25-1: Reliance on Information Provided by the Registrant.....	150

## List of Figures

Figure 3-1: Location Map of San Martín .....	9
Figure 3-2: Map showing Concession Value .....	12
Figure 3-3: Surface Rights Map – Area of San Martín Operation .....	13
Figure 3-4: Location of Ejidos within the San Martín Concessions .....	14
Figure 4-1: Photographs of the Surrounding Area of San Martín .....	18
Figure 4-2: Access Infrastructure to San Martín Mine.....	19

Figure 4-3: Location of the Tailings Dam - Expansion ..... 22

Figure 6-1: Regional Geology Map..... 27

Figure 6-2: Local Geology Map ..... 29

Figure 6-3: Stratigraphic Column of San Martín ..... 30

Figure 6-4: Schematic Cross Section of San Martín ..... 31

Figure 6-5: Property Geology Map ..... 33

Figure 6-6: Vertical Sections – Interpreted Mineralization..... 34

Figure 6-7: 3D View of the Geological Model..... 35

Figure 6-8: Photographs of Core in Zones of Massive Sulfides (Sphalerite, Galena, Pyrite), Drillhole DDHMN21-11 ..... 36

Figure 6-9: Scheme of Structural Evolution Model..... 37

Figure 7-1: Example of Channel Sampling Location Maps (AutoCAD Format) ..... 41

Figure 7-2: Example of Geological Underground Maps (Paper and Digital AutoCAD)..... 42

Figure 7-3: 3D View of an Example of Georeferenced Vertical Section in Leapfrog ..... 43

Figure 7-4: Marks Indicating Limits and Width of Samples ..... 44

Figure 7-5: Left: Rock Sampling using Hammer and Chisel. Right: Homogenization of Fragments Size ..... 45

Figure 7-6: Drillhole Traces – San Martín..... 48

Figure 7-7: Core Drilling Logging Format Used at San Martín for Historical Information (1982) ..... 50

Figure 7-8: Core Boxes of San Martín..... 51

Figure 7-9: Core Logging Room of the Exploration Department in San Martín ..... 52

Figure 7-10: Core Boxes with Sample Marks and the Remaining Half of Core ..... 53

Figure 7-11: Labeled Core Samples..... 54

Figure 7-12: Core Logging and Core Storage Facility at San Martín ..... 55

Figure 7-13: Example of a Geology Interpretation in a Vertical Section, Including Completed Fan Drilling .... 57

Figure 7-14: Location of 2023 Drillhole Collars – Exploration Fan Drilling..... 59

Figure 7-15: N-S Vertical Section, 2023 Exploration Drilling in Gallo Gallina (Looking to East)..... 60

Figure 7-16: Map of the Areas for Exploration ..... 72

Figure 8-1: Flow Chart of Sample Preparation (Internal Laboratory) ..... 75

Figure 8-2: Detection Limits – Methods GE-ICP14B..... 77

Figure 8-3: Insertion Rates of Each Control Type ..... 79

Figure 8-4: Values of the Certified Standard Reference Materials (CDN) used by Exploration in San Martín 80

Figure 8-5: Examples of Results of Fine Blanks Controls ..... 82

Figure 8-6: Examples of Results of Fine Duplicates (Acceptability Range  $\pm 5\%$ )..... 83

Figure 8-7: Example of Results of CSRM (CDN-ME-1414) ..... 84

Figure 9-1: Scatter plots: X Axis: Validation Samples (Pulps); Y Axis: Original data..... 89

Figure 10-1: General Flow Chart of Process and Tailings ..... 91

Figure 11-1: Location of Drillholes..... 97

Figure 11-2: Rock Samples Location (3D view) ..... 98

Figure 11-3: Example of Plan View of Underground Workings and Geological Interpretation ..... 100

Figure 11-4: Example of 3D view of a vertical section of the geological model (Green: Intrusive; Red: Mineralized Mantos) ..... 101

Figure 11-5: Example Of Zinc Capping Analysis using Probability Plots and Comparative Statistics using Various Capping Levels (Gallo Gallina, domain group: Vetas) ..... 106

Figure 11-6: Length Histogram ..... 107

Figure 11-7: Semi Variograms and Model of Zinc – Manto A ..... 108

Figure 11-8: Table of Summary of Variogram Models ..... 109

Figure 11-9: Block Size KNA Analysis Result ..... 110

Figure 11-10: Example of Variable Orientations – Manto A Reference Surface ..... 112

Figure 11-11: Example of Swath Plots – Manto A, Central Zone ..... 116

Figure 11-12: Example of Swath Plots – GGM2, Gallo Gallina Zone ..... 117

Figure 11-13: Example of Visual Validation – Manto A and Manto 2- Central Zone ..... 118

Figure 11-14: 3D View of the Surveyed Underground Works ..... 125

Figure 11-15: Long Section of Manto A – Block Model Classification ..... 127



## List of Abbreviations

The metric system has been used throughout this report. Tonnes are metric of 1,000 kg, or 2,204.6 lb. All currency is in U.S. dollars (US\$) unless otherwise stated.

Abbreviation	Unit or Term
A	ampere
AA	atomic absorption
A/m <sup>2</sup>	amperes per square meter
ANFO	ammonium nitrate fuel oil
Ag	silver
Au	gold
AuEq	gold equivalent grade
°C	degrees Centigrade
CCD	counter-current decantation
CIL	carbon-in-leach
CoG	cut-off grade
cm	centimeter
cm <sup>2</sup>	square centimeter
cm <sup>3</sup>	cubic centimeter
cfm	cubic feet per minute
ConfC	confidence code
CRec	core recovery
CSS	closed-side setting
CTW	calculated true width
Cu	copper
°	degree (degrees)
dia.	diameter
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
FA	fire assay
ft	foot (feet)
ft <sup>2</sup>	square foot (feet)
ft <sup>3</sup>	cubic foot (feet)
g	gram
gal	gallon
g/L	gram per liter
g-mol	gram-mole
gpm	gallons per minute
g/t	grams per tonne
ha	hectare
HDPE	Height Density Polyethylene
hp	horsepower
HTW	horizontal true width
ICP	induced couple plasma
ID2	inverse-distance squared
ID3	inverse-distance cubed
IFC	International Finance Corporation
ILS	Intermediate Leach Solution
kA	kiloamperes
kg	kilograms
km	kilometer
km <sup>2</sup>	square kilometer
koz	thousand troy ounce
kt	thousand tonnes
kt/d	thousand tonnes per day
kt/y	thousand tonnes per year
kV	kilovolt
kW	kilowatt

<b>Abbreviation</b>	<b>Unit or Term</b>
kWh	kilowatt-hour
kWh/t	kilowatt-hour per metric tonne
L	liter
L/sec	liters per second
L/sec/m	liters per second per meter
lb	pound
LHD	Long-Haul Dump truck
LLDDP	Linear Low Density Polyethylene Plastic
LOI	Loss On Ignition
LoM	Life-of-Mine
m	meter
m <sup>2</sup>	square meter
m <sup>3</sup>	cubic meter
M+I	Measured + Indicated
masl	meters above sea level
MARN	Ministry of the Environment and Natural Resources
MDA	Mine Development Associates
mg/L	milligrams/liter
mm	millimeter
mm <sup>2</sup>	square millimeter
mm <sup>3</sup>	cubic millimeter
MME	Mine & Mill Engineering
Moz	million troy ounces
Mt	million tonnes
MTW	measured true width
MW	million watts
m.y.	million years
NGO	non-governmental organization
NI 43-101	Canadian National Instrument 43-101
OSC	Ontario Securities Commission
oz	troy ounce
%	percent
Pb	lead
PLC	Programmable Logic Controller
PLS	Pregnant Leach Solution
PMF	probable maximum flood
ppb	parts per billion
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
RC	rotary circulation drilling
RoM	Run-of-Mine
RQD	Rock Quality Description
SEC	U.S. Securities & Exchange Commission
sec	second
SG	specific gravity
SPT	standard penetration testing
st	short ton (2,000 pounds)
t	tonne (metric ton) (2,204.6 pounds)
t/h	tonnes per hour
t/d	tonnes per day
t/y	tonnes per year
TSF	tailings storage facility
TSP	total suspended particulates
µm	micron or microns
V	volts
VFD	variable frequency drive
W	watt
XRD	x-ray diffraction
y	year

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<b>Abbreviation</b>	<b>Unit or Term</b>
Zn	zinc

# 1 Executive Summary

This report was prepared as an initial assessment (mineral resource) technical report summary in accordance with the Securities and Exchange Commission (SEC) S-K regulations (Title 17, Part 229, Items 601 and 1300 until 1305) for Southern Copper Corporation (SSC) on their Industrial Minera México, S.A. de C.V (IMMSA or Company), a wholly owned subsidiary of Southern Copper Corporation, by SRK Consulting (U.S.), Inc. (SRK) on the San Martín Mine (San Martín), located in México.

## 1.1 Property Description (Including Mineral Rights) and Ownership

The San Martín Project consists of 73 mining concessions with a total surface of 10,360.9508 hectares (ha), with the titles held 100 percent (%) by IMMSA. The 73 mining concessions are valid for 50 years and extendable to 50 more years. The oldest concession was originally awarded in 1979 and has a current expiration date of 2029; however, the concession may be extended 50 more years.

IMMSA owns sufficient surface lands with rights to conduct any work or exploration required to advance or continue of activities within the San Martín project.

## 1.2 Geology and Mineralization

San Martín mine is located in the Central Mesa of México, between Sierra Madre Occidental and Sierra Madre Oriental. The Cuesta del Cura (Upper Cretaceous) limestone is the main sedimentary formation in the district. This is a sequence of shallow marine limestone and black chert which is overlain by Indura Formation that consists of alternating shales and fine-grained clayey limestones.

The mineral deposits in this district are associated with replacement veins and bodies formed in the skarn in close proximity to the Cerro de la Gloria granodiorite intrusion. The main mineralized veins are San Marcial, Ibarra and Gallo-Gallina which are oriented parallel to the intrusive contact and have thicknesses varying from 0.4 m to 4 m and horizontal extents of up to 1,000 m to the east/northeast from the granodiorite contact. The mineralization is associated with massive and disseminated sulfides occurring in replacement ore bodies between the main veins and in the skarn and include chalcopyrite (CuFeS), sphalerite (ZnS), galena (PbS), bornite (CuFeS), tetrahedrite (CuFe Sb S), native silver (Ag), Pyrite (FeS), arsenopyrite (FeAsS) and stibnite (SbS).

## 1.3 Status of Exploration, Development and Operations

IMMSA has been exploiting the deposit since 1948. At the beginning of the 1950s, the surface and interior exploration of the mine began in San Martín, from this period until 2005, approximately 100,000 m were drilled from surface and 220,000 m from underground chambers. During the years 1990-1997 approximately 67,000 meters with a total of 165 holes were completed.

Between the years 1990-1997, a large surface exploration program was completed in the area surrounding the San Martín mine. The exploration program included application of standard modern exploration techniques such as satellite imagery, geophysical surveys, mapping.

In 2008, a geological-geochemical study was carried out in the eastern area of the San Martín unit, Sombrerete, Zacatecas; which indicated a number of anomalous N-S striking anomalies in the limestones, associated with the intrusive contact. A total of five holes were completed to test the

intrusive-limestone contact, and in order to explore the contact at depth and possible replacement mineralization in the Skarn.

The San Martín Mine was operated by Grupo México until the late 2007 when it closed due to labor unrest. The mine reopened August 21, 2018, upon resolution of the labor issues and has been in continuous production since.

Exploration at San Martín is ongoing with drills targeting economic extensions of the main deposit and new satellite orebodies. Drilling activities completed by San Martín's exploration department are generally conducted following industry best practices, including quality assurance/quality control (QA/QC) protocols. However, at the internal laboratory used for some of the assays, no certification has been completed, which in the Qualified Person's (QP) opinion does not meet the required standards for reporting under international best practice and therefore limits the confidence in these assays to accurately estimate grades. The QP recommends that more-detailed validation and external checks should be completed if the laboratory is not certified given the lack of independence presented. The QP recommends that IMMSA undertake a program to certify the laboratory as is completed at their other operation (Charcas).

## 1.4 Mineral Resource Estimates

Historically, San Martín has collected samples from diamond core drilling (surface and underground) and channel samples from underground workings. This work was conducted by a combination of the exploration department and the mine geology department. The work completed by the mine department has not been supported by industry-standard QA/QC protocols, including the lack of downhole surveys, which in the QP's opinion is not in-line with industry best practices. In 2023 San Martín started to implement the use of NQ core size in all the drilling completed by the mine geology department, but no new QA/QC protocol has been implemented.

Despite this, the variability of the mineralization at San Martín appears to be appropriately interpreted based on the available information. SRK has reviewed the reconciliation of the planned versus actual grades and tonnages reported at San Martín and based on the long mining history, considered the drilling and channel rock sampling grades reported to be representative of the mined material.

For previous resource estimates, most of the data was obtained from historical paper copies, such as geological mapping within the mine workings and vertical section and plan view interpretations of the geology and mineralization, and very little information was available in digital format to facilitate the construction of both a three-dimensional (3D) geological and 3D resource block model.

In 2022, San Martín accelerated the process of digitization of base information for mineral resource estimation and in 2023 the first complete 3D geological model was constructed. The current resource estimation used the geological model and the digitized data of drilling and rock sampling, completed the typical statistical analysis, constructed a block model and performed the interpolation of Ag, Pb, Zn and Cu.

The geological team of San Martín finalized the geological modeling and Mineral Resource Estimation (MRE) using Seequent Leapfrog Geo and Leapfrog Edge software tools. The geological modeling included the creation of wireframe solids delineating the geological/mineralization domains. Furthermore, the process involved data compositing and capping, geostatistical and variography analyses. Subsequent steps comprised block modeling, grade interpolation techniques, and validation

process. SRK worked with San Martín throughout the process to ensure that the geological modeling and mineral resource estimates were performed following standard practices.

A single density value of 3.3 tonnes per cubic meter ( $t/m^3$ ) is used to obtain tonnages. The San Martín operation has used this density value for an extended period of time, and the density value is reportedly based on historical tests that have not been documented and are not available. The QP considers the lack of testwork and documentation to represent a potential risk to estimating the correct tonnage and has therefore considered this during the classification process. The QP notes that this is also the same tonnage applied by the operation.

Mineral resources have been categorized based on relative confidence in the modeling, estimation, or reporting of the tonnage and grades from the model.

#### **1.4.1 Measured**

There are no Measured mineral resources, as insufficient overall confidence exists to confirm geological and grade continuity between points of observation to the level needed to support detailed mine planning and final evaluation studies. In the QP's opinion, other limitations are a lack of density measurements and insufficient QA/QC protocols in the mine samplings protocols. Due to the lack of QA/QC protocols for the historical drilling and channel sampling, deficiencies in the channel sampling procedures, and the lack of downhole surveys, SRK established that there are no Measured resources in San Martín.

#### **1.4.2 Indicated**

Blocks within 40 m search range and using a minimum of two drillholes or rock channel, where the distance to the mining works and rock sampling is also considered for assignment of confidence using the same criteria.

#### **1.4.3 Inferred**

Blocks within 80 m search range and using a minimum of one drillhole or channel sample, and reasonable geological continuity. The distance to the mining works and rock sampling is also considered for assignment of confidence using the same criteria.

The estimate was categorized in a manner consistent with industry standards. Mineral resources have been reported using economic and mining assumptions to support the reasonable potential for economic extraction of the resource. A cut-off grade (CoG) has been derived from these economic parameters, and the resource has been reported above this cut-off. The mineral resource is reported exclusive of reserves.

San Martín mineral resources are in compliance with the S-K 1300 resource definition requirement of reasonable prospects for economic extraction. Depletions have been accounted for using the latest survey information for most of the areas of the mine, and only a few areas that were exploited in the last month of 2023 were adjusted according to the planned exploitation. It is SRK's opinion that the differences with the real exploited material are not material.

Given that process recoveries and costs in the resource model are grade and/or domain dependent, the resources are reported with respect to a block Net Smelter Return (NSR) value which is calculated on a stope block (panel) basis.

NSR cut-off values for the Mineral Resources were established using a zinc (Zn) price of US\$1.32/pound (lb) Zn, a lead (Pb) price of US\$1.09/lb Pb, a silver price of US\$23.0/troy ounce (oz) Ag, and a copper (Cu) price of US\$3.80/lb Cu. While minor amounts of gold exist at the project (0.1 grams/tonne (g/t) head grade) gold has not been used as a revenue driver within the NSR calculation.

The Mineral Resources for the San Martín underground operation as of December 31, 2023, are summarized in Table 1-1 and are reported on an in-situ basis and are reported based on an NSR cut-off of US\$63.1/tonne (t). Mineral Resources have been reported in total (which in effect are exclusive of Reserves) as currently no Mineral Reserves are declared for the Project in compliance with the new S-K 1300 standards.

**Table 1-1: San Martín Summary Mineral Resources at End of Fiscal Year Ended December 31, 2023, SRK Consulting (U.S.), Inc.<sup>(1)</sup>**

IMMSA Underground – San Martín							Cut-Off <sup>(2)</sup>		NSR <sup>(3)</sup> US\$63.1	
Category	Tonnage Quantity (kt)	Grade					Metal			
		Ag (g/t)	Zn (%)	Pb (%)	Cu (%)	NSR <sup>(3)</sup> (US\$)	Ag (koz)	Zn (t)	Pb (t)	Cu (t)
Measured										
Indicated	12,978	77	1.97	0.34	0.65	106	32,236	256,307	43,909	84,753
M+I	12,978	77	1.97	0.34	0.65	106	32,236	256,307	43,909	84,753
Inferred	52,330	72	2.66	0.32	0.48	107	121,500	1,393,758	167,526	251,323

Source: SRK, 2024

<sup>(1)</sup>Mineral resources are reported exclusive of mineral reserves. Mineral resources are not ore reserves and do not have demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimates. Silver, lead, zinc, and copper assays were capped where appropriate. Given historical production, it is the company's opinion that all the elements included in the metal equivalents calculation have a reasonable potential to be recovered and sold.

<sup>(2)</sup>Mineral resources are reported at metal equivalent CoGs based on metal price assumptions,\* variable metallurgical recovery assumptions,\*\* mining costs, processing costs, general and administrative (G&A) costs, and variable NSR factors. Mining, processing, and G&A costs total US\$63.1/t.

\*Metal price assumptions considered for the calculation of metal equivalent grades are: gold (US\$1,725.00/oz), silver (US\$23.0/oz), lead (US\$1.09/lb), zinc (US\$1.32/lb), and copper (US\$3.80/lb).

\*\*CoG calculations and metal equivalencies assume variable metallurgical recoveries as a function of grade and relative metal distribution. Average metallurgical recoveries are: silver (71%), lead (31%), zinc (75%), and copper (67%), assuming recovery of payable metal in concentrate.

<sup>(3)</sup> Cut-off grade calculations and metal equivalencies assume variable NSR factors as a function of smelting and transportation costs. The NSR Values (inclusive of recovery) are calculated using the following calculation  $NSR = Ag*0.465 + Pb*6.776 + Cu*51.067 + Zn*17.656$

The mineral resources were estimated by SRK Consulting (U.S.), Inc, a third-party QP under the definitions defined by S-K 1300.

koz: Thousand troy ounces

kt: Thousand tonnes

## 1.5 Conclusions and Recommendations

### 1.5.1 Property Description and Ownership

The San Martín Project consists of 73 mining concessions with a total surface of 10,360.9508 ha, with the titles held 100% by IMMSA.

IMMSA owns sufficient surface lands with rights to conduct any work or exploration required to advance or continue of activities within the San Martín project.

### 1.5.2 Geology and Mineralization

The overall geology of San Martín is well understood as a result of the long mine life to date which is supplemented with more recent exploration. The mineralization styles and exploration models are well

established, to aid in the determination of the geometry of future Mineral Resources and Mineral Reserves.

### 1.5.3 Mineral Resource and Mineral Reserve Estimates

It is SRK's opinion that the mineral resources stated herein are appropriate for public disclosure and meet the definitions of Indicated and Inferred resources established by SEC guidelines and industry standards.

SRK recommends continuing digitizing the drilling and rock sampling and keep the database updated for future geological model update. This could include geological/mineralization maps and sections.

In the QP's opinion, the assumptions, parameters, and methodology used for the San Martín underground mineral resource estimates are appropriate for the style of mineralization and mining methods.

The QP has recommended that IMMSA use a data capture tool and the creation of a geologic database to provide secure storage of drilling data. The database will provide better data control and a potential audit trail for any changes made in the system over time.

### 1.5.4 Recommendations

It is the QP's opinion that measures that should be taken to mitigate the uncertainty include, but are not limited to:

- Continual infill drilling in the most critical areas of the deposit, locally to spacing of less than 40 m x 40 m
- Introduction of more routine density sampling within the mineralization to confirm level of fluctuation from the current uniform assignment of a single 3.3 t/m<sup>3</sup> value
- SRK recommends reviewing the procedures of drilling and sampling and design and implement of a complete QA/QC protocol for the drilling and rock sampling activities performed by the mine geology department of San Martín
- Obtain certification for the internal mine laboratory to international standards
- QA/QC protocol of the Exploration Department: Implement the use of an umpire laboratory (commercial laboratory) to send the second laboratory check samples periodically (for example, quarterly), and the review of the acceptability criteria used to evaluate the duplicate controls results
- Maintain the digitization of all new geological information and storage of data into a commercial secure database
- Extensive QA/QC analysis and monitoring to understand relative impacts to local inherent variability within resource domains.



## **2 Introduction**

### **2.1 Registrant for Whom the Technical Report Summary was Prepared**

This Technical Report Summary was prepared in accordance with the Securities and Exchange Commission (SEC) S-K regulations (Title 17, Part 229, Items 601 and 1300 through 1305) for Southern Copper Corporation (SSC) on its subsidiary Industrial Minera México, S.A. de C.V (IMMSA or Company) by SRK Consulting (U.S.), Inc. (SRK) on the San Martín Mine (San Martín), located in the state of Zacatecas, México.

### **2.2 Terms of Reference and Purpose of the Report**

The quality of information, conclusions, and estimates contained herein are consistent with the level of effort involved in SRK's services, based on:

- i) information available at the time of preparation and
- ii) the assumptions, conditions, and qualifications set forth in this report.

This report is intended for use by IMMSA subject to the terms and conditions of its contract with SRK and relevant securities legislation. The contract permits IMMSA to file this report as a Technical Report Summary with U.S. securities regulatory authorities pursuant to the SEC S-K regulations, more specifically Title 17, Subpart 229.600, item 601(b)(96) - Technical Report Summary and Title 17, Subpart 229.1300 - Disclosure by Registrants Engaged in Mining Operations. Except for the purposes legislated under US federal securities law, or with other securities regulators as specifically consented to by SRK, any other use of this report by any third party are at that party's sole risk. The responsibility for this disclosure remains with IMMSA.

The purpose of this Technical Report Summary is to report mineral resources for the Project.

The effective date of this report is December 31, 2023.

References to industry best practices contained herein are generally in reference to those documented practices as defined by organizations such as the Society for Mining Metallurgy and Exploration (SME), the Canadian Institute of Mining, Metallurgy, and Petroleum (CIM), or international reporting standards as developed by the Committee for Mineral Reserves International Reporting Standards (CRIRSCO).

### **2.3 Report Version Update**

This Technical Report Summary is an update of a previously filed Technical Report Summary and is the most-recent report. This report presents an update from the previously filed technical report summary entitled, "SEC Technical Report Summary Initial Assessment on Mineral Resources San Martín, Zacatecas, México, effective date December 31, 2021, and reported February 25, 2022." The current report accounts changes made in the mineral resource process and a switch from the traditional two-dimensional (2D) methods used in prior years, to more modern three-dimensional (3D) geological models and associated estimates for tonnage and grade. The updated mineral resources based on 2022/2023 exploration activities. The updated models reflect the 2023 models have been depletion using 3D surveys of the completed mining.

## 2.4 Sources of Information

This report is based in part on internal Company technical reports, previous studies, maps, published government reports, and public information as cited throughout this report and listed in the References Section 24.

Reliance upon information provided by the registrant is listed in Section 25 when applicable.

SRK’s report is based upon the following information:

- Site visits to the project
- Discussions and communications with the key personnel of the operation of San Martín
- Data collected by the Company from historical mining operation
- Review of the data collection methods and protocols, including sampling, QA/QC, assaying, etc.
- Review of the original drillhole logging sheets
- Review of paper documents supporting the resource/reserve estimates, including interpretation on sections, spreadsheets, and manual calculations (Excel)
- Review of geological models and resource estimations in Leapfrog Geo software

## 2.5 Details of Inspection

Table 2-1 summarizes the details of the personal inspections completed between 2021 and 2023 on the property by each QP or, if applicable, the reason why a personal inspection has not been completed.

**Table 2-1: Site Visits**

Expertise	Date(s) of Visit	Details of Inspection
Geology, Exploration, and Mineral Resources	June 13 – 16, 2021	Review drilling and sampling procedures, visit to underground workings, review of procedures of estimation of resources
Geology, Exploration, and Mineral Resources	October 11 – 15, 2021	Review of procedures of resources estimation and supporting data. Review of QA/QC procedures for sampling. Validation sampling
Geology, Exploration, and Mineral Resources	November 28 – 30, 2021	Review of procedures of estimation, check of resource blocks and supporting data
Geology, Exploration, and Mineral Resources	November 19 – 21, 2022	Review exploration procedures and the updated resource blocks and supporting data
Geology, Exploration, and Mineral Resources	March 27 – 30, 2023	Review exploration procedures, databases and geological modeling in Leapfrog.

Source: SRK, 2023

## 2.6 Qualified Person

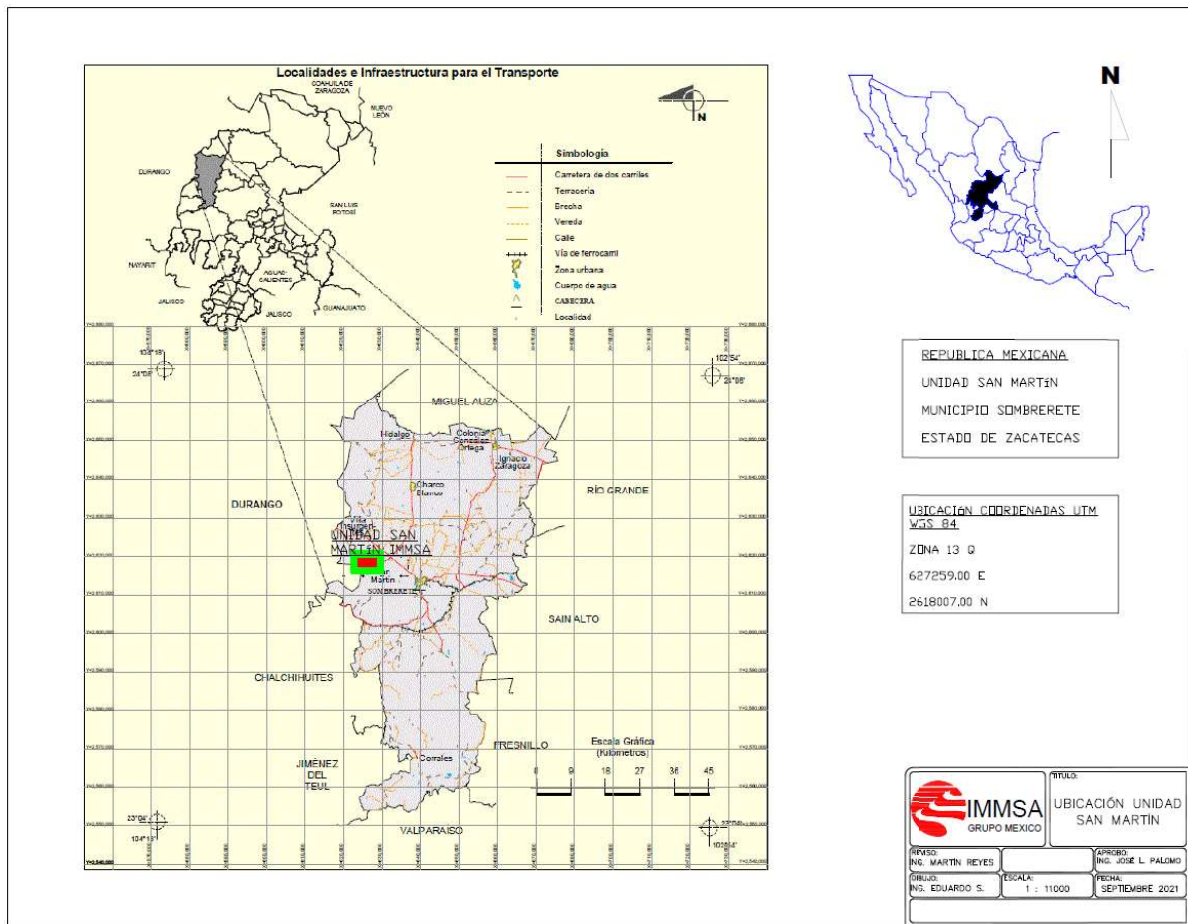
This report was prepared by SRK Consulting (U.S.), Inc., a third-party firm comprising mining experts in accordance with § 229.1302(b)(1). IMMSA has determined that SRK meets the qualifications

specified under the definition of qualified person in § 229.1300. References to the Qualified Person or QP in this report are references to SRK Consulting (U.S.), Inc. and not to any individual employed at SRK.

### 3 San Martín Property Description

#### 3.1 Property Location

The San Martín mining district is located in the northwest portion of the state of Zacatecas, approximately 185 kilometers (km) from the city of Zacatecas. The elevation is approximately 2,600 meters (m) with geographic coordinates of 629,000 E and 2,614,000 N (WGS84, UTM Zona 13) (Figure 3-1). The nearest major town is the municipality of Sombrerete (17 km away) in the Sierra Madre Occidental geographic province. This is an area with considerable mining history, dating back to 1555.



Source: IMMSA, 2021

**Figure 3-1: Location Map of San Martín**

The area is located at the intersection of the physiographic provinces of the Sierra Madre Occidental and La Mesa within the high plains of México. The characteristic relief in the region is considered as elevated open plains, with average elevations in Sombrerete of 2,351 meters above sea level (masl). Sabinas is located in more mountainous terrain to the west of the city with elevations ranging from 2,000 to 3,000 masl.

## **3.2 Mineral Title, Claim, Mineral Right, Lease or Option Disclosure**

In México, mining concessions are granted by the Economy Ministry and are considered exploitation concessions with a 50-year term. Mining concessions have an annual minimum investment to complete and an annual mining rights fee to be paid to keep the concessions effective. Valid mining concessions can be renewed for an additional 50-year term if the mine is active.

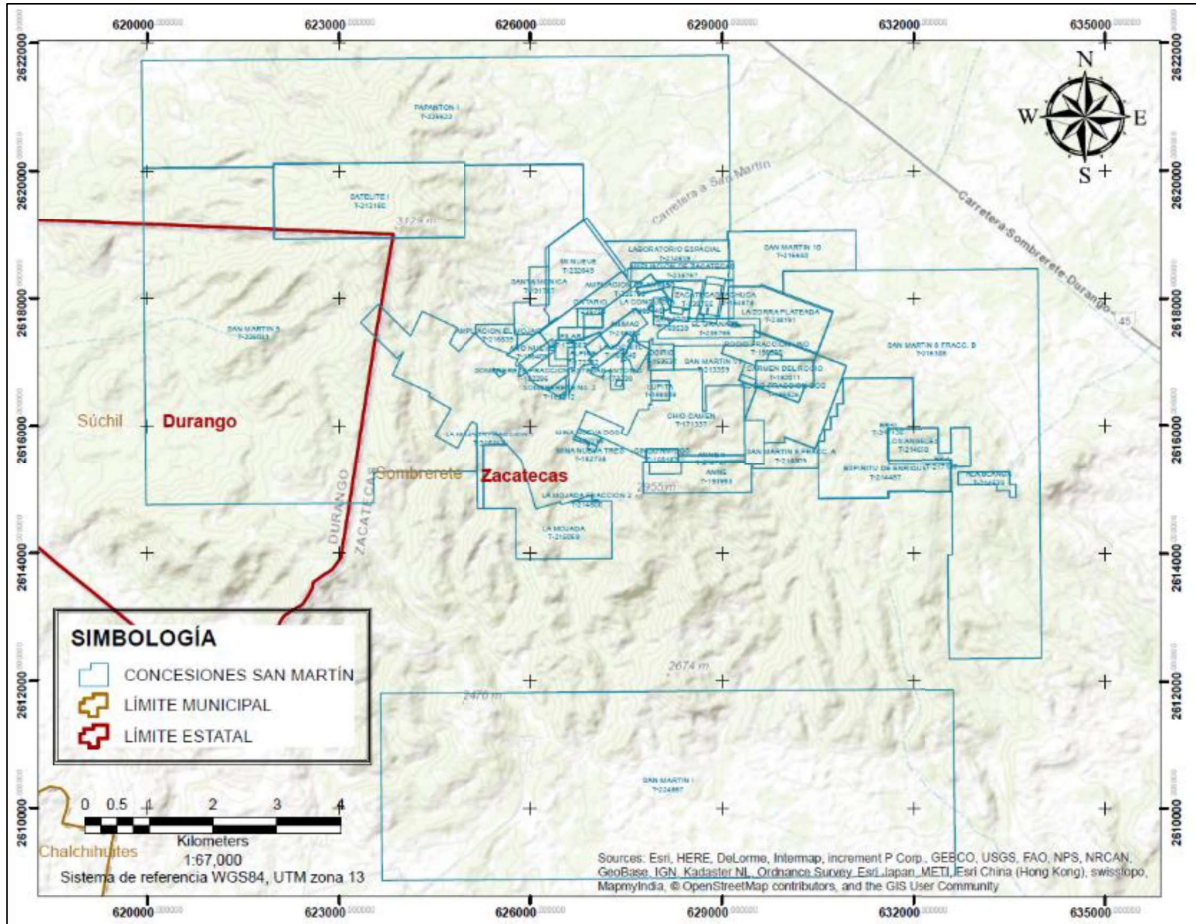
SRK was provided legal documentation by IMMSA and has relied on that information for the purposes of this section as discussed in Section 25 of this report. SRK has relied on this information and disclaims responsibility for its accuracy or any errors or omissions in that information.

The San Marin Project consists of 73 mining concessions with a total surface of 10,360.9508 ha, which are owned by IMMSA. Table 3-1 and Figure 3-2 show San Martín mining concessions.

**Table 3-1: Land Tenure at San Martín**

No.	Title	Name of the Concession	Expedition	Validity	Surface
1	164419	SAN JUAN	05/07/1979	05/06/2029	4.51
2	164878	PACHUCA	07/11/1979	07/10/2029	17.11
3	168182	CINCO AMIGOS	19/03/1981	18/03/2031	10.00
4	169533	LA FE	12/03/1981	12/02/2031	6.60
5	169534	TAJO DE SAN ANTONIO	12/03/1981	12/02/2031	6.00
6	169535	HUECO No. 3	12/03/1981	12/02/2031	0.01
7	169536	HUECO No. UNO	12/03/1981	12/02/2031	0.07
8	169537	OSIRIS	12/03/1981	12/02/2031	15.87
9	169538	BETANIA	12/03/1981	12/02/2031	1.68
10	169539	SAN JOSE	12/03/1981	12/02/2031	5.26
11	169540	LA XOCHITL	12/03/1981	12/02/2031	11.74
12	171337	CHIO CAMEN	20/09/1982	19/09/2032	209.95
13	171830	SAN EXPEDITO	15/06/1983	14/06/2033	1.00
14	172222	ALPINE	27/10/1983	26/10/2033	15.89
15	172223	INDEPENDENCIA Y LIBERTAD	27/10/1983	26/10/2033	2.00
16	172224	SAN VICENTE DE PAUL	27/10/1983	26/10/2033	2.00
17	172239	SAN ANTONIO	27/10/1983	26/10/2033	15.95
18	172667	PILAR	28/06/1984	27/06/2034	8.96
19	182008	SEGUNDA FRACC. DE AÑO NUEVO	04/08/1988	04/07/2038	1.05
20	182010	LA JOYA	04/08/1988	04/07/2038	5.00
21	182011	CARMEN DEL ROCIO	04/08/1988	04/07/2038	36.00
22	182012	SOMBRERETE No. 2	04/08/1988	04/07/2038	4.60
23	182013	LA ESMERALDA	04/08/1988	04/07/2038	8.00
24	182014	PROVIDENCIA	04/08/1988	04/07/2038	6.00
25	182015	LA ESMERALDA NOROESTE	04/08/1988	04/07/2038	6.00
26	182294	SOMBRERETE CUATRO FRACC. NORTE	31/05/1988	30/05/2038	0.58
27	182296	SOMBRERETE FRACC. ESTE	31/05/1988	30/05/2038	31.49
28	182738	MINA NUEVA TRES	16/08/1988	15/08/2038	2.29
29	182739	MINA NUEVA DOS	16/08/1988	15/08/2038	5.57
30	185879	25 DE OCTUBRE	14/12/1989	13/12/2039	10.66
31	186409	AÑO NUEVO	30/03/1990	29/05/2040	12.94
32	187017	LA ESPADA	29/05/1990	28/05/2040	0.23
33	188009	LUPITA	22/11/1990	21/11/2040	8.57
34	190015	EL MOJA'O	12/06/1990	12/05/2040	2.67
35	191787	SANTA MONICA	19/12/1991	18/12/2041	18.00
36	191993	ANNE	19/12/1991	18/12/2041	74.42
37	195372	EL VIRUTO	14/09/1992	13/09/2042	1.00
38	195448	LA CONQUISTA	14/09/1992	13/09/2042	9.00
39	196525	ROCIO FRACCION UNO	23/07/1993	21/09/2036	35.05
40	196526	ROCIO FRACCION DOS	23/07/1993	21/09/2036	13.00
41	196527	ROCIO FRACCION TRES	23/07/1993	21/09/2036	0.37
42	213180	SATELITE I	30/03/2001	29/03/2051	360.00
43	213359	SAN MARTÍN VII	27/04/2001	26/04/2051	58.13
44	214487	ESPIRITU DE ENRIQUE	10/02/2001	10/01/2051	257.93
45	214539	ALA BLANCA	10/02/2001	10/01/2051	20.00
46	214619	LABORATORIO ESPACIAL	10/02/2001	10/01/2051	78.77
47	214650	LOS ANGELES	26/10/2001	25/10/2051	60.00
48	214800	LA MOJADA FRACCION 2	12/04/2001	12/03/2051	1.76
49	215069	LA MOJADA	02/07/2002	02/06/2052	194.10
50	215148	LA MOJADA FRACC. 1	02/08/2002	02/07/2052	17.60
51	216308	SAN MARTÍN 8 FRACC. B	30/04/2002	29/04/2052	1,000.77
52	216309	SAN MARTÍN 8 FRACC. A	30/04/2002	29/04/2052	34.69
53	216639	AMPLIACION EL MOJAO	17/05/2002	16/05/2052	22.26
54	216640	SAN MARTÍN 10	17/05/2002	16/05/2052	146.26
55	216787	ANNE II	28/05/2002	27/05/2052	10.76
56	217126	ER-II	18/06/2002	17/06/2052	0.67
57	217187	ER-I	07/02/2002	07/01/2052	7.60
58	224667	SAN MARTÍN I	31/05/2005	30/05/2055	2,640.35
59	225031	SAN MARTÍN 9	07/08/2005	07/07/2055	2,459.23
60	225622	PAPANTON I	23/09/2005	22/09/2055	1,804.97
61	232462	2a.FRACCION DE EL BRINCO	08/08/2008	08/07/2058	10.00
62	232649	MI NUEVE	10/02/2008	10/01/2058	109.76
63	234694	SOMBRERETE SEIS	29/07/2009	28/07/2059	110.70
64	235754	ANIMAS	03/02/2010	03/01/2060	18.40
65	235755	ZACATECAS	03/02/2010	03/01/2060	32.60
66	235756	EL GRANATE	03/02/2010	03/01/2060	44.68
67	235757	AMPLIACION DE ZACATECAS	03/02/2010	03/01/2060	45.15
68	235758	ONTARIO	03/02/2010	03/01/2060	37.66
69	235759	AMPLIACION ANIMAS	03/02/2010	03/01/2060	36.84
70	235760	LA NUEVA ERA	03/02/2010	03/01/2060	2.89
71	235761	EL GALLO	03/02/2010	03/01/2060	3.35
72	235762	LA GALLINA	03/02/2010	03/01/2060	0.31
73	238191	LA ZORRA PLATEADA	08/12/2011	08/11/2061	105.67

Source: IMMSA, 2021

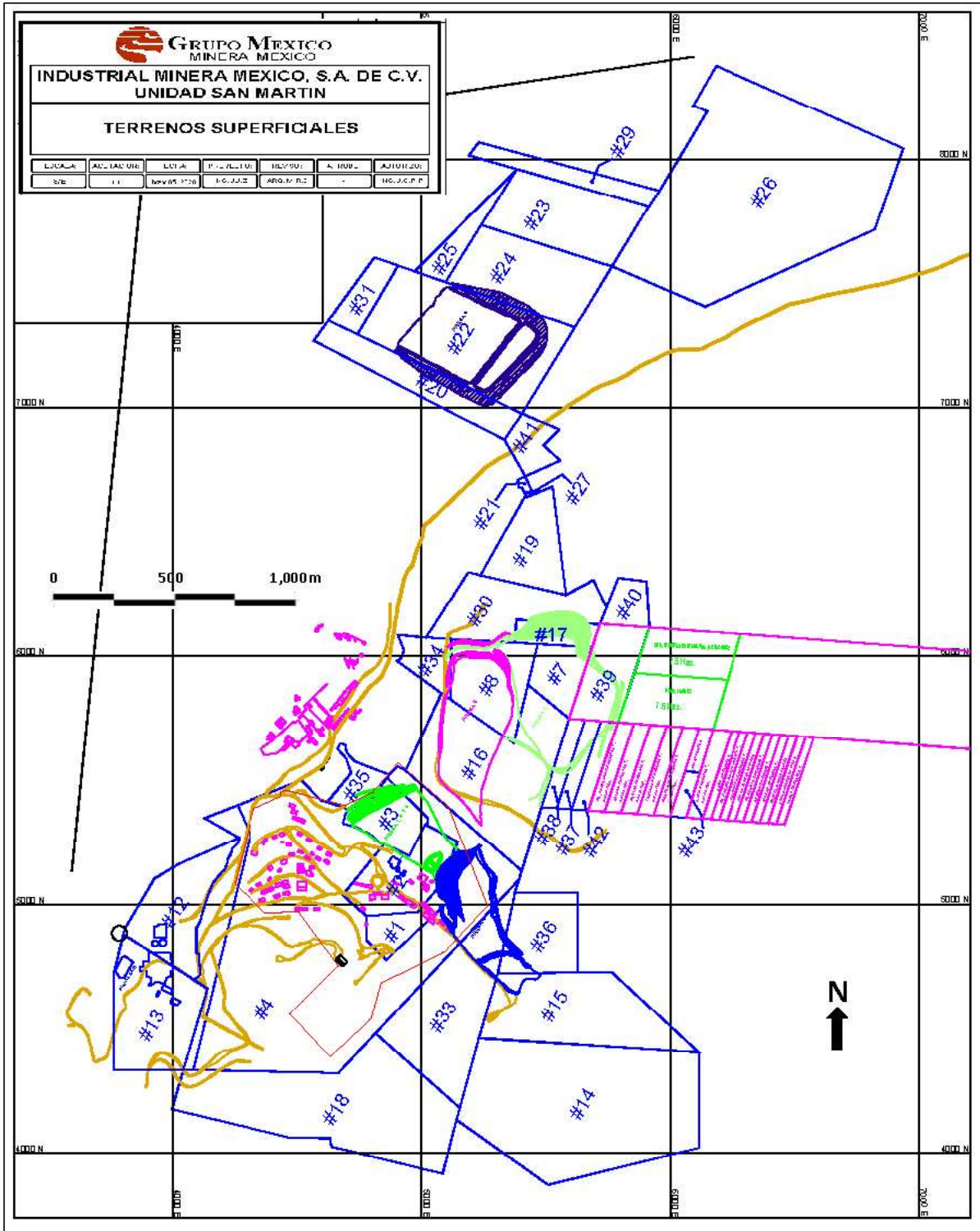


Source: IMMSA, 2021

**Figure 3-2: Map showing Concession Value**

Within the San Martín mining unit, there are surface lands covering an area of 878.96 hectares, owned by Industrial Minera México, S.A. de C.V. (Figure 3-3).

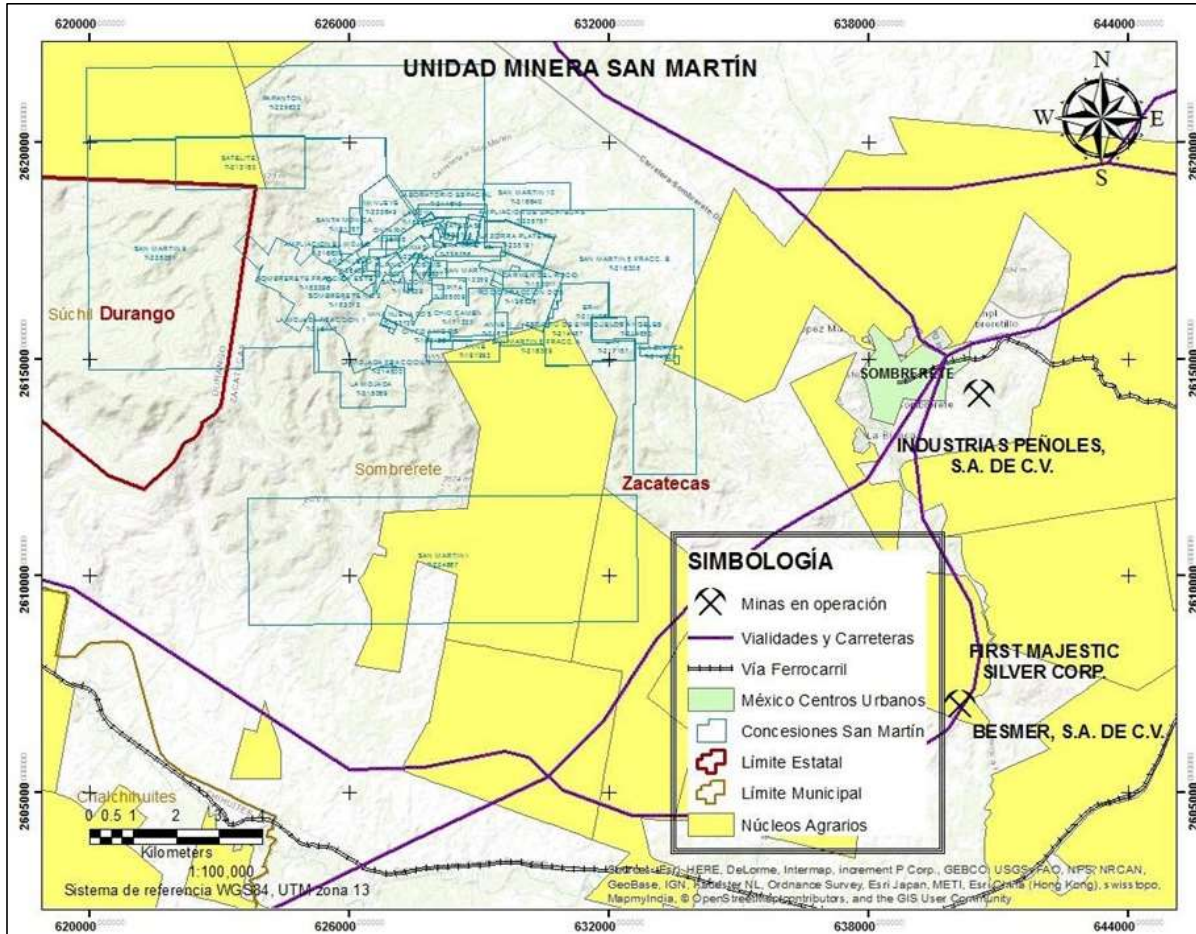
Surface rights in México are commonly owned either by communities (“Ejidos”) or by private owners (Figure 3-4). The San Martín mining district land is mainly owned by the Company but some Ejidos also exist within the current concessions. In either case, the mining concessions include “right of way” rights, although in many cases it is necessary to negotiate access to the land. Federal or state roads allow permission to access federal or state lands without other requirements. Additionally, the Mexican Mining Law includes provisions to facilitate purchasing land required for mining activities, installations, and development.



Source: IMMSA, 2021

**Figure 3-3: Surface Rights Map – Area of San Martín Operation**





Source: IMMSA, 2021

**Figure 3-4: Location of Ejidos within the San Martín Concessions**

### 3.3 Mineral Rights Description and How They Were Obtained

Mining rights in México are granted with the concessions. Changes to the Mexican mining legislation incorporated in 2005 now grant the concession holder the right to conduct exploration, operate a mining operation, and/or operate a processing plant on each concession. The procedure for each of the mining concessions begins with the presentation to the Secretaría de Economía, Dirección General de Minas of México, of the Application for Concession or Mining Assignment, format SE-FO-10-001, with all the sections duly completed and accompanied by the required documentation, including payment of the application study and procedure, photographs of the physical evidences of the boundary markers following the standards of the mining law, information supporting the existence of the person or entity responsible of the application.

The following are the obligations of the registrant to retain the properties at San Martín:

- Execute and verify the works and works foreseen by the Mexican Mining Law in the terms and conditions established by it and its Regulations.
- Pay the mining rights established by the law on the matter.

- Comply all the general provisions and the official Mexican standards applicable to the mining-metallurgical industry in terms of safety in mines and ecological balance and environmental protection.
- Allow the personnel commissioned by the Mexican mining entity (Secretaría) to carry out inspection visits.
- The execution of works will be proven by means of investments in the area covered by the mining concession or by obtaining economically exploitable minerals. The Regulations of the Law will set the minimum amounts of the investment to be made and the value of the mineral products to be obtained.
- The holders of mining concessions or those who carry out works by contract, must designate an engineer legally authorized to practice as responsible for compliance with the safety regulations in the mines, if the works and works involve more than nine workers in the case of the coal mines and more than forty-nine workers in the other cases.
- The mining law stipulates the investments in works and works that are mandatory for the registrant of a mining concession:
- The investments in the works and works foreseen by the Law that are carried out in mining concessions or the value of the mineral products obtained must be equivalent at least to the amount that results from applying the quotas to the total number of hectares covered by the mining concession or the grouping of these.

The reports that are delivered to the Mexican mining entity (Secretaría) to verify the execution of the mining works, must contain:

- Name of the holder of the mining concession or of the person who carries out the mining works and works by contract
- Name of the lot or of the one that heads the grouping and title number
- Period to review
- Itemized amount of the investment made, or amount of the billing value or settlement of the production obtained, or an indication of the cause that motivated the temporary suspension of the works or works
- Surplus to be applied from previous verifications and their updating
- Amount to be applied in subsequent checks
- Location plan and description of the works carried out in the period

The mining entity (Secretaría) shall consider the works of exploration or exploitation to have not been executed and legally verified when, in the exercise of its powers of verification, it finds:

- That the verification report contains false data or does not conform to what was done on the ground, or
- That the non-adjacent mining lots object of the grouping do not constitute a mining or mining-metallurgical unit, from the technical and administrative point of view.

In the above cases, the Secretaría will initiate the cancellation procedure of the concession or of those mining lots incorporated into the grouping, in the terms of article 45 of the Mexican Mining Law, final paragraph of the Law.

It is considered by the QP that the Company holds sufficient rights to support operations including the processing plant installations, tailings storage, and other mine operations requirement.

### 3.4 Encumbrances

IMMSA has all necessary permits for current mining and processing operations, including an operating license, a mine water use permit, and an Environmental Impact Authorization (EIA) for the mines, processing plant, and tailings management facilities.

SRK is not aware of any legal encumbrances on IMMSA-owned or leased surface or mineral rights but has relied on IMMSA's legal documentation regarding this aspect of the project.

Several obligations must be met to maintain a mining concession in good standing, including the following:

- Carrying out the exploitation of minerals expressly subject to the applicability of the mining law
- Performance and filing of evidence of assessment work
- Payment of mining duties (taxes)

The regulations establish minimum amounts that must be invested in the concessions. Minimum expenditures may be satisfied through sales of minerals from the mine for an equivalent amount. A report must be filed each year that details the work undertaken during the previous calendar year.

Mining duties must be paid to the Secretaría de Economía in advance in January and July of each year and are determined on an annual basis under the Mexican Federal Rights Law.

Duties are based on the surface area of the concession, and the number of years since the mining concession was issued. Mining duties totaled MXN\$4,218,360 in 2023.

### 3.5 Other Significant Factors and Risks

The mine is subject to risk factors common to most mining operations in México, and IMMSA has an internal process in place to study and mitigate those risks that can reasonably be mitigated. No known factors or unusual risks affect access to the titles, or the ability to conduct mining. Specific exploration activities are authorized into 2023.

Since the reopening of the unit in 2018 to date, the Company has signed agreements (Company-group of affiliates) to obtain benefits and benefits for employees, which have helped the stability of today's operations in the unit. mining.

There are still some legal issues to be resolved with striking personnel (2007 to 2018) which are being legally addressed with Company lawyers to resolve them.

### 3.6 Royalties or Similar Interest

There is no payment for royalties, 100% of the concessions are owned by Industrial Minera México, S.A. of C.V.

## **4 Accessibility, Climate, Local Resources, Infrastructure and Physiography**

### **4.1 Topography, Elevation and Vegetation**

The Sierra Madre Occidental is a north-to-northwest-trending range with mountains reaching elevations of more than 3,000 m. It comprises peaks, plateaus and elongated valleys along the range which merge into the mountains to the northwest. Deep canyons carved by drainage cross the Sierra Madre Occidental with increasing depth in the northwest portion of the range.

The Mesa Central province includes a great portion of the north-central part of México. It comprises a large plateau composed of Mesozoic sedimentary rocks at elevations of 1,500 to 2,300 m covering parts of the states of Zacatecas, Durango, San Luis Potosí, Coahuila and Chihuahua. Occasional ranges originated by folding or igneous activity break the flat extensions of the Mesa Central.

The mine is located in more mountainous terrain to the west of the city of Sombrerete with elevations ranging from 2,500 to 2,850 masl. The hydrographic system consists of two basins, the Pacific basin (integrated by the Chapala-Río Grande de Santiago system) and the endorheic inland basin (without access to the sea).

Vegetation in the area consists of xerophile plants in the lower elevations and grasslands, including cactuses (maguey, nopal and biznaga), while in the higher elevations the predominant vegetation consists of coniferous or evergreen oak forests (pine and oak trees). Figure 4-1 shows the characteristics of the surrounding area of San Martín.

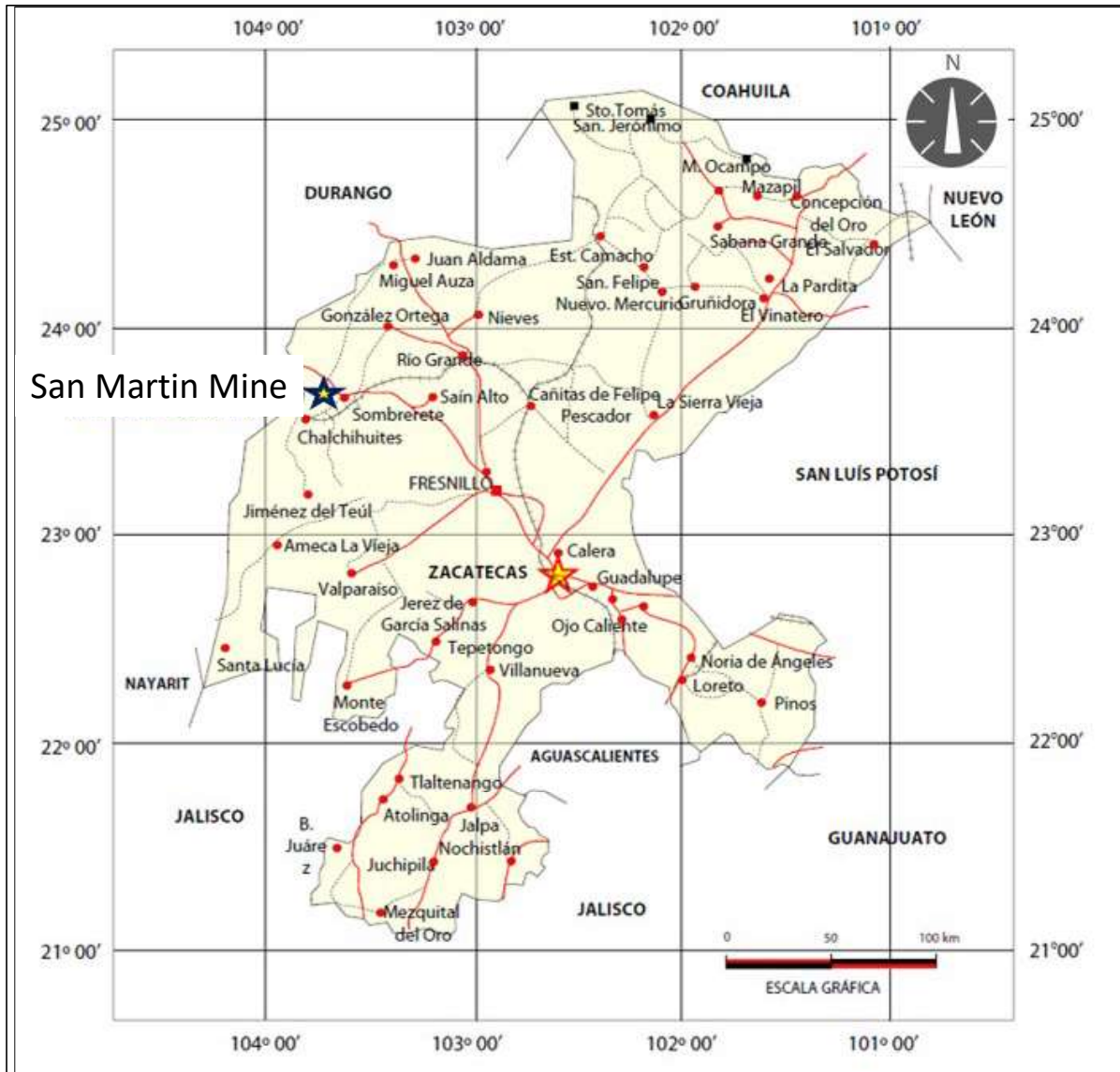


Source: IMMSA, 2021

**Figure 4-1: Photographs of the Surrounding Area of San Martín**

## 4.2 Means of Access

The state of Zacatecas has an extensive infrastructure of roads and highways that connect the San Martín to the rest of the country (Figure 4-2).



Source: IMMSA, 2021

**Figure 4-2: Access Infrastructure to San Martín Mine**

The San Martín mining unit has a paved road to Highway 45, which leads to the town of Sombrerete, 17 km away. Highway 45 then connects Sombrete to Fresnillo, Zacatecas and Durango at distances of 110, 171, and 125 km, respectively.

The Secretariat of Communications and Transport (SCT) highlighted the modernization of the Jerez-Tepetongo highway, which has a length greater than 21 km, in which 544.6 million pesos were invested. Meanwhile, the modernization of the Fresnillo-Valparaíso and Fresnillo-Jerez roads continues, as well as the conservation of the federal network of toll-free roads and the feeder roads that communicate the agricultural and producing communities with the headwaters.

### **4.3 Climate and Length of Operating Season**

The climate is considered a semiarid, mild temperature climate according to the Köppen climate classification (BS1kw). The average temperature for the year in at the Project is between 5 and 26°C. The warmest month on average is May, with an average temperature of 26°C. The coolest months on average are December and January, with an average temperature of 17°C ranging from 5 and 17°C.

The average amount of precipitation for the year in Sombrerete is between approximately 15 and 260 mm. The rainy season occurs in the San Martín area during the months of July to October. The month with the most precipitation on average is August (263 mm), and the month with the least precipitation on average is April (12 mm). Exploration and mining operations are conducted year-round.

### **4.4 Infrastructure Availability and Sources**

Local roads connect the mining district to various population centers within the region. The towns of Sombrerete in the state of Zacatecas (58,000 inhabitants at an elevation of 2,300 m) and Vicente Guerrero in the state of Durango (21,000 inhabitants at an elevation of 1,960 m), are located within 50 km of the Del Toro area.

All basic facilities such as hotels, restaurants, and telephone (including cellular), banking and postal services are available in Sombrerete. Elementary and secondary schools are available in all medium to major cities within the region. Higher education institutions and international airports are established in Durango and Zacatecas.

#### **4.4.1 Water**

The San Martín Unit has a water concession title for the extraction of 1,841,079 m<sup>3</sup> per year. Currently, water is extracted via three deep wells in the Proaño area, storing it in a pool adjacent to the wells. Next, it's pumped to the intermediate pools re-pumping station and then finally pumped to pools and freshwater tanks within the industrial area of operation for a total pumping distance of 10.2 km.

#### **4.4.2 Electricity**

Electric power is provided by the national grid via a 45km extension constructed by FMS in 2011-2012.

The unit receives a power supply of 115 KV, and the main substation has a capacity of 24 MWA. The Federal Electricity Commission (CFE) is the agency in charge of electrical energy administration; the unit had annual consumption of about 70 GWH in 2023.

#### **4.4.3 Personnel**

The site provides good access to qualified personnel with a history of mining within the region and from the neighboring region. The San Martín mine site currently employs 843 employees and 3,191 unionized workers.

#### **4.4.4 Supplies**

The mine has a highly favorable location and infrastructure, local communities in the surrounding area are well suited with basic accommodations, fuel, industrial materials, contractor services, and bulk suppliers. Supplies to the mine can be transported with ease via the rail or road network system.

#### 4.4.5 Plant/Tailings

The Minera San Martín unit has two processing plants or concentrators, one with an operating capacity of 2,400 tons/day (plant 2-400) and another with a capacity of 4,400 tons/day (plant 4-400) and discussed in more detail in Section 10.1. At San Martín three concentrates are produced:

- Zinc Concentrate
- Copper Concentrate
- Lead Concentrate

Tailings Dam of the San Martín Mining Unit has programmed a total storage capacity of 4,071 million m<sup>3</sup> or 7.3 million metric tonnes, with a monthly load of 40.5x10<sup>3</sup> dry metric tonnes with a total volume of water and tailings of 106.57x10<sup>3</sup> m<sup>3</sup>. This structure has the foundation, drainage, filtration and diversion of appropriate stormwater and runoff.

The project of expansion of the tailings Dam includes four stages:

- Stage 1: The curtain will reach the elevation of 2560 masl, with a maximum height of 61 m, a total storage capacity of 9.82 MTMS and the volume of the overlift is equal to 1.65 Mm<sup>3</sup>.
- Stage 2: The curtain will reach the elevation of 2566 masl, with a maximum height of 66 m, a total storage capacity of 14.32 MTMS and the volume of the overlift is equal to 1.60 Mm<sup>3</sup>.
- Stage 3: The curtain will reach the elevation of 2572 masl, with a maximum height of 74.4m, a total storage capacity of 19.56 MTMS and the volume of the overlift is equal to 1.95 Mm<sup>3</sup>.
- Stage 4: The curtain will reach the elevation of 2578 masl, with a maximum height of 80.6 m, a total storage capacity of 29.51 MTMS and the volume of the overlift is equal to 2.35 Mm<sup>3</sup>.

The earthquake considered for the analyses developed is for a return period (Tr) of 10,000 years, so the highest degree of risk for the operating condition was considered. The stability condition of the Tailings Dam in each of the expansion project construction stages is secure, both in static and pseudo-static conditions and water flow. Figure 4-3 shows the location image of the Tailings Dam and its expansion project.





Source: IMMSA, 2023

**Figure 4-3: Location of the Tailings Dam - Expansion**

For the actual Tailings Dam, according to the documents of design, construction and operation discussed in this document, this Dam presents a consolidation and stabilization of the tailings such that a very low probability of tailings sludge overflow. However, if an extraordinary event of high rainfall occurred on the site and According to the superior water storage capacity (7,000 m<sup>3</sup>), this volume would be the total sent downstream with a solid content of 20% or less. Assuming this volume, the total overflowed sludge would not reach transported beyond 2 km (shortly before reaching the pumping station, company-owned).

## 5 History

San Martín is one of the oldest mining districts in México. The first vein discovered by the Spanish was the Ibarra Vein in 1548, other important veins such as the Noria de San Pantaleón, San Marcial, Ramal Ibarra, Las Animas, Sabinas, were discovered later.

### 5.1 Previous Operations

Prior to 1948 the San Martín Mine exploited narrow high-grade veins that cut the skarn and extend beyond it. These structures continue to depth and appear to be the principal feeders for the sulfide mineralization stage. At great depth (>18 Level) these structures contain massive sulfide mineralization consisting of almost pure chalcopyrite and bornite, locally laced by late native silver.

Kohls and Amezaga (1956) estimated that during the period 1548-1821 250,000 tons of oxidized ore were produced with grades of 450 g / t Ag and 0.5 g / t Au. In the period 1938-1943, primary sulfides were exploited with grades of 450 g / t Ag, 1-3% Pb, 1 to 4.5% Cu and 6% Zn. The QP has done insufficient work to confirm these production figures.

At the beginning of the 1950s, surface and interior mine exploration began in San Martín, from this period to 2005 approximately 100,000 m on the surface and 220,000 m in the interior mine have been drilled, which discovered new mineral resources that have extended the mine life.

In the same period, approximately 42 million tons have been mined, without considering the mineral from the Noria de San Pantaleón and Sabinas. The historical production of the district and the current reserves of the two mines in production (San Martín and Sabinas), are estimated at approximately 95 million tons in this deposit, with a potential of an additional 40 million in the northern, western and southern parts of the La Gloria stock (Maldonado-Espinosa D., IMMSA Report, 2004).

Between the years 1990-1997, a large surface exploration program was completed in the area surrounding the San Martín mine. The exploration program included application of standard modern exploration techniques such as satellite imagery, geophysical surveys, mapping. Over the same period approximately 67,000 meters of diamond drilling with a total of 165 holes. (Sánchez H., J.M-Vega Saldaña J.A., IMMSA Report, 1998), was completed.

In 2008, a geological-geochemical study was carried out in the eastern area of the San Martín unit, Sombrerete, Zacatecas; which indicated a number of anomalous N-S striking anomalies in the limestones, associated with the intrusive contact. A total of five holes were completed to test the intrusive-limestone contact, and in order to explore the contact at depth and possible replacement mineralization in the Skarn (Flores EJ, Álvarez HE, Guerra Paez J., 2008).

The San Martín Mine was operated by Grupo México until the late 2007 when it closed due to labor unrest. The mine reopened in August 21<sup>st</sup>, 2018, upon resolution of the labor issues and has been in continuous production since. A summary of the production is shown in Table 5-1.

**Table 5-1: Production Table Summary, San Martin (2002 to 2023)**

C O N C E P T	2002	2003	2004	2005	2006	2007	2019	2020	2021	2022	2023*
<b>Milled tonnes</b>	<b>1,237,051</b>	<b>1,287,239</b>	<b>1,259,220</b>	<b>1,231,476</b>	<b>925,807</b>	<b>625,341</b>	<b>625,090</b>	<b>1,355,065</b>	<b>1,217,334</b>	<b>1,413,207</b>	<b>707,553</b>
Grades Mill Feed											
Au (g/t)							0.03	0.02	0.01	0.01	0.01
Ag (g/t)	122	107.73	101	87.97	84.51	96	88	108	75	66	52
Pb (%)	0.24	0.21	0.20	0.20	0.20	0.18	0.34	0.34	0.24	0.25	0.20
Cu (%)	1.4	1.34	1.01	0.80	0.71	0.69	0.45	0.50	0.47	0.43	0.42
Zn (%)	2.91	2.65	2.21	2.03	2.18	1.76	1.73	1.68	1.87	1.62	1.51
<b>Lead concentrate tonnes</b>	<b>1,798</b>	<b>NA</b>	<b>NA</b>	<b>2,367</b>	<b>2,575</b>	<b>1,151</b>	<b>2,001</b>	<b>4,882</b>	<b>3,659</b>	<b>3,540</b>	<b>1,371</b>
Grades											
Au (g/t)			NA				0.65	0.28	0.48	0.37	0.50
Ag (g/t)	1,934	NA	NA	2,800	2,176	2,595	3,458	3,679	3,445	3,587	3,045
Pb (%)	32.20	NA	NA	31.61	34.00	32.24	23.41	29.20	26.06	31.69	29.73
Cu (%)	11.22	NA	NA	7.15	5.65	6.51	11.93	10.61	11.64	9.50	8.53
Zn (%)	3.44	NA	NA	2.94	2.92	2.55	5.52	6.38	5.28	3.73	4.12
<b>Copper concentrate tonnes</b>	<b>66,652</b>	<b>67,429</b>	<b>54,537</b>	<b>39,227</b>	<b>27,898</b>	<b>17,668</b>	<b>7,105</b>	<b>20,077</b>	<b>16,134</b>	<b>19,091</b>	<b>9,752</b>
Grades											
Au (g/t)							0.31	0.19	0.25	0.28	0.31
Ag (g/t)	1,480	1,535	1,939	1,904	1,906	2,464	3,332	2,959	2,562	2,365	2,188
Pb (%)	2.84	3.48	4.01	2.98	2.37	3.31	11.15	6.64	5.50	7.48	7.09
Cu (%)	20.95	21.09	20.70	19.87	18.38	19.59	17.11	17.92	19.13	19.90	20.61
Zn (%)	5.16	5.65	4.85	3.36	3.78	3.93	10.16	12.95	9.99	7.98	9.15
<b>Zinc concentrate tonnes</b>	<b>46,067</b>	<b>44,324</b>	<b>40,532</b>	<b>36,745</b>	<b>29,902</b>	<b>16,007</b>	<b>14,411</b>	<b>31,577</b>	<b>39,335</b>	<b>41,320</b>	<b>17,552</b>
Grades											
Au (g/t)							0.12	0.08	0.09	0.14	0.18
Ag (g/t)	161	161	131	118	138	148	343	323	222	213	172
Pb (%)	0.30	0.30	0.26	0.23	0.31	0.36	0.90	0.90	0.61	0.55	0.41
Cu (%)	1.59	1.59	1.57	1.13	1.14	1.11	2.26	2.02	1.54	1.59	1.56
Zn (%)	48.77	48.77	49.91	52.20	51.12	51.45	42.07	46.33	43.46	41.58	43.74

Source: IMMMS, 2022

- NA: Not applicable
- 2008-2018 No data
- (\*) January – June 2023

## **5.2 Exploration and Development of Previous Owners or Operators**

Detailed information of previous exploration and development completed in San Martín by previous owners is not available. As mentioned in the history section, the exploitation is known in the district from 1548 until around 1950 when IMMSA, took control of the operation. Exploration and sampling used to contribute to the current Mineral Resources are limited to work by the current company and are detailed in Section 7 of this report.

## 6 Geological Setting, Mineralization, and Deposit

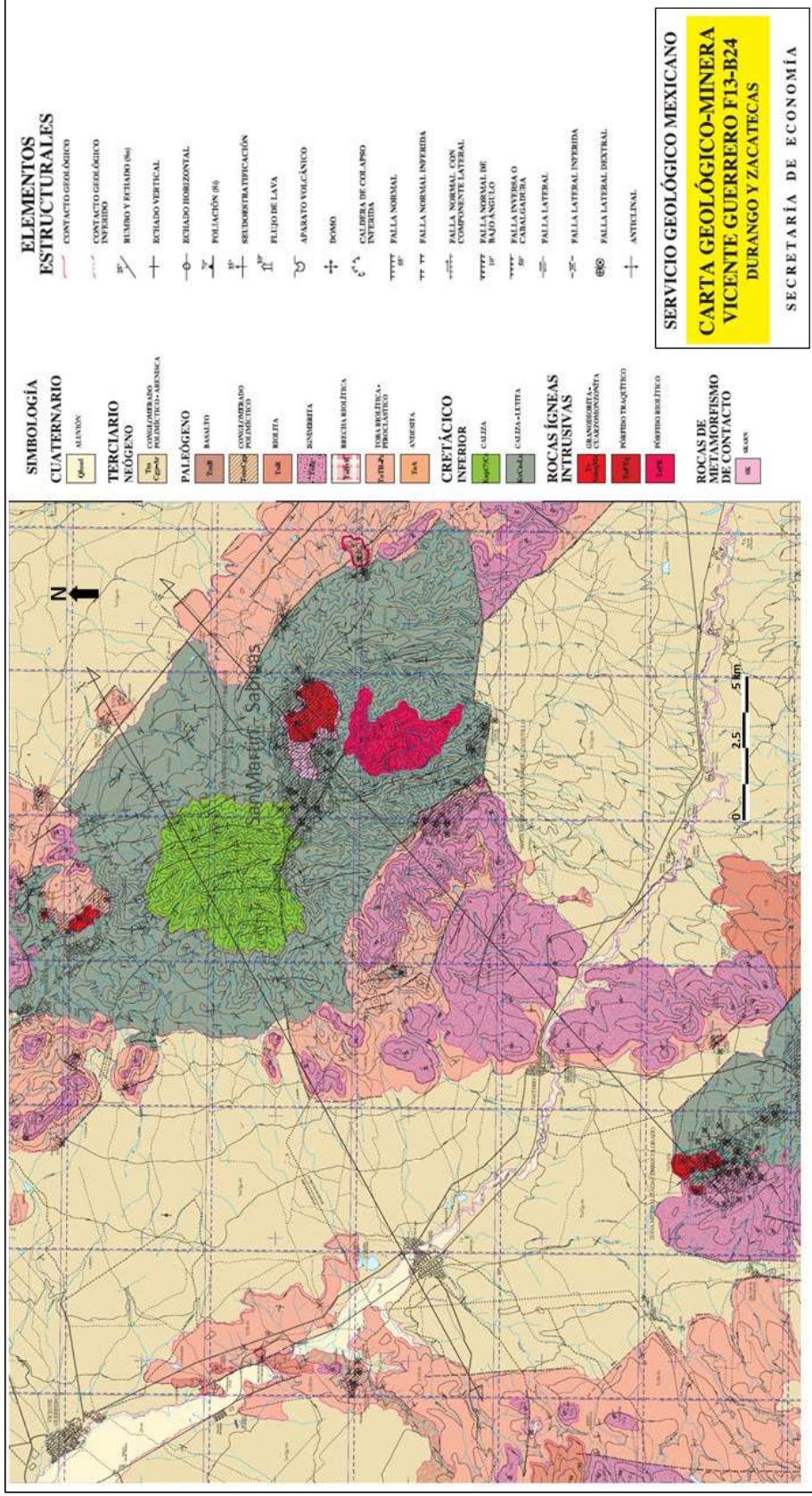
### 6.1 Regional, Local and Property Geology

#### 6.1.1 Regional Geology

San Martín lies in the Mesa Central which occurs between two major tectono-stratigraphic provinces. The Sierra Madre Occidental, a region of extensive horizontal or gently dipping volcanic rocks, lies to the west. The Sierra Madre Occidental is dominated by two complexes of post-Jurassic igneous rocks (McDowell and Clabaugh, 1979). The lower volcanic complex ranges in age from 100 to about 45 m.y., and the upper volcanic complex from 34 to 23 m.y. Most of the lower complex consists of calc-alkaline intrusions and andesitic lavas and rhyolitic ash flows, whereas the upper complex is dominated by rhyolitic ash-flow tuffs (McDowell and Keizer, 1977; McDowell and Clabaugh, 1979). The Sierra Madre Oriental lies to the east of the Mesa Central and consists of parallel folds of Jurassic and Cretaceous carbonate and siliciclastic rocks, which are unconformably overlain by minor Tertiary and Quaternary sediments. The transition between the Sierras Madres and the Mesa Central is gradational. (Rubin and Kyle, 1988)

The Mesa Central consists of plateaus and valleys dominated by thick Cretaceous carbonate sequences with interbedded chert and shale units; these are commonly overlain, especially toward the western boundary, by Tertiary volcanic rocks of the Sierra Madre Occidental. In addition, Tertiary calc-alkaline intrusions, ranging in composition from granite to diorite, are quite common. These intrusions and their associated hydrothermal systems are largely responsible for the Mesa Central being one of México's most important metal producing regions. Many districts actively produce one or more of the following commodity groups: Pb-Zn-Ag, Sn (+-W), Cu, Ag-Au, and CaF<sub>2</sub> (Clark et al., 1982). (Rubin and Kyle, 1988)

In San Martín, the union of the two physiographic provinces, also marks the proposed contact of the Guerrero and Parral units, which in this area are oriented W-NW (Figure 6-1). A trend of regional faults extends from the SE of Real de Ángeles to the NW of San Martín. At both ends of the region the rocks are covered by volcanic rocks of the Sierra Madre Occidental. This structure is a series of subparallel faults that are very evident in México, and that are strongly associated with mineral deposits formed during and after the Laramide Orogeny (Taxco, San Martín and Santa Barbara; Starling. T. 1997). These fault zones appear to have been influenced by local patterns of folds during Laramide deformation in several districts. (Velardeña, San Martín) and mark a fundamental control of magmatic and hydrothermal systems during the early and middle Tertiary.



Source: Servicio Geológico Mexicano, 2001  
**Figure 6-1: Regional Geology Map**

## 6.1.2 Local Geology

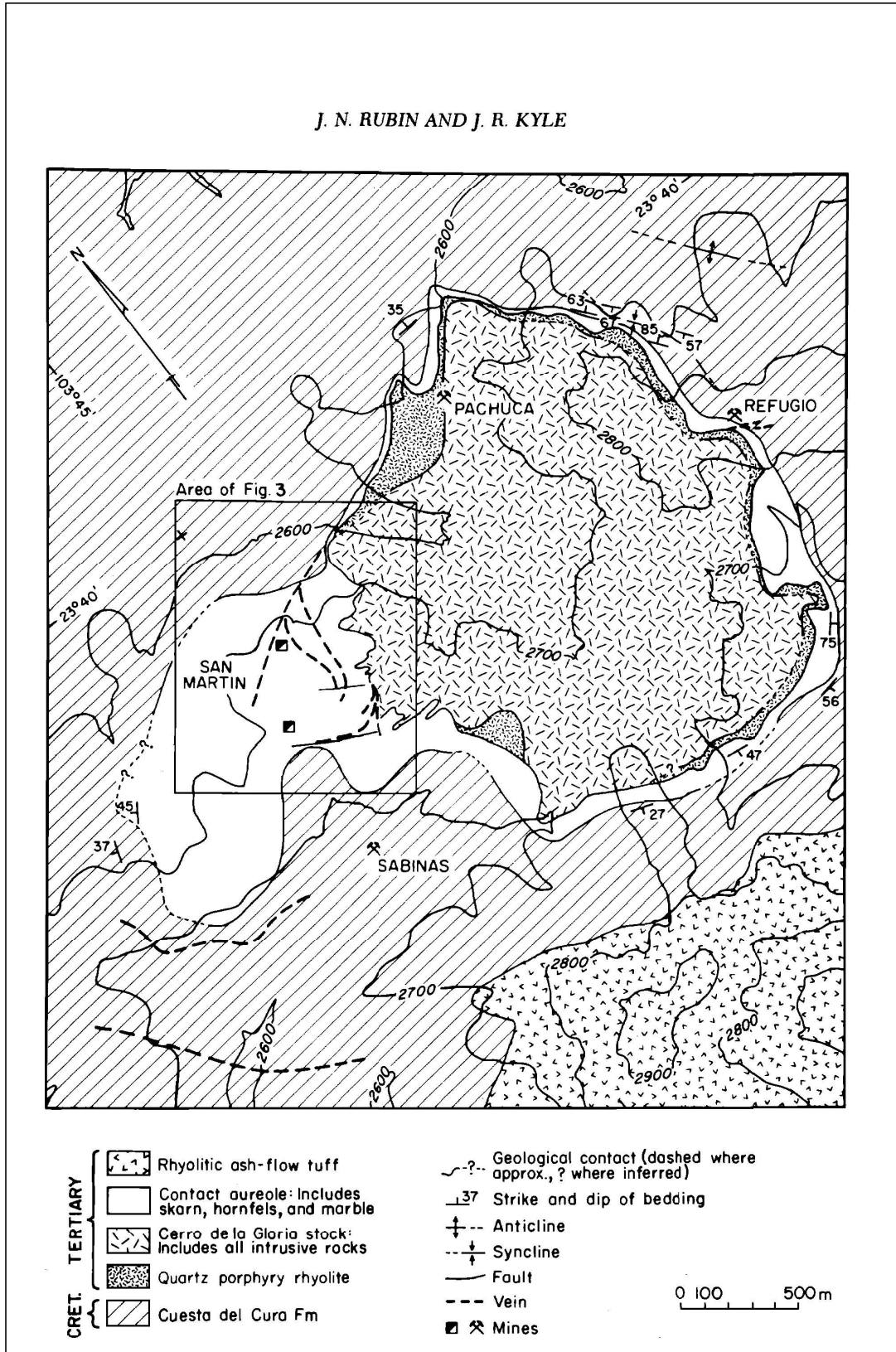
The San Martín-Sabinas district occurs at the NW end of a trend of subparallel regional faults, trending N65°W; extending from Real de Ángeles, with both ends covered by volcanic rocks. The San Martín mining district contains Ag, Pb, Cu, Zn and Au mineralization in veins, and replacement bodies and skarn (andradite, hedenbergite-clinopyroxene). The mineralization is hosted in carbonate rocks of marine origin, proximal to an Eocene-Oligocene granite stock showing multiple phases and textures (Cerro de la Gloria). The granite stock appears to have been emplaced by W-NW striking faults with sinistral-extensional movement. These W-NW faults join districts of base sulfides such as Fresnillo, Zacatecas, Guanajuato, on the west slope of the Sierra Madre Occidental.

Generally, the Laramide deformation produced compression structures of N-NW course, however, in this mine area the main mineralization trends are W-NW, N-S, NE and E, due to phases of extension N-NE, N-S, to the reactivation of W-NW structures and to the intrusion contacts. It is currently interpreted by IMSSA that the high-angle mineralized fault structures have helped fluid control during mineralization to be concentrated at the top and consequently, the Skarn area.

The various phases of intrusion were controlled to the north and south by two W-NW fault zones representing elements of pre-Laramide basement failure zones; these structures were initially developed as dextral faults and later reactivated as sinistral - trans tensional faults during post Laramide extension. The E and W limits of the intrusion are defined by fault zones which have been reactivated with SW throw. The main trends of W-NW fault zones controlled the distal vein systems of Ag-Pb.

The intrusion in turn produced N-NE, NE, E faults, which are the origin of the main veins known as San Marcial, Ramal Ibarra, Ibarra and Gallo-Gallina. The WNW basement structures appear to have been reactivated during intrusion, joining the main veins and causing wide replacement bodies within the skarn alteration.

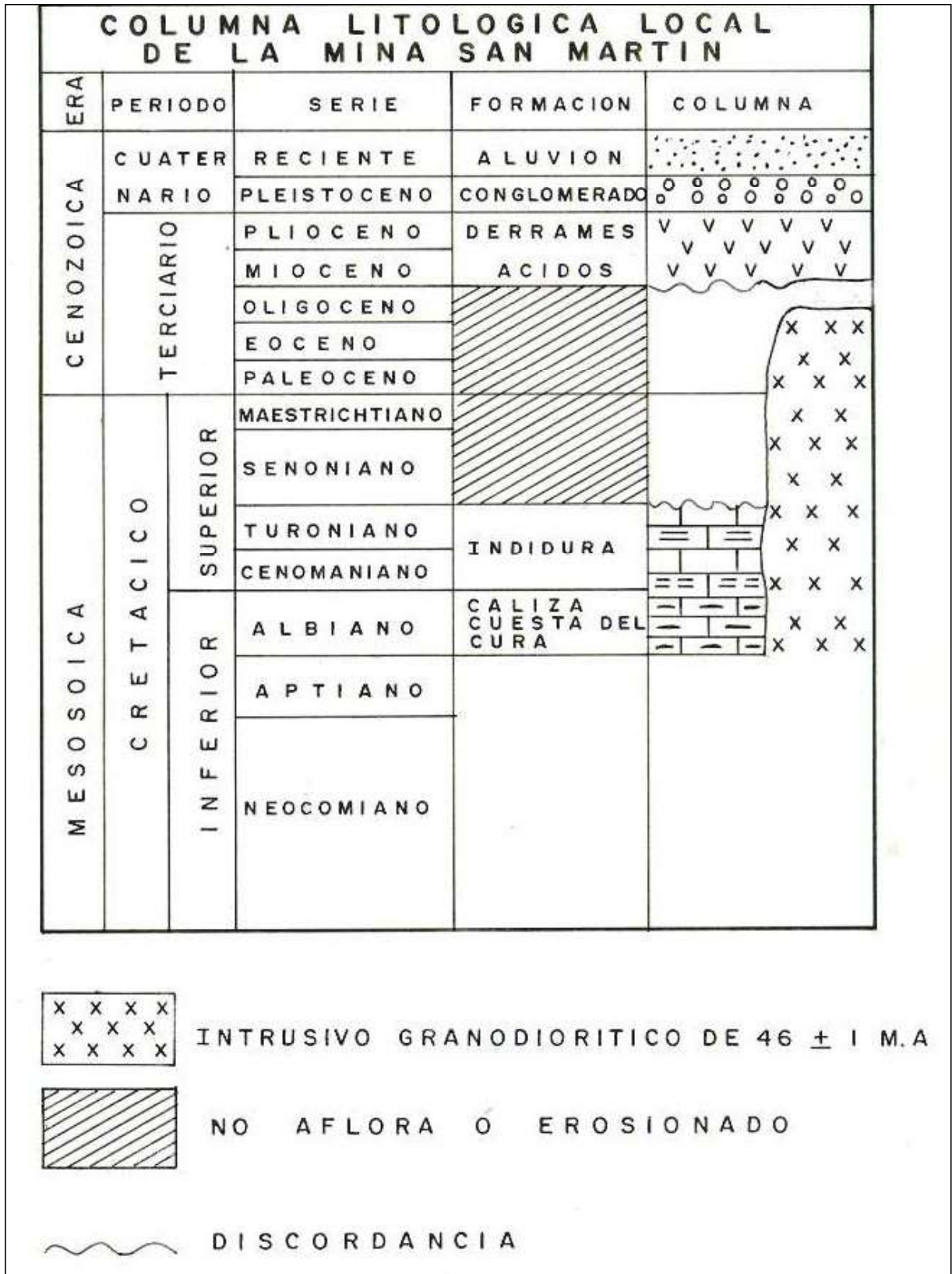
Figure 6-2 provides a map of the local geology. Figure 6-3 shows the stratigraphic column of San Martín. Figure 6-4 presents the schematic cross section showing structural and lithological mineralization control relations at San Martín.



Source: Rubin and Kyle, 1988

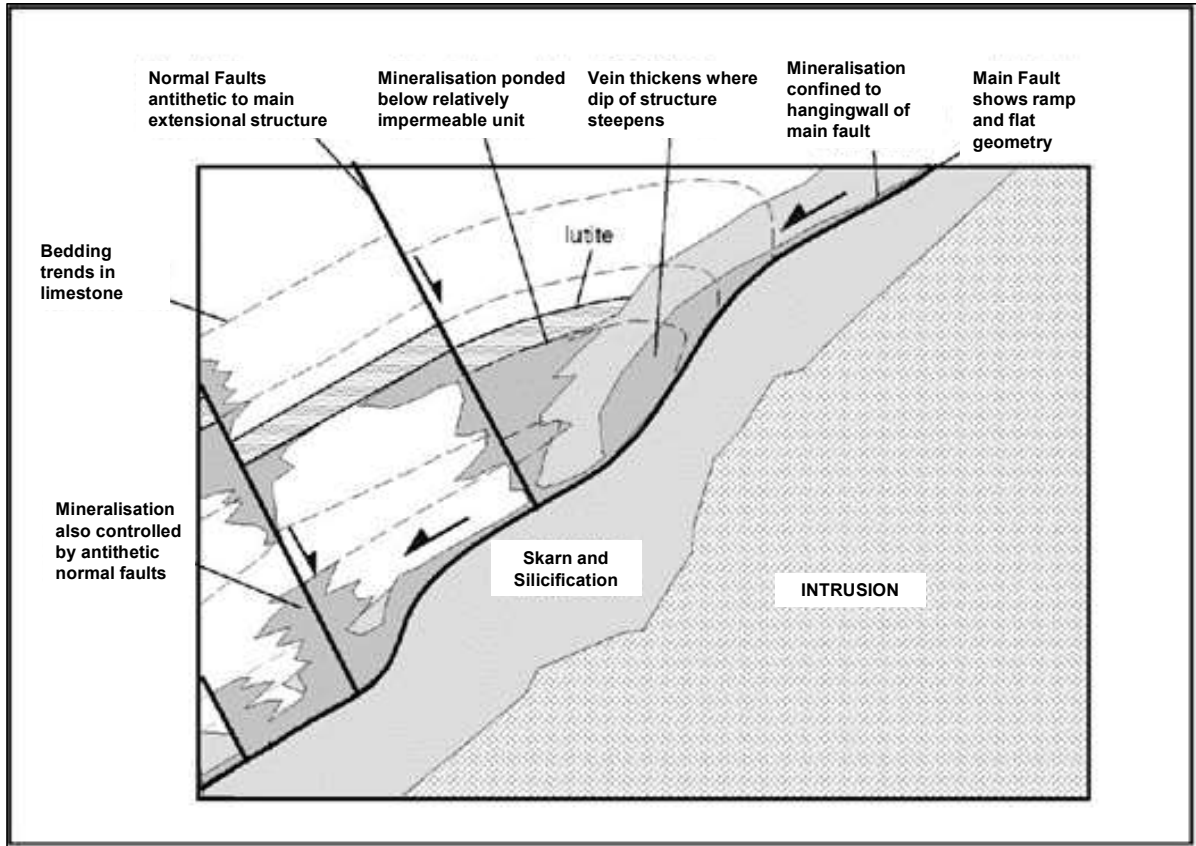
**Figure 6-2: Local Geology Map**





Source: Maldonado, 2004

**Figure 6-3: Stratigraphic Column of San Martín**



Source: Maldonado, 2004

**Figure 6-4: Schematic Cross Section of San Martín**

### 6.1.3 Property Geology

In the area of San Martín, the Cretaceous Cuesta del Cura and Indidura Formations consist of limestones with thin interbeds of flint and shale. It has been observed in the lower levels of the San Martín mine, as well as in deep diamond holes of exploration, that the Cuesta del Cura Formation is approximately 900 m thick, presents changes such as: the presence of carbonaceous shale horizons and almost absence of flint. The Peña formation is intensely folded and faulted by the Laramide orogeny of (40 to 80 Ma), and discordantly covered by tertiary conglomerates, and by Rhyolites and Basalts of the Quaternary across the region.

#### Lithology of the Intrusive

The stock of Cerro de la Gloria presents an irregular elliptical shape on the surface, in which the largest diameter N–S is 2.1 kms and the smallest E–W, 1.7 kms.

The Stock Cerro de la Gloria dated 46 Ma by K-Ar methods on biotite (Damon et al., 1983) intrudes the limestones of the Cuesta del Cura formation. The stock presents several types of rocks and textures, culminating in fluids related to late porphyritic phases. The igneous evolution in San Martín and the nature of the igneous evolution has been a contributing factor in mineralization.

San Martín has similarity in ore with other deposits of this type in México, however it is apparently richer in Cu – Fe in exoskarn and Cu – Mo in intrusion (endoskarn).

The earliest igneous phase is a medium to fine grain granodiorite, with euhedral grains of hornblende, Plagioclase (An 35-40), abundant biotite and subhedral grains of quartz. Accessory minerals include sphene, magnetite, allanite.

The alteration observed at depth are quartz veins with potassium feldspar envelope, chloritization of biotite, as well as fine-grained sericite.

Exploration intercepted a granitic-dioritic Porphyry which considered to be one of the earliest phases, as demonstrated by the composition of plagioclase (An 45 – 60). Petrographic analyses indicate a dominance of plagioclases and hornblende in phenocrystals, with a lower proportion of quartz, biotite and pyroxene.

The largest dominant phase of Cerro de La Gloria is Granite (Monzogranite), (Figure 6-5). This phase is equi-granular to slightly porphyritic; having potassium feldspar (12mm), subhedral quartz, euhedral plagioclase, and minor hornblende. Accessory minerals include apatite, zircon, sphene and as iron oxides, magnetite and ilmenite. At depth it has an overall increase in grain size and is more equi-granular. Most of the bodies can be seen to the east of the mine forming the body of the Cerro de La Gloria. Inside the mine they are cut by dikes of medium grain of granite porphyry, with similar composition.

The alteration of this granite is located adjacent to the Quartz-Porphyritic dikes, especially in fracture zones where biotite is chloritized, and plagioclase is sericitized. Where alteration occurs the rocks are characterized by the presence of quartz, quartz- feldspar- potassium (chalcopyrite - arsenopyrite), and veins are present which include pyrite and pyrrhotite.

#### **Medium Grain Porphyritic Granites**

Porphyritic granite bodies can be mapped at surface and in the mine. While the composition is similar to the Cerro de la Gloria and the Granite Porphyry, potassium feldspar crystals show a uniform direction. These porphyritic dikes are more common in the western part of the Cerro de la Gloria and in the eastern part south of the Refugio.

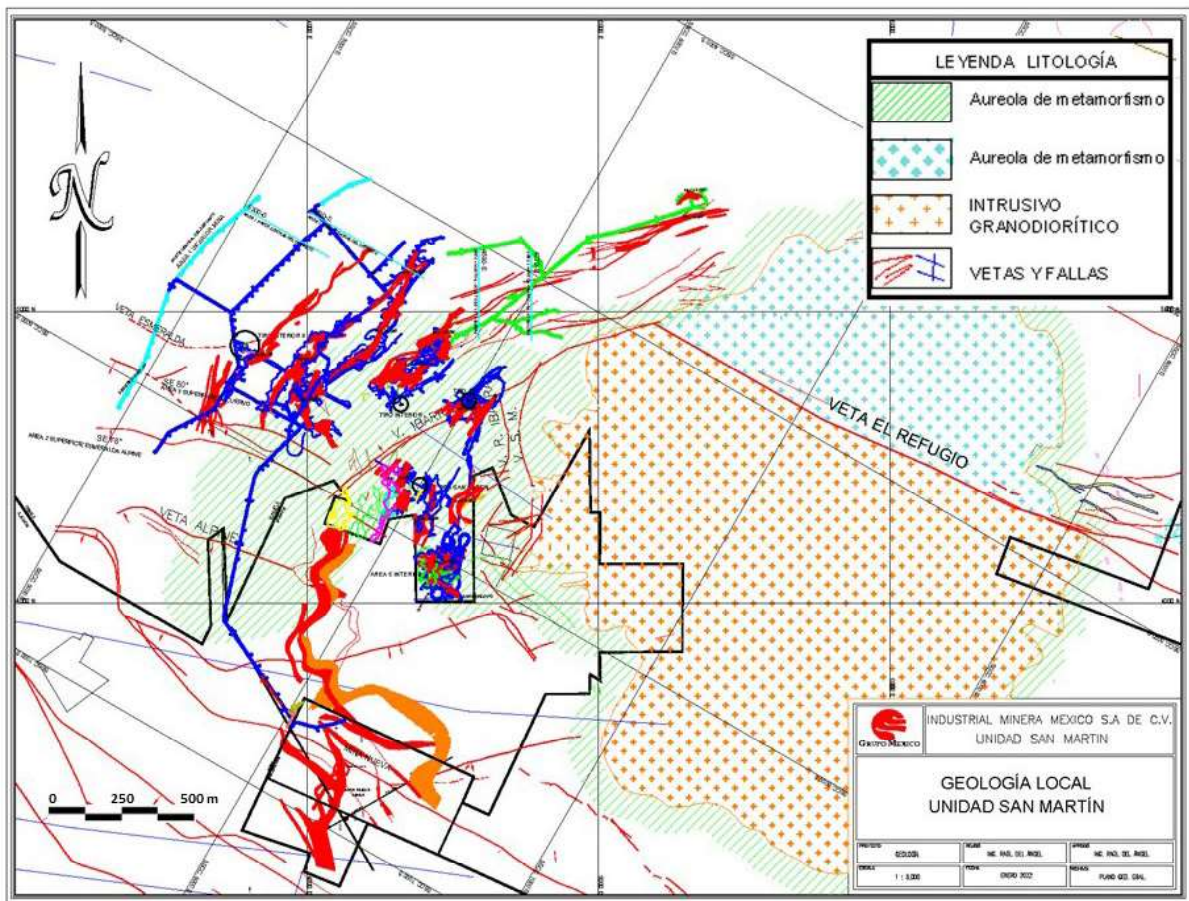
In composition this porphyry granite is like the granite of the Cerro de la Gloria and the Granite Porphyry, the main concentration of these masses of dike occurs in the western part of the Granite of the Cerro de la Gloria, as well as in the eastern part of this Intrusive complex south of the Refugio.

#### **Coarse Grain Porphyritic Granites**

Coarse-grained Prophyritic Granite cuts the granite of Cerro de la Gloria, has a composition similar to the other two phases of granite, but has a fine-grained phaneritic matrix. Potassium feldspar phenocrystals, quartz and plagioclases, are more common and rarely biotite. It is altered and replaced by intense veins of quartz, being a possible genesis of saccharoidal quartz, which is located superficially in the SW projection of the large mass of Porphyritic Quartz.

#### **Medium Grain Porphyritic Granites**

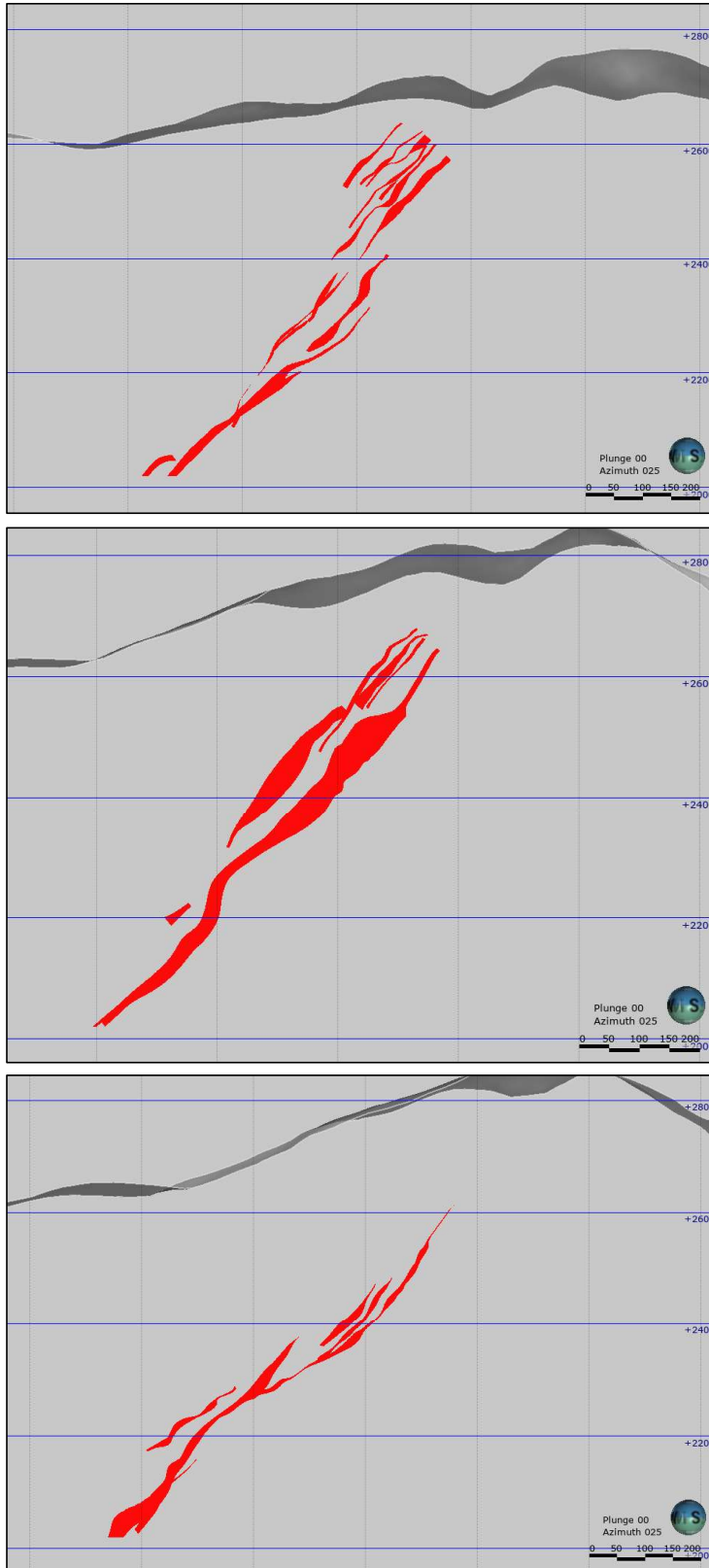
These dikes commonly cut Porphyry Quartz, Porphyry Granite, and Skarn. Its distribution suggests a volatile-rich volatile rich, late-stage crystallization of Porphyritic Quartz. Veins cut intrusive phases, as well as skarn and sulfide-rich veins and massive replacement. The fine-grained, intensely chloritized and sericitized dikes seen in core are examples of these dikes.



Source: IMMSA, 2021

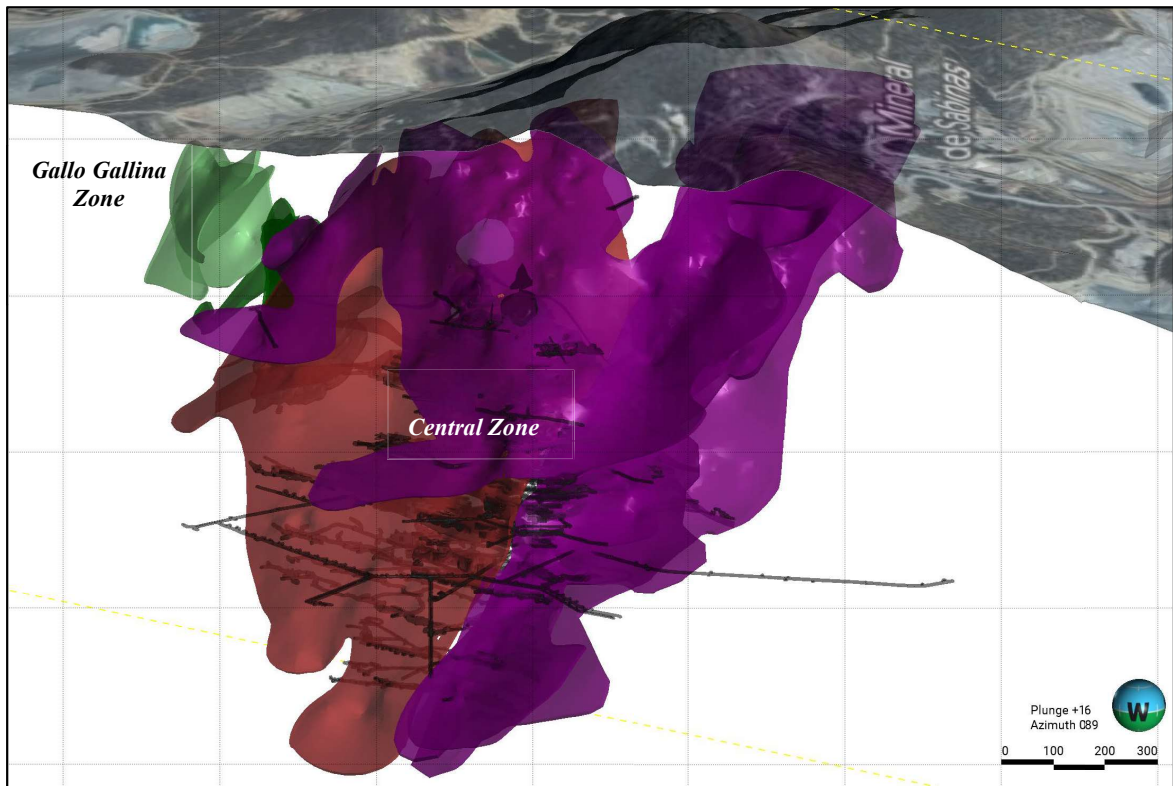
**Figure 6-5: Property Geology Map**

Figure 6-6 presents an example of the interpreted mineralization in San Martín in vertical sections (Azimuth 025°) from south (upper image) to north (bottom image) distanced 100 m, indicating the distribution and changes in width. The mineralization (replacements) inside the mantles/layers is variable and irregular. The length of the mineralization downdip reach 800-850 m and drilling has found that the mineralization is still open at depth, including areas where the mineralization extends for an additional 400 m. Figure 6-7 shows the 3D view of the mineralized structures (Mantos and Veins) that are part of the geological model. The width of the mantles varies from a few meters up to 50-60 m or more locally.



Source: IMMSA, 2021

**Figure 6-6: Vertical Sections – Interpreted Mineralization**



Source: IMMSA, 2023

**Figure 6-7: 3D View of the Geological Model**

## 6.2 Mineralization

### 6.2.1 Mineralization and alteration

Detailed studies of mineralogy, alteration, fluid structures and inclusions (Aranda-Gomez; 1978), (Rubin and Kyle;1988), (Starling;1997), (Graf;1997), indicate that the mineralization of St. Martín is subsequent to metasomatism in skarn (andradite-diopside) and prior to that of tremolite (actinolite, vesuvianite, wollastonite). Mineralization is related to the retrograde alteration event overprinting the skarns. This retrograde event is thought to have occurred during the cooling of the porphyry intrusions is related to the retrograde alteration that accompanied the porphyry feldspathic quartz. Fluid inclusions show that sulfide mineralization was associated with high and low salinity fluids (46 %wt Na Cl eq. and 3-8 %wt NaCl eq. Gonzalez Partida, 1997) and temperatures between 250°-300°C, suggesting magmatic and meteoric sources respectively.

Alteration veins associated with porphyries include: early quartz-chalcopyrite-molybdenite, quartz-chalcopyrite-arsenopyrite, fluorite-arsenopyrite with sphalerite and quartz, quartz-sericite-pyrite veins. In the central part of the deposit there is a horizontal zone with respect to the intrusive contact, presenting Ag, Cu and As enrichment close to the contact. Sphalerite tends to be deposited later and in greater quantity than Fe, Mo, As, Cu, but it is strongly associated with marmatite and chalcopyrite. At depth, there is an increase of pyrrhotite and marmatite, with a horizontal zonation similar to that described. In the NE portion of the deposit structures concentric to the intrusive “Ibarra, Gallo –

Gallina”, there is an increase of Pb, Zn, Ag in the Skarn. At the far east of the deposit there is an elevated area of Cu and Ag mineralization, while towards the SE (Mina Nueva-Sabinas) Ag, Pb, Zn dominate in massive bodies in the Skarn. Anomalous Au-Ag values have been located within the intrusive vein of the NW-SE system at surface in the Refugio vein, with increasing Pb and Zn mineralization at depth. Figure 6-8 shows core of the Mina Nueva zone with massive sulfides (Sphalerite, Galena, Pyrite).



Source: IMMSA, 2021

**Figure 6-8: Photographs of Core in Zones of Massive Sulfides (Sphalerite, Galena, Pyrite), Drillhole DDHMN21-11**

Several mineralization stages and paragenetic phases have been suggested:

- Arsenic and fluorite appear early, but are cut by veins of quartz and chalcopyrite with feldspar
- Bornite and chalcopyrite occur together in the Skarn and are deposited at time similar to replacement textures, prior to most other sulfides.
- Sphalerite is usually deposited after chalcopyrite. Pyrite is observed at both early and late ages, as well as very distant from metamorphic halo. Pyrrhotite occurs close to the deep intrusion in the central part of the mineral body in the early stage of paragenesis.
- Mo and W occur in small portions in the Skarn close to contact with the intrusive and often associated with calcite.
- Sphalerite and galena postdate most of the Sulfides of Cu and Fe, but they are later cut by silver minerals, as well as stibnite in calcite.

The deposit of distal minerals of lower temperature such as gold, native silver, tennantite-tetrahedrite, realgar, orpiment, and stibnite, has been suggested to a late collapse of the hydrothermal system.

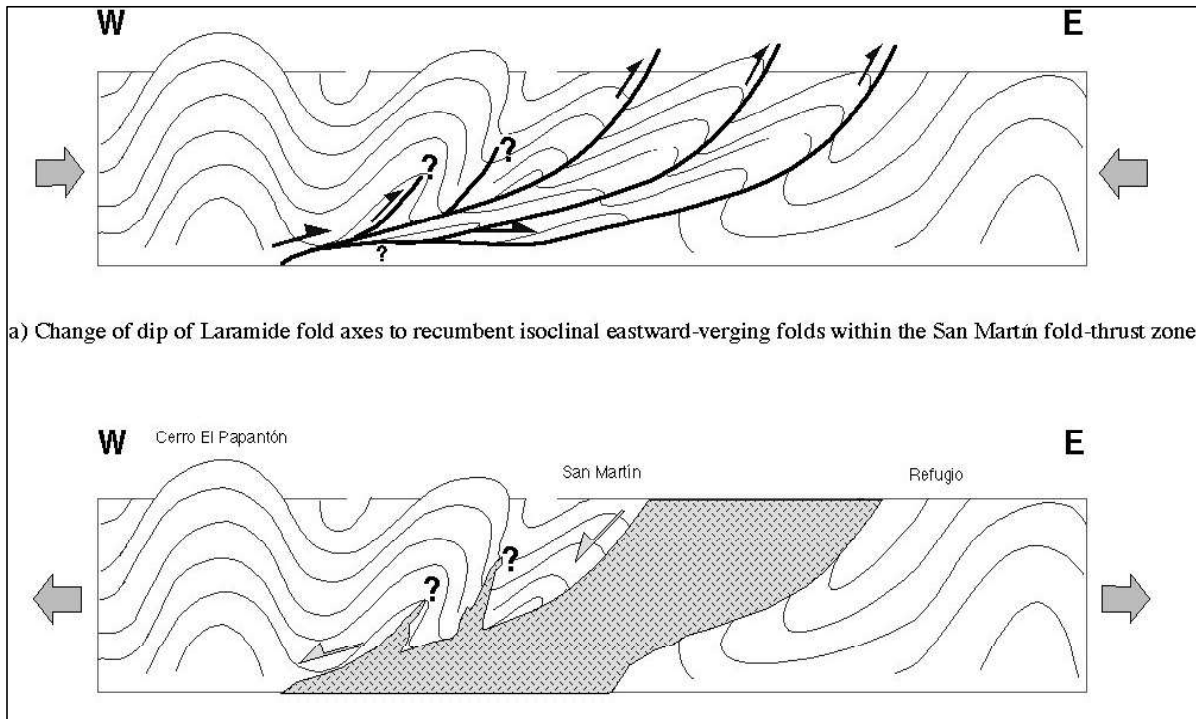
## 6.2.2 Structural Controls on Mineralization

The mineralization of the San Martín deposit is primarily controlled by a W-NW sinistral dilatational fault zone. Many of these fundamental structures are pre-mineral in origin, which were reactivated during and after the Laramide event.

San Martín is located on the margin of the larger structural zone of discrete WNW regional fault zones, which extend from San Martín to the SE of Zacatecas and Real de Angeles (Figure 6-1)

The intrusive complex plunges shallowly to the southwest, focusing mineralization immediately above the contact. As the Indidura formation is in the area of folding and contains a high content of shales, there is a good possibility of locating mineralization in the contact of the Formations Cuesta del Cura and Indidura.

Veta San Marcial is thin with subvertical dipping. Antithetical veins are also present to the through-going vertical veins. The NE and S margins of the intrusion/deposit are controlled by zones of sinistral faulting striking NW to W-NW. The intrusion of San Martín was pre and syn mineralization in age, acting in part as a solid body within the dilation zone. Field data indicate that mineralization is strongly associated with Porphyric Quartz dikes (Figure 6-9).



a) Change of dip of Laramide fold axes to recumbent isoclinal eastward-verging folds within the San Martín fold-thrust zone

Source: Maldonado, 2004

**Figure 6-9: Scheme of Structural Evolution Model**

The structural model indicates that the Post-Laramide extension (N-NE) produced oblique faults with a large expansional component W-NW to NW, which control the emplacement of intrusions and resulting mineralization.

Structural control can be seen on multiple scales; the largest and most economically important are the concentric and antithetical structures that house the main mineral veins, when these structures are intercepted by the WNW-NW in the Skarn zone, the mass replacement bodies are of large dimensions. These bodies are also formed at the edges of the intersections of the main veins and the antithetical structures.

Thus, the main veins known as San Marcial, Ramal Ibarra, Ibarra, Gallo – Gallina strike NW, N NE, NE, which when combined with structures W NW – NW (faults 3 and 5) form the large bodies of replacement in Skarn known in San Martín, with longitudinal influence of 1.5 km and depth of 1.1 km.



Where the contact of the intrusion is low angle, the ore bodies are narrow or do not exist, but when these surfaces change pitch there is a large increase in grade and volume. Some of the deep exploration targets are located at the intersection of normal faults with the margin of the intrusive (Figure 6-4).

### 6.3 Mineral Deposit

The Zn-Pb-Cu (- Ag ± Au) San Martín deposit in northwestern Zacatecas is one of the most economically important and largest skarns in México. Mineral associations in this deposit belong to the sulfide skarn type (with rather "classical" prograde and retrograde zones) and contain peripheral sub-epithermal to epithermal veins. Detailed Mineralogy and geochemistry have been completed on the deposit historically which is summarized from Rubin and Kyle 1988, below:

The San Martín skarn deposit was formed by a hydrothermal system associated with intrusion of the 46-m.y.-old Cerro de la Gloria quartz monzonite stock into the middle Cretaceous Cuesta del Cura limestone. The deposit is exploited by two major mines. The San Martín mine extracts Cu-Zn-Ag ore from veins and replacement bodies hosted by skarn, and the Sabinas mine extracts Zn-Pb-Ag (+ or - Au) ore from veins hosted by skarn and recrystallized limestone.

Horizontal metal zonation is well developed in the San Martín district. Cu and Ag correlate positively and the general pattern is Cu + Ag --> Cu + Zn --> Zn + Pb, with increasing distance from the intrusive contact. The contents of Fe, Cu, Zn, and Pb increase with depth within the ore zone.

Au is farthest from the contact and occurs in veins within recrystallized limestone. Structural and stratigraphic controls were of major importance in localizing mineralization. Fractures in the Cuesta del Cura Formation associated with Laramide folding increased the permeability of the host rock; the metasomatic aureole, with accompanying sulfides, is most extensive in the most deformed portion of the limestone.

Chert and shale units of the Cuesta del Cura served as local impermeable barriers to hydrothermal fluids; these units are mineralized only along fractures.

The vein system represents a series of intrusion-related fractures that roughly parallel the intrusive contact and that served as major conduits for the ore-forming fluids. Formation of both the vein system and sulfide-hosting in skarn probably was aided by volume loss during metasomatism. Other retrograde phases include wollastonite, vesuvianite, epidote, and chlorite; fluorite and calcite are common, and minor quartz is also present.

The metallic mineral assemblage is diverse and the paragenetic sequence can be divided into early, intermediate, and late stages. The sequence consists of:

- early arsenopyrite, bornite, chalcopyrite, pyrrhotite, and molybdenite; intermediate sphalerite, with intergrowths of chalcopyrite, and galena; and late tetrahedrite-tennantite, pyrite, native silver, and stibnite.
- Supergene phases include marcasite, acantite, stromeyerite, and pyrargyrite. Deposition of grandite garnet probably was initiated by an increase in F (sub O2) (and possibly decrease in F (sub S2) and took place at temperatures estimated in the range of 500 degrees to 550 centigrade degrees.
- Garnet then became unstable relative to clinopyroxene and later calc-silicate alteration products. Fluid inclusion evidence suggests initially highly saline fluids (at least 24 wt % KCl

and 36 wt % NaCl) with temperatures of major sulfide deposition starting at about 425 degrees C and declining thereafter such that metals were able to be transported as chloride complexes and sulfur was carried mainly as SO<sub>2</sub>. Sulfide precipitation was probably caused by a continuing decrease in temperature and an increase in pH brought about by dissolution of CaCO<sub>3</sub>.

- Local endoskarn formation and noneconomic mineralization of the intrusion preceded exoskarn formation. Relative metal solubilities were the major control on metal zonation. The Cu-Ag association is a product of thermal collapse of the mineralizing system, resulting in low-temperature mineral assemblages coexisting with high-temperature assemblages near the intrusive contact.

## **7 Exploration**

### **7.1 Exploration Work (Other Than Drilling)**

Since early last century exploration activities have advanced in parallel to the exploitation operation, defining the continuity of the mineralization as the exploitation advanced.

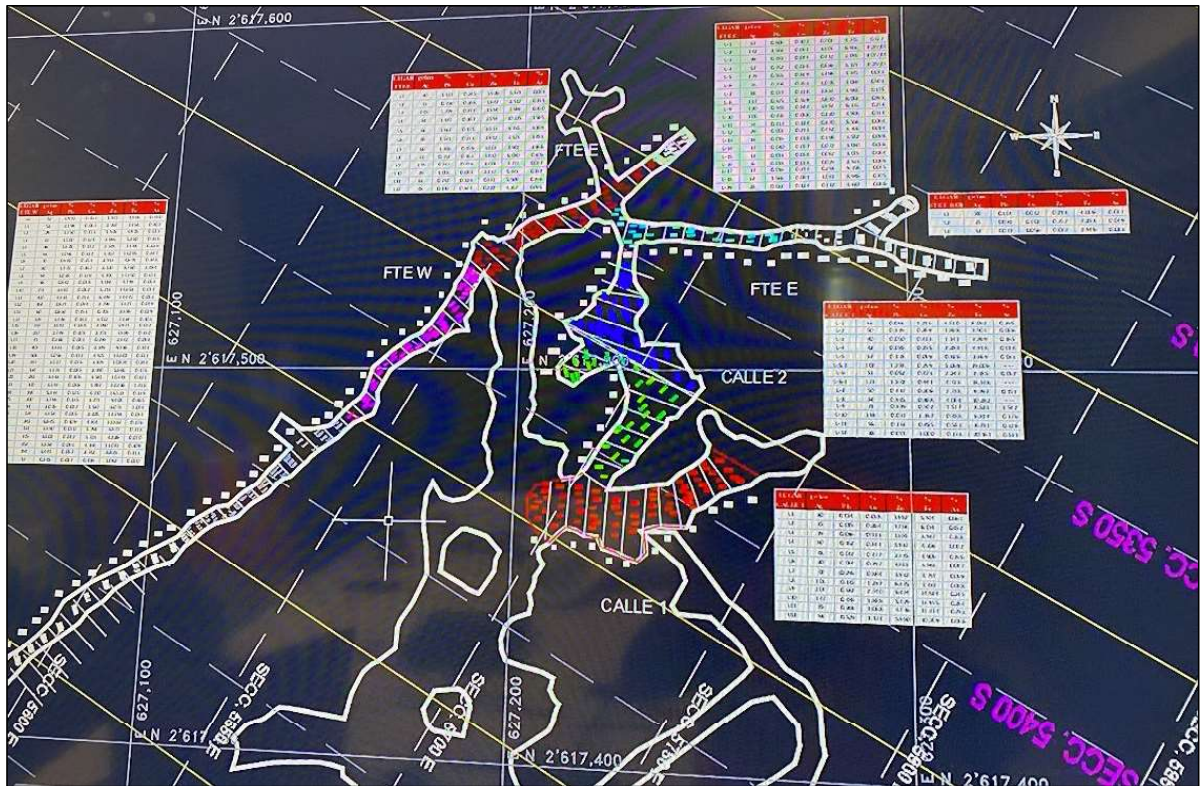
At the beginning of 2019, the Zona Centro exploration team undertook the task of carrying out a structural geological mapping, geologically mapping in detail 80 hectares in the Zorra Plateada area, scale 1: 1,000. Likewise, for the Cuervo-Josefina area, 80 hectares were also mapped at a scale of 1: 1,000 and a total of 82 samples of splinters were collected from landfills and old mining works. These two areas are located to the west of the San Martín operation.

In 2023, San Martín collected approximately 5,000 rock samples from underground workings as part of the grade control activities of the mine geology department.

#### **7.1.1 Procedures and Parameters Relating to the Surveys and Investigations**

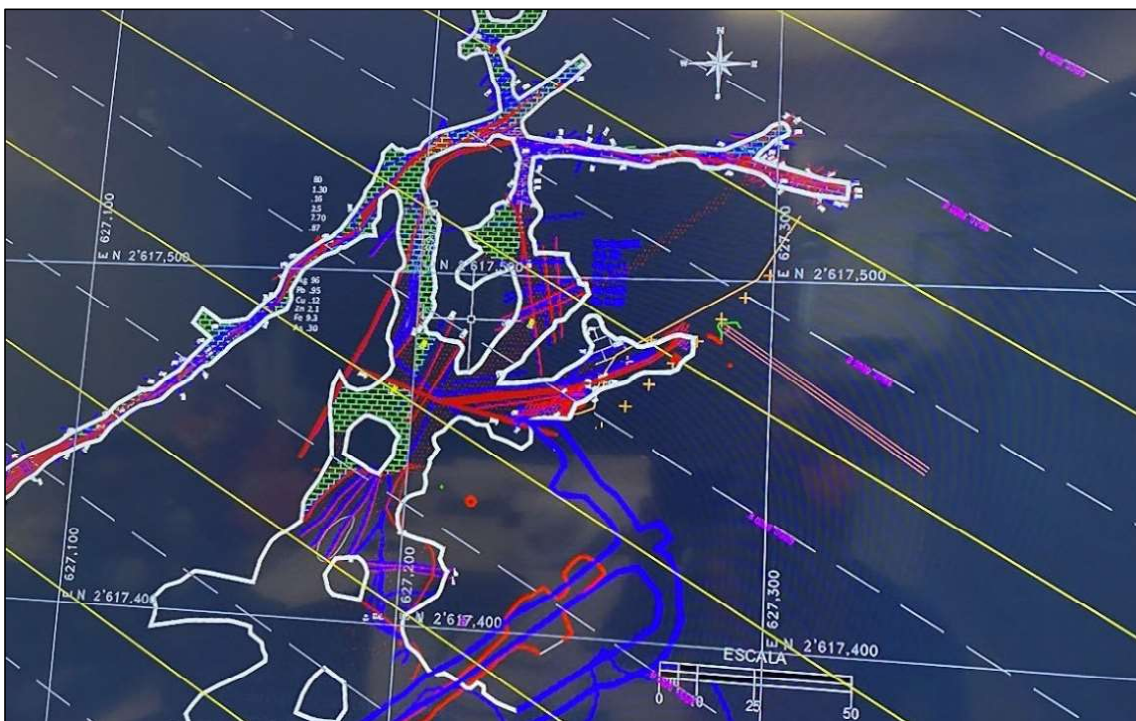
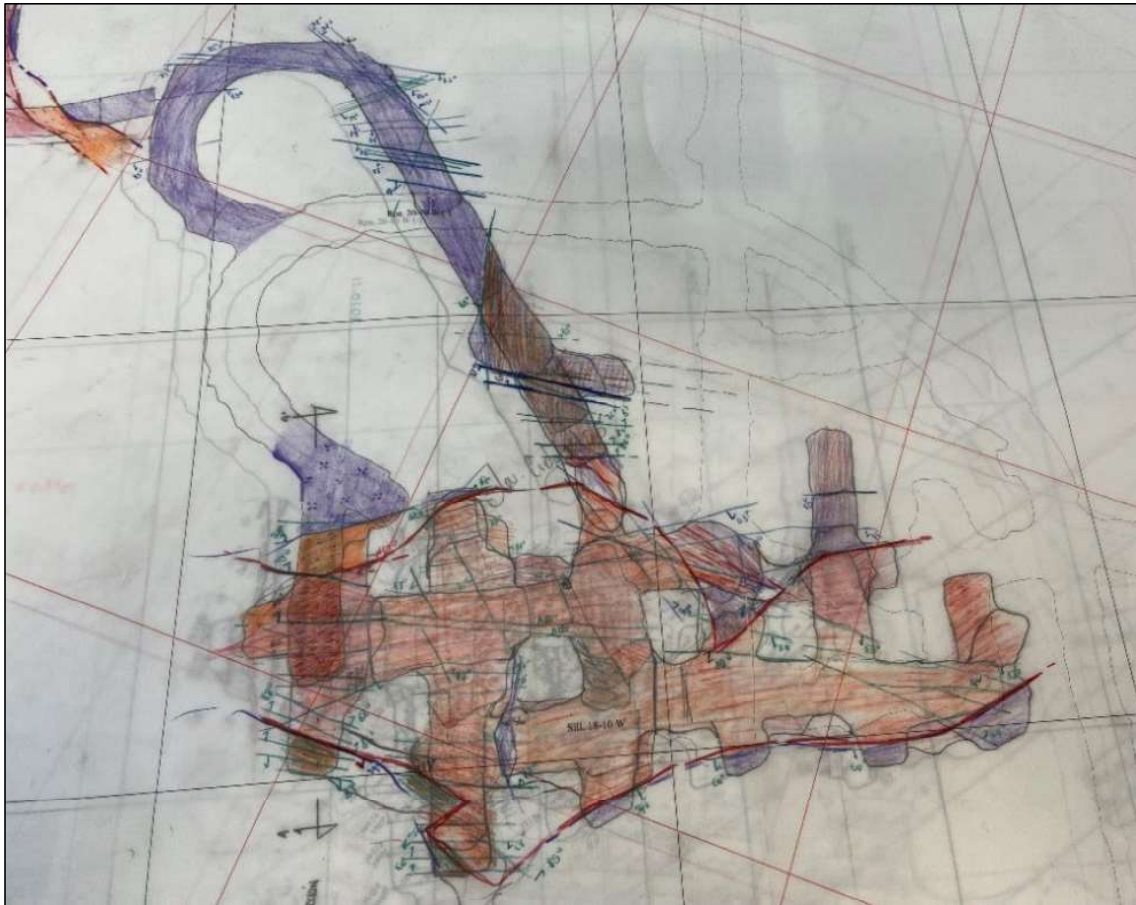
The underground workings are surveyed with Total Station, and historically using Theodolite. The sampling, geology, structural, and mineralization information is registered in maps. The historical maps were completed in paper format and are maintained and stored in the mine geology office.

The sample channels are located using compass and tape from known points located along the underground workings. The mine topography maps provided by the mine topography department are used to draw the geology interpretation, structure, and the horizontal projection of rock sampling lines (Figure 7-1 and Figure 7-2).



Source: IMMSA, 2021

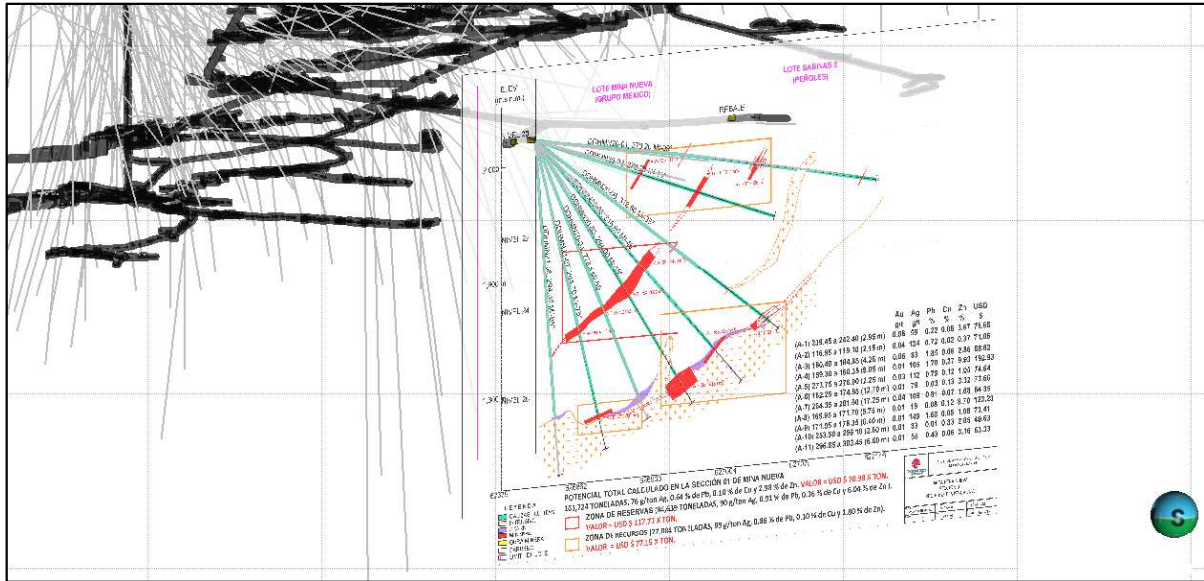
**Figure 7-1: Example of Channel Sampling Location Maps (AutoCAD Format)**



Source: IMMSA, 2021

**Figure 7-2: Example of Geological Underground Maps (Paper and Digital AutoCAD)**

In 2023, San Martín completed the digitization of the available rock sampling and drilling information. The georeferenced information was digitized directly from sections and core logging sheets in excel sheets and this information was imported into the Leapfrog geo software for the geological modeling and the mineral resource estimation. Some maps and sections were directly uploaded and georeferenced in Leapfrog to help in the geological interpretations and modeling, Figure 7-3.



Source: IMMSA, 2021

**Figure 7-3: 3D View of an Example of Georeferenced Vertical Section in Leapfrog**

The QP highlights that there is a limited risk that not all information is used when generating maps and cross sections, or that the process of updating the interpretations can result in a time-consuming process for the geological staff, before importing the data into Leapfrog software.

It is the QP’s opinion that the mine has demonstrated sufficient quality in the survey process to accurately reflect the geology, which is supported by the long mining history of the deposit.

## 7.1.2 Sampling Methods and Sample Quality

### Mine Channel/Rock Chip Sampling

Sample limits are defined by the geologists according to changes in mineralization and lithology and are oriented perpendicular to the mineralization controls (stratigraphy and veins), Figure 7-4. The rock chips are collected by the geology technicians, simulating a channel of approximately 15 cm. The rock samples from the underground workings are collected from the roof of drifts using long steel bars and/or with hammer and chisel (Figure 7-5). Sample lengths vary from 1 to 2 m. The geologists try to use 5-m systematic distance between the sampling channels.



Source: SRK, 2021

**Figure 7-4: Marks Indicating Limits and Width of Samples**



Source: SRK, 2021

**Figure 7-5: Left: Rock Sampling using Hammer and Chisel. Right: Homogenization of Fragments Size**

Each rock sample is collected in a piece of fabric disposed in the floor, and then the big pieces of rock are homogenized to a size of approximately 2.5 – 4.0 cm using a hammer. The sample is mixed inside the fabric, split by hand and then a sample of 2 – 5 kg is packed in plastic bags which are labelled and then closed with ties.

The geologists complete the geological description of the channel. The samples are described including the following information:

- Lithology
- Alteration (type, intensity, and mineralogy)
- Mineralization (styles, intensity, mineralogy)
- Structures (description, aptitude, mineralogy)

The complex distribution of the mineralization is a distinctive feature of this deposit, and the integration of the interpretation sections and maps will be a challenge when constructing a 3D geological model, despite of the good quality and quantity of geological interpretation information.

Since 2022, IMMSA implemented an additional method of rock sampling that consists of collecting chips from the drift fronts or roofs in areas (panels) of homogeneous mineralization/geology characteristics (Figure 7-2) defined by the mine geologist. Each sample (1 to 2 kg) is collected with hammer and chisel from the defined panel. IMMSA did not collect field duplicates of these samples to



evaluate the quality of this sampling methodology. According to IMMSA, this methodology has shown advantages for the short-term planning of the operation.

SRK considers that the current non continuous channel sampling procedure is not in-line with industry best practices and sampling errors can be introduced due to changes in rock hardness when using long bars to collect the rock chip samples. The lack of an adequate rock sampling protocol results in poor-quality rock sampling and uncertainty associated with the results.

The samples collected by the geology technicians and delivered to a company geologist, who reviews the samples and delivers the samples to the on-site laboratory to provide a chain of custody. Internal quality controls are not included in the sample stream by the geologists of San Martín.

All the chip channel samples (2 - 5 kg weight) collected by the operation are sent to the internal onsite laboratory for assaying, where multi-element assays by ICP are completed.

The assay results received by the geology staff are registered in Excel spreadsheets. For the historical sampling, the assays results were received in paper tables and the geologists transcribed the results directly into the maps (Figure 7-1 and Figure 7-2) and the mining panels (stope) supporting documents. Part of the sample information in Excel does not contain the sample length but does contain silver, copper, lead, zinc, iron and arsenic grades. Lithology, alteration, and mineralization description are not included in the Excel spreadsheets but is partially described in the geological maps and sections. The digitalization completed in 2023 used the data that included location, length and assays.

### **7.1.3 Information About the Area Covered**

San Martín samples all the underground workings and stopes maintaining an approximate separation of 5 m between channels. Each stope is advanced vertically and a new set of samples are collected from the ceiling of the stopes, that are used for the mineral resource updates. The area covered by the operation and the exploration around it is approximately 9 km<sup>2</sup>.

### **7.1.4 Significant Results and Interpretation**

Although the sampling methods and sample quality do not follow best practices to minimize potential bias or contamination. It is the QP's opinion that the overall the results are representative of the geological units and mineralization controls. The results from channel sampling are accepted for the definition of the geological interpretations and Mineral Resources at San Martín.

The channel sampling is used for the mine planning (medium and short term). SRK relied upon reconciliation of the planned versus executed grades and tonnages system of San Martín to determine the performance of the channel sampling, which is considered reasonable considering the long history of mining at San Martín.

Table 7-1 shows the comparison between the planned and real tonnages and the mill feed grades for the last 4 years. For 2023, there are important differences in silver, lead and zinc, which reflects the variability of grades associated with the deposit. The QP notes there are higher differences in the comparison to the grades of 2022. There is not a protocol of reconciliation that provides robust numbers to evaluate appropriately these differences, but these differences are an aspect to investigate in each of the processes of the operation.

**Table 7-1: Comparison of Planned vs. Real Tonnages and Grades for 2020 to 2022**

	<b>Milled Tonnage (t)</b>	<b>Au (g/t)</b>	<b>Ag (g/t)</b>	<b>Pb (%)</b>	<b>Cu (%)</b>	<b>Zn (%)</b>
<b>Total Plan 2020</b>	<b>1,298,400</b>	<b>0.04</b>	<b>92.03</b>	<b>0.25</b>	<b>0.60</b>	<b>2.00</b>
<b>Total Real 2020</b>	<b>1,355,065</b>	<b>0.02</b>	<b>107.80</b>	<b>0.34</b>	<b>0.50</b>	<b>1.68</b>
Difference 2020	4%	-55%	17%	38%	-16%	-16%
<b>Total Plan 2021</b>	<b>1,371,150</b>	<b>0.02</b>	<b>94.28</b>	<b>0.34</b>	<b>0.52</b>	<b>1.90</b>
<b>Total Real 2021</b>	<b>1,217,334</b>	<b>0.01</b>	<b>74.77</b>	<b>0.24</b>	<b>0.47</b>	<b>1.87</b>
Difference 2021	-11%	-34%	-21%	-29%	-10%	-2%
<b>Total Plan 2022</b>	<b>1,294,975</b>	<b>0.01</b>	<b>68</b>	<b>0.28</b>	<b>0.50</b>	<b>1.90</b>
<b>Total Real 2022</b>	<b>1,413,207</b>	<b>0.01</b>	<b>66</b>	<b>0.25</b>	<b>0.43</b>	<b>1.62</b>
Difference 2022	9%	0%	-3%	-11%	-14%	-15%
<b>Total Plan 2023*</b>	<b>1,096,700</b>	<b>0.01</b>	<b>68</b>	<b>0.25</b>	<b>0.45</b>	<b>1.68</b>
<b>Total Real 2023*</b>	<b>1,194,185</b>	<b>0.01</b>	<b>55</b>	<b>0.20</b>	<b>0.45</b>	<b>1.48</b>
Difference 2023*	9%	-18%	-19%	-20%	1%	-12%

Source: IMMSA, 2023

(\*) January – October 2023

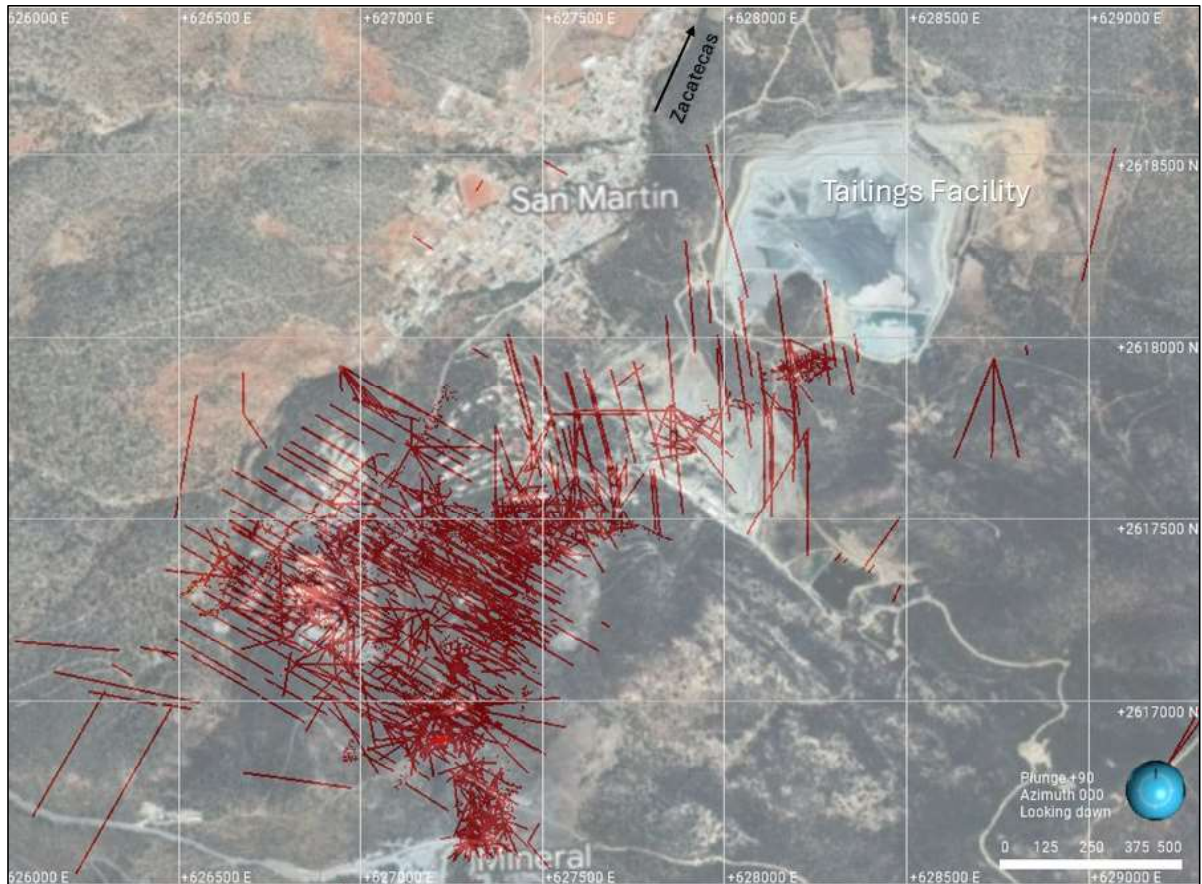
## 7.2 Exploration Drilling

The drilling in San Martín has been documented since the last century, but the total quantity of drillholes completed at San Martín cannot be established due to lack of an available historical drilling register and the loss of previous information.

At the beginning of the 1950s, the surface and interior exploration of the mine began in San Martín, from this period until 2005, approximately 100,000 m were drilled from surface and 220,000 m from underground chambers. During the years 1990-1997 approximately 67,000 meters with a total of 165 holes were completed. (Sánchez J.M, et al., 1998).

### 7.2.1 Drilling Type and Extent

San Martín has completed diamond core drilling from surface and underground, and the actual number is not known due to the lack of a historical drilling register or a central database and the loss of information during the general strike occurred some years ago. IMMSA finalized the process of data capture of the drilling database. Most of the drilling completed by the operation is BQ core and has not been downhole surveyed, but in 2023, IMMSA implemented the use of NQ core size and the down hole surveying for all the mine geology drilling. The majority of the historical drillholes have lengths more than 100 m and depending on the zone of the project, but there are a considerable number of drillholes longer than 300 m. A lack of downhole surveys for the historical drilling can result in location errors of the drillhole intercepts and potential mining panels (stopes) defined with the drilling, representing a moderate risk level. It is the QP's opinion that this risk is limited as the drillholes defining the Indicated portion of the deposit are relatively close to the current underground workings and therefore will have limited deviation. Impact on Inferred Resource for longer holes will likely have slightly higher risk. The QP has considered this risk during the classification process, reflecting the levels of confidence. Figure 7-6 presents the location of the traces of the drilling completed in San Martín that are part of the drilling database imported to Leapfrog software and used for the resource estimates.



Source: IMMSA, 2023

**Figure 7-6: Drillhole Traces – San Martín**

Underground diamond drilling completed by the mine geology department includes drilling a fan of holes on sections spaced 25 - 30 m apart perpendicular to the main mineralization trend.

On completion of each drillhole, the collar location is surveyed, and the following information is recorded on paper drill log sheets:

- Hole number, with collar location, length, planned dip and azimuth.
- Start and completion dates of drilling.
- Core lengths and recoveries.
- Geological and mineralogical descriptions
- Assay results.

The historic mine geology drillholes are used in conjunction with the drillholes in the mineral resource estimation.

The location of the collars and drilling traces are now registered in excel files and leapfrog Geo project, and in paper maps or Autocad files. The drillhole information can be found in individual paper plans and vertical sections.

## 7.2.2 Drilling, Sampling, or Recovery Factors

### **Mine Geology Department Drilling Programs**

The historical drilling is completed by the mine geology department of San Martín. It was estimated that there are approximately 2,000 historical drillholes have not been digitized. The mine geologists complete the core logging in paper formats, which includes the lithological, structural, and mineralization characteristics. Although the general characteristic of mineralization is registered in the logging formats, the codes of mineralization and geology characteristics have changed over time. An example of the logging format is shown in Figure 7-7. The sample limits were defined according to changes in geology and mineralization and the logging formats included the zinc, lead, copper, silver, and iron grades (and recently, gold).

Only the areas of visible mineralization and its halo of 4 to 5 m around the mineralized zones (hangingwall and footwall) are sampled. A core splitter or an electrical saw have been used to cut the core, and a half of the core is collected in plastic bags and sent to the internal laboratory for chemical analysis. Small core pieces (10 to 20 cm) from the drillhole intervals that have been described as non-mineralized were stored, and the rest of this material was discarded after logging.

Part of the assay results received by the geology staff were registered in Excel spreadsheets and included in plan section drawings (AutoCAD format). A lot of the sample information in Excel does not contain presently the information of the sample length, which is required for geological modeling and mineral resource estimation. The information digitized includes the length of the samples captured from the original logs and is now in Excel format and have been uploaded into Leapfrog Geo software for geological modeling and resource estimation.

Historically the onsite laboratory has reported the assays in paper and recently in excel files. There is no QA/QC protocol for the historical drilling completed by operations staff. In 2023, IMMSA started the implementation of a QA/QC protocol.

INDUSTRIA MINERA MEXICO, S. A.  
 UNIDAD SAN MARTIN  
 - PERFORACION de DIAMANTE - DESCRIPCION de NUCLEO

Sección: 5775 S      Barreno NP: 436-22-BE-66  
 Localización: Rancho L-660      Rumbo: 71 00° W  
 Coordenadas Collar N.: 4422      Objeto:      Inclinación: 7 8°  
 E.: 4454      Longitud: 125.10  
 Elev. Collar: 2410  
 Fecha Iniciación: 27/11/82      Diam. Nucleo:      Descripción por: PRIMITIVO JUAREZ M.  
 Fecha Terminación: 14/11/82

Barreno dibujado - Plano - Sección  
 Lingete - Completo - Condensado - Tirado  
 Recuperación de Barreno: %

Nov. 1982  
 800  
 125.10 FIN

DESCRIPCION		RECUPERACION		Mts.	Grafica de Nucleo	DESCRIPCION	ENSAYES - NUCLEO						
Litología - Alteración - Misc.		Interv.	Nuc. %				Intervalo	Rec.	Ag.	Pb.	Cu.	Zn.	Fe.
0.00 - 0.00	arcilla con fragmentos	0.00											
0.00 - 0.45	arcilla con fragmentos de mica laminada	0.45	0.43										
0.45 - 0.90		0.90	0.43										
0.90 - 1.35		1.35	0.45										
1.35 - 1.80		1.80	0.44										
1.80 - 2.70		2.70	0.38										
2.70 - 5.30		5.30	0.32										
5.30 - 8.00		8.00	2.28										
8.00 - 8.60	arcilla con fragmentos de mica laminada	8.60	0.23										
8.60 - 11.90	arcilla con fragmentos de mica laminada	11.90	0.27										
11.90 - 15.20	arcilla con fragmentos de mica laminada	15.20	0.26										
15.20 - 17.50	arcilla con fragmentos de mica laminada	17.50	0.25										
17.50 - 21.80	arcilla con fragmentos de mica laminada	21.80	0.24										
21.80 - 23.20	arcilla con fragmentos de mica laminada	23.20	0.22										
23.20 - 26.00	arcilla con fragmentos de mica laminada	26.00	0.27										
26.00 - 27.00	arcilla con fragmentos de mica laminada	27.00	0.27										

Hoja nº \_\_\_\_\_ de \_\_\_\_\_

Source: IMMSA, 2021

**Figure 7-7: Core Drilling Logging Format Used at San Martín for Historical Information (1982)**

A core splitter or an electrical saw is used to cut the core, and half of the core is collected in plastic bags and sent to the internal laboratory for chemical analysis (34 elements). Historically, the remaining core of the sampled zones were stored at the operation complex for 5 to 10 years, but during the period of time due to a strike, all the stored core was discarded. The pulps of the processed historical samples in the internal laboratory were discarded.

In 2023, the mine geology department completed 6,334 m of drilling, and the exploration department 15,257 m.

The San Martín operation currently does not operate a commercial database or a geological data management protocol. The historical drilling information is physically stored in the San Martín Mine geology office with individual hole in individual folders. However, the mine geology staff informed SRK that portions of this documentation were lost in the last decade. To validate drill results from as part of the previous estimates the QP relied on review of the hard copies (paper format) of the historical drilling, and the excel files of a part of the drilling. In 2023, the digitalization of the available information was completed, and the information is in digital formats, including Excel and AutoCAD formats.

The information of drilling, rock sampling and the geological interpretations in plan and vertical sections was uploaded into Leapfrog Geo software for Geological modeling and Mineral Resource estimation.

### **Exploration Department Drilling Programs**

After the restart of the activities in San Martín, IMMSA has used a contractor to be responsible for the exploration drilling. The drilling contractor (Tecmin) completed approximately 35,000 m of drilling during the last 3 years. In 2023, the contractor drilled 15,257 m, including 30 holes (13,480 m) in Gallo gallina. The diamond core drilling is completed using diamond bits, using the standard core sizes HQ, NQ, BQ and AQ. Most drill rods are 10 feet long (3.048 m). This drilling includes downhole surveying at interval of every 20 and 50 m. All new drillhole collars are surveyed using Total Station. The QP notes that multiple coordinate systems have been used historically, which have been translated to a single system during the current data capture process.

The drilling depth is estimated by keeping track of the number of drill rods that have been inserted while drilling, and the recorded drill core lengths. The obtained core is stored in plastic core boxes (Figure 7-8), which are labelled with the borehole identification, box number and from/to measurements.



Source: IMMSA, 2021

**Figure 7-8: Core Boxes of San Martín**

Once the diamond drilling has been carried out and the core has been recovered, the next step is to transport the core boxes to the logging facility where the core is logged and sampled. Figure 7-9 presents the core logging area of the exploration department in San Martín.



Source: SRK, 2021

**Figure 7-9: Core Logging Room of the Exploration Department in San Martín**

Once at the logging facility, the core boxes are placed in order on logging tables with the run blocks (from-to) clearly visible. The core is then washed, photographed, and then logged with the following features recorded (structures, mineralization, alteration, rock type, contacts, and clasts), and sample intervals are marked.

Geotechnical information such as recovery and RQD are also recorded, as these data are needed to assess rock quality, determine mining widths, pillars, and mine support programs.

Within the activities carried out in the logging, zones with mineralization or altered are defined, where according to the criteria of the geologist, the samples not smaller than 20 centimeters and not larger than 2.0 m were selected and marked. Later they are labeled with a sample tag and half of the core is cut to be sent for assaying and the other half remains as a control in the box (Figure 7-10).

The QA/QC protocol includes the insertion of blanks, duplicates, and certified reference material checks. These samples are being sent to SGS Laboratory, Durango, México. The onsite internal laboratory is used as a secondary laboratory and no other commercial laboratory is used as an umpire. In 2023 (January – October), 3,628 core samples were sent to the SGS laboratory for chemical analysis.

Core samples are collected in various types of lithology for the measurement of specific gravity, mainly in mineralized areas. After registering the core, samples. The samples are packed in plastic bags, labeled, and sent to the SGS laboratory facilities in Durango (Figure 7-11).

Specific gravity measurements are taken by the exploration team every 50 m according to changes of lithology and mineralization characteristics, using the Archimedes principle-based methodology. The specific measurement results have not been used for the current resource estimation because these measurements are collected in areas surrounding the main part of the deposit. It is the QP's opinion that the use of a single density value for the Project represents a moderate risk to the estimation of the total tonnage, and local fluctuations are likely expected. The risk is only considered moderate as the current assigned density of 3 t/m<sup>3</sup> is based on the mining production which has been established over a long period of time.



Source: SRK, 2021

**Figure 7-10: Core Boxes with Sample Marks and the Remaining Half of Core**





Source: SRK, 2021

**Figure 7-11: Labeled Core Samples**

GvMapper Software was used to capture data from exploration drill campaigns. This software is a configurable digital tool for creating, editing, displaying maps and drillhole columns, designed to manage information in a centralized database.

The conditions of the storage facility of the exploration group are in the QP's opinion in good condition and the core is appropriately maintained. (Figure 7-12). The drill core completed by Exploration is being stored along with the sample rejects and pulps.



Source: IMMSA, 2021

**Figure 7-12: Core Logging and Core Storage Facility at San Martín**

### 7.2.3 Drilling Results and Interpretation

The historical drilling information, which supports most of the mineral resources of San Martín, have been completed without proper QA/QC protocol and downhole survey measurements. These aspects are not in line with the industry best practices which may result in errors related to the location of the mineralization intersection and quality of the samples and assay results.

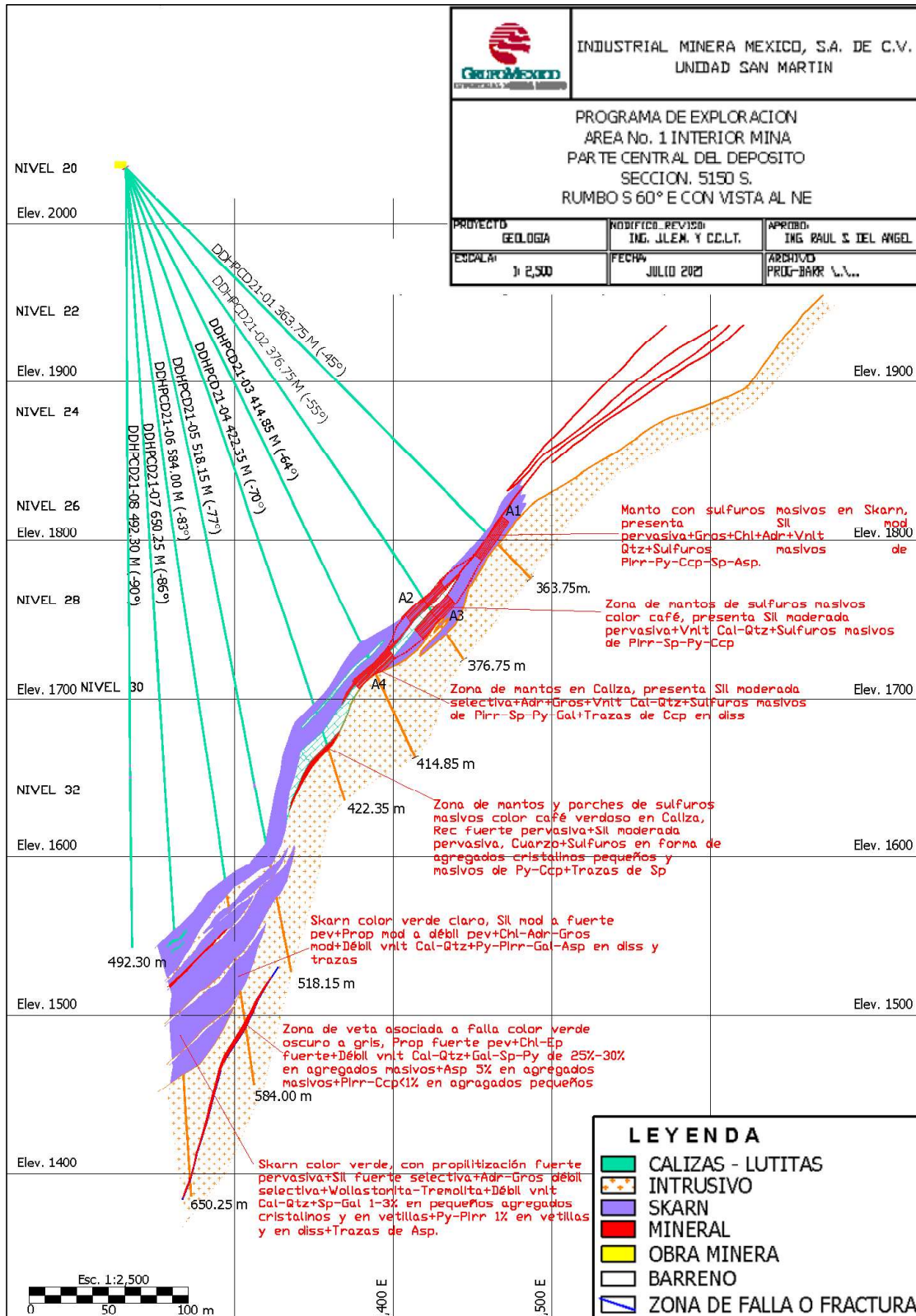
The lack of downhole surveys in underground drillholes represents a moderate risk associated to location and extent of mineralization in areas unsupported by underground workings. Recent drilling completed by the exploration team have downhole surveys every 50 m.

Core recovery is not an issue according to the information provided by San Martín. Recent drilling has shown core recovery average above 97% and locally low recoveries associated to weathering zone and faulting. Poor recoveries associated with historical drilling may be due to drilling practices and equipment from that period.

Historical and recent drilling campaigns have been carried out by the operation with core recovery in diameters from NQ to BQ and TT46, which are considered reasonable for the operation, and in 2023 IMMSA started the implementation of NQ in all the drilling completed by the mine geology department. HQ, NQ drilling diameters are being used for the exploration drillholes completed by Tecmin.

The operation drillholes have been drilled from underground drilling chambers by both mine operations staff and contractors. This drilling is typically completed using fan drilling from the existing drives.

Drillholes are orientated as perpendicular to the mineralization controls (stratigraphy and veins) as possible. It is the QP's opinion based on the sections reviewed that overall, the drilling intersects the mineralization at acceptable angles to model the geological contacts. In some cases, the angle of the intersection to the mineralization can be shallow, due to the irregularity of the mineralization, but San Martín tries to minimize this. Figure 7-13 shows the intersection angles relative to the interpreted geology in a vertical section, including the completed drilling. The geology of San Martín and distribution of mineralization is irregular, and the variable drilling inclination is acceptable considering the geology and mineralization of the deposit.



Source: IMMSA, 2021

**Figure 7-13: Example of a Geology Interpretation in a Vertical Section, Including Completed Fan Drilling**

The core is logged and transcribed in the hole books.

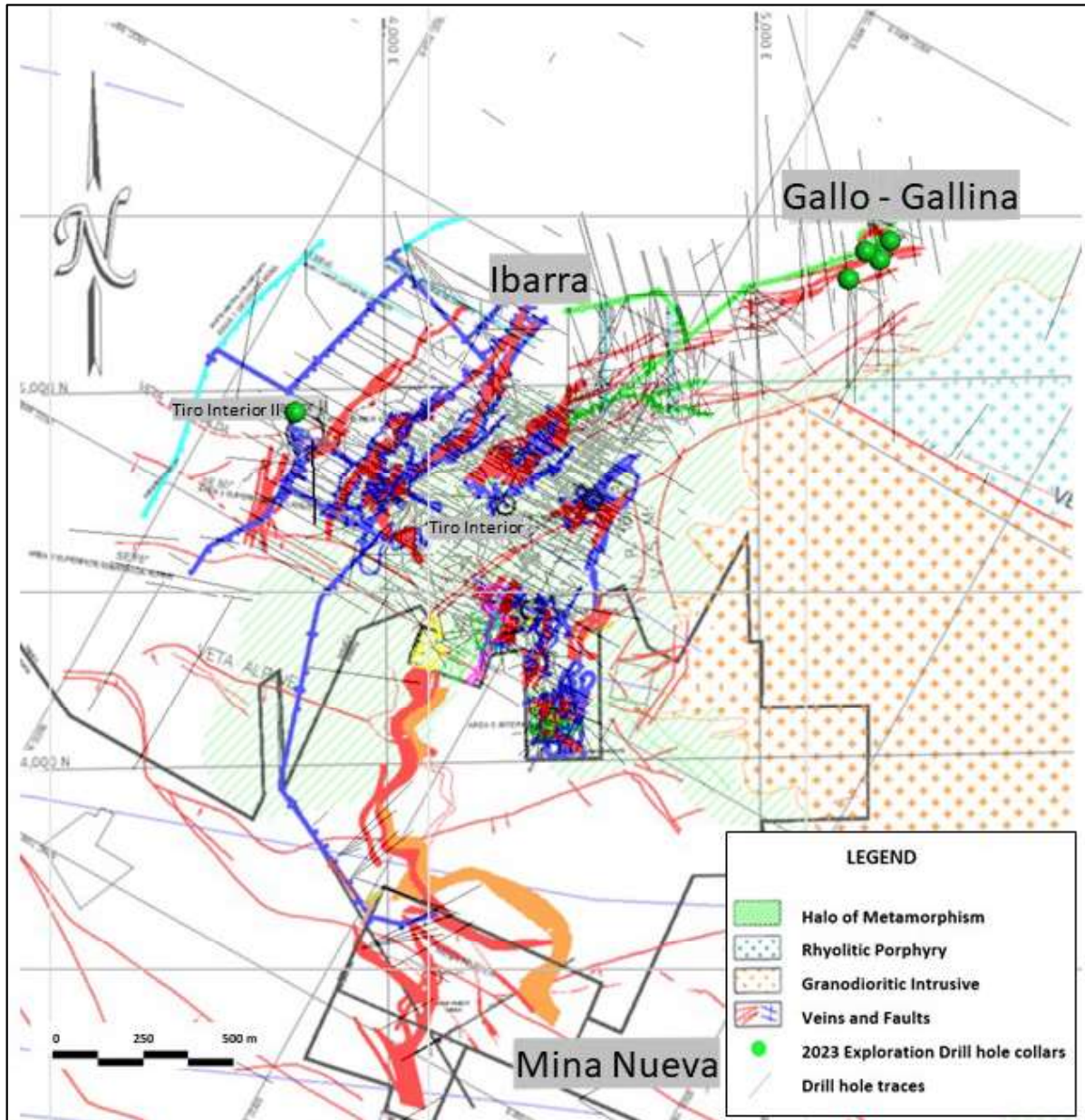
This data is combined with channel sampling and geological interpretations based on underground workings to update plans and vertical sections on either paper maps or in AutoCAD.

The variability of the mineralization that characterizes the skarn and veins deposit of San Martín is appropriately interpreted using the different sources of information. SRK relied upon reconciliation of the planned vs. actual grades and tonnes mined at San Martín to evaluate the quality of drilling data. Based on the reconciliation and the long history of mining at San Martín, it is SRK's opinion that the drilling and sampling is acceptable for use in the current mineral resource estimate.

#### **Recent Drilling – Exploration**

Recent exploration within the San Martín mining district, in the vicinity of the San Martín Mining Unit, specifically towards the South - West portion, Gallo Gallina and the deep Central zone.

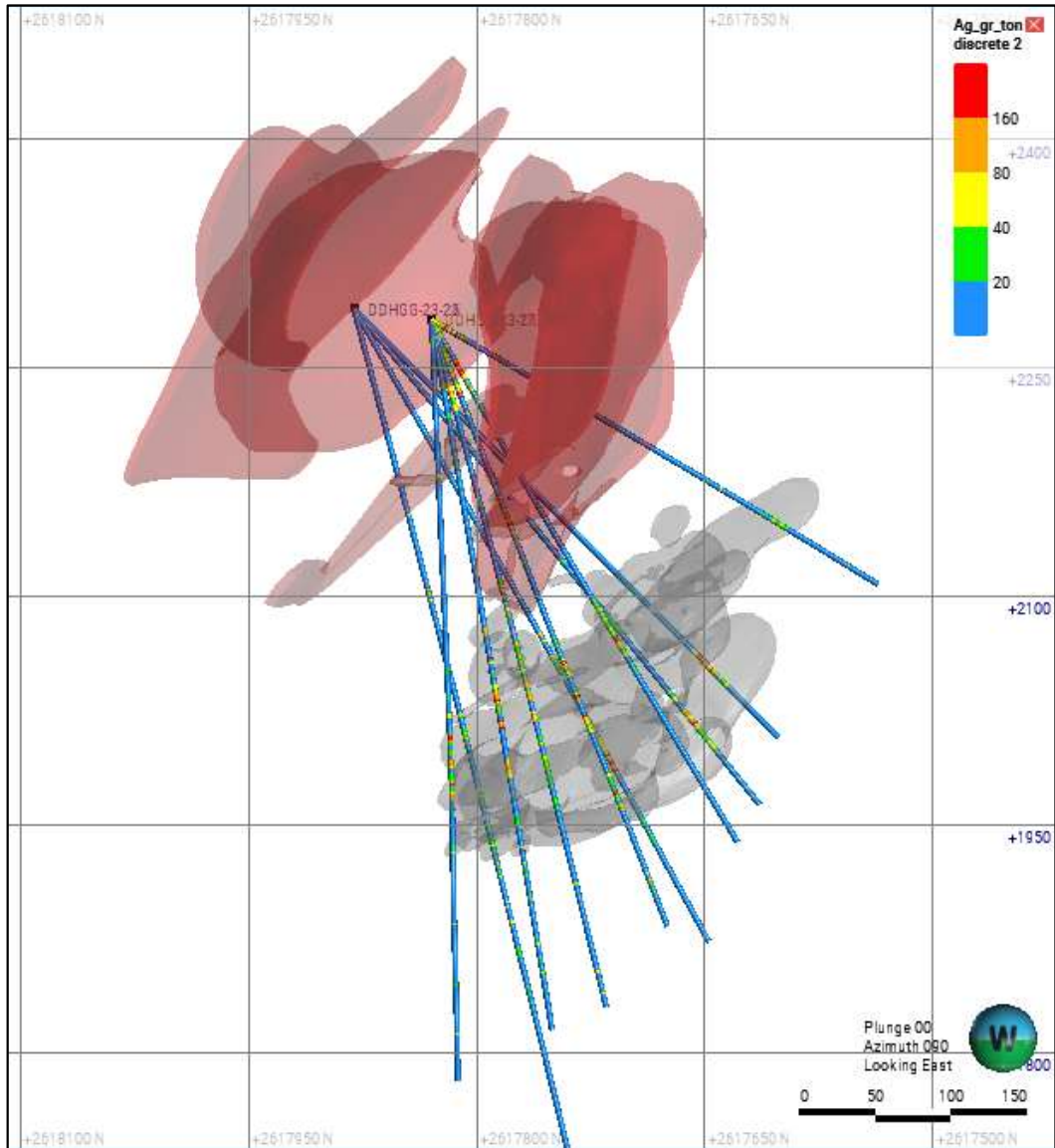
In 2023, from January to October, the exploration department completed 34 drillholes totaling 14,300 m in Gallo-Gallina. Figure 7-14 shows the location of the drillhole collars of the exploration drilling.



Source: IMMSA, 2023

**Figure 7-14: Location of 2023 Drillhole Collars – Exploration Fan Drilling**

The exploration diamond drilling completed by the contractor in Gallo Gallina was focused on the definition of the already identified veins, mantos and the disseminated mineralization. Figure 7-15 and Table 7-2 present the 3D view of the drilling and the core interval results obtained, that intercepted the mineralized structures, including the disseminated mineralization at depth.



Source: IMMSA, 2023

**Figure 7-15: N-S Vertical Section, 2023 Exploration Drilling in Gallo Gallina (Looking to East)**

**Table 7-2: Summary of Relevant Results of 2023 Exploration Drilling Campaign**

Drillhole Name	Sample #	From	To	Width	Ag	Pb	Cu	Zn
		m	m	m	ppm	%	%	%
DDHGG23-17	332119	31.3	32.3	1	104.00	0.01	0.82	0.02
DDHGG23-17	332120	32.3	33.1	0.8	236.00	0.13	1.17	0.02
DDHGG23-17	332121	33.1	34.55	1.45	277.00	1.00	0.99	4.08
DDHGG23-17	332123	34.55	35.7	1.15	171.00	0.04	1.13	0.03
DDHGG23-17	332124	35.7	36.6	0.9	102.00	0.48	0.46	1.33
DDHGG23-17	332125	36.6	37.5	0.9	153.00	0.41	0.72	1.93
DDHGG23-17	332127	37.5	38.5	1	337.00	0.09	3.09	0.10
DDHGG23-17	332128	38.5	39.35	0.85	279.00	0.04	2.97	0.05
DDHGG23-17	332129	39.35	40.5	1.15	110.00	0.01	0.58	0.03
DDHGG23-17	332131	40.5	41.5	1	231.00	0.01	1.52	0.02
DDHGG23-18	332290	45.6	46.6	1	154.00	0.01	1.60	0.06
DDHGG23-18	332291	46.6	47.3	0.7	64.00	0.01	0.64	0.10
DDHGG23-18	332292	47.3	48.1	0.8	14.00	0.00	0.17	0.01
DDHGG23-18	332293	48.1	49.4	1.3	44.00	0.00	0.49	0.01
DDHGG23-18	332294	49.4	50.9	1.5	104.00	0.00	1.06	0.01
DDHGG23-18	332295	50.9	52.1	1.2	552.00	0.01	4.01	0.02
DDHGG23-18	332297	52.1	53.3	1.2	17.00	0.00	0.11	0.01
DDHGG23-18	332298	53.3	53.9	0.6	110.00	0.00	0.92	0.01
DDHGG23-18	332299	53.9	55.3	1.4	318.00	0.02	1.51	0.04
DDHGG23-18	332353	137.35	138.6	1.25	34.00	0.40	0.06	0.91
DDHGG23-18	332354	138.6	139.6	1	236.00	10.03	0.24	11.81
DDHGG23-18	332355	139.6	140.6	1	128.00	4.19	0.17	11.32
DDHGG23-18	332357	140.6	141.6	1	58.00	0.36	0.03	0.96
DDHGG23-18	332358	141.6	142.6	1	38.00	0.15	0.02	0.32
DDHGG23-18	332359	142.6	144	1.4	212.00	0.27	0.01	0.19
DDHGG23-18	332360	144	144.9	0.9	175.00	1.08	0.02	0.31
DDHGG23-18	332361	144.9	145.8	0.9	100.00	1.85	0.13	2.34
DDHGG23-18	332399	239	240	1	79.00	0.09	0.04	0.04
DDHGG23-18	332400	240	241	1	614.00	1.04	0.05	0.19
DDHGG23-18	332401	241	242	1	98.00	0.10	0.09	0.01
DDHGG23-18	332402	242	243.1	1.1	290.00	0.10	1.23	0.02
DDHGG23-18	332403	243.1	244.05	0.95	63.00	0.06	0.09	0.02
DDHGG23-18	332405	244.05	245.3	1.25	159.00	0.07	0.04	0.01
DDHGG23-19	332485	45.05	45.6	0.55	173.00	0.10	0.97	0.06
DDHGG23-19	332486	45.6	47.1	1.5	49.00	0.01	0.46	0.01
DDHGG23-19	332487	47.1	48.6	1.5	66.00	0.00	1.08	0.01
DDHGG23-19	332488	48.6	50.1	1.5	149.00	0.00	1.68	0.01
DDHGG23-19	332489	50.1	51.6	1.5	140.00	0.00	1.41	0.01
DDHGG23-19	332490	51.6	53	1.4	54.00	0.01	0.53	0.01
DDHGG23-19	332491	53	54.5	1.5	29.00	0.01	0.34	0.01
DDHGG23-19	332493	54.5	55	0.5	424.00	0.01	3.61	0.01
DDHGG23-19	332494	55	55.75	0.75	13.00	0.01	0.03	0.03
DDHGG23-19	332495	55.75	56.2	0.45	144.00	0.23	0.57	0.16
DDHGG23-19	332496	56.2	57.6	1.4	38.00	0.01	0.49	0.01
DDHGG23-19	332497	57.6	59.1	1.5	71.00	0.03	1.00	0.01
DDHGG23-19	332498	59.1	60.6	1.5	47.00	0.01	0.90	0.03
DDHGG23-19	332572	243.2	244.35	1.15	112.00	0.08	0.15	0.11
DDHGG23-19	332575	244.35	245.85	1.5	86.00	0.22	0.14	1.83
DDHGG23-19	332576	245.85	246.5	0.65	13.00	0.02	0.05	0.35
DDHGG23-19	332578	246.5	248	1.5	97.00	0.18	0.36	0.04
DDHGG23-19	332579	248	249.5	1.5	205.00	0.50	0.35	0.35
DDHGG23-19	332585	254.2	255.2	1	141.00	0.18	0.04	0.02
DDHGG23-19	332586	255.2	256.7	1.5	180.00	0.49	0.05	0.16
DDHGG23-19	332587	256.7	257.7	1	267.00	1.50	0.03	0.35



Drillhole Name	Sample #	From	To	Width	Ag	Pb	Cu	Zn
		m	m	m	ppm	%	%	%
DDHGG23-19	332588	257.7	258.9	1.2	21.00	0.03	0.01	0.04
DDHGG23-19	332590	266.1	267.2	1.1	76.00	0.09	0.01	0.01
DDHGG23-19	332591	267.2	268.5	1.3	168.00	0.32	0.01	0.01
DDHGG23-20	332816	246.8	247.8	1	117.00	0.31	0.07	0.21
DDHGG23-20	332817	247.8	248.8	1	106.00	0.14	0.06	0.06
DDHGG23-20	332818	248.8	250.3	1.5	150.00	0.27	0.02	0.06
DDHGG23-20	332819	250.3	251.8	1.5	115.00	0.31	0.06	0.77
DDHGG23-20	332821	251.8	252.8	1	124.00	0.28	0.10	0.99
DDHGG23-20	332822	252.8	254.3	1.5	208.00	0.35	0.06	0.18
DDHGG23-20	332823	254.3	255.8	1.5	98.00	0.11	0.04	0.08
DDHGG23-20	332824	255.8	257.3	1.5	26.00	0.02	0.01	0.01
DDHGG23-20	332825	257.3	258.8	1.5	127.00	0.18	0.02	0.16
DDHGG23-20	332826	258.8	260.3	1.5	125.00	0.18	0.07	0.19
DDHGG23-20	332833	266.85	267.85	1	265.00	0.37	0.04	0.49
DDHGG23-22	333196	9.8	11	1.2	193.00	0.02	3.62	0.02
DDHGG23-22	333198	11	12.1	1.1	69.00	0.19	1.23	0.20
DDHGG23-22	333199	12.1	13	0.9	13.00	0.05	0.08	0.05
DDHGG23-22	333200	13	13.9	0.9	77.00	0.08	0.53	0.08
DDHGG23-22	333201	13.9	14.3	0.4	52.00	0.16	0.43	0.12
DDHGG23-22	333202	14.3	14.8	0.5	142.00	0.01	1.20	0.02
DDHGG23-22	333207	18.9	20	1.1	320.00	0.03	2.80	0.04
DDHGG23-22	333208	20	21	1	139.00	0.13	2.19	0.14
DDHGG23-22	333209	21	22	1	12.00	0.02	0.07	0.04
DDHGG23-22	333210	22	23.2	1.2	137.00	0.01	1.44	0.02
DDHGG23-23	333438	320.8	321.9	1.1	347.00	0.22	2.20	0.12
DDHGG23-23	333439	321.9	323.4	1.5	22.00	0.03	0.10	0.04
DDHGG23-23	333440	323.4	324.4	1	176.00	0.05	1.07	0.07
DDHGG23-23	333441	324.4	325.4	1	131.00	0.04	0.84	0.05
DDHGG23-23	333442	325.4	326.6	1.2	320.00	0.03	3.07	0.07
DDHGG23-23	333444	326.6	327.6	1	80.00	0.01	0.84	0.02
DDHGG23-23	333445	327.6	328.6	1	231.00	0.08	2.04	0.08
DDHGG23-23	333446	328.6	329.85	1.25	91.00	0.06	0.63	0.04
DDHGG23-23	333447	329.85	331.1	1.25	146.00	0.04	1.29	0.06
DDHGG23-23	333448	331.1	332.25	1.15	45.00	0.17	0.41	0.24
DDHGG23-23	333449	332.25	333.25	1	71.00	0.88	0.46	0.32
DDHGG23-23	333452	333.25	334.1	0.85	202.00	4.41	1.33	3.96
DDHGG23-23	333454	334.1	334.95	0.85	267.00	5.58	1.49	2.25
DDHGG23-23	333456	334.95	335.95	1	45.00	0.48	0.11	0.21
DDHGG23-23	333457	335.95	337	1.05	100.00	0.64	0.17	0.62
DDHGG23-24	333586	340.2	341.6	1.4	33.00	0.01	0.32	0.03
DDHGG23-24	333587	341.6	343	1.4	56.00	0.09	0.35	0.23
DDHGG23-24	333588	343	344.5	1.5	119.00	0.04	0.94	0.03
DDHGG23-24	333590	344.5	346	1.5	80.00	0.07	0.73	0.06
DDHGG23-24	333591	346	347.5	1.5	70.00	0.10	0.64	0.27
DDHGG23-24	333592	347.5	349	1.5	51.00	0.06	0.38	0.07
DDHGG23-24	333593	349	350.5	1.5	131.00	0.05	0.98	0.05
DDHGG23-24	333594	350.5	352	1.5	128.00	0.14	0.54	0.03
DDHGG23-24	333595	352	353.4	1.4	255.00	0.28	0.75	0.08
DDHGG23-24	333596	353.4	354.9	1.5	134.00	0.11	0.81	0.04
DDHGG23-25	333690	318.9	320.4	1.5	163.00	0.23	1.01	0.14
DDHGG23-25	333691	320.4	321.9	1.5	377.00	0.10	3.36	0.18
DDHGG23-25	333692	321.9	323.4	1.5	77.00	0.09	0.49	0.12
DDHGG23-25	333693	323.4	324.9	1.5	87.00	0.08	0.56	0.08
DDHGG23-25	333694	324.9	326.4	1.5	77.00	0.08	0.52	0.13
DDHGG23-25	333701	333.75	335.25	1.5	133.00	0.16	0.88	0.11
DDHGG23-25	333702	335.25	336.2	0.95	79.00	0.79	0.24	0.45

Drillhole Name	Sample #	From	To	Width	Ag	Pb	Cu	Zn
		m	m	m	ppm	%	%	%
DDHGG23-25	333703	336.2	337.7	1.5	217.00	0.23	1.14	0.27
DDHGG23-25	333705	337.7	338.85	1.15	150.00	0.72	0.80	0.73
DDHGG23-25	333706	338.85	339.9	1.05	113.00	0.06	1.02	0.06
DDHGG23-25	333707	339.9	341.4	1.5	84.00	0.04	0.64	0.03
DDHGG23-25	333708	341.4	342.9	1.5	204.00	0.34	1.35	0.08
DDHGG23-25	333709	342.9	344.4	1.5	200.00	0.01	1.83	0.04
DDHGG23-25	333710	344.4	345.9	1.5	95.00	0.00	2.46	0.01
DDHGG23-25	333711	345.9	347.4	1.5	81.00	0.01	1.29	0.01
DDHGG23-25	333713	347.4	348.9	1.5	244.00	0.02	2.69	0.04
DDHGG23-25	333714	348.9	350	1.1	232.00	0.06	2.34	0.05
DDHGG23-25	333715	350	351	1	113.00	0.01	1.82	0.02
DDHGG23-27	334090	307.5	309	1.5	46.00	0.00	0.96	0.01
DDHGG23-27	334091	309	310	1	154.00	0.00	1.57	0.00
DDHGG23-27	334094	310	311	1	353.00	0.00	2.56	0.01
DDHGG23-27	334095	311	312.3	1.3	31.00	0.00	0.72	0.01
DDHGG23-27	334096	312.3	313.55	1.25	215.00	0.00	2.94	0.00
DDHGG23-27	334098	313.55	314.55	1	76.00	0.00	1.50	0.01
DDHGG23-27	334099	314.55	315.7	1.15	113.00	0.00	1.62	0.01
DDHGG23-27	334100	315.7	316.8	1.1	17.00	0.00	0.36	0.01
DDHGG23-27	334101	316.8	318.3	1.5	30.00	0.00	0.51	0.01
DDHGG23-27	334102	318.3	319.5	1.2	34.00	0.00	1.15	0.01
DDHGG23-27	334103	319.5	320.6	1.1	94.00	0.00	1.23	0.00
DDHGG23-27	334104	320.6	321.85	1.25	42.00	0.00	1.45	0.01
DDHGG23-27	334105	321.85	323.35	1.5	101.00	0.00	2.09	0.01
DDHGG23-27	334106	323.35	324.85	1.5	281.00	0.00	3.48	0.01
DDHGG23-27	334108	324.85	326.35	1.5	93.00	0.00	1.46	0.01
DDHGG23-27	334109	326.35	327.5	1.15	140.00	0.01	2.57	0.02
DDHGG23-27	334110	327.5	329	1.5	76.00	0.00	1.39	0.01
DDHGG23-27	334111	329	330.1	1.1	67.00	0.00	1.17	0.01
DDHGG23-27	334113	330.1	331.55	1.45	24.00	0.00	0.39	0.01
DDHGG23-27	334114	331.55	333.05	1.5	50.00	0.00	0.64	0.00
DDHGG23-27	334115	333.05	334.5	1.45	96.00	0.00	1.46	0.01
DDHGG23-27	334116	334.5	336	1.5	119.00	0.04	1.51	0.10
DDHGG23-27	334117	336	337.5	1.5	241.00	0.04	2.65	0.04
DDHGG23-27	334118	337.5	339	1.5	113.00	0.02	1.33	0.03
DDHGG23-27	334119	339	340.1	1.1	174.00	0.01	3.61	0.01
DDHGG23-27	334120	340.1	341	0.9	333.00	0.03	6.74	0.02
DDHGG23-27	334122	341	342	1	240.00	0.09	2.82	0.08
DDHGG23-27	334123	342	343.5	1.5	103.00	0.08	1.16	0.12
DDHGG23-27	334124	343.5	344.5	1	111.00	0.07	1.13	0.10
DDHGG23-27	334216	489.25	490.75	1.5	52.00	3.61	0.05	0.82
DDHGG23-27	334217	490.75	492.25	1.5	81.00	5.11	0.12	2.47
DDHGG23-27	334218	492.25	493.75	1.5	49.00	2.70	0.17	0.76
DDHGG23-27	334219	493.75	495	1.25	54.00	3.30	0.14	0.51
DDHGG23-27	334220	495	496.5	1.5	63.00	3.24	0.11	2.92
DDHGG23-27	334221	496.5	498	1.5	73.00	4.63	0.09	2.50
DDHGG23-27	334222	498	499.5	1.5	43.00	1.57	0.34	0.57
DDHGG23-27	334224	499.5	501	1.5	58.00	2.24	0.53	1.43
DDHGG23-27	334225	501	502.5	1.5	99.00	5.80	0.66	2.27
DDHGG23-27	334226	502.5	504	1.5	150.00	10.72	0.84	4.23
DDHGG23-27	334227	504	504.85	0.85	66.00	4.28	0.03	1.48
DDHGG23-28	334267	244.2	245.55	1.35	61.00	0.01	1.56	0.06
DDHGG23-28	334269	245.55	247.1	1.55	175.00	0.16	3.02	0.73
DDHGG23-28	334270	247.1	248	0.9	113.00	0.06	1.00	0.04
DDHGG23-28	334271	248	249.5	1.5	20.00	0.00	0.88	0.02

Drillhole Name	Sample #	From	To	Width	Ag	Pb	Cu	Zn
		m	m	m	ppm	%	%	%
DDHGG23-28	334273	285.5	286.4	0.9	270.00	0.00	5.06	0.06
DDHGG23-28	334274	286.4	287.9	1.5	247.00	0.00	1.88	0.01
DDHGG23-28	334275	287.9	289	1.1	25.00	0.00	0.38	0.01
DDHGG23-28	334277	289	290	1	149.00	0.00	1.88	0.00
DDHGG23-28	334278	290	291.5	1.5	104.00	0.00	1.33	0.01
DDHGG23-28	334279	291.5	293	1.5	52.00	0.00	0.74	0.01
DDHGG23-28	334280	293	294.5	1.5	60.00	0.00	1.08	0.00
DDHGG23-28	334281	294.5	296	1.5	18.00	0.00	1.33	0.00
DDHGG23-28	334282	296	297.5	1.5	58.00	0.00	2.16	0.00
DDHGG23-28	334283	297.5	299	1.5	65.00	0.00	0.97	0.01
DDHGG23-28	334341	430.7	431.8	1.1	58.00	1.20	0.10	1.23
DDHGG23-28	334344	431.8	433	1.2	54.00	1.46	0.20	2.36
DDHGG23-28	334345	433	434.5	1.5	82.00	2.90	0.35	4.36
DDHGG23-28	334346	434.5	435.9	1.4	75.00	2.57	0.43	6.13
DDHGG23-28	334347	435.9	436.45	0.55	98.00	3.56	0.65	0.88
DDHGG23-28	334349	436.45	437.5	1.05	31.00	0.60	0.15	2.74
DDHGG23-28	334350	437.5	438.8	1.3	57.00	1.46	0.65	2.72
DDHGG23-28	334351	438.8	439.8	1	31.00	1.60	0.13	2.46
DDHGG23-28	334352	439.8	440.65	0.85	45.00	1.42	0.47	3.71
DDHGG23-28	334354	440.65	441.2	0.55	96.00	4.43	0.43	5.07
DDHGG23-28	334355	441.2	442.55	1.35	32.00	0.74	0.23	1.75
DDHGG23-28	334356	442.55	443.8	1.25	24.00	0.68	0.13	1.83
DDHGG23-28	334358	443.8	444.85	1.05	38.00	1.31	0.17	1.90
DDHGG23-30	334503	329.95	330.85	0.9	41.00	1.10	0.39	3.85
DDHGG23-30	334504	330.85	331.7	0.85	50.00	1.21	0.30	4.01
DDHGG23-30	334506	331.7	332.85	1.15	35.00	0.96	0.22	1.20
DDHGG23-30	334507	332.85	333.85	1	279.00	6.87	1.33	0.82
DDHGG23-30	334509	333.85	334.5	0.65	104.00	2.52	0.56	2.69
DDHGG23-31	334549	313.95	314.5	0.55	1201.00	32.95	1.68	7.86
DDHGG23-31	334551	314.5	315.6	1.1	136.00	4.21	0.52	4.89
DDHGG23-31	334552	315.6	316.5	0.9	43.00	1.63	0.16	2.11
DDHGG23-31	334553	316.5	317.5	1	19.00	0.66	0.05	0.95
DDHGG23-31	334554	317.5	319	1.5	64.00	3.07	0.26	3.70
DDHGG23-31	334555	319	320	1	23.00	0.90	0.07	1.31
DDHGG23-31	334556	320	321	1	13.00	0.40	0.04	0.70
DDHGG23-31	334559	321	321.75	0.75	98.00	2.25	0.36	3.67
DDHGG23-31	334560	321.75	322.6	0.85	83.00	2.57	0.37	4.18
DDHGG23-31	334561	322.6	324.1	1.5	169.00	5.57	0.66	10.40
DDHGG23-31	334562	324.1	324.8	0.7	70.00	2.16	0.28	3.05
DDHGG23-31	334564	324.8	325.65	0.85	568.00	23.62	0.95	9.14
DDHGG23-31	334565	325.65	326.6	0.95	181.00	6.23	0.50	5.55
DDHGG23-31	334566	326.6	327.7	1.1	178.00	7.49	0.49	2.39
DDHGG23-33	334708	290.8	291.75	0.95	96.00	0.33	1.16	0.09
DDHGG23-33	334709	291.75	293.05	1.3	69.00	0.21	0.59	0.09
DDHGG23-33	334710	293.05	294.3	1.25	66.00	0.21	0.53	0.23
DDHGG23-33	334711	294.3	295.45	1.15	108.00	0.18	1.12	0.23
DDHGG23-33	334713	295.45	296.7	1.25	82.00	0.12	0.69	0.20
DDHGG23-33	334714	296.7	297.8	1.1	26.00	0.03	0.26	0.10
DDHGG23-33	334715	297.8	298.85	1.05	181.00	0.33	0.91	0.15
DDHGG23-33	334716	298.85	299.85	1	122.00	0.09	0.98	0.18
DDHGG23-34	334794	292.6	293.5	0.9	117.00	0.26	1.49	0.39
DDHGG23-34	334795	293.5	294.5	1	32.00	0.02	0.35	0.05
DDHGG23-34	334796	294.5	295.35	0.85	180.00	0.05	1.49	0.02
DDHGG23-34	334799	295.35	296.75	1.4	277.00	0.06	2.62	0.09
DDHGG23-34	334800	296.75	297.3	0.55	14.00	0.02	0.09	0.04

Drillhole Name	Sample #	From	To	Width	Ag	Pb	Cu	Zn
		m	m	m	ppm	%	%	%
DDHGG23-34	334801	297.3	298.05	0.75	118.00	0.39	1.03	0.32
DDHGG23-34	334802	298.05	299.35	1.3	79.00	0.22	0.63	0.37
DDHGG23-34	334803	299.35	300.6	1.25	241.00	0.09	1.80	0.10
DDHGG23-34	334804	300.6	301.55	0.95	128.00	0.05	0.99	0.03
DDHGG23-34	334805	301.55	302.8	1.25	244.00	0.28	1.34	0.68
DDHGG23-34	334807	302.8	304	1.2	146.00	0.12	0.75	0.21
DDHGG23-34	334808	304	305.1	1.1	84.00	0.05	0.61	0.08
DDHGG23-34	334824	319.85	320.4	0.55	38.00	1.09	0.07	2.05
DDHGG23-34	334825	320.4	321.4	1	74.00	0.88	0.14	1.44
DDHGG23-34	334826	321.4	322.75	1.35	61.00	0.57	0.07	1.22
DDHGG23-34	334827	322.75	324.15	1.4	35.00	0.21	0.01	0.28
DDHGG23-34	334828	324.15	324.75	0.6	287.00	1.68	0.23	1.88
DDHGG23-34	334829	324.75	325.8	1.05	305.00	1.24	0.03	0.31
DDHGG23-34	334830	325.8	327.2	1.4	58.00	0.20	0.00	0.13
DDHGG23-34	334831	327.2	327.65	0.45	123.00	1.54	0.23	1.19
DDHGG23-34	334833	327.65	328.25	0.6	248.00	1.90	0.04	0.28
DDHGG23-34	334834	328.25	329.75	1.5	48.00	0.20	0.01	0.09
DDHGG23-34	334835	329.75	331	1.25	84.00	0.39	0.03	1.31
DDHGG23-35	334915	243.5	244.7	1.2	83.00	0.03	0.62	0.09
DDHGG23-35	334916	244.7	245.9	1.2	38.00	0.01	0.37	0.01
DDHGG23-35	334917	245.9	247.3	1.4	92.00	0.11	0.54	0.32
DDHGG23-35	334918	247.3	248.45	1.15	265.00	0.07	2.34	0.09
DDHGG23-35	334919	248.45	249.2	0.75	139.00	0.09	1.24	0.11
DDHGG23-35	334920	249.2	250.7	1.5	195.00	0.04	1.34	0.07
DDHGG23-35	334921	250.7	252.1	1.4	335.00	0.05	2.03	0.07
DDHGG23-35	334922	252.1	253	0.9	991.00	0.12	4.28	0.20
DDHGG23-35	334924	253	253.8	0.8	177.00	0.03	1.72	0.04
DDHGG23-35	334925	253.8	255.2	1.4	198.00	0.22	1.34	0.27
DDHGG23-35	334926	255.2	256.7	1.5	107.00	0.03	0.98	0.03
DDHGG23-35	334927	256.7	258	1.3	21.00	0.00	0.33	0.02
DDHGG23-35	334928	258	258.65	0.65	99.00	0.00	1.63	0.01
DDHGG23-35	334929	258.65	259.9	1.25	12.00	0.00	0.19	0.01
DDHGG23-35	334930	259.9	260.3	0.4	547.00	0.01	2.79	0.06
DDHGG23-35	334932	260.3	261.25	0.95	39.00	0.00	0.62	0.01
DDHGG23-35	334933	261.25	262.3	1.05	89.00	0.03	0.76	0.03
DDHGG23-35	334934	262.3	263.4	1.1	178.00	0.06	1.37	0.06
DDHGG23-35	334935	263.4	264.9	1.5	20.00	0.00	0.22	0.02
DDHGG23-35	334936	264.9	266.15	1.25	60.00	0.00	0.94	0.02
DDHGG23-35	334943	273.2	274.7	1.5	81.00	0.01	0.90	0.02
DDHGG23-35	334944	274.7	275.9	1.2	81.00	0.01	1.08	0.01
DDHGG23-35	334945	275.9	276.9	1	82.00	0.02	0.72	0.02
DDHGG23-35	334946	276.9	277.65	0.75	236.00	0.10	1.60	0.03
DDHGG23-35	334947	277.65	278.7	1.05	122.00	0.10	0.72	0.08
DDHGG23-35	334949	278.7	280.15	1.45	398.00	0.14	2.66	0.10
DDHGG23-35	334950	280.15	281.3	1.15	273.00	0.05	2.32	0.09
DDHGG23-35	334951	281.3	282.3	1	32.00	0.00	0.61	0.01
DDHGG23-35	334952	282.3	283	0.7	62.00	0.00	1.35	0.01
DDHGG23-35	334953	283	284.5	1.5	18.00	0.00	0.37	0.00
DDHGG23-35	334954	284.5	285.85	1.35	78.00	0.01	1.47	0.02
DDHGG23-35	334955	285.85	287	1.15	33.00	0.00	0.70	0.01
DDHGG23-35	334957	287	288	1	68.00	0.04	0.68	0.04
DDHGG23-35	334958	288	288.8	0.8	32.00	0.01	0.22	0.01
DDHGG23-35	334959	288.8	289.9	1.1	130.00	0.03	1.09	0.01
DDHGG23-37	335157	416.9	417.4	0.5	66.00	1.24	0.47	1.13
DDHGG23-37	335158	417.4	417.8	0.4	618.00	27.06	2.90	2.77

Drillhole Name	Sample #	From	To	Width	Ag	Pb	Cu	Zn
		m	m	m	ppm	%	%	%
DDHGG23-37	335160	417.8	418.3	0.5	579.00	37.83	0.79	0.98
DDHGG23-37	335161	418.3	419.45	1.15	9.00	0.16	0.07	0.11
DDHGG23-37	335162	419.45	419.75	0.3	455.00	32.26	0.77	0.86
DDHGG23-37	335163	419.75	420.35	0.6	99.00	3.07	0.87	3.47
DDHGG23-39	335427	291.75	293	1.25	73.00	0.04	0.86	0.03
DDHGG23-39	335430	293	294.15	1.15	148.00	0.15	1.43	0.26
DDHGG23-39	335431	294.15	295.2	1.05	105.00	0.39	0.93	0.68
DDHGG23-39	335433	295.2	295.6	0.4	11.00	0.03	0.07	0.15
DDHGG23-39	335434	295.6	296.9	1.3	90.00	0.41	0.17	0.51
DDHGG23-39	335435	296.9	298.15	1.25	76.00	0.32	0.37	0.58
DDHGG23-39	335436	298.15	298.8	0.65	88.00	0.45	0.46	1.15
DDHGG23-41	335632	312.7	313.6	0.9	73.00	0.06	0.93	0.03
DDHGG23-41	335634	313.6	314.65	1.05	45.00	0.06	0.44	0.11
DDHGG23-41	335635	314.65	315.5	0.85	170.00	0.30	2.11	0.24
DDHGG23-41	335636	315.5	316.4	0.9	52.00	0.11	0.64	0.05
DDHGG23-41	335637	316.4	317.5	1.1	146.00	0.37	0.70	0.12
DDHGG23-41	335638	317.5	318.6	1.1	109.00	0.16	0.98	0.43
DDHGG23-41	335639	318.6	319.6	1	82.00	0.06	0.56	0.10
DDHGG23-41	335640	319.6	320.95	1.35	105.00	0.17	0.16	0.20
DDHGG23-42	335750	349.7	350.6	0.9	77.00	2.87	0.34	6.97
DDHGG23-42	335752	350.6	351.6	1	59.00	1.55	0.42	3.91
DDHGG23-42	335753	351.6	352.15	0.55	18.00	0.24	0.11	0.75
DDHGG23-42	335754	352.15	353.05	0.9	52.00	1.22	0.27	1.38
DDHGG23-42	335755	353.05	353.95	0.9	71.00	2.18	0.37	1.03
DDHGG23-42	335756	353.95	355	1.05	226.00	3.94	0.98	1.19
DDHGG23-42	335758	355	356.2	1.2	98.00	1.61	0.62	1.58

### 7.3 Hydrogeology

There are not hydrogeological studies and documented groundwater flow parameters available for San Martín.

The rocks that outcrop in the San Martín area are generally found to be impermeable preventing infiltration and promoting surface runoff. The granodioritic intrusive is impermeable due to its texture and composition, although some secondary porosity can be found. The Cuesta del Cura and Indidura formations (limestones and shales), do not have primary porosity, but have secondary porosity due to fracturing. The porosity in general decreases at depth where calcite cementing is found. The existence of levels of shales and fine grain rock create natural barriers to the vertical groundwater flow which reduces importantly the water infiltration.

It is probable that the ground water is very deep, and its circulation is through microfractures. The direction of the flow is not known.

According to INEGI in the Geographical Synthesis of the state of Zacatecas, the area is classified as rock without water.

### 7.4 Geotechnical Data, Testing and Analysis

During 2023, SRK has conducted three geotechnical site visits to San Martín to support the underground geotechnical assessment for reserves certification and to provide operational support. The following sections contains a summary relevant information and recommendations for

geotechnical mine stability that are largely based on SRK’s site visits and previous work done by Itasca in 1998.

## 7.4.1 Geotechnical Mapping and Laboratory Testing

### Geotechnical Data

San Martín needs a mine scale, three-dimensional geotechnical domain model. Additionally, there is need of initiating and expanding a testing program to correlate laboratory testing with geotechnical domaining work. Existing mapping data collected at different mine levels should be assessed to correct or eliminate inconsistencies in historical geotechnical databases.

Characterization of minor structure patterns could be improved, leading to the establishment of structural domains.

There is a lack of in-situ stress data that describes the magnitude and orientation of principal stresses.

Geotechnical data compiled by Itasca (1998) is provided in Table 7-3 to Table 7-7. Table 7-3 shows RMR values obtained using the Bieniawski’s method for the areas mapped on Levels 16, 18, and 20 at San Martín.

**Table 7-3: Summary of RMR Values Determined Using Bieniawski’s Method**

Rock Type	Min	Max	Average
<b>Level 16</b>			
Limestone	74	82	77
Mineralized Skarn	69	74	71
Skarn	74	82	77
Granite	71	87	78
<b>Level 18</b>			
Limestone	69	79	74
Mineralized Skarn	-	-	-
Skarn	79	82	80
Granite	64	82	71
<b>Level 20</b>			
Limestone	74	74	74
Mineralized Skarn	-	-	-
Skarn	79	82	80
Granite	69	79	74
<b>Totals</b>			
Limestone	69	82	76
Mineralized Skarn	69	74	71
Skarn	66	82	77
Granite	64	87	75

Source: Itasca, 1998

The rock mass parameters determined using the Hoek-Brown method are summarized in Table 7-4.

**Table 7-4: Summary of Hoek-Brown Parameters Determined from Mapping**

Rock Type	mb/mi	s	a	E/Ei	v	GSI
Limestone	0.29	0.021	0.5	0.37	0.25	59 to 72
Mineralized Skarn	0.29	0.021	0.5	0.37	0.25	59 to 72
Skarn	0.22	0.012	0.5	0.3	0.25	51 to 62
Granite	0.4	0.062	0.5	0.46	0.2	68 to 79

Source: Itasca, 1998

Table 7-5 shows the summary of the point load strength parameters for intact rock, and presents the uniaxial compressive strengths determined for the rock units of San Martín.

**Table 7-5: Summary of Point Load Strengths by Rock Type**

Rock Type	I <sub>s</sub> (Mpa)	Uniaxial Compressive Strength (Mpa)
Granite	8.6	173.67
Contact Zone	7.35	148.31
Limestone	4.55	91.94
Granite Skarn	5.59	113.06
Mineralized Skarn	5.75	116.25

Source: Itasca, 1998

Table 7-6 shows a summary of Hoek-Brown parameters obtained from laboratory testing.

**Table 7-6: Summary of Intact Rock Strength Parameters from Laboratory Testing Program**

Rock Type	σ <sub>c</sub>	M <sub>i</sub>	GSI	E <sub>m</sub> (Gpa)	m <sub>b</sub>	s	v
Limestone	86.8	7.79	65	24	2.23	0.02047	0.25
Mineralized Skarn	171.3	19.99	65	24	5.44	0.02047	0.25
Skarn	222.8	15.95	56	16.5	3.31	0.00753	0.25
Granite	207.2	26.21	75	40	10.73	0.06218	0.2

Source: Itasca, 1998

The uniaxial compressive strength values obtained from laboratory testing and point load testing are compared in Table 7-7.

**Table 7-7: Comparison of Uniaxial Compressive Strength Test Results**

Rock Type	Uniaxial Point Load Tests	Compressive Strength (Mpa) Lab Tests
Granite	174	207
Contact Zone	148	-
Limestone	92	87
Granite Skarn	113	223
Mineralized Skarn	116	171

Source: Itasca, 1998

**Geotechnical Data Recommendations**

Structural domains should be established to understand spatial variation in minor structure patterns. This task should be followed by completion of a kinematic assessment to identify critical wedges for each domain and a sensitivity analysis for large span stability. Results should be used to assess maximum potential wedge size and height to verify ground support designs.

A 3D major fault model should be developed, including a structural matrix describing known orientations, characteristics, and confidence data.

Significant additional laboratory testing is required to understand the deposit conditions (Uniaxial compressive testing, modulus, triaxial testing, Brazilian tensile tests and direct shear). This should include:

- A review of the validity of current testing results and expansion of testing to understand weak areas
- QA/QC on PLT databases and calibration of intact rock strength using PLT and UCS test results
- Testing targeting the altered rock mass to confirm current testing/characterization

San Martín should undertake work to build 3D geotechnical domain model and extrapolate the domains at depth. The domaining exercise should include an assessment of a potential transition depth between ground conditions in the upper (weathered rock of lower quality) and lower mines, including the following:

- QA/QC on geotechnical databases
- Validation of current domaining with drillhole information, sampling, and testing
- Drill new GT drillholes, sampling, and testing
- Perform statistical analysis of existing mapping data
- Reconcile domains with previous rock mass testing work done by Itasca (1998)

## 7.4.2 Ground Support Practices

### Support Practice

Ground support procedures cannot keep up with mining and the resulting unsupported area can be a source of falls of ground. Additionally, large wedge type failures cannot be prevented due to the relatively short length of reinforcement in the back, particularly in tunnel intersections or in wide spans. The present reinforcement system of the back does not adequately support the hanging wall.

Stress conditions in the lowest parts of the decline (Rampa 28) were observed to be sufficiently high to induce stress fracturing and strain bursting in the granite. Current support systems at depth are inadequate to control strain bursting and SRK believes that this condition presents a significant risk.

There is a lack of ground support standards for each domain, addressing rock mass quality variations, excavation span, excavation service life and use, and stress levels over lifespan.

QA/QC needs to be performed on ground support during and after installation.

### Recommendations for Support

Due to the essentially random orientations of structures in the rock mass, a standard roof reinforcement pattern is suggested throughout the mine. This pattern should be maintained to the face.

It would be beneficial to mechanize the installation of bolts to keep up with the mining rate. The economics of automatic rock bolting machines versus improvements to the present bolting practice should be investigated in more detail.

Checks on the ground support performance should be completed and documented. Quality control of ground support by post installation measurement (pull tests) on friction rock stabilizer or grouted bolts should be completed.

A proactive approach to plan ground support based on anticipated ground conditions should be put into place. This should include assessment ground support strategies for upper parts of the mine at lower stress (static conditions) and deeper parts of the mine at higher stress. Consideration should be given to ground support with dynamic bolts and mesh in regions of high stress levels.

## 7.4.3 Mining Method and Operational Considerations

The post pillar cut and fill mining method currently in use is well suited to wider parts of the orebody. Narrow-vein mining areas employ overhand cut and fill.



The direction of mining along the hanging wall needs to be evaluated. It is generally preferable to mine perpendicular to the hanging wall between post pillars, reinforce the back and hanging wall, then slash the pillars and complete the mining.

The potential hazard associated with working under and along the hanging wall can be reduced by utilizing a remote scoop to load trucks parked under stable ground. This is standard practice in most Canadian mines.

#### **7.4.4 Mine Scale Stability**

An important consideration for mine stability is the state of a mine scale collapse that occurred in the mid 1990's. This section is the summary of the San Martín Geotechnical Study prepared by Itasca (1998).

The main purpose of the geotechnical study of the San Martín Unit was to determine the cause(s) of the collapses that have occurred in the upper levels and to assess whether they are part of the development of a mine-scale instability. Additional issues addressed included operational aspects of the mining method, ground support requirements, and geotechnical monitoring.

##### **Causes of Collapses in the Upper Levels of the Mine**

The collapses in the upper levels resulted from stress relief and loosening, which is primarily caused by the mining geometry. The collapses occurred due to fallout along existing geological structures in the loosened region of the rock mass. Undercutting of 6 level by 8 level mining was seen to be the main cause triggering the collapses, whose progression was made possible by this loosening mechanism.

##### **Future Growth of the Collapse Zone**

Both the nature of the collapse sequence and the numerical modeling results indicate that the collapses are not a result of an inevitable mine-scale instability process. They were triggered at specific locations due to a combination of local geological conditions, mining geometry, and the stress field resulting from the mining geometry. However, if nothing is done to halt the collapses. The collapse zone could expand into a mine-scale instability that would be difficult or impossible to halt.

##### **Stabilization of Historic Collapses**

It should be possible to stabilize the collapse zone by tight backfilling of the upper-level stopes. Contact of backfill with the stope hanging wall and overlying sill pillar is essential for the stabilizing effect of backfill to be realized.

##### **Future Mining**

Mining to 20 level should not have any adverse effect on stability of the upper-level stopes provided the upper levels are tightly backfilled. With completion of mining to 20 level, the zone of stress relief (loosening) currently surrounding the upper-level stopes will expand to include 20 level. This could lead to renewed caving in the upper levels if they are not tightly backfilled.

Seismic events and rock bursts are expected to increase in frequency as mining depth increases. Rock bursts are expected to be more pronounced in granite than in limestone.

Mining below level 20 will be associated with increased fracturing of rock due to high stress levels. Improved hanging wall and back support are considered necessary and continued use of post pillars is recommended.

#### **Support Measures to Ensure Mine-Scale Stability**

Tight backfilling of scopes is essential to mine-scale stability. Contact of the backfill with the underside of sill pillars is required. Tight backfill has several functions: it prevents fallout of loose material from the hanging wall and the underside of sill pillars, it preserves the integrity of sill pillars, and it enables the sills to carry load even when they are in a "yielded" or fractured state. By itself, it does not provide much support pressure to the hanging wall, but by preserving the integrity of sill pillars it enables effective hanging wall support to be maintained.

Analyses indicated that sill pillars become fractured at a relatively early stage of mining. Accordingly, IMMSA concluded there was no reason to change their size from the current 12 m width. As noted, use of tight backfill to preserve their integrity is essential.

Post pillars are also a highly effective means of stiffening sill pillars and their continued use is strongly recommended. Bolting of the sides of sill pillars should be carried out if they are cut by continuous geological structures. Backfill will also maintain the integrity of post pillars.

### **7.4.5 Geotechnical Monitoring Program**

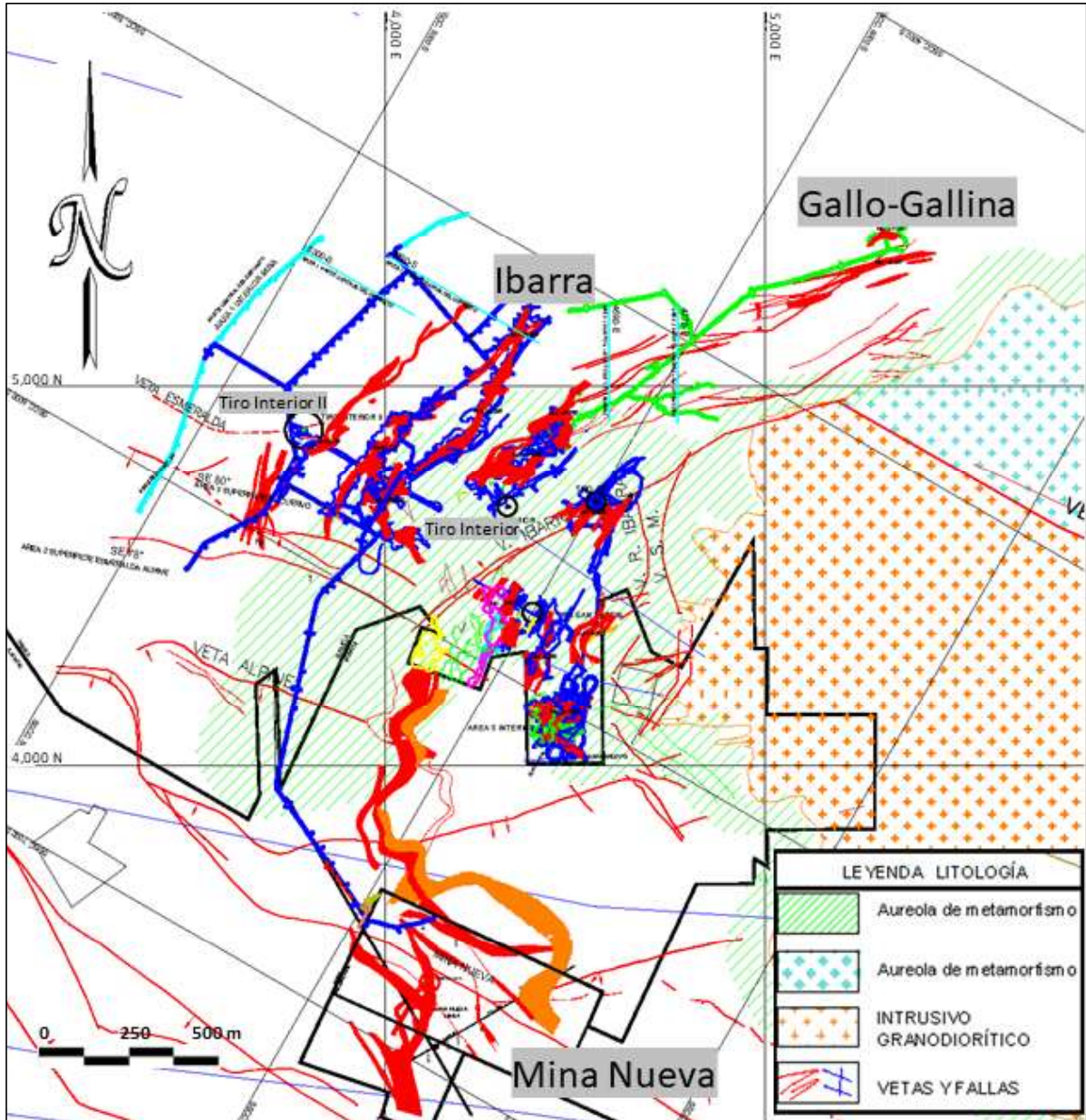
A geotechnical monitoring program is recommended to verify that rock mass behavior is reasonably in accordance with expected behavior and that no major instabilities are developing.

Critical targets for the monitoring program have been specified and suggestions for types of in-instruments to use in each case have been made. Details of instrument locations will depend on availability of access. Critical targets to monitor are:

- Cavities in the upper collapse zone.
- Sill pillars.
- Shaft pillars.
- Tiro Cero and hoist room.
- Hanging wall in upper and lower pans of the orebody.
- Micro seismicity of the lower levels.

### **7.5 Property Plan View**

The Figure 7-16 presents the map with the main locations in the San Martín Operation including the projection of the underground workings from where the channel sampling is being collected in all levels.



Source: IMMSA, 2022

**Figure 7-16: Map of the Areas for Exploration**

## 7.6 Exploration Target

San Martín plans for 2024 to continue the exploration in the areas of Gallo-Gallina and deep Central zone (Figure 7-16). The objective of the drilling in these areas include the definition of the horizontal and vertical extension of the mineralization and close the drilling grid.

## 8 Sample Preparation, Analysis, and Security

### 8.1 Sample Preparation Methods and Quality Control Measures

Trained staff were involved at all stages of the sampling, sample packaging and sample transportation process. After geological logging and sample selection, the core is split in half longitudinally using an electric core cutter. Core pieces are placed in the cutter machine and cut following the cut line marked by the geologist. The core splitter was used historically. Half of the core will be assayed, and the other half will be stored in the core box to be available for future assaying or relogging of core.

The sample is placed in plastic bags with its corresponding sample tag and sent to the laboratory using defined laboratory submission sheets to track the number of samples and batch numbers.

### 8.2 Sample Preparation, Assaying and Analytical Procedures

#### 8.2.1 Density Analysis

San Martín doesn't have the historical density data and the supporting documentation for the density used in the mineral resource estimate. The plant and the mine have been using a unique density value of 3.3 t/m<sup>3</sup> for decades.

The exploration department have collected density measurements and has the following process for the density analysis:

Specific gravity (SG) measurement method is based on the Archimedes principle and consist of measuring the weight of the rock sample P in air and subsequently the weight of the sample in water P (water). We can determine the specific weight using the formula:  $SG = P / (P - P_{water})$

The steps carried out to obtain the specific gravity of the samples collected from drill core are described below:

1. Sample location and cut:
  - Draw hole trajectory.
  - Write down Nomenclature in the core:
    - Hole ID
    - Depth
  - The sample's size will be at the discretion of the personnel who select it, and depending on the capacity of the scale used, the sample data collected should be noted in the core box. Sample fragment sizes vary between 5 and 10 cm.
2. Washing the sample with water to remove residues
3. Dry the sample in an electric oven or in sunlight if this is not available
4. Level the balance until the bubble is centered using the help of the position adjustments of each leg of the balance, then calibrate the balance before starting to measure the samples and make sure that it reads zero (in case of a precision digital scale)
5. Weight the dry sample (P)
6. Waterproofing sealing of the sample with and appropriate the material (consider the density of this material to consider it in the calculations of the sample density). Seal at least three times. Wait for a period of time for optimal drying of the samples
7. Weight the sample in purified water preferably and take the data (P\_Agua)

8. Wash the sample and reincorporate it to the core bx from where it was collected
9. Determine the specific gravity with the data obtained and fill in the hole density format

Photographs and brief descriptions were taken and the corrections to obtain the density data are applied. Then, the density data is recorded in the main database of Exploration.

Photographs and brief descriptions were taken and the corrections to obtain the density data are applied. Then, the density data is recorded in the Tecmin database. The QP considers these procedures to follow industry standards and recommends that the process be expanded to include all material (host rocks and mineralization) and be completed at regular intervals within the core. Increasing the size of the density database to confirm the current density values used should be considered a priority for 2022 by the Company. Table 8-1 presents the specific gravity test results completed by the exploration team in 2022 in mineralized zones in Gallo-Galina. Additional tests are required to characterize all the rock types and locations of the deposit.

**Table 8-1: Specific Gravity Measurements (2022 drilling campaign)**

# of Tests	Average S.G. (g/cm <sup>3</sup> )	Rock Type
4	2.94	Limestone
34	3.22	Skarn
11	3.00	Granodiorite
2	3.29	Granite
7	3.45	Breccia
10	3.75	Vein
<b>68</b>	<b>3.27</b>	<b>Total</b>

Source: IMMSA, 2022

## 8.2.2 Sample Preparation – Internal Laboratory

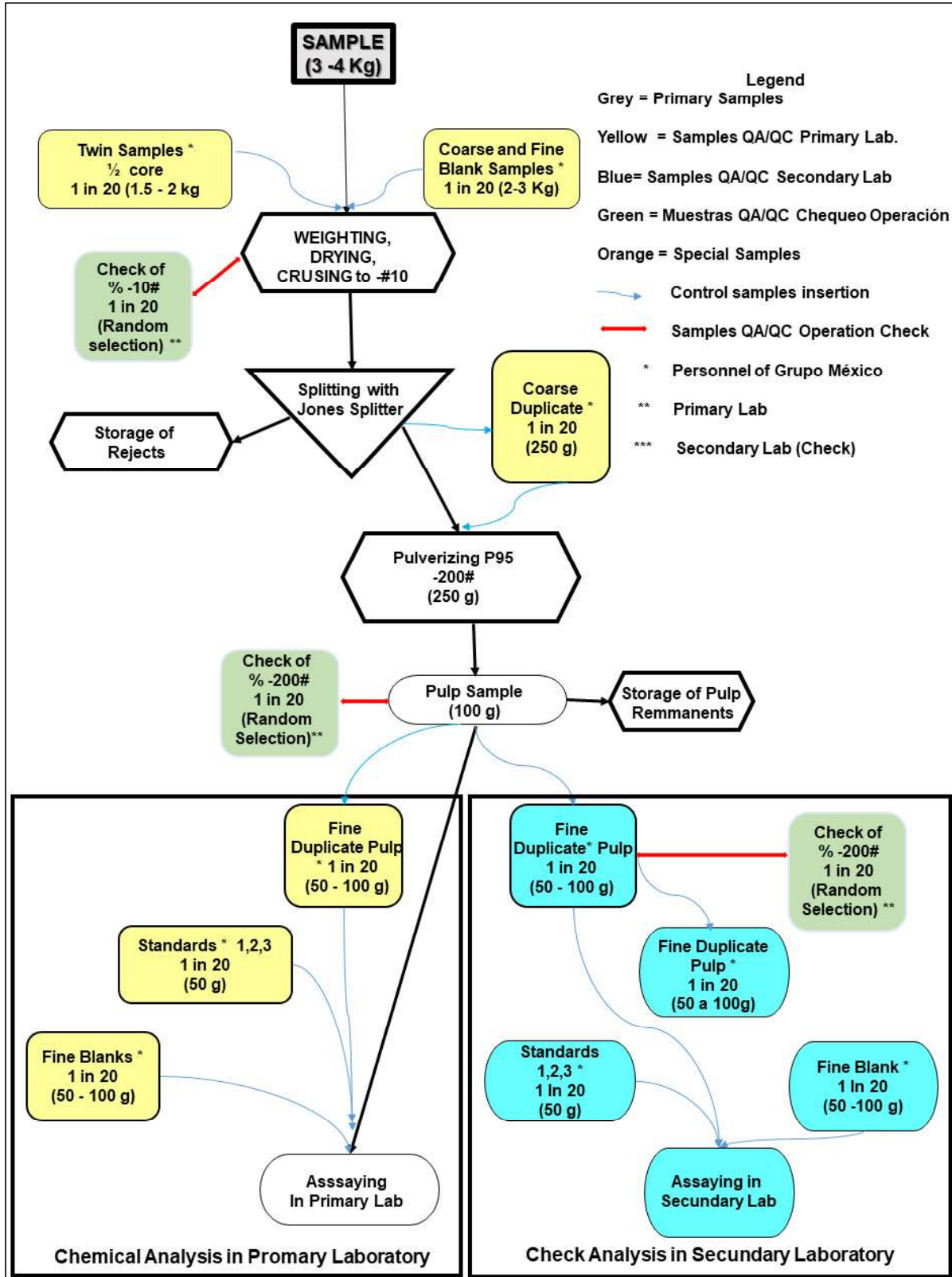
The internal laboratory prepares the core and the channel samples and performs the chemical analysis of all the samples collected by the mine geology department (drilling and rock sampling).

The laboratory follows internal QA/QC protocols which include continuous maintenance and calibration of equipment, monitors sample contamination, and uses certified standard reference materials, which in the opinion of SRK are considered in line with the industry standards.

Sample preparation in the internal laboratory includes:

- Sample drying
- Crushing, 75% passing 10 mesh
- Subsampling (Riffle sample splitter), to obtain a sample of 250 g
- Pulverizing, 85% passing 200 mesh
- Subsampling to obtain pulp samples of 50 g

Figure 8-1 shows the flow chart of the preparation process and QA/QC controls using during the process in the internal laboratory of San Martín. No certification has been completed on the current mine laboratory which in the QP’s opinion does not meet the required standards for reporting under international best practice. More detailed validation and external checks should be completed if the laboratory is not certified given the lack of independence presented. The QP recommends that IMMSA undertake a program to certify the laboratory as is completed at their other operation Charcas.



Source: IMMSA, 2021

**Figure 8-1: Flow Chart of Sample Preparation (Internal Laboratory)**

### 8.2.3 Chemical Analysis – Internal Laboratory

The following chemical analysis are used at the internal laboratory of San Martín, using 100-g pulp samples:

- **ICP:** Multielement (Ag, Au, Pb, Zn, Cu, Fe, Cd, As, Bi, Sb) Plasma analytic method (ICP AVIO 500). ICP-OES: Inductively Coupled Plasma Atomic Emission Spectrophotometer:  
Detection Limits  
Au 0.1 g/t – 10 g/t  
Ag 0.1 g/t – 50 g/t  
Zn 0.002% - 6%  
Cu 0.002% - 6%  
Pb 0.002% - 6%
- **Fire Assay (Gravimetric method):** Determination of Au and Ag by fire assay and gravimetric termination (Detection Limits: Au: 10 g/t to NA; Ag: 50 g/t – NA)
- **Volumetric determination of Zinc:** For high zinc concentrations, the volumetric analysis is performed (Detection Limits: 5.1% to 60%)
- **Volumetric determination of Copper:** For high copper concentrations, the volumetric analysis is performed (Detection Limits: 5.1% to 30%)
- **Volumetric determination of Lead:** For high lead concentrations, the volumetric analysis is performed (Detection Limits: 5.1% to 60%).

In 2022, 965 core samples and 20,629 rock samples (underground workings) were analyzed in the internal laboratory.

### 8.2.4 Sample Preparation – SGS Laboratory

The core samples collected by the exploration department of San Martín are sent to the SGS Laboratory in Durango where the following activities are completed:

The core samples collected by the exploration department of San Martín are sent to the SGS Laboratory in Durango (SGS). The SGS laboratory is independent of IMMSA and holds accreditation under ISO/IEC 17025:2017 under the Standards Council of Canada, which indicates the laboratory is accredited under the general requirements for the competence of testing and calibration laboratories

The sample preparation procedures at the SGS laboratory in Durango facility, comprised drying the sample, crushing the entire sample in two stages to - 6 mm and - 2 mm by jaw crusher (more than 95% passing), riffle splitting the sample to 250 to 500 g, and pulverizing the split to more than 95% passing -140 mesh in 800 cubic centimeters (cm<sup>3</sup>) chrome steel bowls in a Labtech LM2 pulverizing ring mill.

### 8.2.5 Chemical Analysis – SGS Laboratory

The following chemical analysis packages are used at SGS Lab by the exploration department of San Martín:

- **GE\_ICP14B:** Multielement (34 Elements) analysis by aqua regia digestions and Inductively Coupled Plasma Optical Emission Spectrometry [ICP-OES; Ag, Al, As, Ba, Be, Bi, Ca, Cd, Cr, Co, Cu, Fe, Hg, K, La, Li, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sn, Sr, Ti, V, W, Y, Zn, Zr;

HNO<sub>3</sub>; HCL]. Multielement assay (34 elements), using digestion with two acids (Combination of HNO<sub>3</sub> and HCL) in a ration 3:1 (HCL:HNO<sub>3</sub>). (Figure 8-2.

- **GE\_FAA515 Au:** : Au analysis by 50 g Fire Assay with Atomic Absorption Spectrometry AAS finish [AAS; Au; 30g; 50g; HNO<sub>3</sub>; HCl]. (Detection limits 5 – 10,000 ppb Au).
- **GO\_FAG515 Ag:** Used For the determination of over limits of Ag by fire and gravimetric termination using a sample of 50 g (Detection limits 10 – 100,000 ppm Ag).
- **GO\_ICP90Q:** Analysis of Ore Grade Samples (Pb, Cu, Zn, Fe and As) by Sodium Peroxide Fusion and Inductively Coupled Plasma Optical Emission Spectrometry [ ICP-OES, As, Fe, Cu, Ni, Pb, Sb, Zn; Na<sub>2</sub>O<sub>2</sub>]. (Detection limits 0.01% - 30% for each element).
- **GC\_CON12V Zn:** Used for the determination of zinc using a volumetric and gravimetric concentration for samples with zinc > 32% (Detection limits 5 – 65% Zn). Process involves preparation and determination of Zn in Ores, concentrates and metallurgical products by separation, precipitation and titration of acid solubles, fusion with inductively coupled plasma optical emission atomic absorption spectrometry of acid insolubles [Zn, AAS, ICP-OES]

<b>TWO ACID / AQUA REGIA DIGESTION / ICP-AES PACKAGE (34 ELEMENTS)</b>			
<b>GE ICP12B or GE ICP14B</b>			
<b>ELEMENTS AND LIMIT(S)</b>			
Ag	2 - 100 ppm*	Hg	1 - 10000 ppm
Al	0.01 - 15%	K	0.01 - 15%
As	3 - 10000 ppm	La	0.5 - 10000 ppm
Ba	5 - 10000 ppm	Li	1 - 10000 ppm
Be	0.5 - 2500 ppm	Mg	0.01 - 15%
Bi	5 - 10000 ppm	Mn	2 - 10000 ppm
Ca	0.01 - 15%	Mo	1 - 10000 ppm
Cd	1 - 10000 ppm	Na	0.01 - 15%
Co	1 - 10000 ppm	Ni	1 - 10000 ppm
Cr	1 - 10000 ppm	P	0.01 - 15%
Cu	0.5 - 10000 ppm	Pb	2 - 10000 ppm
Fe	0.01 - 15%	S	0.01 - 5%
		Sb	5 - 10000 ppm
		Sc	0.5 - 10000 ppm
		Sn	10 - 10000 ppm
		Sr	0.5 - 10000 ppm
		Ti	0.01 - 15%
		V	1 - 10000 ppm
		W	10 - 10000 ppm
		Y	0.5 - 10000 ppm
		Zn	1 - 10000 ppm
		Zr	0.5 - 10000 ppm

Source: SGS, 2018

**Figure 8-2: Detection Limits – Methods GE-ICP14B**

In 2022, 1,767 core samples and 283 quality control samples were analyzed in SGS Durango.



## **8.3 Quality Control Procedures/Quality Assurance**

### **8.3.1 Security Measures – Chain of Custody**

The mine geology and exploration departments have control and supervision on all the process of collection of samples from drilling and channel sampling, maintaining the custody chain for the samples until the delivery of the samples to the laboratory.

At the drill rig, the contractor is responsible for removing the core from the core barrel (using manual methods) and placing the core in prepared core boxes. The core is initially cleaned in the boxes and once the box is full of core, it is closed and transported by the authorized personnel to the logging facility where the San Martín geologists take possession. On receipt at the core shed, geologists follow the logging and sampling procedures. The samples are transported to the laboratory (Internal and SGS Lab) by authorized personnel.

The boxes with the remanent core are stored in areas under continuous vigilance. The core is stored in the exploration department location (Figure 7-12) and in the mine geology logging area inside the San Martín Operation.

In the opinion of the QP there is sufficient protocols in place to ensure the quality and integrity of the samples from exploration to the laboratory are acceptable. Storage of data using a central repository system is recommended to ensure data security is maintained.

### **8.3.2 Mine Geology Department**

Historically and currently, the mine geology department has not implemented QA/QC protocols for the drilling and rock sampling activities, which is not in line with the best industry practices.

The core of the historical drilling was discarded after some years. Then, when the mine was closed due to labor unrest in the late 2000's, a significant portion the historical drilling core was lost. There is not a core storage facility, and there is limited space in the mine geology logging area. At present, the internal laboratory conserves the pulps for 1 month after assaying and then discards the samples.

In 2023, IMMSA started to implement the use of NQ for all the drilling completed by the mine geology department. The QP recommends start designing and implementing a protocol for the core and rock sampling which include the insertion of fine and coarse duplicates, field duplicates, fine and coarse blanks, low medium and high grade certified reference materials and second laboratory checks (Umpire lab), in a reasonable insertion rate to evaluate all the aspects associated to the sample preparation and chemical analysis. This is a task that IMMSA is working on and expects its implementation in 2024.

### **8.3.3 Exploration Department**

The protocol designed for core sampling includes the use of 8 types of control samples which are inserted into every 10 to 15 core samples to detect possible contamination problems of the samples and to determine the accuracy and precision of the laboratory in the analyzed samples. These controls are performed as a confidence measure of the preparation and analysis procedures in the external laboratory.

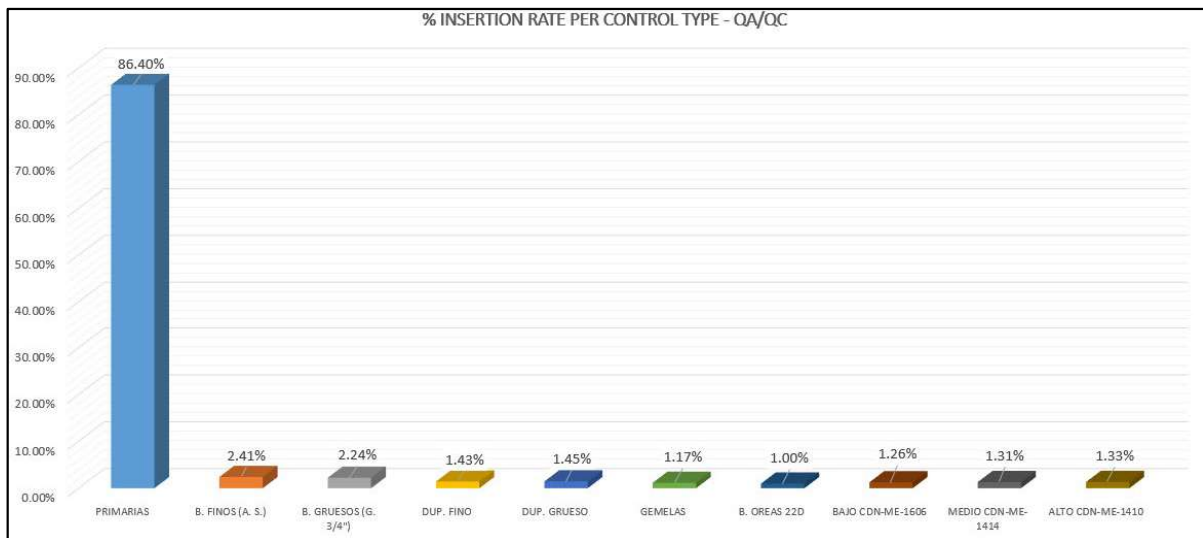
The QA/QC protocol of the exploration department in charge of the exploration at San Martín includes the following controls:

- Core duplicates, to control systematic errors of sampling.
- Coarse and fine blank controls to detect possible contamination during crushing and pulverization. This material should be barren of the elements of economic interest. In this case, a silica sand was used for pulp blanks and volcanic gravel material - ¼” silica for the coarse blanks.
- Coarse and fine duplicate controls to evaluate precision of the procedure (subsampling)
- Certified Standard Reference Materials – CSRM - (low, medium, and high grade) to measure accuracy

Control samples were inserted under the following criteria:

- Before and after each mineralized zone or with high mineralization in either Zn, Pb, Cu or Ag, control samples of the fine and coarse blanks type are inserted.
- Inside or outside mineralized zones and in areas with or without economic values, CSRM controls were inserted with high, medium and low values in Zn mainly, depending on the case.
- Fine and coarse duplicate samples in mineralized areas and in zones with or without economic values at the discretion of the geologist.
- Twin Samples (Core duplicates) in mineralized zones and in zones with or without economic values at the discretion of the geologist.

In total, 4,199 samples were collected in 30 drillholes, of which 3,628 were core samples, 195 control samples of the coarse or fine blank type, 206 reference samples, 121 samples of fine or coarse duplicate, and 49 core duplicates in the QA/QC program applied to the core of those holes. 571 control samples were inserted, representing a 13.6% rate of insertion. Figure 8-3 presents the insertion rate of each control type used by the exploration department of San Martín in 2023.



Source: IMMSA, 2022

**Figure 8-3: Insertion Rates of Each Control Type**

One hundred one (101) fine blanks (silica sand) and 94 coarse blanks (gravel material and 1/4-inch massive quartz) were used. The CSRM controls include 42 Oreas 22D, 59 CDN-ME-1606, 55 CDN-ME-1414 (medium Zn), and 56 CDN-ME-1410. Figure 8-4 shows the recommended values of the CDN-ME CRMs.

Sixty (60) fine and 61 coarse duplicates were inserted; in addition, 49 twin samples were collected, of which half of the core was sent as the original sample and the remaining half as the twin sample. Later, when the rejection of the twin sample was recovered, it was placed in the box marked with the depth where it corresponds.

<b><u>REFERENCE MATERIAL: CDN-ME-1410 (ALTO Zn)</u></b>					
Recommended values and the “Between Lab” Two Standard Deviations					
<b><i>Gold</i></b>	<b><i>0.542 g/t</i></b>	<b><i>±</i></b>	<b><i>0.048 g/t</i></b>	<b><i>Certified value</i></b>	
<b><i>Silver</i></b>	<b><i>69.0 g/t</i></b>	<b><i>±</i></b>	<b><i>3.8 g/t</i></b>	<b><i>Certified value</i></b>	
<b><i>Copper</i></b>	<b><i>3.80 %</i></b>	<b><i>±</i></b>	<b><i>0.17 %</i></b>	<b><i>Certified value</i></b>	
<b><i>Lead</i></b>	<b><i>0.248 %</i></b>	<b><i>±</i></b>	<b><i>0.012 %</i></b>	<b><i>Certified value</i></b>	
<b><i>Zinc</i></b>	<b><i>3.682 %</i></b>	<b><i>±</i></b>	<b><i>0.084 %</i></b>	<b><i>Certified value</i></b>	
<b><u>REFERENCE MATERIAL: CDN-ME-1414 (MEDIO Zn)</u></b>					
Recommended values and the “Between Lab” Two Standard Deviations					
<b><i>Gold</i></b>	<b><i>0.284 g/t</i></b>	<b><i>±</i></b>	<b><i>0.026 g/t</i></b>	<b><i>Certified value</i></b>	
<b><i>Silver</i></b>	<b><i>18.2 g/t</i></b>	<b><i>±</i></b>	<b><i>1.2 g/t</i></b>	<b><i>Certified value</i></b>	
<b><i>Copper</i></b>	<b><i>0.219 %</i></b>	<b><i>±</i></b>	<b><i>0.010 %</i></b>	<b><i>Certified value</i></b>	
<b><i>Lead</i></b>	<b><i>0.105 %</i></b>	<b><i>±</i></b>	<b><i>0.006 %</i></b>	<b><i>Certified value</i></b>	
<b><i>Zinc</i></b>	<b><i>0.732 %</i></b>	<b><i>±</i></b>	<b><i>0.024%</i></b>	<b><i>Certified value</i></b>	
<b><u>REFERENCE MATERIAL: CDN-ME-1606 (BAJO Zn)</u></b>					
Recommended values and the “Between Lab” Two Standard Deviations					
<b>Gold</b>	<b>1.069 g/t</b>	<b>±</b>	<b>0.092 g/t</b>	<b>30 g FA, instrumental</b>	<b>Certified value</b>
<b>Silver</b>	<b>114 ppm</b>	<b>±</b>	<b>7 ppm</b>	<b>30 g FA, gravimetric</b>	<b>Certified value</b>
<b>Silver</b>	<b>116 ppm</b>	<b>±</b>	<b>5 ppm</b>	<b>4-Acid / ICP</b>	<b>Certified value</b>
<b>Copper</b>	<b>0.197 %</b>	<b>±</b>	<b>0.008 %</b>	<b>4 Acid / ICP</b>	<b>Certified value</b>
<b>Lead</b>	<b>1.76 %</b>	<b>±</b>	<b>0.06 %</b>	<b>4 Acid / ICP</b>	<b>Certified value</b>
<b>Zinc</b>	<b>0.60 %</b>	<b>±</b>	<b>0.02 %</b>	<b>4 Acid / ICP</b>	<b>Certified value</b>

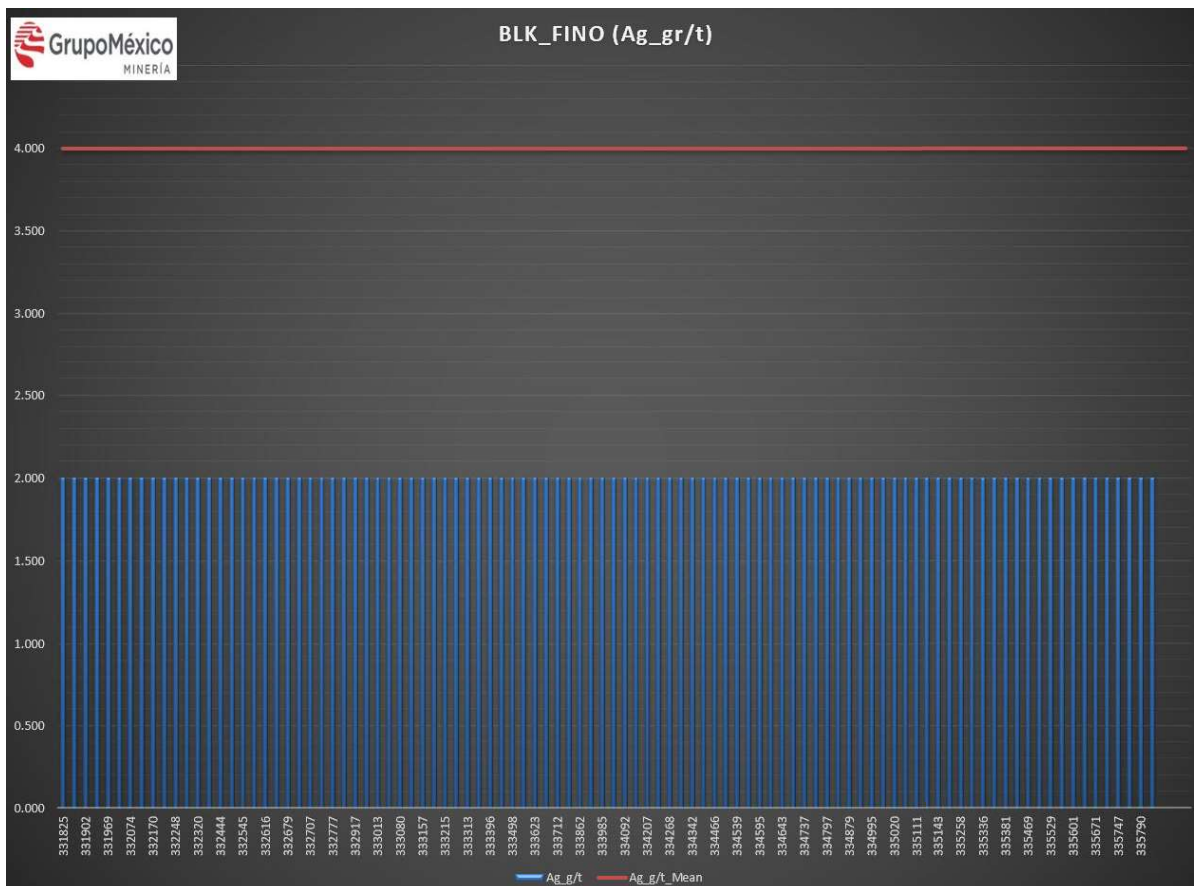
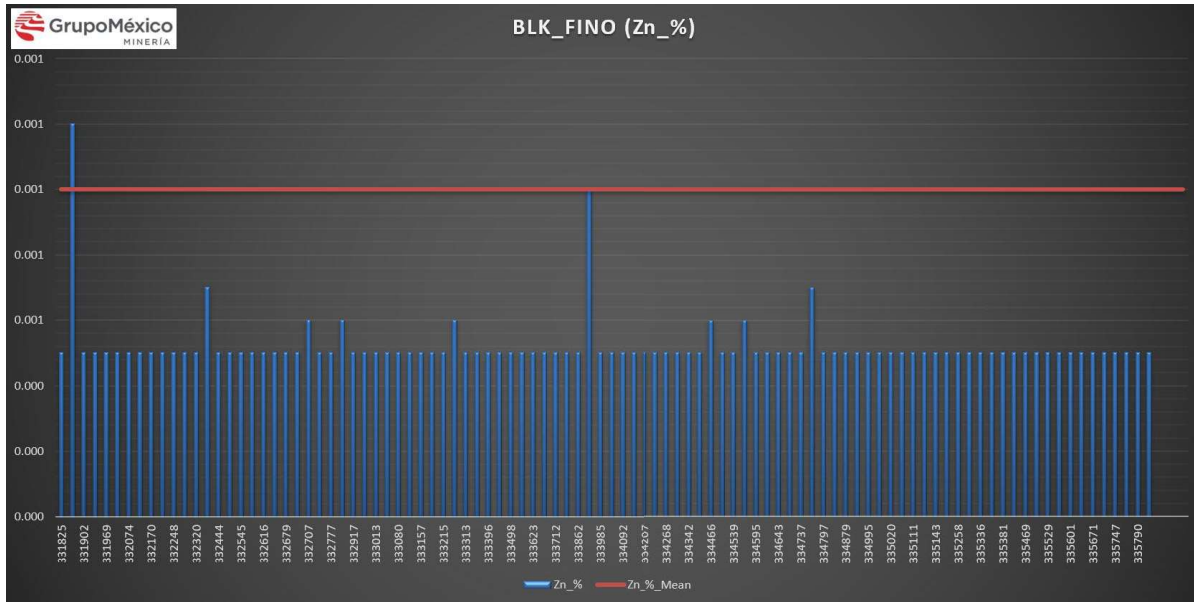
Source: IMMSA, 2022

**Figure 8-4: Values of the Certified Standard Reference Materials (CDN) used by Exploration in San Martín**

The results of the different controls are registered and tables and evaluated using scatter plots for the duplicates and second laboratory checks, and graphics to represent the results of the controls.

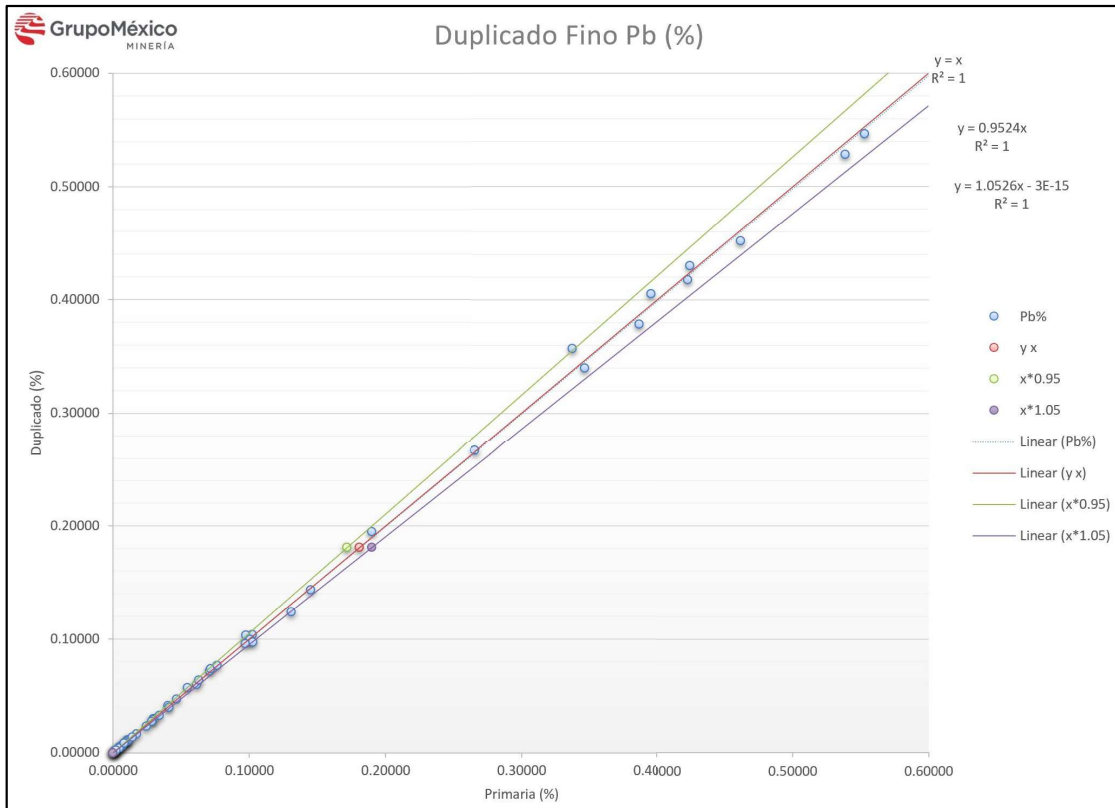
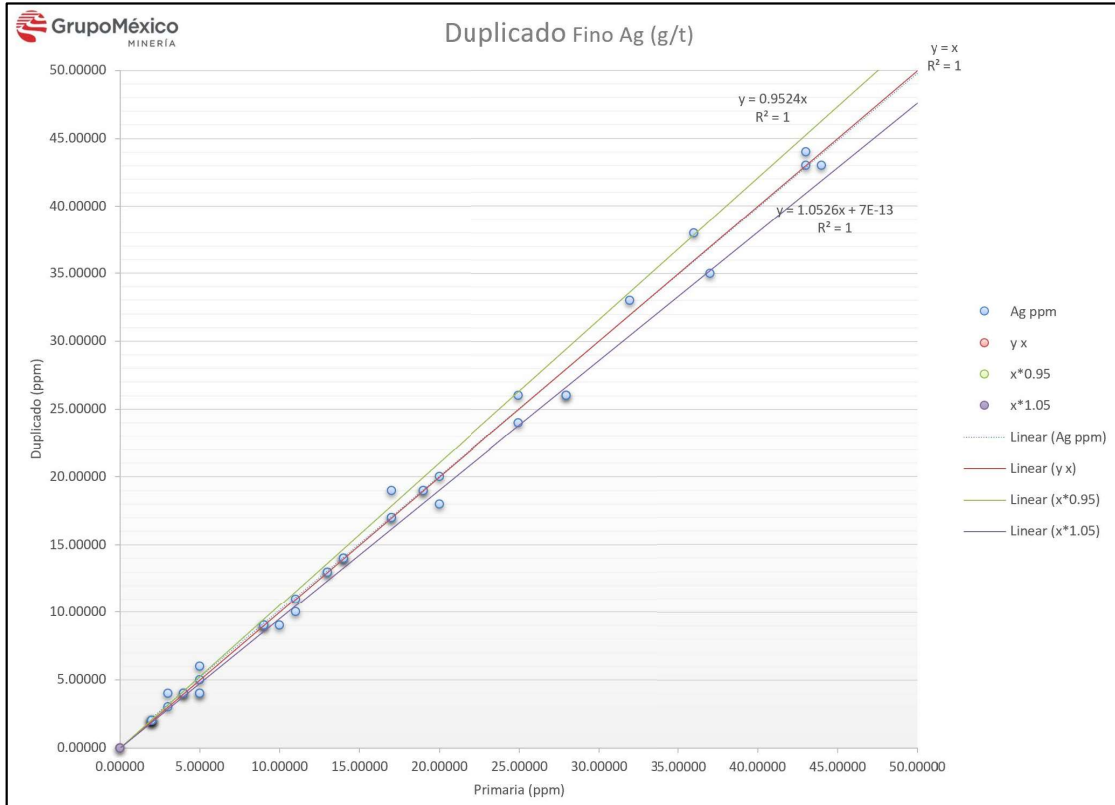
San Martín has established limits of acceptability for the different controls including:

- **Blanks:** There is contamination when the assay results are above 5 x detection limit for a specific element evaluated. When contamination occurs, San Martín informs to the laboratory to check the internal protocols and if necessary, repeat the assaying of a specific batch if the contamination is considered repetitive and continuous. Figure 8-5 shows the results of the fine blank. All the blanks are inside the acceptability limit for silver, but there are many failures observed in the Cu% graph, which is an aspect that San Martín is reviewing, including the type of blank that is being used.
- **Duplicates:** San Martín uses an acceptability level of  $\pm 5\%$  relative error range from the 45-degree line (scatter plot) for coarse and fine duplicates. The ranges are very strict and can be reviewed and adjusted according to the duplicate type. Pairs outside of these acceptability ranges are considered failures, and if in a certain period (failures are more than 10% of the total control samples), San Martín contacts the laboratory to review their procedures of preparation. SRK recommends using an acceptability range of  $\pm 10\%$  and  $20\%$  relative error for the fine and coarse duplicates, respectively (Figure 8-6).
- **Check assays (Second Laboratory):** San Martín is not using check assays (Tercerías). SRK recommends sending pulps of part of the assayed samples to a third commercial laboratory as part of the QA/QC protocol.
- **Certified Reference Materials (CRM):** The CRM are bought from commercial laboratories (CDN and Oreas), which are selected (grades and mineralization type) consistent with the mineralization and rock types of San Martín. The performance of this check is evaluated using graphs where the two standard deviation and three standard deviation reference lines are drawn in conjunction with the assay results obtained. A failure is considered when a specific CRM assay result is outside of the three standard deviation reference line or when two contiguous CRMs are outside of the two standard deviation reference line. In these cases, San Martín request the re-analysis of the samples above and below of the failure in a specific batch of samples included in the laboratory assay certificate. Figure 8-7 shows the examples of the results of the CRM (CDN-ME-1606), where no failures are observed.



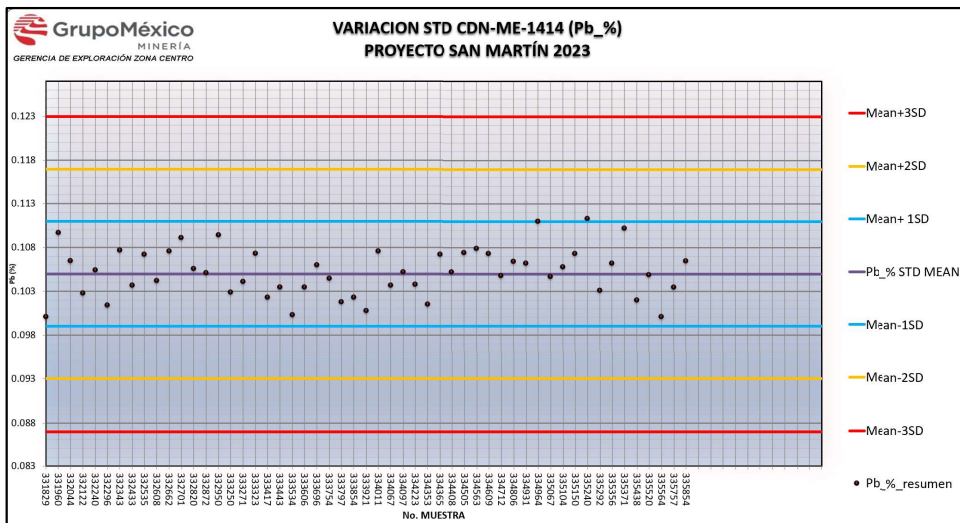
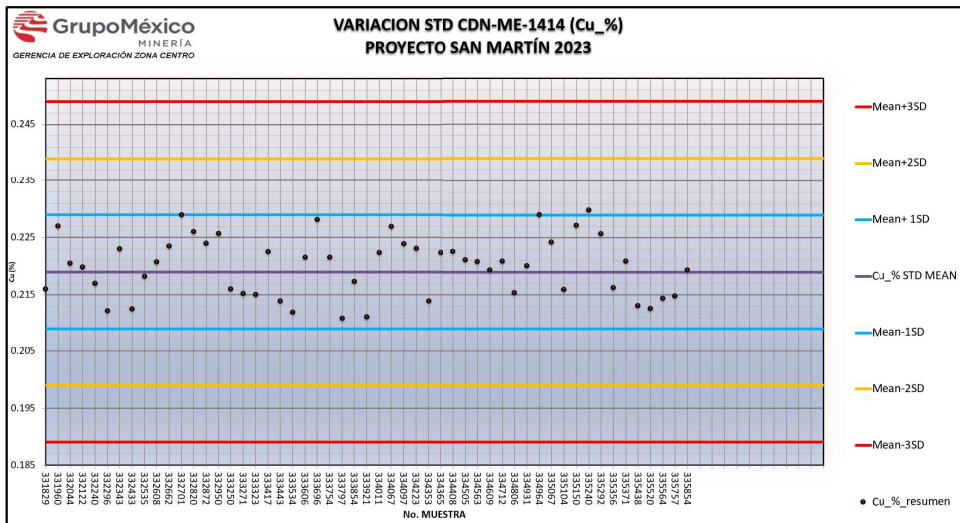
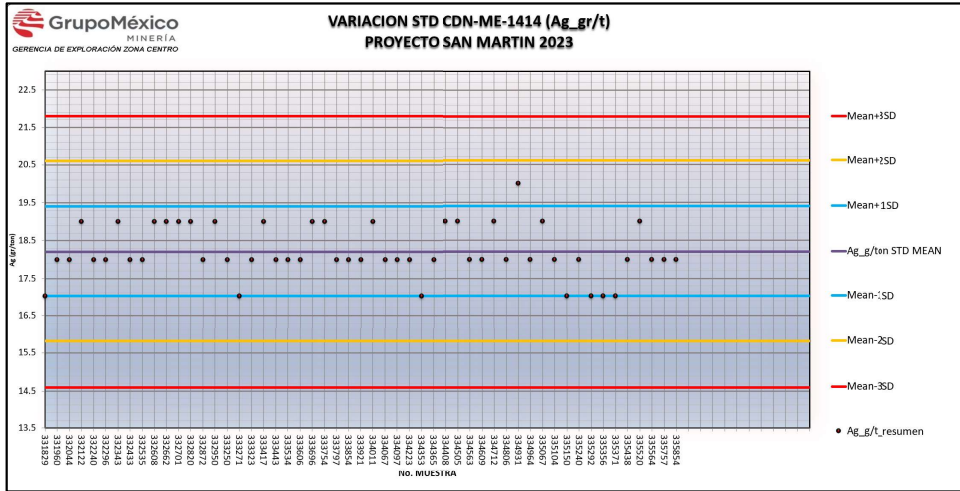
Source: IMMSA, 2023

**Figure 8-5: Examples of Results of Fine Blanks Controls**



Source: IMMSA, 2023

**Figure 8-6: Examples of Results of Fine Duplicates (Acceptability Range  $\pm 5\%$ )**



Source: IMMSA, 2023

**Figure 8-7: Example of Results of CSR (CDN-ME-1414)**

## 8.4 Opinion on Adequacy

The security of the drilling and channel sampling is considered adequate for the mine geology and exploration departments of San Martín.

The mine geology department has not implemented quality controls for the samples collected from drilling and rock sampling from underground workings, which SRK considers that is not in line with the industry best practices and represents a source of uncertainty for the data collected by the mine geology department.

The exploration department has procedures for drilling and core sampling which SRK considers in line with the industry best practices. Review of the QA/QC information in Section 8.3.3 of this report shows acceptable correlations in the duplicate samples (which is testing precision of the laboratory), and no bias is observed in the CRM data (which is testing accuracy). It is the QP's opinion that these figures are acceptable. SRK recommends the inclusion of check assays (second laboratory controls (Tercerías)) periodically (e.g., quarterly), and the review of the acceptability ranges for fine and coarse duplicates (10% and 20% relative error).

The procedures of chemical analysis and protocols of the internal laboratory of San Martín and the SGS laboratory are in line with the industry standards. At the internal laboratory no certification has been completed, which in the QP's opinion does not meet the required standards for reporting under international best practice. More detailed validation and external checks should be completed if the laboratory is not certified given the lack of independence presented. The QP recommends that IMMSA undertake a program to certify the laboratory as is completed at their other operation San Martín.

## 8.5 Non-Conventional Industry Practice

The procedures of sampling and QA/QC of the mine geology department of San Martín are not in line with the best practices. The quantity of data (Drilling and rock channel sampling) collected during the history of the operation supports most of the Mineral Resources of the project. The long history of the mining operations, which started almost 70 years ago, provides support to the historical data, based on the recognized performance of the San Martín operation for decades. The uncertainty sources for Mineral Resources are considered and evaluated in the following sections.



## 9 Data Verification

### 9.1 Data Verification Procedures

A detailed verification process was completed by SRK in 2021, which included the following activities:

- Mr. Giovanni Ortiz of SRK visited the San Martín project three times between June and December 2021. The purpose of the site visits was to:
  - Complete an underground site inspection and recognize the geology and the mineralization controls.
  - Review the exploration procedures, including the sampling methods and sampling quality, drilling procedures, core sampling and management of data.
  - Review of the historical data supporting the reserve calculations.
- The core of historical drilling doesn't exist, no samples could be collected. The validation sampling included 24 samples collected from recent drillholes and underground workings.

In 2022 and 2023, additional site visits have been done and are included the review of the exploration protocols, drilling, rock sampling, data management and mineral resource estimation, as part of the verification processes.

#### 9.1.1 Results of the Validation Samples

San Martín lost all the core of historical drilling during the period that the company was absent from the project after the strike of 2007. The internal laboratory discarded the pulps and rejects of all the historical samples.

16 samples from underground workings were collected in areas of strong mineralization. Table 9-1 presents the names of the underground workings, the elevation and the assay results (SGS Laboratory). The results of the samples show the different levels of mineralization shown in the locations of the stopes distributed at different elevations of the deposit.

Eight mineralized intercepts from the exploration drilling were selected as part of the validation sampling. Table 9-2 presents the results of the core samples sent to the SGS Laboratory in Durango.

Coarse and fine blanks, coarse duplicates and a certified reference material were inserted in the samples sent to SGS for control. The results of the controls passed the acceptability criteria.

**Table 9-1: Validation Rock Samples from Underground Workings**

Folio	Sample #	Place (Underground)	Elevation (masl)	Au (g/t)	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)	Fe (%)
7004	297598	2-250 CORTE CALLE 4	2,578.30	0.01	11	0.082	0.021	0.28	7.5
6073	297597	0-1030 CORTE FTE # 2	2,697.28	0.01	160	0.636	0.003	2.91	7.5
6492	297596	12-385 XRO IZQUIERDA	,2287.07	0.01	48	0.016	0.980	0.82	11.7
6641	297595	8-800 ZONA NORTE CORTE LADO DERECHO	2,411.23	0.03	52	0.393	0.010	2.94	9.7
4957	297594	10-387 CORTE FRENTE	2,365.53	0.03	179	1.140	0.195	2.60	11.2
6617	297593	0-1030 CALLE 1 CORTE	2,691.63	0.01	157	1.010	0.062	2.06	5.7
6406	297591	8-800 ZONA SUR	2,409.42	0.01	91	0.879	0.053	0.13	10.2
4686	297590	2-550 CONTRA CALLE 1 POR LABRADO	2,570.18	0.05	33	0.141	0.009	3.22	9.0
6449	297589	14-350 CALLE 2 SEMIVERTI	2,237.78	0.15	309	0.124	0.927	1.12	10.9
6442	297588	14-350 SEMI VERTICAL CALLE 1	2,238.37	0.01	48	0.055	0.279	2.26	12.7
6476	297587	28-800 XO EXPLO TOPE	1,795.50	0.01	56	0.104	2.930	2.64	11.3
4971	297586	26-800 TOPE	1,853.96	0.01	91	0.765	0.102	0.50	10.8
6068	297585	26-800 LADO DERECHO	1,853.04	<0.005	53	0.661	0.041	1.19	9.8
6484	297584	18-350 RAMPA POSITIVA	2,137.28	0.01	38	0.049	1.990	1.59	5.1
6444	297583	22550 RAMPA (+) XRO 1	2,003.61	0.03	19	0.441	0.235	2.33	33.4
6490	297582	22-550 RAMPA NEGATIVA	1,955.86	0.01	34	0.096	1.360	1.37	5.3

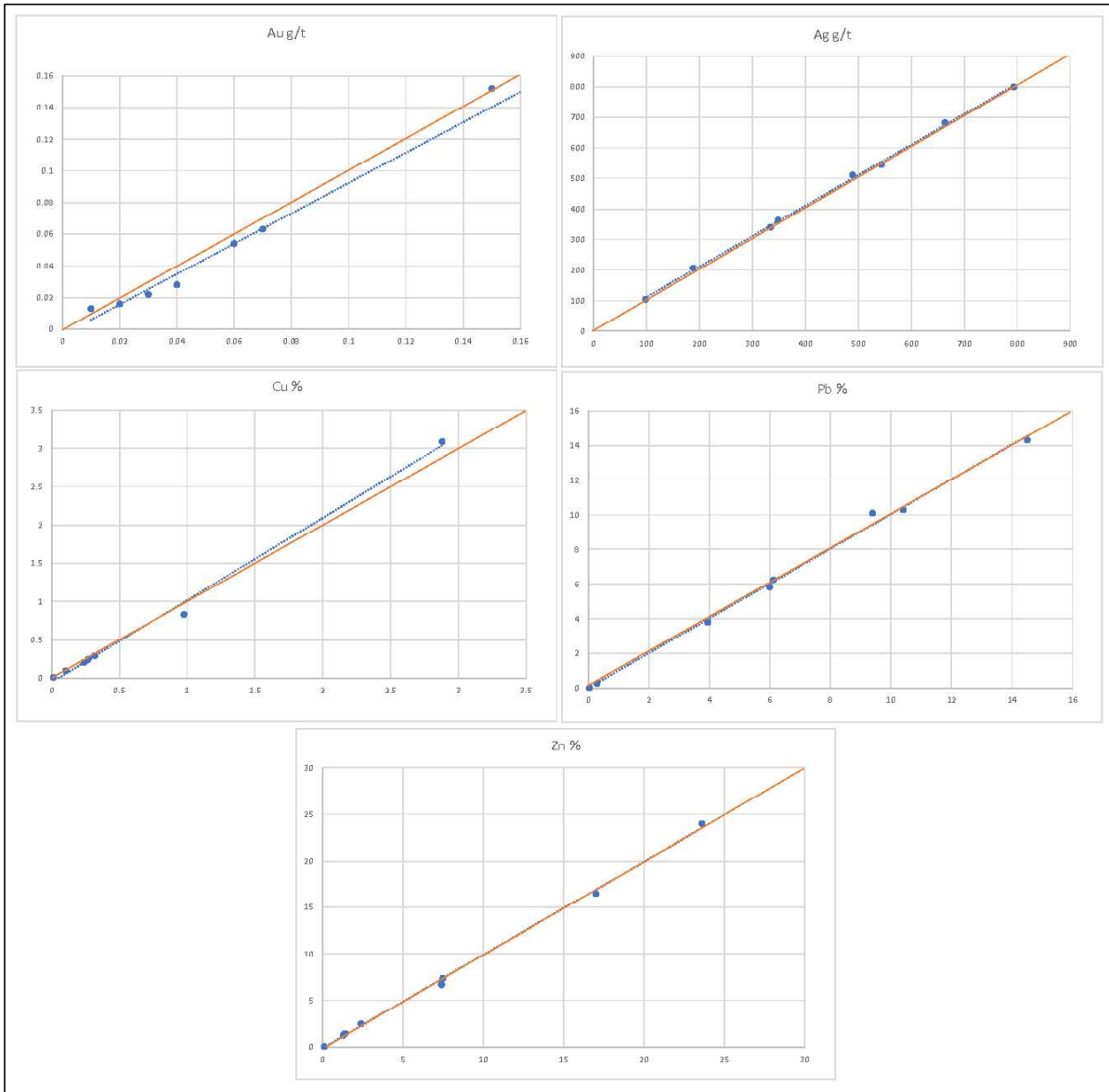
Source: SRK, 2021

**Table 9-2: Results of the Validation Core Samples (Pulps) and the Original Data - Exploration Drilling**

Drillhole #	Sample #	From	To	Length (m)	Validation Samples (Pulps) – SGS Lab.					Original Assays – SGS Lab.						
					Au (g/t)	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)	Fe (%)	Au (g/t)	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)	Fe (%)
DDHMN20-02	297547	183.45	184.05	0.6	0.06	334	0.317	10.40	17.00	4	0.05	340	0.293	10.30	16.50	4
DDHMN20-05	297548	271.05	272.3	1.25	0.04	664	0.266	3.95	7.40	24	0.03	682	0.241	3.81	6.71	24
DDHMN21-07	297550	177.35	177.8	0.45	0.03	489	0.105	6.12	2.40	7	0.02	511	0.098	6.26	2.48	6
DDHMN21-13	297549	278.55	279.1	0.55	0.17	794	0.240	5.99	1.40	23	0.15	799	0.207	5.83	1.43	25
DDHPCD21-01	297552	325.5	325.95	0.45	0.07	188	2.880	0.03	1.30	27	0.06	206	3.090	0.02	1.28	29
DDHPCD21-03	297551	352.6	353.2	0.6	0.02	544	0.268	14.50	7.50	27	0.02	545	0.246	14.30	7.40	28
DDHPCD21-07	297553	501.9	503.4	1.5	0.01	98	0.013	0.29	0.10	6	0.01	104	0.012	0.28	0.05	5
DDHPCD21-06	297554	546.9	547.55	0.65	0.15	349	0.976	9.39	23.60	12	0.15	363	0.831	10.10	24.00	11

Source: SRK, 2021

Figure 9-1 shows the results scatter plots of the SGS results of the pulps selected for validation and the original data of the exploration drillholes as shown in Table 9-2. Good comparison and correlation between the data is observed in the scatter plots



Source: SRK, 2021

**Figure 9-1: Scatter plots: X Axis: Validation Samples (Pulps); Y Axis: Original data**

## 9.2 Limitations

San Martín lost all the core of historical drilling after the strike of 2007. Before this event, the core completed by the mine geology department was stored for some years and then discarded. The internal laboratory of San Martín discards the rejects and pulps after the chemical analysis.

The historical data could not be independently verified due to the non-existence of the core, and lack of the original assay certificates. The QP considers there to be limited risk in the use of the historical

data as this information has been supporting the exploitation of San Martín, but except for the work completed the QP cannot confirm the level of uncertainty.

### **9.3 Opinion on Data Adequacy**

Based on the validation work completed, The QP thinks data supporting the resources is adequate to support the mineral resource estimate. The lack of QA/QC data remains a concern, but the historical mining and production for over 60 years provides additional verification of the historical data supporting the resources. Given the uncertainty related to the lack of QA/QC the in the QP's opinion assigning the highest level of confidence (Measured) to the estimated stopes until procedures are improved to ensure no bias exists (positive or negative) for the level of accuracy considered within this category. Revised procedures should include a robust QA/QC program for mine and external laboratories and routine third-party checks.

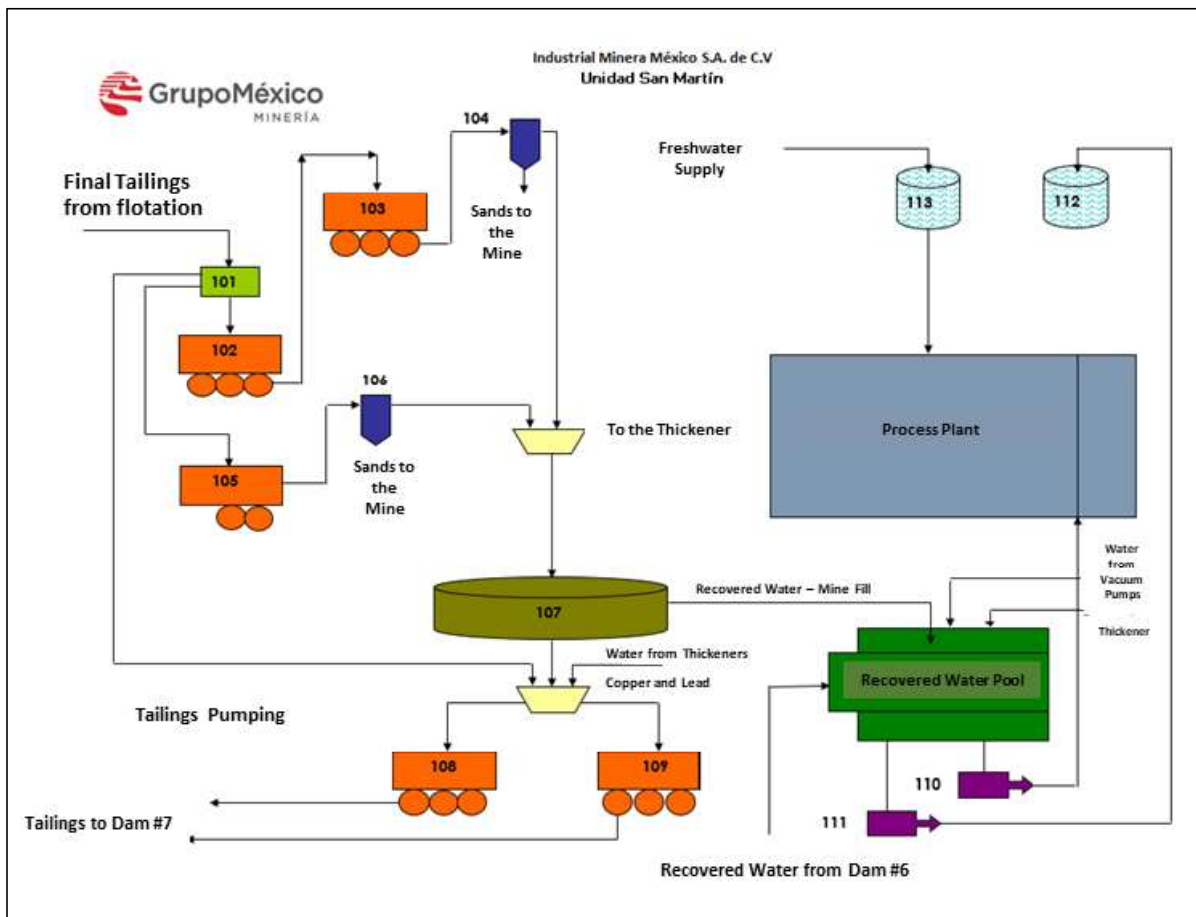
# 10 Mineral Processing and Metallurgical Testing

## 10.1 Testing and Procedures

Mineral Processing is completed via conventional flotation processes, including crushing, milling, flotation, filtration, thickening and conduction and disposal of tailings. The Minera San Martín unit has two processing plants or concentrators, one with an operating capacity of 2,400 tons/day (plant 2-400) and another with a capacity of 4,400 tons/day (plant 4-400). Three concentrates are produced:

- Zinc Concentrate
- Copper Concentrate
- Lead Concentrate

Figure 10-1 shows the general flow chart of the mineral processing at San Martín.



Source: IMMSA, 2021

**Figure 10-1: General Flow Chart of Process and Tailings**

## 10.2 Sample Representativeness

It is assumed by the QP that the current material is representative of the future mining areas with no known changes in the mineralization styles expected over the short term. Should the mine conduct

further exploration on potential exploration targets then additional metallurgical test work will be required. At minimum this should include a sensitivity study for potential recoveries using the current operating setup to estimate potential recoveries.

### **10.3 Laboratories**

Currently all sampling for the San Martín mill is conducted onsite at the mine laboratory. The mine laboratory is directly owned by IMMSA.

### **10.4 Relevant Results**

(iv) The relevant results include the basis for any assumptions or predictions about recovery estimates. Discuss any processing factors or deleterious elements that could have a significant effect on potential economic extraction.

A summary of the metallurgical performance from the operation is shown in Table 10-1. It is QP's opinion that using a three-year trailing average for the recoveries would therefore not be appropriate and would likely result in over stating the recovery of zinc and lower recoveries for lead in the system.

The QP has therefore elected to use the 2023 production information and recoveries for the assessment of the cut-off grade as disclosed in Section 11.12 of this report.

**Table 10-1: Metallurgical Performance 2020 to June 2023**

Component	Year	Tonnage (t)	Assay Grade						Recovery (%)					
			Au (g/t)	Ag (g/t)	Pb (%)	Cu (%)	Zn (%)	Fe (%)	Au (%)	Ag %	Pb %	Cu %	Zn %	Fe %
Head Grade	2020	1,355,065	0.01	107.7	0.3	0.5	1.7	5.4	100	100	100	100	100	100
	2021	1,217,334	-	74.8	0.2	0.5	1.9	5.7	100	100	100	100	100	100
	2022	1,413,207	-	66.5	0.3	0.4	1.6	6.1	100	100	100	100	100	100
	2023*	707,553	0.01	52.0	0.2	0.4	1.5	5.8	100	100	100	100	100	100
Concentrate Lead (Pb%)	2020	4,882	0.72	3,679.3	29.2	10.6	6.4	3.2	10.4	12.3	30.8	7.7	1.4	0.2
	2021	3,659	0.50	3,444.6	26.1	11.6	5.3	12.1	10.9	13.8	32.2	7.5	0.8	0.6
	2022	3,540	0.40	3,587.3	31.7	9.5	3.7	12.0	12.1	13.5	31.6	5.5	0.6	0.5
	2023*	1,371	0.50	3,045.0	29.7	8.5	4.1	10.7	13.0	11.3	29.2	3.9	0.5	0.4
Concentrate Copper (Cu%)	2020	20,077	0.18	2,959.0	6.6	17.9	13.0	18.9	19.3	40.7	28.8	53.3	11.4	5.2
	2021	16,134	0.20	2,562.3	5.5	19.1	10.0	18.4	25.0	45.4	30.0	54.1	7.1	4.2
	2022	19,091	0.30	2,365.3	7.5	19.9	8.0	23.0	50.2	48.1	40.2	62.1	6.7	5.1
	2023*	9,752	0.30	2,188.0	7.1	20.6	9.2	20.7	57.6	57.6	49.5	67.1	8.4	5.0
Concentrate Zinc (Zn%)	2020	31,577	0.09	322.8	0.9	2.0	46.3	10.8	14.4	7.0	6.1	9.4	64.3	4.7
	2021	39,335	0.10	222.2	0.6	1.5	43.5	11.6	22.3	9.6	8.2	10.6	75.1	6.6
	2022	41,320	0.10	212.5	0.6	1.6	41.6	14.4	55.9	9.3	6.4	10.8	75.1	6.9
	2023*	17,552	0.20	172.0	0.4	1.6	43.7	12.9	58.7	8.2	5.1	9.2	71.9	5.6
Tails	2020	1,298,529	0.01	44.9	0.1	0.2	0.4	5.1	55.9	40.0	34.3	29.6	23.0	89.9
	2021	1,158,206	-	24.5	0.1	0.1	0.3	5.3	41.9	31.1	29.7	27.9	16.9	88.6
	2022	1,349,256	-	18.5	0.1	0.1	0.3	5.1	(18.2)	29.1	21.8	21.6	17.6	87.5
	2023*	678,878	-	12.0	0.0	0.1	0.3	5.4	(29.3)	22.9	16.2	19.8	19.2	89.1

(\*) January – June 2023  
Source: IMMSA, 2023



Using the information provided in Table 10-1, and a trailing average of 2.5 years (2021 to June 2023), and by calculating the total recovery for the key elements the following cumulative recoveries have been used for the purpose of the cut-off grade analysis, and are based on the recovered metal payable in concentrate (Table 10-2):

**Table 10-2: Cumulative Recovery used for Cut-Off Grade Analysis**

Element	Recovery 2022(%)	Recovery 2023(%)
Ag	70.9	71.1
Pb	31.6	31.4
Cu	67.7	66.0
Zn	72.1	74.5

Source: SRK, 2023

## 10.5 Adequacy of Data and Non-Conventional Industry Practice

In SRK’s opinion, the results to date are sufficient for the definition of a mineral resource with the potential for economic extraction of the three concentrate products produced. SRK is not aware of non-conventional industry practice utilized.

# 11 Mineral Resource Estimates

The Mineral Resource Estimate presented herein represents the more recent resource evaluation prepared for San Martín project in accordance with the disclosure standards for mineral resources under §§229.1300 through 229.1305 (subpart 229.1300 of Regulation S-K)

## 11.1 Key Assumptions, Parameters, and Methods Used

This section describes the key assumptions, parameters, and methods used to estimate mineral resources. The technical report summary includes the mineral resource estimates, effective December 31, 2023. Mineral Resources are reported in situ with no dilution factors applied.

IMMSA finalized the process of digitizing the historical database for the San Martín project during 2023 which has been supplied to SRK for use in the generation of the current estimates. Previously in 2021 and 2022, SRK did a detailed and manual validation of those previous Mineral Resources, which we generated using classical 2D polygonal methods. For 2023, IMMSA finalized the digitization for all the rock sampling and drilling information available, and prepared the geological model and mineral resource estimation, based on all the digitized data, including the geological interpretations in horizontal and vertical sections.

SRK considers the procedures used by IMMSA to be reasonable and line with Industry standards and recommends implementing a data capture and data storage system to improve the data management and security.

### 11.1.1 Mineral Titles and Surface Rights

The MRE stated herein is done so on 100% terms of the resources contained within mineral title and surface leases which are currently held by IMMSA as of the effective date of this report. All conceptual considerations to constrain mineral resource statement have been limited to within these boundaries too. Current and future status of the access, agreements, or ownership of these titles and rights is described in Section 3 of this report.

### 11.1.2 Database

Table 11-1 and Table 11-2 present the summary of drilling and rock sampling (captured digitally) included in the database prepared by IMMSA for the 2023 Mineral Resource. SRK notes that the digitization of the rock chip sampling is dated back to 2020 but highlights that this covers the areas of active mining. Figure 11-1 and Figure 11-2 present the location of the drillholes and rock samples that were digitalized.

**Table 11-1: Summary of Drillholes by Year**

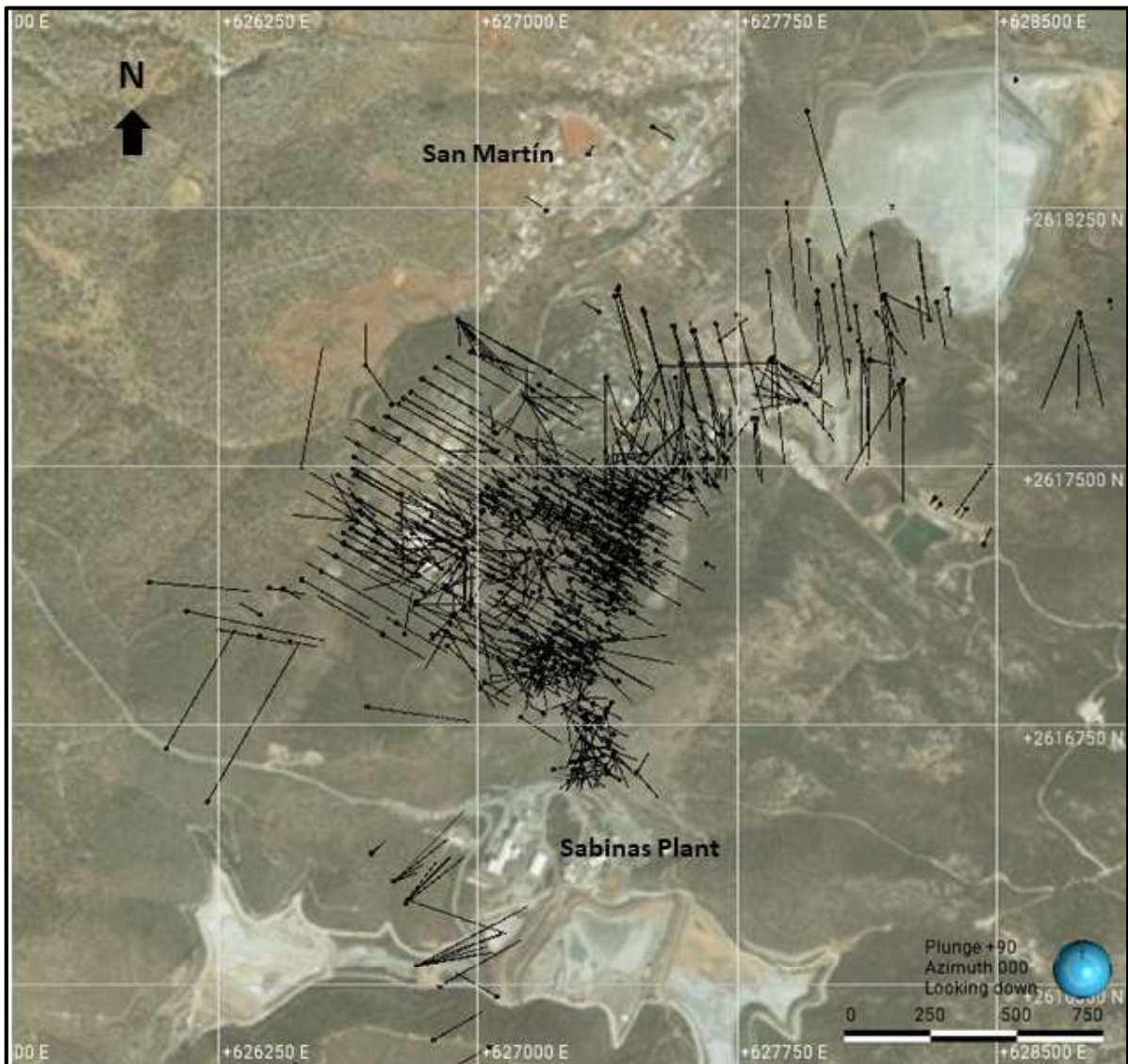
<b>Year</b>	<b>Count</b>	<b>Meters</b>
1958	2	122.9
1960	1	79.8
1961	4	337.7
1962	25	1,829.2
1963	10	916.2
1964	22	2,135.8
1965	22	1,927.1
1966	25	1,912.4
1967	23	2,137.3
1968	15	1,036.2
1969	1	16.9
1976	6	476.7
1978	4	392.2
1979	70	6,033.1
1980	33	3,950.4
1981	21	1,873.9
1982	57	5,774.7
1983	91	8,192.4
1984	56	4,881.9
1985	35	4,312.3
1986	30	3,181.8
1987	33	2,912.4
1988	44	5,687.8
1989	39	4,676.3
1990	14	2,928.1
1991	8	2,685.6
1992	73	5,789.4
1993	83	5,208.6
1994	52	5,994.6
1995	44	4,587.8
1996	69	16,039.8
1997	54	9,858.0
1998	77	13,318.7
1999	60	19,952.9
2000	146	37,202.9
2001	58	9,196.7
2002	35	6,817.1
2003	8	1,598.1
2004	17	3,765.5
2005	6	1,441.7
2006	26	6,015.0
2007	30	8,126.3
2020	12	2,725.7
2021	28	10,075.0
2023	14	2,081.2
ND	213	43,990.3
<b>Total</b>	<b>1,796</b>	<b>284,196</b>

Source: SRK, 2023

**Table 11-2: Summary of Underground Rock Samples by Year**

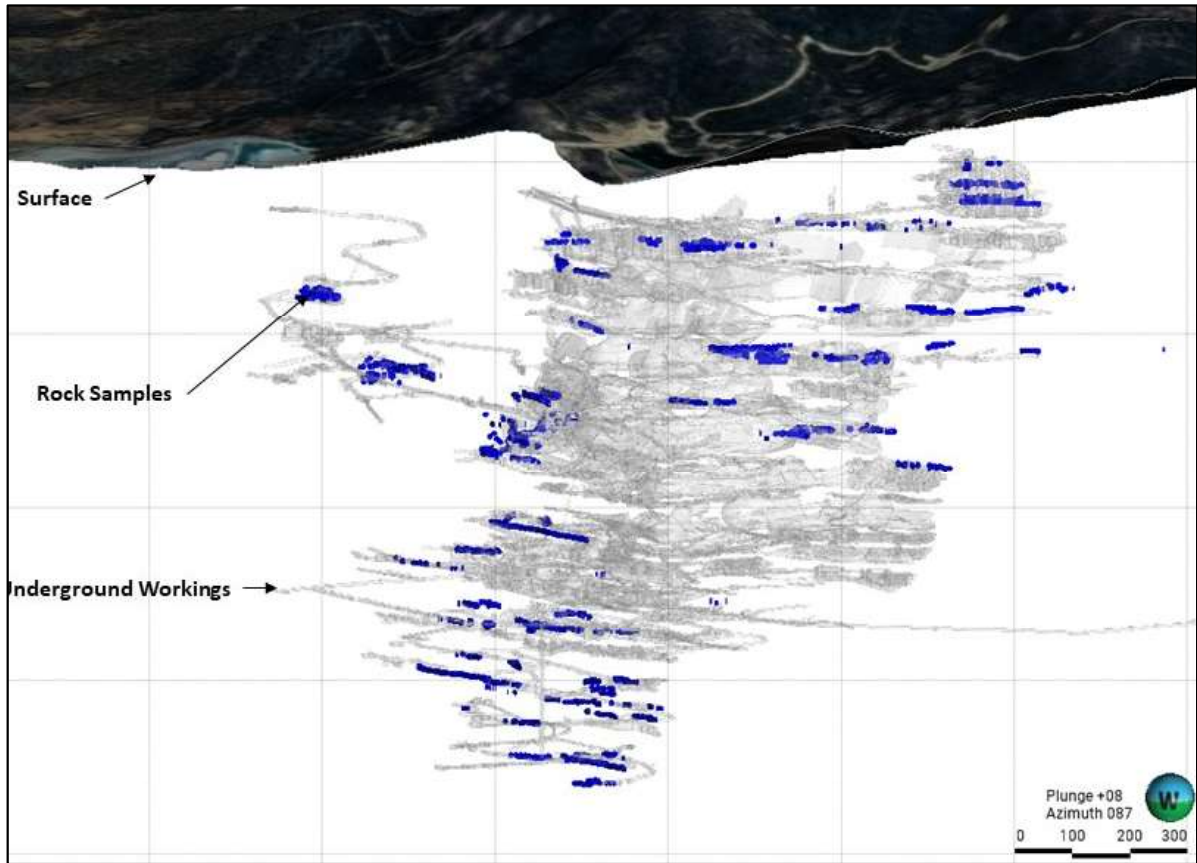
Year	Count	Meters
2020	3,287	4,580.8
2021	1,313	1,783.0
2022	2,461	3,025.1
2023	1,588	1,624.8
<b>Total</b>	<b>8,649</b>	<b>11,013.7</b>

Source: SRK, 2023



Source: IMMSA, 2023

**Figure 11-1: Location of Drillholes**



Source: IMMSA, 2023

**Figure 11-2: Rock Samples Location (3D view)**

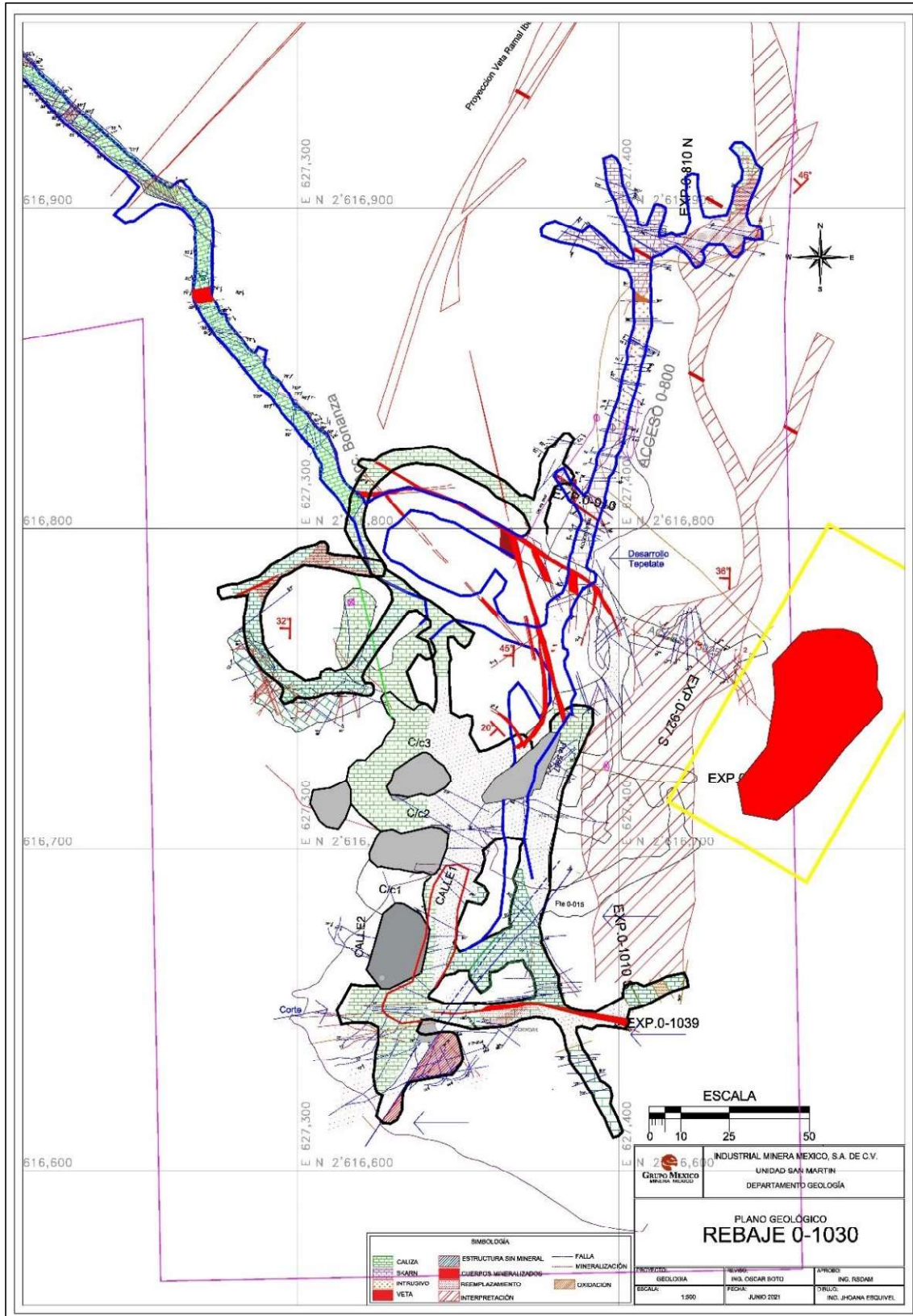
All drilling and sampling completed by the Company are logged for a variety of geological parameters including rock types, mineralogy, and structure. Historical drilling featured cross sections and maps have locally been used for modeling purposes for the mineralization contacts. IMMSA digitalized all the data in Excel spreadsheets but hasn't implemented a unique digital database using commercial software. This information has been imported into Leapfrog Software for geological modeling and resource estimation. SRK recommends implementing unique digital database using commercial software, which should include a strict management protocol. This will result in additional improvements in quality and security of the information.

## 11.2 Geological Model

San Martín prepared a geological model of the main lithological units. The mineralized mantos at San Martín are in the QP's opinion sufficiently understood. IMMSA prepared the geological model based on the horizontal and vertical sections, using the lithological descriptions in the drillhole and rock samples database.

The mineralization of Zn, Ag, Pb and Cu in replacements is very irregular and the distribution of the intrusive is very complex. Based on the geological interpretation in plan and vertical sections, the geological model was constructed in Leapfrog. The intrusive solids were constructed using the coded

drilling data and interpretations made by the IMMSA geologists in georeferenced sections. Figure 11-3 presents an example of a plan section including the lithological interpretations.

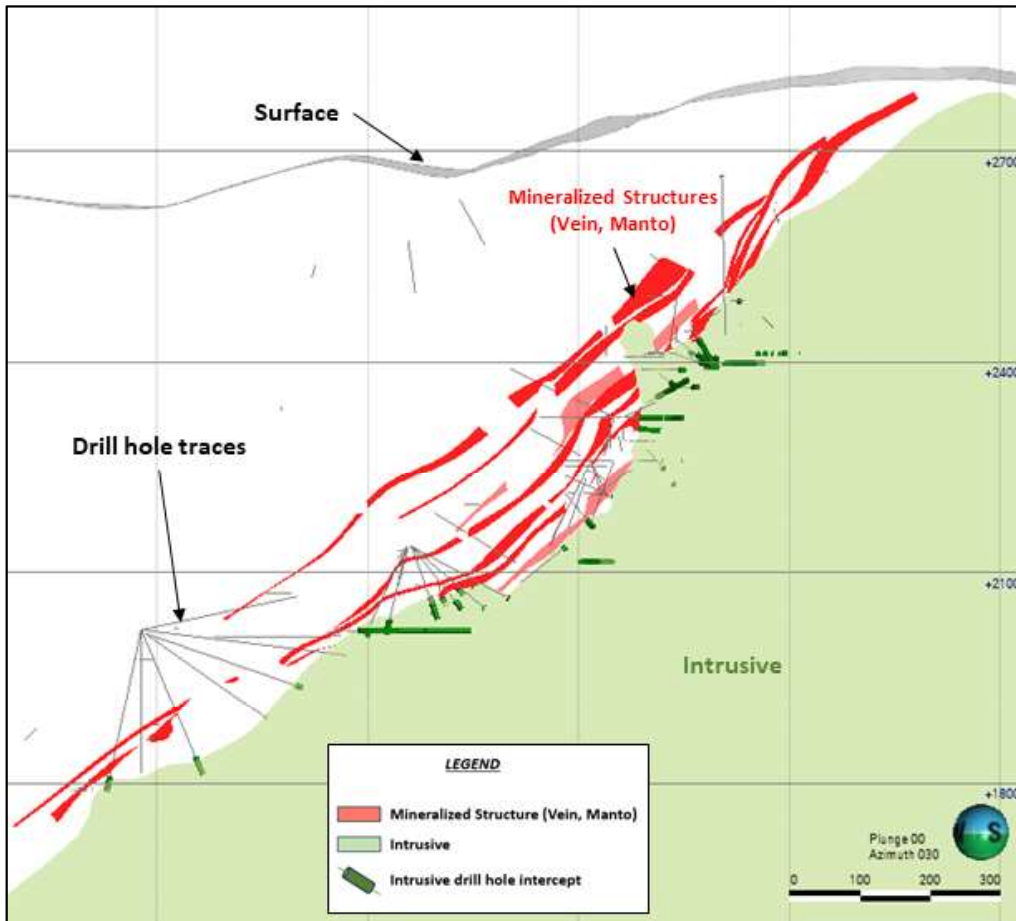


Source: IMMSA, 2021

**Figure 11-3: Example of Plan View of Underground Workings and Geological Interpretation**

There are some surrounding materials that are less understood and therefore considered lower confidence in the geological interpretation due to limited drilling. These areas are not known to host mineralization in quantities that meet economic cutoffs, so the IMMSA decided not to model at this stage.

IMMSA used Seequent Leapfrog Geo and Leapfrog Edge to create mineralized mantos solids and perform the estimations, respectively. The previous interpretations guided the construction of the solids and volumes when implicit modeling algorithms were employed. Figure 11-4 presents an example of a vertical section showing the geological model in vertical section, showing the Mantos and the Intrusive.



Source: IMMSA, 2023

**Figure 11-4: Example of 3D view of a vertical section of the geological model (Green: Intrusive; Red: Mineralized Mantos)**

As part of the process to define the mineralized structures (mantos and veins), IMMSA used a calculation of ZnEq value to orientate the delineation and construction of the mineralized mantos solids. The following is the formula used to calculate the ZnEq:

$$\text{ZnEq}_{\%} = [\text{Ag}_{\text{g/t}}] * 0.41 + [\text{Pb}_{\%}] * 0.643 + [\text{Zn}_{\%}] + [\text{Cu}_{\%}] * 2.143$$



This formula is based only on historical metal prices, which IMMSA considers that is an approach that works appropriately when defining the mineralized intervals. The prices used are US\$1.4/lb Zn, US\$18/oz Ag, US\$0.9/lb Pb and US\$3/lb Cu.

For the construction of the mineralized domains a combination of using a cut-off of approximately 5% ZnEq, which is based on the typical concentrations observed in the mantos and veins, combined with the visual analysis of the continuity of the mineralized structures observed in horizontal and vertical views and geological interpretations and underground mapping.. The process of creation of the mantos solids can include material below the determined economic intercepts, which has been done to supports the continuity of the mineralized zones. In areas where the grades are consistently below economic values which display continuity over multiple sections IMMSA identified zones of waste material from the drilling data and the interpretation sections, and generated solids to superimpose them over the mantos.

The QP considers that the use of ZnEq% value combined with geological aspects including geological continuity interpretations from horizontal and vertical section and using the Leapfrog visualization tools are reasonable to define the mineralized solids is appropriate.

### 11.3 Estimation Domain Analysis

The solids of the mineralized structures (Mantos, veins, dissemination) were used independently for estimation with all contacts being treat as hard boundaries. Table 11-3 shows the summary statistics by domain for the San Martin model. The populations of zinc, silver, lead and copper were used as reference for estimation accuracy. Some domains present high Coefficient of Variation (CoV), indicating high variability of the populations. CoV between 1 and 1.5 are considered reasonable for estimation, which is an aspect considered during the statistical analysis, including capping (Section 11.5), which reasonably reduced the variability. Additionally, the subsequent compositing helps obtain less variable populations before the grade estimation.

**Table 11-3: Summary Statistics of Raw Sampling per Domain**

Domain	Variable	Count	Length	Mean	SD	CoV	Variance	Min	Max
<b>Central &amp; Deep Area</b>									
Manto 1	Ag g/t	3,506	4,746.1	107.5	263.1	2.45	69,237	0.00	6,656.0
	Cu %	3,507	4,747.4	0.98	2.24	2.29	5.04	0.00	32.90
	Pb %	3,507	4,747.4	0.13	0.83	6.55	0.69	0.00	41.00
	Zn %	3,507	4,747.4	2.70	4.64	1.72	21.54	0.00	45.30
Manto 2	Ag g/t	2,625	3,508.2	101.7	307.5	3.02	94,544	-	12,978.0
	Cu %	2,625	3,508.2	0.77	1.89	2.46	3.55	0.00	27.80
	Pb %	2,625	3,508.2	0.08	0.42	5.38	0.18	0.00	11.70
	Zn %	2,625	3,508.2	2.06	3.91	1.90	15.30	0.00	53.00
Manto 3	Ag g/t	2,461	3,097.9	109.3	241.6	2.21	58,391	-	4,980.0
	Cu %	2,461	3,097.9	0.73	1.60	2.20	2.55	0.00	36.40
	Pb %	2,461	3,097.9	0.07	0.34	4.89	0.11	0.00	6.60
	Zn %	2,461	3,097.9	1.57	3.25	2.07	10.55	0.00	39.00
Manto 4	Ag g/t	2,597	3,465.9	79.3	212.5	2.68	45,154	-	3,700.0
	Cu %	2,597	3,465.9	0.34	1.01	2.95	1.02	0.00	26.80
	Pb %	2,596	3,464.6	0.39	1.36	3.52	1.84	0.00	20.30
	Zn %	2,597	3,465.9	2.98	4.25	1.42	18.03	0.00	49.40
Manto 5	Ag g/t	1,051	1,448.6	59.7	220.3	3.69	48,554	0.00	4,780.0
	Cu %	1,051	1,448.6	0.28	0.98	3.49	0.96	0.00	21.50
	Pb %	1,051	1,448.6	0.17	0.60	3.48	0.36	0.00	11.80
	Zn %	1,051	1,448.6	1.60	2.82	1.76	7.94	0.00	21.50
Manto 6	Ag g/t	163	217.3	65.1	140.2	2.16	19,656	0.00	1,046.0
	Cu %	163	217.3	0.26	0.70	2.65	0.49	0.00	6.00
	Pb %	163	217.3	0.39	1.46	3.73	2.14	0.00	16.30
	Zn %	163	217.3	0.76	1.54	2.03	2.37	0.00	14.00
Manto 7	Ag g/t	104	155.4	72.4	180.6	2.50	32,630	0.00	1,428.0
	Cu %	104	155.4	0.15	0.23	1.50	0.05	0.00	1.40
	Pb %	104	155.4	0.21	0.47	2.20	0.22	0.00	3.27
	Zn %	104	155.4	0.86	1.25	1.46	1.57	0.00	7.30
Manto 8	Ag g/t	320	449.9	75.9	189.7	2.50	35,979	0.00	2,550.0
	Cu %	320	449.9	0.51	1.64	3.20	2.69	0.00	30.00
	Pb %	320	449.9	0.08	0.32	3.91	0.10	0.00	6.60
	Zn %	320	449.9	0.49	1.51	3.08	2.27	0.00	17.17
Manto A	Ag g/t	8,077	8,886.7	78.0	200.1	2.56	40,042	-	6,990.0
	Cu %	8,077	8,886.7	0.53	1.40	2.67	1.97	0.00	29.60
	Pb %	8,077	8,886.7	0.50	1.29	2.59	1.65	0.00	20.90
	Zn %	8,077	8,886.7	2.42	3.59	1.48	12.87	0.00	32.10
Manto B	Ag g/t	5,499	6,308.1	73.7	147.8	2.00	21,848	-	4,820.0
	Cu %	5,499	6,308.1	0.55	1.60	2.93	2.57	0.00	30.00
	Pb %	5,499	6,308.1	0.52	1.47	2.80	2.15	0.00	29.20
	Zn %	5,499	6,308.1	2.76	3.92	1.42	15.33	0.00	43.20
Manto C	Ag g/t	4,371	5,431.9	76.3	169.7	2.22	28,802	-	6,258.0
	Cu %	4,371	5,431.9	0.61	1.58	2.59	2.49	0.00	31.90
	Pb %	4,371	5,431.9	0.52	1.37	2.65	1.88	0.00	18.90
	Zn %	4,371	5,431.9	3.47	4.50	1.30	20.24	0.00	56.00
Manto Inferior 1	Ag g/t	1,279	1,481.0	105.4	285.9	2.71	81,767	0.00	4,365.0
	Cu %	1,279	1,481.0	0.78	2.08	2.65	4.31	0.00	28.90
	Pb %	1,279	1,481.0	0.42	3.76	8.92	14.10	0.00	97.00
	Zn %	1,279	1,481.0	3.46	4.89	1.41	23.94	0.00	35.20
<b>Gallo Gallina Area</b>									
G1	Ag g/t	325	396.2	60.4	75.4	1.25	5,684	0.00	604.0
	Cu %	325	396.2	0.05	0.12	2.37	0.02	0.00	1.54
	Pb %	325	396.2	0.33	0.72	2.18	0.51	0.00	8.43
	Zn %	325	396.2	0.76	1.40	1.84	1.96	0.00	11.60

Domain	Variable	Count	Length	Mean	SD	CoV	Variance	Min	Max
G1-2	Ag g/t	62	60.1	110.8	142.3	1.28	20,249	2.00	579.0
	Cu %	62	60.1	0.17	0.24	1.38	0.06	0.00	1.26
	Pb %	62	60.1	1.64	2.20	1.34	4.85	0.00	8.57
	Zn %	62	60.1	1.62	1.99	1.22	3.95	0.01	10.16
G2	Ag g/t	301	376.7	83.7	118.9	1.42	14,135	0.00	753.0
	Cu %	301	376.7	0.16	0.45	2.80	0.20	0.00	6.80
	Pb %	301	376.7	1.13	1.83	1.62	3.33	0.00	14.40
	Zn %	301	376.7	1.14	1.37	1.20	1.89	0.00	10.20
G3	Ag g/t	88	107.2	69.1	79.7	1.15	6,344	4.00	351.0
	Cu %	88	107.2	0.23	0.94	4.09	0.89	0.00	8.00
	Pb %	88	107.2	0.91	1.42	1.56	2.03	0.01	7.20
	Zn %	88	107.2	1.02	1.48	1.45	2.18	0.02	7.60
GC	Ag g/t	74	62.4	57.7	74.3	1.29	5,525	2.00	447.0
	Cu %	74	62.4	0.39	0.76	1.94	0.58	0.00	5.60
	Pb %	74	62.4	0.24	0.59	2.44	0.35	0.00	3.20
	Zn %	74	62.4	0.28	0.57	2.04	0.33	0.01	2.83
GGM2	Ag g/t	198	244.4	78.6	108.5	1.38	11,768	4.00	1,300.0
	Cu %	198	244.4	0.77	0.91	1.18	0.83	0.01	6.30
	Pb %	198	244.4	0.11	0.73	6.54	0.54	0.00	12.20
	Zn %	198	244.4	0.88	1.91	2.18	3.64	0.00	14.87
GGM1	Ag g/t	205	225.1	62.0	72.1	1.16	5,197	1.00	558.0
	Cu %	205	225.1	0.33	0.73	2.21	0.53	0.01	5.51
	Pb %	205	225.1	0.17	0.24	1.37	0.06	0.00	1.79
	Zn %	205	225.1	0.70	2.07	2.96	4.28	0.01	18.40
GMM3	Ag g/t	229	288.1	80.0	170.2	2.13	28,972	3.00	2,480.0
	Cu %	229	288.1	0.57	0.81	1.42	0.66	0.01	7.46
	Pb %	229	288.1	0.13	0.84	6.39	0.71	0.00	16.00
	Zn %	229	288.1	1.38	2.99	2.17	8.93	0.01	22.10
DISS	Ag g/t	774	779.6	80.2	144.2	1.80	20,800	2.00	3,064.6
	Cu %	774	779.6	0.21	0.42	1.99	0.18	0.00	3.36
	Pb %	774	779.6	0.32	0.94	2.92	0.88	0.00	14.20
	Zn %	774	779.6	0.36	1.19	3.27	1.41	0.00	16.30

Source: IMMSA, 2023  
 CoV: Coefficient of variability  
 g/t: grams per tonnes  
 SD: Standard deviation  
 Min: Minimum  
 Max: Maximum

## 11.4 Estimation Methodology

The individual mantos solids of the geological models prepared by IMMSA and reviewed by SRK were used as hard boundaries for the MRE process. The methodology of estimation included the following procedures:

- Database review
- Definition of Domains
- Capping and Compositing for statistical and geostatistical analysis
- Variography
- Block model construction
- Grades Interpolation (Zn, Ag, Pb, Cu)
- Resource Classification
- Depletion of Block Model

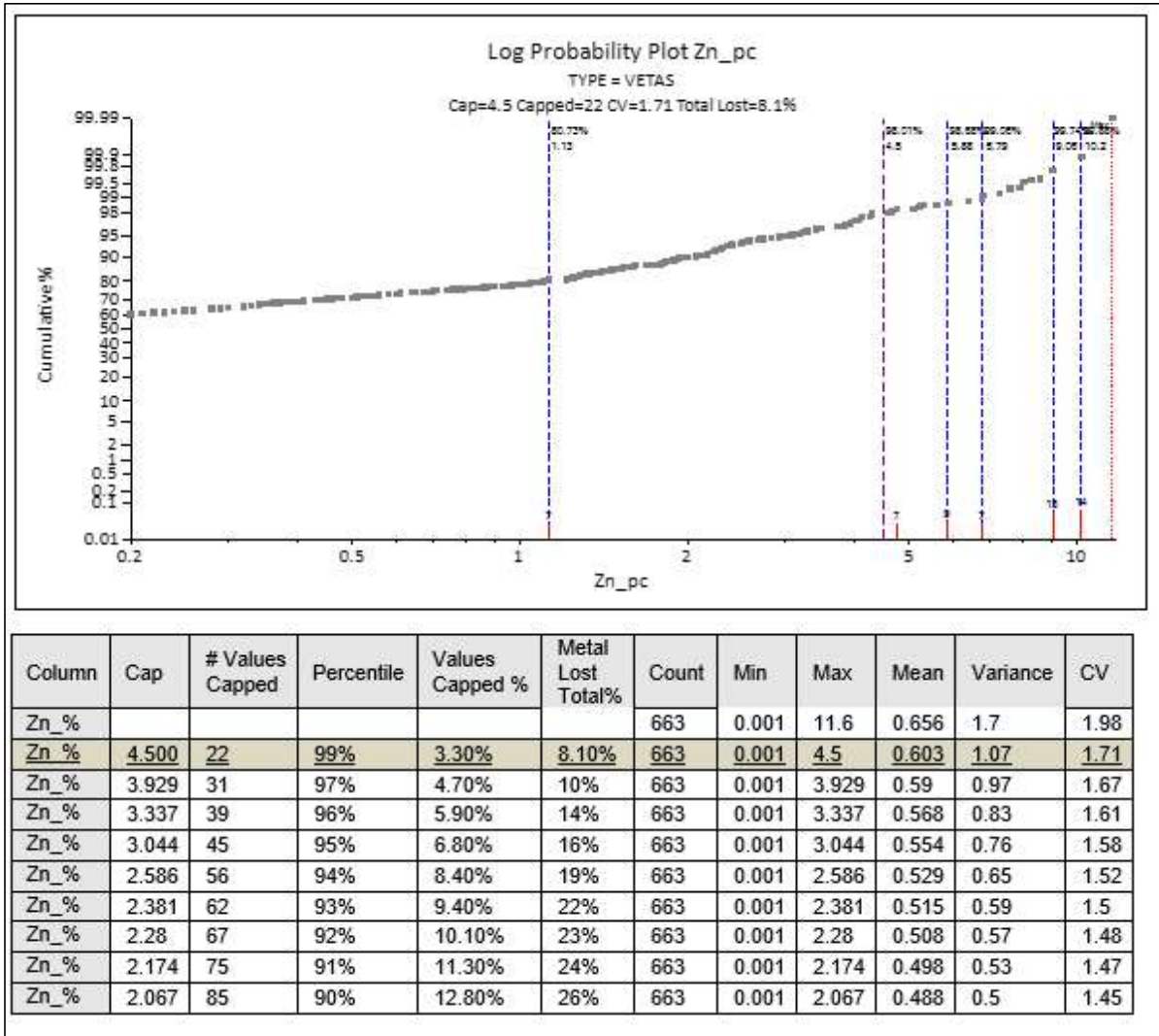
- Assessment of “reasonable prospects for economic extraction” and selection of appropriate reporting cut-off grades (CoG)
- Mineral Resource Statement

## 11.5 Assay Capping and Compositing

High grade capping is typically performed where data is not anymore perceived to be part of the main population. Capping is considered an adequate technique for dealing with the high-grade outlier values.

The capping was applied to the raw data independently for each domain and for each variable. The analysis and definition of the appropriate capping levels are based on the analysis of the grade distributions using log probability plots and raw and log histograms to evaluate graphically the grades at which samples have significant impacts on the local estimation and whose effect is considered extreme.

For this analysis IMMSA grouped domains according to the characteristics and aptitude of the structures. Figure 11-5 shows an example of the zinc probability plot and the capping level selected in the grouped domains called Vetas in Gallo Gallina, and the comparative statistics table using different levels of capping and its impact.

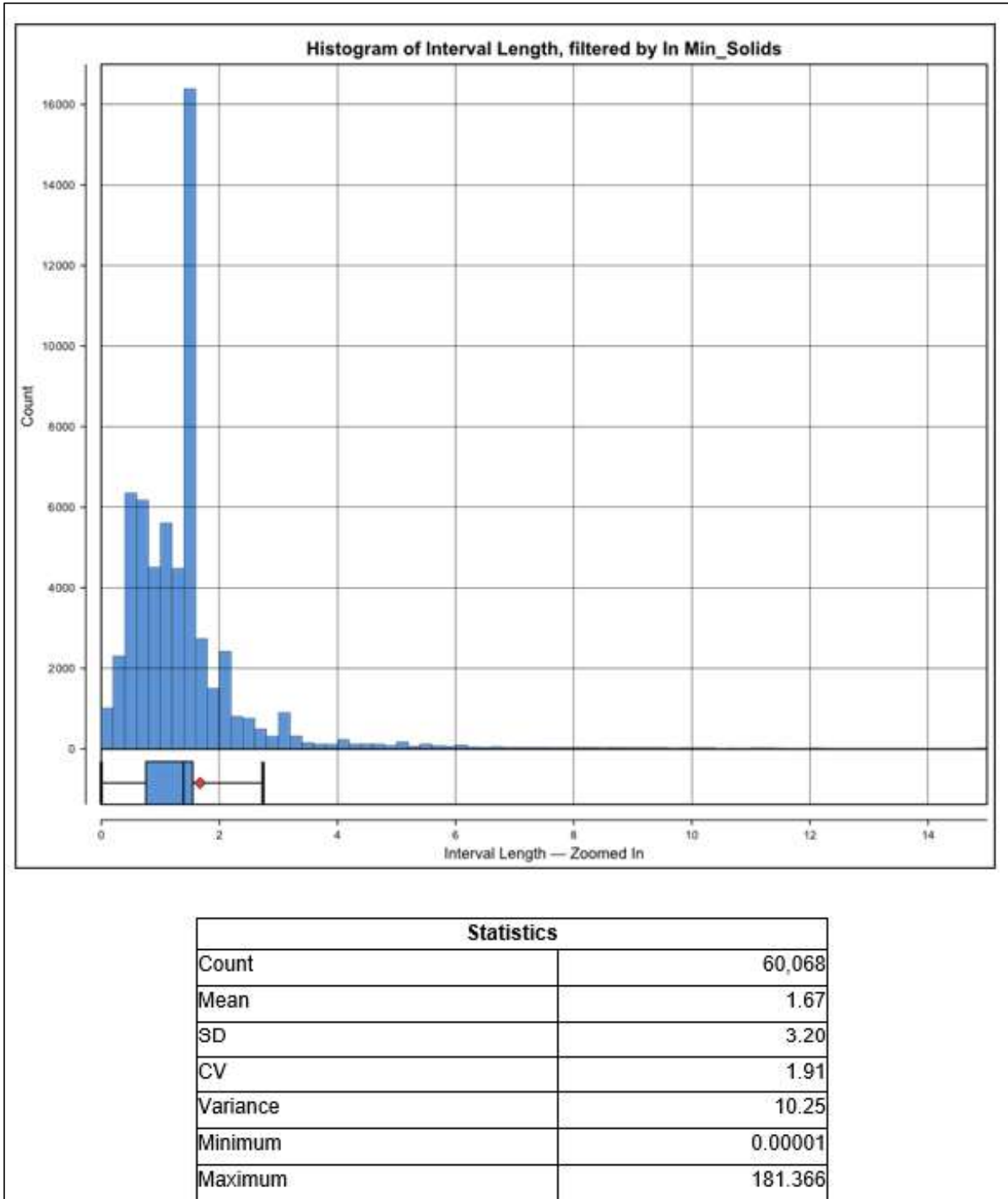


Source: IMMSA, 2023

**Figure 11-5: Example Of Zinc Capping Analysis using Probability Plots and Comparative Statistics using Various Capping Levels (Gallo Gallina, domain group: Vetas)**

Composites were generated to manage the impact of the data variability and to prepare the data for estimation within each domain. In instances where assay data was absent, a value of 0.001 g/t for Ag and 0.001% for Pb, Cu and Zn were assigned for all the variables, and composites of 2.5 m were established. Figure 11-6 presents the length histogram and statistics of the raw samples contained in the domains. The sample length was evaluated in each domain and different composite lengths were analyzed to obtain the composite size that reduces reasonably the variability of the raw samples which makes the statistical analysis (Variography) more robust. Additionally, the composite is consistent with the block size selected and avoids excessive splitting samples after compositing.

The data was composited after capping, truncated at domain boundaries, and using a minimum capping size of 0.25 to capture zones where structures are narrow. When resulting composites are less than 1.5 m, they are distributed equally.



Source: IMMSA, 2023

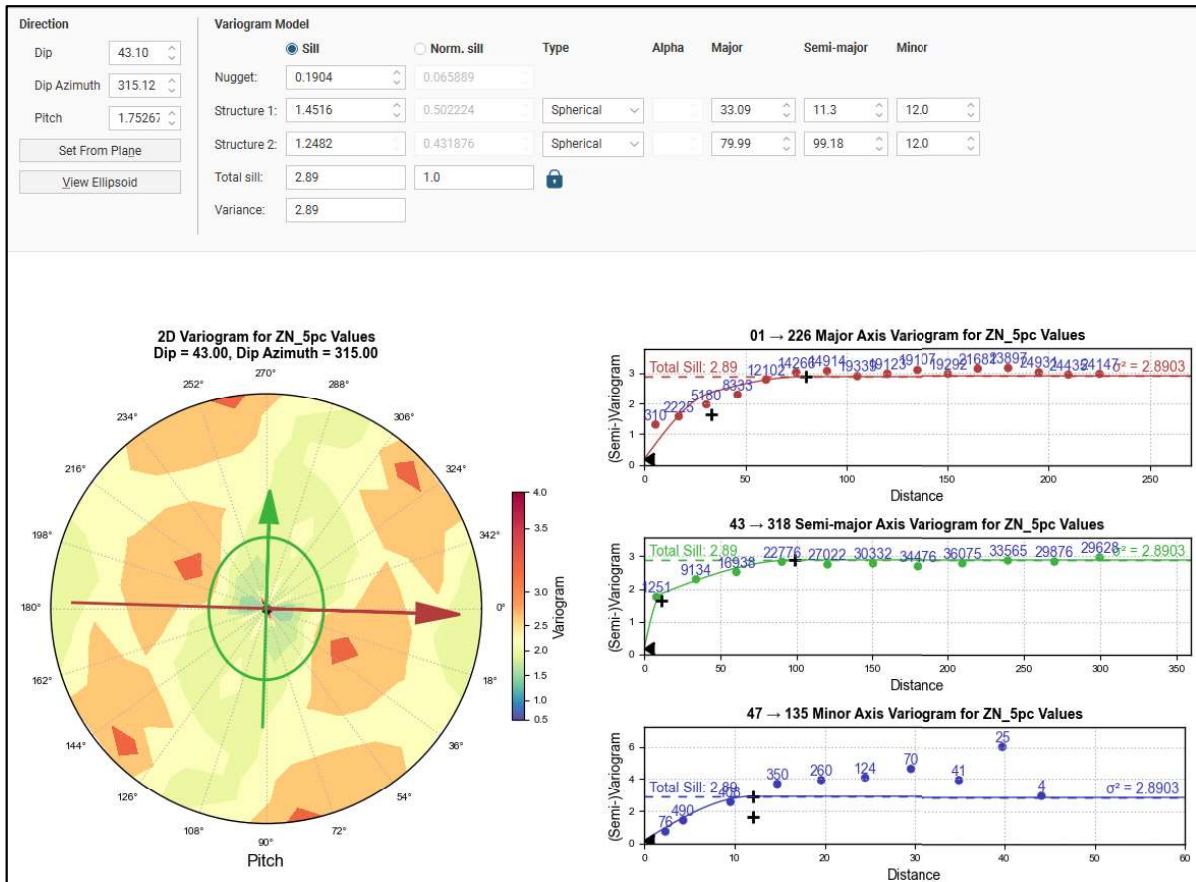
**Figure 11-6: Length Histogram**

## 11.6 Variogram Analysis

SRK assessed the geostatistical characteristics of the domains using the Leapfrog variogram analysis tool. This evaluation included the review of the variogram map to define the main orientation, followed

by the definition of the major, semi-major, and minor axis variograms. The variogram of the mineralized structure with more data was used in mantos or veins with low quantity of data and similar orientation. For mineralized structures with enough data, their own variogram for each variable was used for OK estimation.

The variography of some structures with elevated coefficient of variations (CVs) were unsatisfactory. illustrates an example variogram zinc of the Manto A.



Source: IMMSA, 2023

**Figure 11-7: Semi Variograms and Model of Zinc – Manto A**

For some domains there are low sample populations, wide spacing between samples or short ranges in the variograms, which IMMSA and SRK managed using a combination of ordinary kriging (OK) for the first search and inverse distance (ID) for second and third searches. Figure 11-8 presents the variogram models used in Central and Gallo Gallina areas.

Element	Area	Domain	Nugget	Structure 1						Structure 2									
				Sill	Structure	Major	Semi-major	Minor	Dip	Dip Azi.	Pitch	Sill	Structure	Major	Semi-major	Minor	Dip	Dip Azi.	Pitch
AG	CENTRAL	Manto 1	773.65	2,320.95	Spherical	60	70	35	43.69	318.77	75.98	289.56	Spherical	90	150	70	44	318.8	76.0
AG	CENTRAL	Manto 2	982.79	2,027.49	Spherical	35	40	20	43.69	318.77	45.01	188.41	Spherical	150	100	30	44	318.8	45.0
AG	CENTRAL	Manto 3	626.43	2,484.20	Spherical	120	70	15	43.69	318.77	174.48	303.53	Spherical	170	250	50	44	318.8	174.5
AG	CENTRAL	Manto 4	567.14	1,566.15	Spherical	100	35	30	43.69	318.77	77.10	208.16	Spherical	300	101	40	44	318.8	77.1
AG	CENTRAL	Manto 8	235.28	1,997.35	Spherical	30	50	15	43.69	318.77	164.88	217.86	Spherical	100	250	20	44	318.8	164.9
AG	CENTRAL	Manto A	434.55	1,511.23	Spherical	100	60	10	43.10	315.12	16.03	537.83	Spherical	200	150	30	43	315.1	16.0
AG	CENTRAL	Manto B	720.60	1,568.74	Spherical	50	40	10	43.69	318.77	(289.64)	279.79	Spherical	100	200	40	44	318.8	(289.6)
AG	CENTRAL	Manto C	759.03	1,595.55	Spherical	75	20	10	43.69	318.77	136.80	229.76	Spherical	200	100	20	44	318.8	136.8
AG	GALLO GALLINA	DISS	377.23	1,311.43	Spherical	7	20	5	72.00	329.00	66.93	615.07	Spherical	48	34	10	72	329.0	66.9
AG	GALLO GALLINA	G1, G1-2, G2, G3	1,040.75	7,344.68	Spherical	10	20	5	72.00	329.00	28.92	230.64	Spherical	25	60	10	72	329.0	28.9
AG	GALLO GALLINA	GGM1, GGM2, GGM3	287.66	927.45	Spherical	40	50	10	54.00	316.71	111.02	136.86	Spherical	80	180	15	54	316.7	111.0
CU	CENTRAL	Manto 1	0.36	0.65	Spherical	50	50	15	43.69	318.77	64.74	0.15	Spherical	200	100	65	44	318.8	64.7
CU	CENTRAL	Manto 2	0.12	0.31	Spherical	25	40	20	43.69	318.76	160.91	0.03	Spherical	200	100	40	44	318.8	160.9
CU	CENTRAL	Manto 3	0.09	0.18	Spherical	50	50	25	43.69	318.76	160.01	0.02	Spherical	180	400	40	44	318.8	160.0
CU	CENTRAL	Manto 4	0.04	0.07	Spherical	50	50	20	43.69	318.76	119.75	0.02	Spherical	300	180	25	44	318.8	119.7
CU	CENTRAL	Manto 8	0.06	0.11	Spherical	20	20	15	43.69	318.76	155.00	0.01	Spherical	60	60	30	44	318.8	155.0
CU	CENTRAL	Manto A	0.18	0.23	Spherical	100	40	20	43.10	315.12	(309.91)	0.13	Spherical	225	100	45	43	315.1	(309.9)
CU	CENTRAL	Manto B	0.03	0.10	Spherical	100	120	15	43.69	318.76	(231.65)	0.03	Spherical	225	300	30	44	318.8	(231.6)
CU	CENTRAL	Manto C	0.04	0.17	Spherical	100	50	35	43.69	318.76	157.16	0.03	Spherical	300	180	70	44	318.8	157.2
CU	GALLO GALLINA	DISS	0.00	0.08	Spherical	66	21	6	58.41	295.72	(266.10)	0.00	Spherical	100	80	15	58	295.7	(266.1)
CU	GALLO GALLINA	G1, G1-2, G2, G3	0.01	0.16	Spherical	25	15	6	72.00	329.00	37.22	0.02	Spherical	100	80	15	72	329.0	37.2
CU	GALLO GALLINA	GGM1, GGM2, GGM3	0.04	0.15	Spherical	35	20	5	45.00	300.00	39.17	0.04	Spherical	70	130	8	45	300.0	39.2
PB	CENTRAL	Manto 1	1.68	11.52	Spherical	45	35	10	43.69	318.77	61.69	1.79	Spherical	195	185	35	44	318.8	61.7
PB	CENTRAL	Manto 2	0.01	0.01	Spherical	25	45	25	43.69	318.76	124.40	0.00	Spherical	150	200	55	44	318.8	124.4
PB	CENTRAL	Manto 3	0.00	0.01	Spherical	20	30	25	43.69	318.76	159.54	0.00	Spherical	150	200	40	44	318.8	159.5
PB	CENTRAL	Manto 4	0.01	0.02	Spherical	40	40	15	43.69	318.76	22.71	0.00	Spherical	150	200	40	44	318.8	22.7
PB	CENTRAL	Manto 8	0.00	0.01	Spherical	30	20	10	43.69	318.76	110.45	0.00	Spherical	140	100	50	44	318.8	110.5
PB	CENTRAL	Manto A	0.01	0.02	Spherical	70	100	15	43.10	315.12	113.78	0.01	Spherical	300	400	35	43	315.1	113.8
PB	CENTRAL	Manto B	0.01	0.02	Spherical	35	70	20	43.69	318.76	141.81	0.01	Spherical	150	300	40	44	318.8	141.8
PB	CENTRAL	Manto C	0.01	0.02	Spherical	40	50	25	43.69	318.76	129.07	0.00	Spherical	150	200	40	44	318.8	129.1
PB	GALLO GALLINA	DISS	0.01	0.11	Spherical	56	18	7	58.41	295.72	92.52								
PB	GALLO GALLINA	G1, G1-2, G2, G3	0.35	0.66	Spherical	15	8	5	72.00	329.00	142.44	0.15	Spherical	60	25	6	72	329.0	142.4
PB	GALLO GALLINA	GGM1, GGM2, GGM3	0.00	0.03	Spherical	15	45	3	54.00	316.71	70.16	0.01	Spherical	60	200	7	54	316.7	70.2
ZN	CENTRAL	Manto 1	1.68	11.52	Spherical	45	35	10	43.69	318.77	61.69	1.79	Spherical	195	185	35	44	318.8	61.7
ZN	CENTRAL	Manto 2	0.94	3.80	Spherical	70	40	20	43.69	318.77	11.55	0.81	Spherical	250	100	25	44	318.8	11.6
ZN	CENTRAL	Manto 3	0.30	1.69	Spherical	50	150	60	43.69	318.77	144.41	0.12	Spherical	100	300	100	44	318.8	144.4
ZN	CENTRAL	Manto 4	1.30	4.77	Spherical	80	50	30	43.69	318.77	132.02	0.65	Spherical	300	200	50	44	318.8	132.0
ZN	CENTRAL	Manto 8	0.17	0.53	Spherical	30	40	25	43.69	318.77	142.13	0.04	Spherical	60	200	50	44	318.8	142.1
ZN	CENTRAL	Manto A	0.70	3.58	Spherical	100	75	15	43.10	315.12	91.00	0.41	Spherical	250	250	30	43	315.1	91.0
ZN	CENTRAL	Manto B	1.31	4.12	Spherical	40	40	10	43.69	318.77	77.75	0.86	Spherical	140	150	20	44	318.8	77.7
ZN	CENTRAL	Manto C	0.87	5.99	Spherical	50	50	30	43.69	318.77	81.48	0.73	Spherical	300	200	50	44	318.8	81.5
ZN	GALLO GALLINA	DISS	0.01	0.15	Spherical	45	25	5	58.41	295.72	52.67	0.14	Spherical	90	50	10	58	295.7	52.7
ZN	GALLO GALLINA	G1, G1-2, G2, G3	0.64	1.23	Spherical	25	25	5	72.00	329.00	110.81	0.01	Spherical	60	140	10	72	329.0	110.8
ZN	GALLO GALLINA	GGM1, GGM2, GGM3	0.18	0.60	Spherical	15	15	7	54.00	316.71	157.97	0.07	Spherical	45	100	10	54	316.7	158.0

Source: SRK, 2023

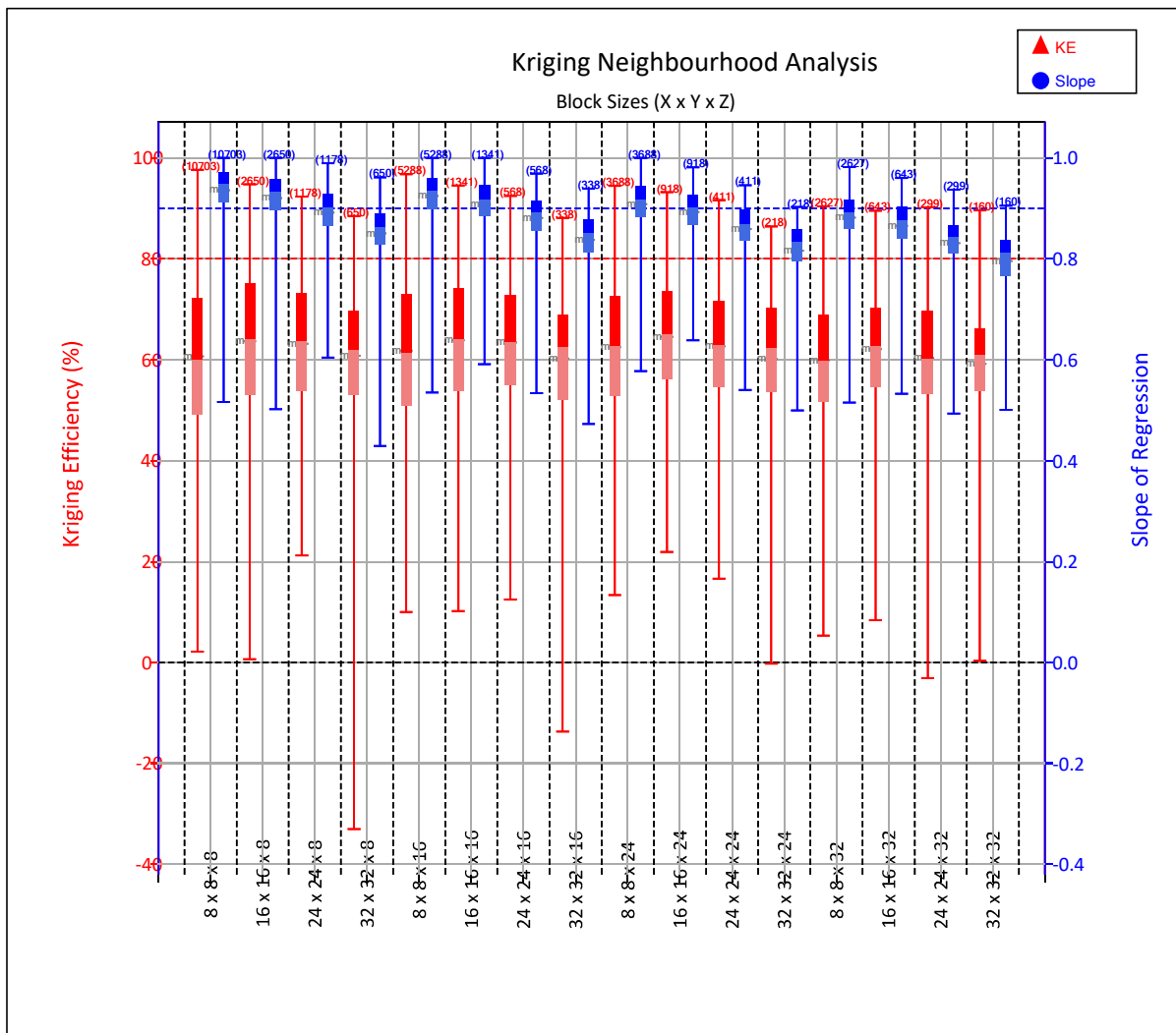
Figure 11-8: Table of Summary of Variogram Models



## 11.7 Block Model

Two block models were prepared for Gallo Gallina and the Central zone of San Martín. Leapfrog Edge was used to construct them and to estimate silver, lead, zinc, and copper into blocks of each domain that were coded accordingly.

Kriging neighborhood analysis (KNA) was completed to optimize the size of the parent blocks, minimum and maximum samples for estimation, ellipsoid size, and discretization, using Snowden Supervisor software. The Manto A, that has a high number of intercepts, were used, and the results are used in Gallo Gallina and Central zones. Figure 11-9 presents the results of the KNA for the block size, where 8m x 8m x 8m that is consistent with the mining unit size at San Martín shows appropriate kriging efficiency and slope of regression.



Source: IMMSA, 2023

**Figure 11-9: Block Size KNA Analysis Result**

Parent blocks of 8 m x 8 m x 8 m were used, based on the KNA and to reflect the size variation for any underground smallest mining units (SMU). The sub-blocks accurately reflect the limits of the

mineralized solids/domains. Models extends and Parent and sub-blocking characteristics are presented in Table 11-4.

**Table 11-4: Block Models Origin, Extents, and Block Sizes**

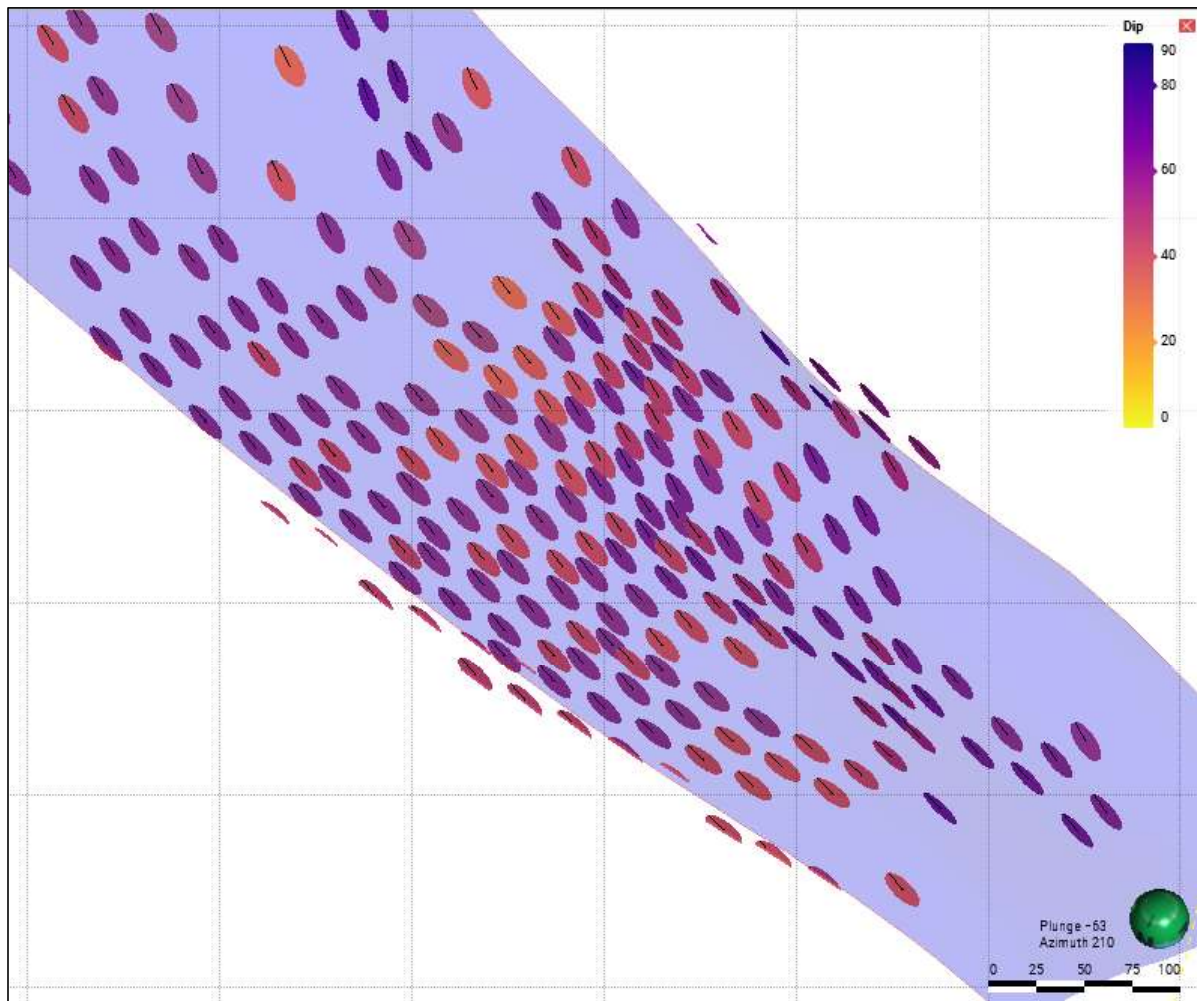
	<b>Easting (X)</b>	<b>Northing (Y)</b>	<b>Elevation (Z)</b>
<b>Central Zone</b>			
Base Point	647,750 m	2,617,650 m	2,590 m
Boundary size	640 m	736 m	456 m
Parent Block Dimensions	8 m	8 m	8 m
Sub-Cell Size	1 m	1 m	1 m
Rotation: Azimuth, Dip	329°, 72°		
<b>Gallo Gallina</b>			
Base Point	627,020 m	2,616,400 m	3,130 m
Extension	1,584 m	2,104 m	592 m
Parent Block Dimensions	8 m	8 m	8 m
Sub-Cell Size	1 m	1 m	1 m
Rotation: Azimuth, Dip	318°, 43°		

Source: SRK, 2023

## 11.8 Grade Estimation

The estimation of silver, zinc, copper, and lead was completed using Ordinary Kriging and Inverse Distance (ID2) methodologies. A combination of OK in the first search and ID2 in second and third estimation search was used in all the domains and grades. Variable orientation of search ellipses was used in all the domains to follow the changes of orientation of the mineralized structures, that was implemented using the reference surfaces of each domain inside the estimation tool of Leapfrog (Figure 11-10). Using a variable orientation makes it possible to re-orient the search and variogram according to local characteristics, which results in improved local value estimates. The

Table 11-5 presents the search parameters used for estimation in all domains.



Source: IMMSA, 2023

**Figure 11-10: Example of Variable Orientations – Manto A Reference Surface**

**Table 11-5: Search Parameters**

Domain	Ellipsoid Ranges			Variable Orientation	Number of Samples		Drillhole Limit Max Samples per Hole
	Maximum (m)	Intermediate (m)	Minimum (m)		Minimum	Maximum	
All Domains 1st Pass	30	30	15	yes	8	14	4
All Domains 2nd Pass	60	60	30	yes	8	14	4
All Domains 3rd Pass	120	120	65	yes	2	14	4

Source: SRK, 2023

## 11.9 Density

The density used by San Martín is 3.3 t/m<sup>3</sup>. This number was provided by the mine. The plant and the mine have been using this density value for decades which provides confidence. The determination method was, not clear and documentation related to this is not available.

A level of risk exists when using unsupported values in the estimation process, and as the density value is directly applied to the calculated volumes to determine the tonnage, the risk has a direct link to the total tonnage declared in the current mineral resource.

The density being used is consistent with the average density (which has been used by the mine through its operation), which provides a reasonable level of confidence that the value is not materially wrong; however, SRK recommends continue the testwork, not only on the exploration core drilling, but as well use the core obtained by the Geology Mine department to confirm the current density values and to assess any potential variability. Different rock types and the characteristics of the mineralization have variable densities, which is an aspect to investigate to obtain a more robust and density calculation.

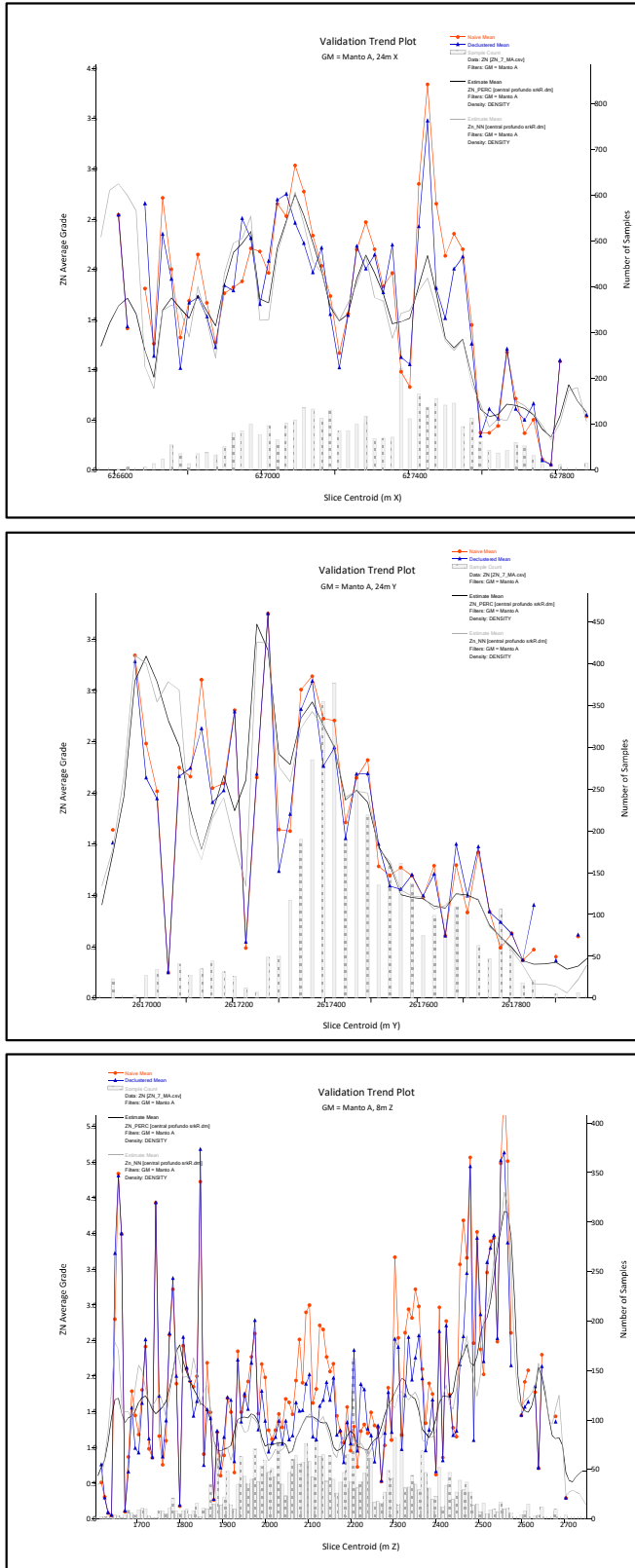
SRK has reviewed the available information and has assigned the density in the final block model by assigning a default value to all blocks of 3.3 t/m<sup>3</sup>.

## 11.10 Model Validation

**The visual validation was completed in three ways, visual validation, comparative statistics, and swath plots. The statistics of the estimated elements using OK, ID, NN algorithms were compared, and including the declustered composites.**

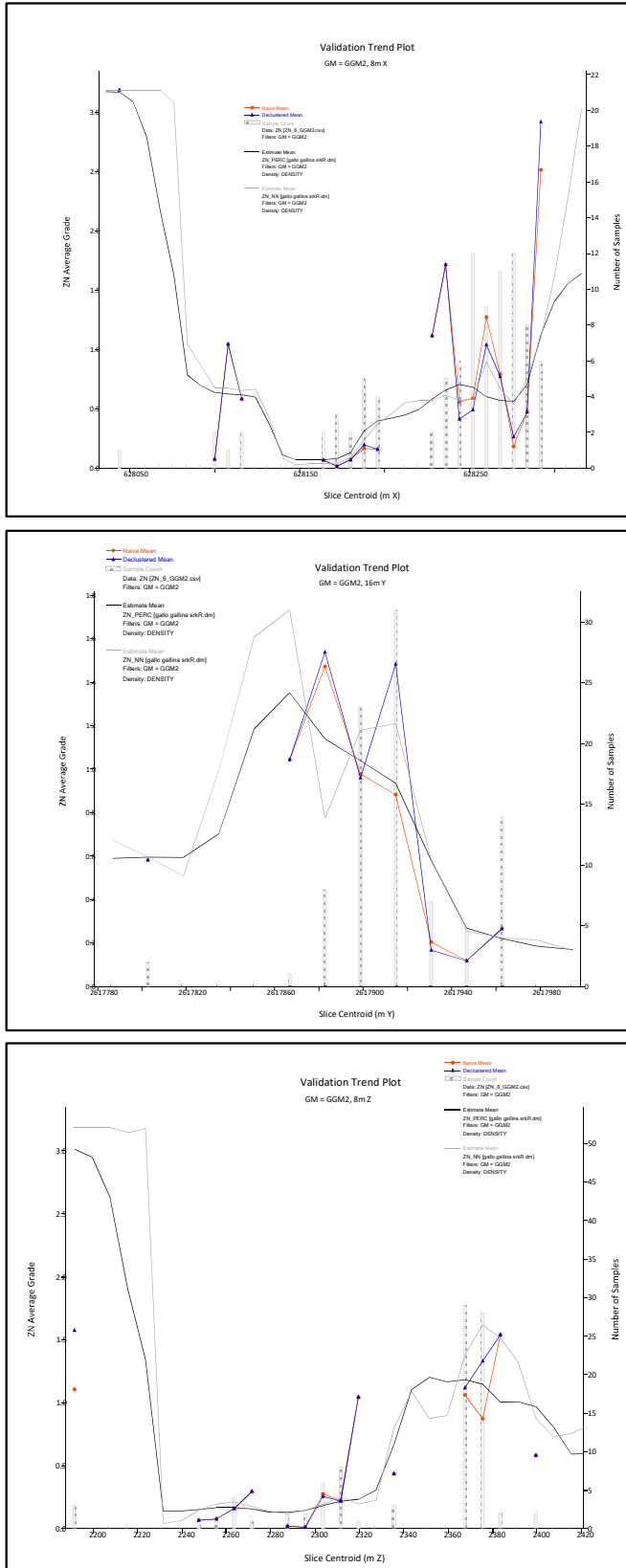
Table 11-6 presents the comparative statistics for all elements in Central and Gallo Gallina Zones. In general, the differences between grade interpolates with OK/ID2 and the NN estimates are considered reasonable, and some differences are observed in some few mineralized structures, which were reviewed using the other validation methods.

Figure 11-11 and Figure 11-12 present examples of swath plots prepared for the validation of domains Manto and GGM2, which shows the curves of the estimated ZN grades in comparison to the input values (raw and declustered)Cp, in the three dimensions. The curves have good correlation in the three dimensions, and some differences in zones of low quantity of data, which is considered reasonable. Figure 11-13 presents the example of the visual validation completed in long sections of Manto A and Manto 2, where the resulting block estimates reflect appropriately the composite grades.



Source: SRK, 2023

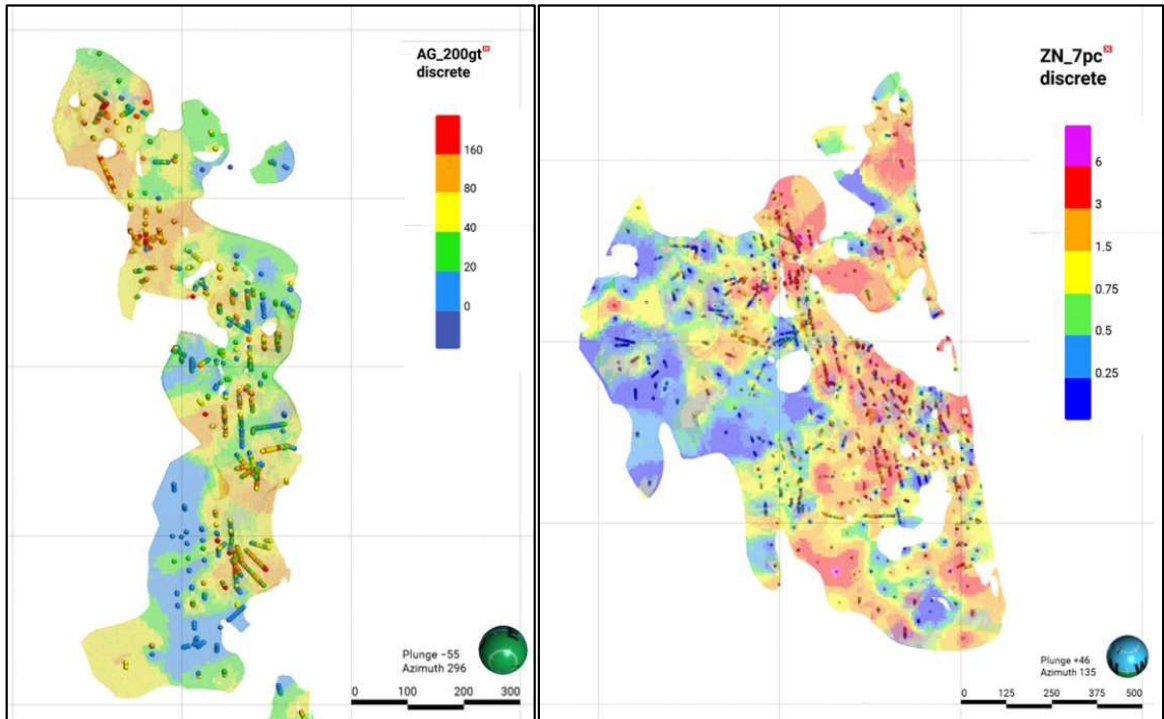
**Figure 11-11: Example of Swath Plots – Manto A, Central Zone**



Source: SRK, 2023

**Figure 11-12: Example of Swath Plots – GGM2, Gallo Gallina Zone**





Source: SRK, 2023

**Figure 11-13: Example of Visual Validation – Manto A and Manto 2- Central Zone**

**Table 11-6: Comparative Statistics – OK/ID2 Grade Estimates vs. NN Estimates**

Name	Variable	Volume	Mean	Standard Deviation	Coefficient of Variation	Variance	Minimum	Maximum
<b>Central Zone</b>								
Manto 1	AG	4,987,551	62.7	33.18	0.53	1,101.1	0.12	199.0
Manto 1	AG_NN	4,990,578	60.4	55.39	0.92	3,068.6	0.00	200.0
	Difference (OK/ID Est. vs. NN Est.)		3.8%					
Manto 1	CU	4,987,551	0.669	0.56	0.83	0.31	-	2.500
Manto 1	CU_NN	4,990,580	0.635	0.80	1.26	0.64	0.001	2.500
	Difference (OK/ID Est. vs. NN Est.)		5.4%					
Manto 1	PB	4,981,015	0.092	0.11	1.17	0.01	0.000	0.978
Manto 1	PB_NN	4,990,580	0.094	0.19	2.02	0.04	0.001	1.000
	Difference (OK/ID Est. vs. NN Est.)		-1.9%					
Manto 1	ZN	4,987,551	2.071	1.97	0.95	3.88	-	9.000
Manto 1	ZN_NN	4,990,580	2.044	2.69	1.32	7.25	0.001	9.000
	Difference (OK/ID Est. vs. NN Est.)		1.3%					
Manto 2	AG	3,031,235	61.4	37.05	0.60	1,372.49	0.14	199.6
Manto 2	AG_NN	3,031,235	60.0	53.88	0.90	2,903.32	0.00	200.0
	Difference (OK/ID Est. vs. NN Est.)		2.3%					
Manto 2	CU	3,031,235	0.545	0.48	0.88	0.23	0.001	2.495
Manto 2	CU_NN	3,031,235	0.558	0.69	1.24	0.48	0.001	2.500
	Difference (OK/ID Est. vs. NN Est.)		-2.4%					
Manto 2	PB	3,029,529	0.075	0.11	1.52	0.01	0.000	1.108
Manto 2	PB_NN	3,031,235	0.074	0.18	2.48	0.03	0.001	1.500
	Difference (OK/ID Est. vs. NN Est.)		2.3%					
Manto 2	ZN	3,031,235	1.665	1.83	1.10	3.34	-	9.000
Manto 2	ZN_NN	3,031,235	1.657	2.36	1.42	5.57	0.001	9.000
	Difference (OK/ID Est. vs. NN Est.)		0.5%					
Manto 3	AG	2,874,858	65.1	37.79	0.58	1,428.42	0.21	199.4
Manto 3	AG_NN	2,875,593	64.9	55.17	0.85	3,043.35	0.00	200.0
	Difference (OK/ID Est. vs. NN Est.)		0.3%					
Manto 3	CU	2,874,858	0.473	0.37	0.77	0.13	0.002	1.969
Manto 3	CU_NN	2,875,593	0.456	0.53	1.16	0.28	0.001	2.000
	Difference (OK/ID Est. vs. NN Est.)		3.7%					
Manto 3	PB	2,871,026	0.065	0.08	1.24	0.01	0.000	0.803
Manto 3	PB_NN	2,875,593	0.065	0.13	1.98	0.02	0.001	1.000
	Difference (OK/ID Est. vs. NN Est.)		-0.4%					
Manto 3	ZN	2,874,858	1.022	1.00	0.97	0.99	-	5.000
Manto 3	ZN_NN	2,875,593	1.033	1.41	1.36	1.98	0.001	5.000
	Difference (OK/ID Est. vs. NN Est.)		-1.1%					

Name	Variable	Volume	Mean	Standard Deviation	Coefficient of Variation	Variance	Minimum	Maximum
Manto 4	AG	6,356,776	49.8	28.19	0.57	794.63	0.02	146.4
Manto 4	AG_NN	6,361,378	49.5	45.60	0.92	2,079.72	0.00	150.0
	Difference (OK/ID Est. vs. NN Est.)		0.7%					
Manto 4	CU	6,356,776	0.257	0.22	0.85	0.05	-	1.494
Manto 4	CU_NN	6,361,378	0.267	0.37	1.38	0.14	0.001	1.500
	Difference (OK/ID Est. vs. NN Est.)		-4.0%					
Manto 4	PB	6,364,605	0.191	0.21	1.09	0.04	0.001	1.000
Manto 4	PB_NN	6,361,378	0.194	0.30	1.56	0.09	0.001	1.000
	Difference (OK/ID Est. vs. NN Est.)		-1.6%					
Manto 4	ZN	6,356,776	2.094	1.63	0.78	2.66	-	9.000
Manto 4	ZN_NN	6,361,378	2.125	2.50	1.18	6.27	0.001	9.000
	Difference (OK/ID Est. vs. NN Est.)		-1.4%					
Manto 5	AG	3,809,268	48.6	25.42	0.52	646.07	0.21	147.5
Manto 5	AG_NN	3,820,826	46.7	37.96	0.81	1,440.88	0.00	150.0
	Difference (OK/ID Est. vs. NN Est.)		4.1%					
Manto 5	CU	3,809,268	0.276	0.24	0.86	0.06	0.002	1.432
Manto 5	CU_NN	3,819,422	0.248	0.32	1.30	0.10	0.001	1.500
	Difference (OK/ID Est. vs. NN Est.)		11.4%					
Manto 5	PB	3,810,123	0.159	0.20	1.26	0.04	0.000	1.000
Manto 5	PB_NN	3,819,422	0.164	0.27	1.66	0.07	0.001	1.000
	Difference (OK/ID Est. vs. NN Est.)		-3.0%					
Manto 5	ZN	3,809,268	1.444	1.25	0.87	1.56	0.006	6.968
Manto 5	ZN_NN	3,819,422	1.389	1.70	1.23	2.91	0.001	7.000
	Difference (OK/ID Est. vs. NN Est.)		4.0%					
Manto 6	AG	261,258	41.3	18.55	0.45	344.26	2.45	130.6
Manto 6	AG_NN	261,258	40.5	31.04	0.77	963.57	0.00	150.0
	Difference (OK/ID Est. vs. NN Est.)		2.0%					
Manto 6	CU	261,258	0.177	0.18	1.02	0.03	0.007	0.938
Manto 6	CU_NN	261,258	0.181	0.27	1.48	0.07	0.001	1.500
	Difference (OK/ID Est. vs. NN Est.)		-2.5%					
Manto 6	PB	260,548	0.244	0.24	0.97	0.06	0.002	0.994
Manto 6	PB_NN	261,258	0.239	0.28	1.17	0.08	0.001	1.000
	Difference (OK/ID Est. vs. NN Est.)		2.0%					
Manto 6	ZN	261,258	0.769	0.56	0.73	0.31	0.030	4.051
Manto 6	ZN_NN	261,258	0.787	0.77	0.98	0.60	0.001	4.353
	Difference (OK/ID Est. vs. NN Est.)		-2.3%					
Manto 7	AG	611,769	34.8	24.11	0.69	581.21	4.07	146.9
Manto 7	AG_NN	611,769	40.6	40.20	0.99	1,616.06	0.00	150.0
	Difference (OK/ID Est. vs. NN Est.)		-14.1%					

Name	Variable	Volume	Mean	Standard Deviation	Coefficient of Variation	Variance	Minimum	Maximum
Manto 7	CU	611,769	0.166	0.10	0.62	0.01	0.011	0.988
Manto 7	CU_NN	611,769	0.211	0.22	1.05	0.05	0.001	1.132
	Difference (OK/ID Est. vs. NN Est.)		-21.1%					
Manto 7	PB	611,672	0.128	0.20	1.54	0.04	0.003	0.922
Manto 7	PB_NN	611,769	0.131	0.28	2.10	0.08	0.001	1.000
	Difference (OK/ID Est. vs. NN Est.)		-2.3%					
Manto 7	ZN	611,769	0.778	0.39	0.51	0.15	0.030	3.854
Manto 7	ZN_NN	611,769	0.715	0.73	1.02	0.53	0.001	5.596
	Difference (OK/ID Est. vs. NN Est.)		8.8%					
Manto 8	AG	460,071	53.0	27.05	0.51	731.60	0.09	161.5
Manto 8	AG_NN	475,572	48.5	42.89	0.88	1,839.51	0.00	200.0
	Difference (OK/ID Est. vs. NN Est.)		9.2%					
Manto 8	CU	460,071	0.357	0.22	0.61	0.05	0.001	1.347
Manto 8	CU_NN	475,572	0.322	0.32	1.00	0.10	0.001	1.500
	Difference (OK/ID Est. vs. NN Est.)		10.9%					
Manto 8	PB	459,343	0.068	0.07	1.10	0.01	0.001	0.747
Manto 8	PB_NN	475,572	0.053	0.13	2.50	0.02	0.001	1.000
	Difference (OK/ID Est. vs. NN Est.)		28.2%					
Manto 8	ZN	460,071	0.469	0.69	1.47	0.48	0.001	3.781
Manto 8	ZN_NN	475,572	0.397	0.89	2.24	0.79	0.001	6.182
	Difference (OK/ID Est. vs. NN Est.)		18.1%					
Manto A	AG	13,998,174	49.4	28.41	0.57	807.41	0.00	150.0
Manto A	AG_NN	13,999,147	49.2	43.86	0.89	1,923.66	0.00	150.0
	Difference (OK/ID Est. vs. NN Est.)		0.5%					
Manto A	CU	13,998,174	0.282	0.29	1.03	0.08	0.001	1.500
Manto A	CU_NN	13,999,147	0.281	0.41	1.45	0.17	0.001	1.500
	Difference (OK/ID Est. vs. NN Est.)		0.5%					
Manto A	PB	14,015,687	0.284	0.28	1.00	0.08	0.000	1.502
Manto A	PB_NN	13,999,147	0.274	0.40	1.48	0.16	0.001	1.500
	Difference (OK/ID Est. vs. NN Est.)		3.6%					
Manto A	ZN	13,998,174	1.423	1.40	0.98	1.96	-	7.176
Manto A	ZN_NN	13,999,147	1.397	1.90	1.36	3.60	0.001	7.000
	Difference (OK/ID Est. vs. NN Est.)		1.9%					
Manto B	AG	10,229,166	52.5	32.95	0.63	1,085.67	0.01	199.2
Manto B	AG_NN	10,230,350	49.9	48.25	0.97	2,328.53	0.00	200.0
	Difference (OK/ID Est. vs. NN Est.)		5.1%					
Manto B	CU	10,229,166	0.267	0.28	1.04	0.08	0.001	1.498
Manto B	CU_NN	10,230,350	0.261	0.36	1.39	0.13	0.001	1.500
	Difference (OK/ID Est. vs. NN Est.)		2.4%					

Name	Variable	Volume	Mean	Standard Deviation	Coefficient of Variation	Variance	Minimum	Maximum
Manto B	PB	10,201,140	0.330	0.33	1.00	0.11	0.000	1.541
Manto B	PB_NN	10,230,350	0.316	0.44	1.40	0.20	0.001	1.500
Difference (OK/ID Est. vs. NN Est.)			4.6%					
Manto B	ZN	10,229,166	1.909	1.63	0.85	2.64	-	8.955
Manto B	ZN_NN	10,230,350	1.813	2.25	1.24	5.05	0.001	9.000
Difference (OK/ID Est. vs. NN Est.)			5.3%					
Manto C	AG	7,179,142	52.3	30.36	0.58	921.64	0.00	149.9
Manto C	AG_NN	7,180,658	50.9	45.29	0.89	2,051.12	0.00	150.0
Difference (OK/ID Est. vs. NN Est.)			2.9%					
Manto C	CU	7,179,142	0.312	0.31	1.00	0.10	0.001	1.995
Manto C	CU_NN	7,180,658	0.309	0.44	1.42	0.19	0.001	2.000
Difference (OK/ID Est. vs. NN Est.)			1.0%					
Manto C	PB	7,173,620	0.310	0.29	0.93	0.08	0.000	1.526
Manto C	PB_NN	7,180,658	0.292	0.42	1.44	0.18	0.001	1.500
Difference (OK/ID Est. vs. NN Est.)			6.4%					
Manto C	ZN	7,179,142	2.539	1.94	0.77	3.78	0.001	8.914
Manto C	ZN_NN	7,180,658	2.403	2.64	1.10	6.95	0.001	9.000
Difference (OK/ID Est. vs. NN Est.)			5.7%					
<b>Gallo Gallina</b>								
DISS	AG	1,008,720	74.1	29.38	0.40	863.33	14.04	205.8
DISS	AG_NN	1,008,720	76.5	49.49	0.65	2,449.69	8.40	261.3
Difference (OK/ID Est. vs. NN Est.)			-3.2%					
DISS	CU	1,008,720	0.259	0.27	1.03	0.07	0.003	1.379
DISS	CU_NN	1,008,720	0.278	0.34	1.23	0.12	0.001	1.491
Difference (OK/ID Est. vs. NN Est.)			-6.8%					
DISS	PB	1,008,720	0.213	0.19	0.91	0.04	0.002	2.109
DISS	PB_NN	1,008,720	0.212	0.35	1.65	0.12	0.001	2.881
Difference (OK/ID Est. vs. NN Est.)			0.8%					
DISS	ZN	1,008,720	0.218	0.24	1.09	0.06	0.008	3.125
DISS	ZN_NN	1,008,720	0.200	0.39	1.93	0.15	0.002	4.824
Difference (OK/ID Est. vs. NN Est.)			8.9%					
G1	AG	596,755	71.6	40.41	0.56	1,632.66	5.59	196.6
G1	AG_NN	596,755	75.1	63.62	0.85	4,046.94	3.77	255.5
Difference (OK/ID Est. vs. NN Est.)			-4.7%					
G1	CU	596,755	0.049	0.07	1.36	0.00	0.010	0.706
G1	CU_NN	596,755	0.059	0.16	2.78	0.03	0.010	1.350
Difference (OK/ID Est. vs. NN Est.)			-16.9%					
G1	PB	596,755	0.325	0.28	0.86	0.08	0.013	2.475
G1	PB_NN	596,755	0.355	0.51	1.42	0.26	0.010	2.669
Difference (OK/ID Est. vs. NN Est.)			-8.6%					

Name	Variable	Volume	Mean	Standard Deviation	Coefficient of Variation	Variance	Minimum	Maximum
G1	ZN	596,755	0.456	0.57	1.25	0.33	0.021	3.834
G1	ZN_NN	596,755	0.477	0.84	1.77	0.71	0.008	4.704
	Difference (OK/ID Est. vs. NN Est.)		-4.3%					
G1-2	AG	14,293	90.0	15.22	0.17	231.62	45.45	146.6
G1-2	AG_NN	14,293	83.9	56.92	0.68	3,239.63	3.19	296.0
	Difference (OK/ID Est. vs. NN Est.)		7.3%					
G1-2	CU	14,293	0.115	0.06	0.51	0.00	0.038	0.398
G1-2	CU_NN	14,293	0.081	0.08	0.94	0.01	0.001	0.587
	Difference (OK/ID Est. vs. NN Est.)		41.6%					
G1-2	PB	14,293	1.124	0.20	0.18	0.04	0.688	1.541
G1-2	PB_NN	14,293	1.015	0.63	0.62	0.39	0.028	3.000
	Difference (OK/ID Est. vs. NN Est.)		10.8%					
G1-2	ZN	14,293	1.625	0.27	0.16	0.07	0.933	2.456
G1-2	ZN_NN	14,293	1.744	1.20	0.69	1.45	0.029	4.994
	Difference (OK/ID Est. vs. NN Est.)		-6.8%					
G2	AG	242,426	70.1	32.32	0.46	1,044.46	8.47	199.0
G2	AG_NN	242,426	70.1	64.20	0.92	4,121.70	0.00	296.0
	Difference (OK/ID Est. vs. NN Est.)		-0.1%					
G2	CU	242,426	0.166	0.10	0.60	0.01	0.016	0.541
G2	CU_NN	242,426	0.155	0.17	1.08	0.03	0.001	0.974
	Difference (OK/ID Est. vs. NN Est.)		7.3%					
G2	PB	242,426	0.754	0.54	0.71	0.29	0.011	2.278
G2	PB_NN	242,426	0.782	0.88	1.13	0.78	0.001	3.000
	Difference (OK/ID Est. vs. NN Est.)		-3.7%					
G2	ZN	242,426	0.989	0.65	0.66	0.43	0.049	3.253
G2	ZN_NN	242,426	1.067	1.33	1.24	1.76	0.001	5.403
	Difference (OK/ID Est. vs. NN Est.)		-7.3%					
G3	AG	137,531	64.9	33.96	0.52	1,153.19	7.58	160.1
G3	AG_NN	137,531	64.9	53.80	0.83	2,893.96	4.53	233.0
	Difference (OK/ID Est. vs. NN Est.)		0.0%					
G3	CU	137,531	0.152	0.10	0.67	0.01	0.014	0.639
G3	CU_NN	137,531	0.158	0.18	1.11	0.03	0.011	0.744
	Difference (OK/ID Est. vs. NN Est.)		-3.6%					
G3	PB	137,531	0.721	0.46	0.64	0.21	0.086	1.815
G3	PB_NN	137,531	0.717	0.68	0.95	0.47	0.031	2.580
	Difference (OK/ID Est. vs. NN Est.)		0.5%					
G3	ZN	137,531	0.916	0.61	0.67	0.37	0.032	3.535
G3	ZN_NN	137,531	0.717	0.68	0.95	0.47	0.031	2.580
	Difference (OK/ID Est. vs. NN Est.)		-27.8%					

Name	Variable	Volume	Mean	Standard Deviation	Coefficient of Variation	Variance	Minimum	Maximum
GGM_1	AG	442,399	53.6	21.04	0.39	442.87	3.95	121.5
GGM_1	AG_NN	442,399	53.8	38.61	0.72	1,490.63	2.00	154.7
	Difference (OK/ID Est. vs. NN Est.)		-0.3%					
GGM_1	CU	442,399	0.258	0.24	0.91	0.06	0.013	1.631
GGM_1	CU_NN	442,399	0.215	0.39	1.80	0.15	0.010	2.170
	Difference (OK/ID Est. vs. NN Est.)		20.1%					
GGM_1	PB	442,399	0.158	0.10	0.62	0.01	0.012	0.534
GGM_1	PB_NN	442,399	0.163	0.16	0.95	0.02	0.003	1.351
	Difference (OK/ID Est. vs. NN Est.)		-3.1%					
GGM_1	ZN	442,399	0.675	0.60	0.88	0.36	0.043	5.695
GGM_1	ZN_NN	442,399	0.624	0.97	1.55	0.94	0.008	6.000
	Difference (OK/ID Est. vs. NN Est.)		8.2%					
GGM2	AG	288,353	71.5	29.85	0.42	891.06	5.12	179.5
GGM2	AG_NN	288,353	74.6	53.76	0.72	2,890.31	5.00	200.0
	Difference (OK/ID Est. vs. NN Est.)		-4.1%					
GGM2	CU	288,353	0.652	0.40	0.62	0.16	0.013	2.230
GGM2	CU_NN	288,353	0.659	0.68	1.04	0.47	0.010	2.820
	Difference (OK/ID Est. vs. NN Est.)		-1.1%					
GGM2	PB	288,353	0.148	0.29	1.95	0.08	0.010	1.559
GGM2	PB_NN	288,353	0.168	0.36	2.17	0.13	0.002	1.561
	Difference (OK/ID Est. vs. NN Est.)		-12.0%					
GGM2	ZN	288,353	0.545	0.58	1.06	0.34	0.016	3.181
GGM2	ZN_NN	288,353	0.611	0.90	1.47	0.80	0.001	5.177
	Difference (OK/ID Est. vs. NN Est.)		-10.8%					
GMM3	AG	270,271	78.5	29.90	0.38	893.95	15.60	169.9
GMM3	AG_NN	270,271	80.8	46.11	0.57	2,125.78	5.03	200.0
	Difference (OK/ID Est. vs. NN Est.)		-2.8%					
GMM3	CU	270,271	0.415	0.37	0.88	0.13	0.035	1.693
GMM3	CU_NN	270,271	0.397	0.52	1.32	0.27	0.025	2.249
	Difference (OK/ID Est. vs. NN Est.)		4.5%					
GMM3	PB	270,271	0.275	0.30	1.09	0.09	0.010	0.920
GMM3	PB_NN	270,271	0.274	0.35	1.28	0.12	0.003	0.964
	Difference (OK/ID Est. vs. NN Est.)		0.4%					
GMM3	ZN	270,271	0.765	0.62	0.81	0.38	0.025	3.984
GMM3	ZN_NN	270,271	0.696	0.81	1.16	0.65	0.010	6.000
	Difference (OK/ID Est. vs. NN Est.)		9.9%					

Source: SRK, 2023

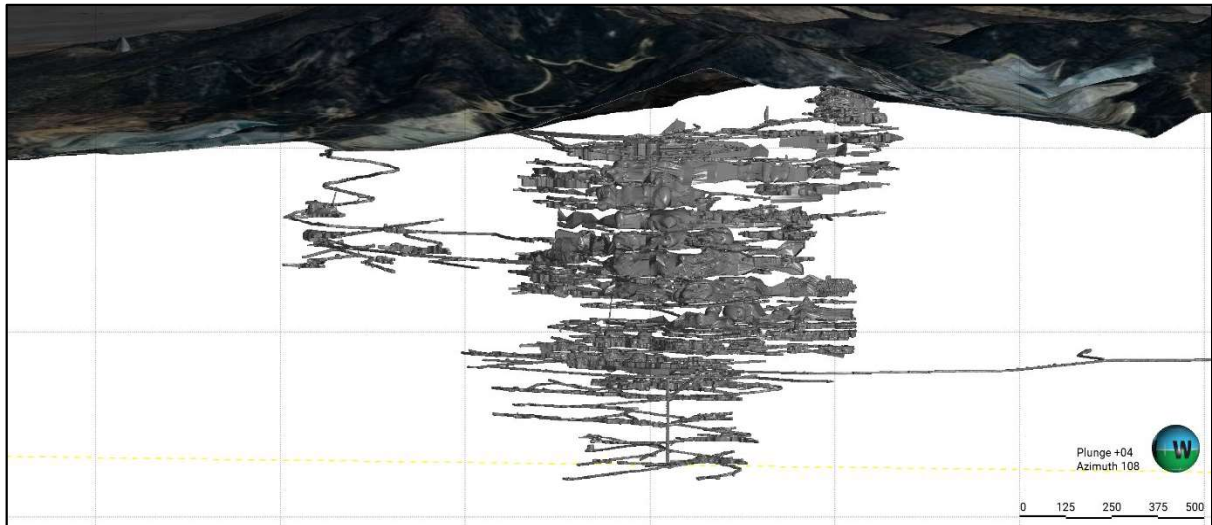
## 11.11 Depletion

IMMSA used the updated underground surveying information produced by the Mine Department, consisting in solids that were previously validated by the mining team. The solids of the underground workings were used in Leapfrog to flag the block model and identify the mined material from San Martín (Figure 11-14).

At the operation the responsibility of the engineering department, with the purpose of this is to keep updated the topography of the mining works (digitally, and physically in plans). The current system involves capture of survey points directly into a digital copy of the underground workings, which is validated in the field by the survey. The survey data points are used to update the AutoCAD definition of the depleted areas.

The historical information is incomplete in zones of the upper portion of the Central zone. IMMSA considers that the historical surveying of underground workings and exploited zones is an aspect that introduces some level inaccuracy when establishing the volumes has considered that that part of the resource can't be considered Indicated or Measured and used the limit of 2,135 masl as the lower limit of this zone. Future verification work is required to define appropriately the historically mined areas.

The QP comments that the final depletion shapes have been surveyed at the end of October 2023 with the additional depletion based for November and December based on the planned depletions. It is the QP's opinion that this will not have a material impact on the final Mineral Resources.



Source: IMMSA, 2023

**Figure 11-14: 3D View of the Surveyed Underground Works**

## 11.12 Resource Classification and Criteria

SRK has classified the mineral resources in accordance with §229.1302(d)(1)(iii)(A) (Item 1302(d)(1)(iii)(A) of Regulation S-K), and in a manner consistent with industry guidelines and definitions as defined by the Committee for Mineral Reserves International Reporting Standards (CRIRSCO). The mineral resources are classified as Indicated and Inferred, according to the following definitions and criteria:



The mineral resources are classified as Indicated and Inferred, according to the following definitions and criteria:

### 11.12.1 Measured Resources

No Measured resources are stated, as insufficient overall confidence exists to *confirm* geological and grade continuity between points of observation, to the level needed to support detailed mine planning and final evaluation studies. Other limitations in the opinion of the QP are a lack of density measurements and insufficient QA/QC protocols in the mine samplings protocols.

### 11.12.2 Indicated Resources

The definition of the Indicated resources has changed in this new resource estimation. The criteria now is based on the geostatistical analysis and the historical knowledge of the San Martín deposit.

The declaration of Indicated Mineral Resources is based on the density data, and drill spacing appropriate to grade variance. Drill spacing varies from 30 to 100 m and is variable for some of the mineralized structures. Based on variography, the variation of the grades shows ranges between 80 and 120 m. Variability of zinc over short distances is based on the rock sample data, which involve certain level of uncertainty due to the quality of the information (No QA/QC, data quality and deficient historical sampling methods), and variography shows variable nugget effect for the different mineralized structures and elements.

The criteria to define the Indicated material is as follows:

- Blocks informed by at least two drillholes (rock and channel sampling)
- Zones with a drill spacing of 40 m.
- Continuous delineated zones (defined by hand) that accomplish the previous conditions.

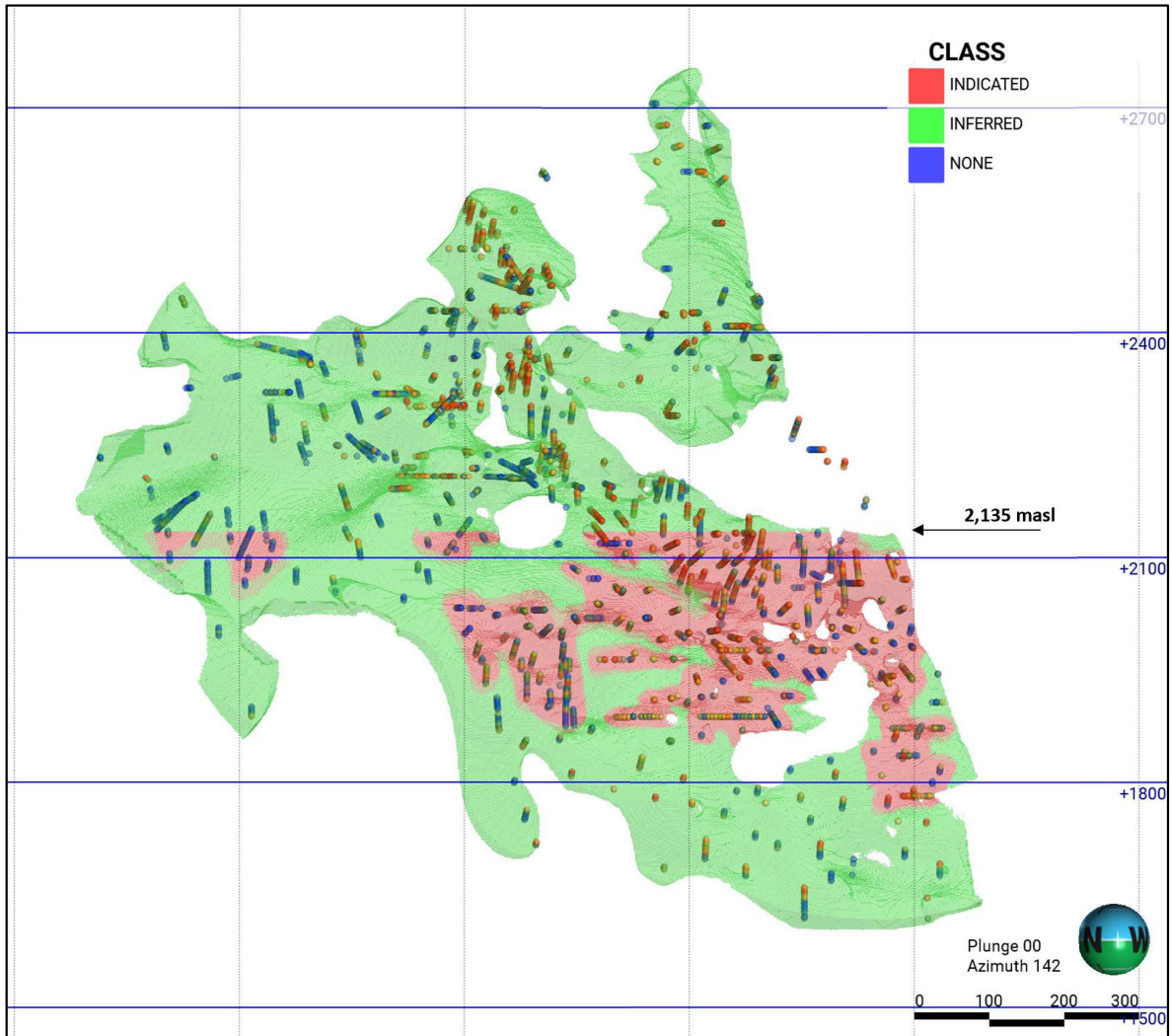
### 11.12.3 Inferred Resources

The Inferred resources can be established in areas with sufficient geological confidence, and the following requirements are met:

- Material located 80 m of the closest single hole in each mineralized structure
- Material with reasonable geological continuity of the mineralized structures interpreted by IMMSA
- Material located above the 2,135 masl in the Central zone accomplishing the previous conditions

Due to the lack of QA/QC protocols for the historical drilling and channel sampling, deficiencies in the channel sampling procedures and the lack of measurements of downhole surveys, SRK established that there are not measured resources in San Martín.

Figure 11-15 shows an example of the resource blocks in Manto A (Long Section).



Source: IMMSA, 2023

**Figure 11-15: Long Section of Manto A – Block Model Classification**

### 11.13 Uncertainty

**Indicated Resources:** Is the opinion of SRK that the indicated resources are estimated based on adequate geological evidence and sampling. The distances of influence from underground sampling and distances between drilling which are the controlling aspects on the uncertainty. The criteria and uncertainty correspond to the Medium Degree of Uncertainty column in Table 11-7.

**Inferred Resources.** The inferred category is limited to the resources that are in areas where the quantity and grade are estimated based on limited sampling and moderated to limited geological evidence. This category is considered to have the highest levels of uncertainty, which corresponds to the High Degree of Uncertainty column in Table 11-7. These areas of the project represent the areas with the lowest drilling density and influence distances to channel sampling of up to 60 m. SRK

considers these areas of the Mineral Resource will need additional drilling and underground workings prior to mining.

**Table 11-7: Sources and Degree of Uncertainty**

Source	Degree of Uncertainty	
	Low	High
Drilling	Recent drilling completed by the exploration team is fulfilling the industry standards. This drilling is focused in new areas discovered as extensions of the main deposit.	Protocols of historical drilling supporting mineral resources do not fulfill the industry standards. Including the lack of down hole deviation measurements.
Sampling		Protocols of sampling don't fully fulfill the industry standards. Density of samples supporting the Mineral Resources is adequate.
Geological Knowledge/Geological Model	There is an extensive knowledge of the geology and mineralization of the San Martin deposit. This aspect and the experience of the management team provides confidence to the geological assumptions during the geological interpretations.	
QA/QC	Sample preparation, chemical analysis and the QA/QC procedures implemented by the exploration team in the recent years meet the current industry standards. These works are focused in new areas in exploration.	Lower precision of historical data recognized. Drilling and channel sampling completed by the Mine Geology Department supporting the mineral resources have not been fully supported by a QA/QC protocol.
Data Verification	The extensive historical production information and knowledge of the geology and mineralization, provides support to the historical data collected since the last century.	The lack of the core of historical drilling supporting the mineral resources limited the verification activities.
Database	Original geology, structural and mineralization maps, drill core logging formats (including the assay results), interpretation plan and vertical sections supporting the Mineral Resources are stored in the operation in paper format and a small portion in digital format. Georeferenced data was digitalized in excel files and imported to Leapfrog for the geological model creation.	Most of the data supporting the mineral resources is stored in paper and the georeferenced data was digitalized in digital formats to support the new geological model and resource estimation. Local errors related to handwritten supporting data are expected.
Bulk Density		A unique value is used for all the rock types and doesn't consider the mineralization changes. This introduces local inaccuracies. Plant and mine have been using this value for decades which provides confidence to the density value used but don't consider the changes in lithology and mineralization.
Variography	Variography analysis was completed using the digitalized data of rock and drilling data and continuity assumptions of mineralization have been based on this analysis and the extensive geological knowledge of the deposit.	
Grade Estimation		Grades and volume calculations are based on historical data digitalized in digital format, providing some inaccuracy. Part of the calculations were completed using digitalized handmade drawings which introduce inaccuracies.
Prices,* NSR Values	Prices and costs based on Sa Martin mining and production information (not exceeding 12-month averages) with 15% as premium applied for resources.	
Drill and Sample Spacing		Minimum 2 drillholes within a drill spacing of 40 m.
Depletion		Minimum of 1 hole at distance <80m
Criteria of Classification	Distances of influence of samples supported on the good knowledge of the geology and mineralization. These distances are considered reasonable which mitigates in some extent the risk associated to over-estimation of the continuity of mineralization.	The resource blocks are defined considering the updated topography of the mine. The adequacy and precision of the historical surveying information of the underground workings and exploited areas introduces some level of inaccuracy to the limits of the resource blocks.

Source: SRK, 2022

\*Changes in metal prices will likely result in significant changes in the values derived from the NSR equation. Currently the stopes defined only limited stopes fall below the operating costs of US\$ 60.8/t.

## 11.14 Cut-Off Grades Estimates

Definitions for Mineral Resource categories used in this Technical Report Summary are those defined by SEC in S-K 1300. Mineral Resources are classified into Indicated, and Inferred categories. Mineral Resources are reported in total as currently no Mineral Reserves are reported in accordance with S-K 1300 requirements.

Geologists uses diamond drilling information, channel sampling and development information to identify mineralized areas. The mineralized areas are then divided into smaller blocks based on the vein. Information on each block, such as classification, dimensions, thickness, sampled grades are entered into an Excel spreadsheet to compile the final Mineral Resources.

The Mineral Resources for the San Martín are considered to be amenable to underground mining methodologies as has been established at the mine to date. Mining is completed using a mechanized Cut and Fill mining method with rockfill and with tailings (hydraulic) and dry tailings. Ramps and levels are developed to provide access to the ore. Attack ramps are then driven to access each cut. The ramps and level development are performed using jumbos. San Martín has been testing the long hole stopping mining methodology after the operation resuming. Processing is completed at the current operating plant using a floatation flow sheet into three separate concentrates (zinc concentrate, copper concentrate, and lead concentrate).

Given that process recoveries and costs in the resource model are grade and/or domain dependent, the resources are reported with respect to a block Net Smelter Return (NSR) value which is calculated on a stope block (panel) basis. The cut-off value used for the Resource estimate is based on an NSR value, in units of US\$/t, which can be directly compared to operating unit costs. The NSR formula is:

$$\text{NSR} = \frac{\text{Gross Revenue} - \text{Offsite Charges}}{\text{Tonnes Processed}}$$

The calculation of the NSR is effectively a calculation of unit values for the individual metals, which results in a value for a block based on the contained metal.

IMMSA reviewed supply and demand projections for zinc, lead, silver, gold and copper, and consensus long-term (ten year) metal price forecasts. The QP has been supplied with IMMSA's internal selected metal prices for mine planning for the Project. The prices are considered in line with independent forecasts from banks and other lenders. The IMMSA selected metal has been adjusted by the QP to the selected Mineral Resource estimation prices using a factor of 15% higher, which is in line with typical industry practice.

NSR cut-off values for the Mineral Resources were established using a zinc price of US\$1.32/lb Zn, a lead price of US\$1.08/lb Pb, a silver price of US\$23.0/oz Ag, and a copper price of US\$3.80/lb Cu. While minor amounts of gold exist at the project (0.1 g/t head grade) gold has not been used as a revenue driver within the NSR calculation.

**Table 11-8: Price Assumptions**

<b>Factors</b>	<b>Value</b>	<b>Unit</b>
Ag	23.00	US\$/oz
Pb	1.09	US\$/lb
Cu	3.80	US\$/lb
Zn	1.32	US\$/lb
Exchange Rate (MXN:US\$)	18.2109	

Source: SRK, 2023

It is the QP’s opinion that the metal prices used for mineral resources are reasonable based on independent checks using consensus, long term forecasts from banks, financial institutions, and other sources.

The metallurgical recovery factors assumed for San Martín are based on historic performance of the processing plants and are shown in Table 11-9. The recoveries used in the calculation are based on the recoveries for payable material within the concentrates, for example the combined recovery for Cu, within the Pb Concentrate + Cu Concentrate. The basis for these factors is discussed in Section 10.4 of this report. The QP chose to use the trailing average from 2021 to June 2023 recoveries for the year-end Mineral Resources.

**Table 11-9: Metallurgical Recovery Assumptions (Recovery in Payable concentrates)**

<b>Element</b>	<b>Value</b>	<b>Unit</b>
Ag	71.1	%
Pb	31.4	%
Cu	66.0	%
Zn	74.5	%

Source: SRK, 2023

In addition to the price and metallurgical recovery, IMMSA has applied additional NSR factors in the metal equivalency calculation to account for other aspects of the mineralization. These additional factors include but are not limited to:

- Smelter recoveries
- Smelter penalties (Arsenic and Bismuth)
- Fleet/transport costs

The NSR factors can there be expressed as a further percentage and are averaged out over the annual production. The Additional percentages applied to the recoverable metal (in situ metal x recovery), using the recovery metal (payable), are shown in Table 11-10.

**Table 11-10: NSR Adjustment Factors**

<b>Element</b>	<b>Value 2022 (%)</b>	<b>Value 2023 (%)</b>	<b>Unit</b>
Ag	87.6	88.4	%
Pb	80.6	89.6	%
Cu	95.9	90.4	%
Zn	80.4	81.3	%

Source: SRK, 2023

In summary using the above prices, recovery and NSR adjustments for the smelter terms the QP has applied the following equation to define the stope values on a stope-by-stope basis. The following criteria should be considered inclusive of the average metallurgical recovery.

$$\text{NSR} = \text{Ag (g/t)} * 0.464 + \text{Pb(\%)} * 6.776 + \text{Cu(\%)} * 51.067 + \text{Zn(\%)} * 17.656$$

The operating unit cost used to determine the potential for economic extraction has been taken by reviewing the costs over the past three years. Based on current market conditions the QP has elected to use the 2023 costs as the basis for the assessment, which in their opinion is a reasonable basis for the declaration of Mineral Resources (Table 11-11). The economic value of each stope is then calculated in an Excel spreadsheet using the NSR equation above, and the QP has assigned a flag for all stopes based on an assessment of their economic value where the NSR values is “above/below” a cut-off grade the operating unit cost of US\$63.09/t which is a marginal increase from a cost of US\$60.80/t used in 2022.

**Table 11-11: Operating Unit Cost**

<b>Factor</b>	<b>Value</b>	<b>Unit</b>
Mine	19.63	US\$/t
Mill	13.55	US\$/t
Indirect (Mine)	11.37	US\$/t
Indirect (Plant)	3.63	US\$/t
<b>Subtotal</b>	<b>48.18</b>	<b>US\$/t</b>
Smelting, Refining and Transportation	13.78	US\$/t
Administrative	1.13	US\$/t
<b>Total Operating</b>	<b>63.09</b>	<b>US\$/t</b>

Source: IMMSA, 2023

## 11.15 Summary Mineral Resources

San Martín Mineral Resources are in compliance with the S-K 1300 resource definition requirement of “reasonable prospects for economic extraction”. Depletions have been accounted for within each panel using the latest survey information for most of the panels and only few panels that were exploited in the last month of 2023 were adjusted according to the planned exploitation. SRK thinks the differences with the real exploited material are not material.

In the QP’s opinion, the assumptions, parameters, and methodology used for the San Martín underground Mineral Resource estimates are appropriate for the style of mineralization and mining methods.

Table 11-12 summarizes the mineral resources for the San Martín underground operation as of December 31, 2023, which are reported on an in-situ basis. Mineral resources have been reported in total, as currently no mineral reserves (which in effect are exclusive of reserves) are declared for the project in compliance with the new S-K 1300 standards.

**Table 11-12: San Martín Summary Mineral Resources at End of Fiscal Year Ended December 31, 2023 – SRK Consulting (U.S.), Inc.<sup>(1)</sup>**

Category	IMMSA Underground – San Martín						Cut-Off <sup>(2)</sup>		NSR <sup>(3)</sup> US\$63.1	
	Tonnage Quantity (kt)	Grade					Metal			
		Ag (g/t)	Zn (%)	Pb (%)	Cu (%)	NSR <sup>(3)</sup> (US\$)	Ag (koz)	Zn (t)	Pb (t)	Cu (t)
Measured										
Indicated	12,978	77	1.97	0.34	0.65	106	32,236	256,307	43,909	84,753
M+I	12,978	77	1.97	0.34	0.65	106	32,236	256,307	43,909	84,753
Inferred	52,330	72	2.66	0.32	0.48	107	121,500	1,393,758	167,526	251,323

Source: SRK, 2024

<sup>(1)</sup>Mineral resources are reported exclusive of mineral reserves. Mineral resources are not ore reserves and do not have demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimates. Silver, lead, zinc, and copper assays were capped where appropriate. Given historical production, it is the company’s opinion that all the elements included in the metal equivalents calculation have a reasonable potential to be recovered and sold.

<sup>(2)</sup>Mineral resources are reported at metal equivalent CoGs based on metal price assumptions,\* variable metallurgical recovery assumptions,\*\* mining costs, processing costs, general and administrative (G&A) costs, and variable NSR factors. Mining, processing, and G&A costs total US\$63.1/t.

\*Metal price assumptions considered for the calculation of metal equivalent grades are: gold (US\$1,725.00/oz), silver (US\$23.0/oz), lead (US\$1.09/lb), zinc (US\$1.32/lb), and copper (US\$3.80/lb).

\*\*CoG calculations and metal equivalencies assume variable metallurgical recoveries as a function of grade and relative metal distribution. Average metallurgical recoveries are: silver (71%), lead (31%), zinc (75%), and copper (67%), assuming recovery of payable metal in concentrate.

<sup>(3)</sup> Cut-off grade calculations and metal equivalencies assume variable NSR factors as a function of smelting and transportation costs. The NSR Values (inclusive of recovery) are calculated using the following calculation  $NSR = Ag*0.465+Pb*6.776+Cu*51.067+Zn*17.656$

The mineral resources were estimated by SRK Consulting (U.S.), Inc, a third-party QP under the definitions defined by S-K 1300.

koz: Thousand troy ounces

kt: Thousand tonnes

M+I: Measured + Indicated

## 11.16 Opinion on Influence for Economic Extraction

It is the SRK’s opinion that the geology and mineralization controls of the San Martín Deposit are very well understood based on the extensive knowledge of the deposit from decades of exploitation.

The mineral resources stated herein are appropriate for public disclosure and meet the definitions of indicated, and inferred resources established by SEC guidelines and industry standards. Based on the analysis described in this report, the SRK’s understanding of resources that production has occurred at the mine since the project’s status of operating since 1950, in the QP’s opinion, there is reasonable potential for economic extraction of the resource.

The SRK QP is of the opinion that with consideration of the recommendations summarized in Section 1 and Section 23, any issues relating to all relevant technical and economic factors likely to influence the prospect of economic extraction can be resolved with further work.

## 11.17 Comparison to Previous Estimates

As part of the annual year-end reporting requirements, SRK completed a comparison of the mineral resources between December 31, 2022, and December 31, 2023, for the Project; Table 11-13 shows the results of the comparison. It is the QP’s opinion that while differences exist, they are typically within the levels of error expected and that no material differences are noted.



**Table 11-13: Comparison IMMSA December 31, 2022, versus December 31, 2023 Mineral Resources Statement for San Martín Mine, SRK Consulting (U.S.), Inc.**

Category	IMMSA Underground - San Martín						NSR 2023: US\$63.1			
	Tonnage Quantity (kt)	Ag (g/t)	Zn (%)	Pb (%)	Cu (%)	NSR (US\$)	Ag (koz)	Zn (t)	Pb (t)	Cu (t)
Indicated 2022	11,542	92	2.48	0.49	0.61	119	34,311	285,945	56,576	70,168
Indicated 2023	12,978	77	1.97	0.34	0.65	106	32,236	256,307	43,909	84,753
Difference (net)	1,436	(15)	(1)	(0)	0	(13)	(2,075)	(29,638)	(12,667)	14,585
Difference (%)	12%	-16%	-20%	-31%	7%	-11%	-6%	-10%	-22%	21%
Inferred 2022	9,176	112	2.05	0.62	0.49	115	32,894	187,756	56,443	45,381
Inferred 2023	52,330	72	2.66	0.32	0.48	107	121,500	1,393,758	167,526	251,323
Difference (net)	43,154	(39)	1	(0)	(0)	(8)	88,606	1,206,002	111,083	205,942
Difference (%)	470%	-35%	30%	-48%	-3%	-7%	269%	642%	197%	454%

Source: SRK, 2023

SRK reviewed the changes and does not consider there to be any material change in the estimates between the two time periods. Where differences exist, they can be attributed to the following factors:

- Mining depletion during 2023 (based on 11 months of actuals and including planned depletion for the last 1 month)
- Change in the CoG on an NSR basis of +US\$2.3/t (or +3.7%), resulting in a minor drop in the tonnage. The change in the CoG accounts for:
  - Minor changes in the recovery factors used between 2022 and 2023, including the slight improvement in the copper recovery performance seen during 2022.
  - Slight increase in the cost, including +US\$0.12/t mining, +US\$1.24/t processing, but an decrease in the indirect costs of -US\$0.58, and the refining and administrative costs of +US\$1.51 on a per tonnage basis, resulting in an overall cost increase of US\$2.3/t (after accounting for refining and G&A increases)
- Additional exploration and mine sampling to increase confidence in the mineral resources prior to mining
- Minor changes were made to the price assumptions for lead during the period to declare mineral resources, while all other elements remained the same.
- The methodology of geological modeling and mineral resource estimation changed from 2D, completed primarily on paper to the 3D implicit geological modeling, geostatistical analysis, block model construction and mineral resource estimation using Leapfrog Geo software.
- The new methodology included changes in the method of evaluating capping, using statistical tools to assess each element by domain or group of domains, and evaluating grade continuity through variography analysis.
- The inferred continuity of the mineralized structures was based on the variography analysis and the geological evidence that resulted in a significant increase in inferred resources. Previous estimates defined inferred resources solely based on fixed distances to data.

## **12 Mineral Reserve Estimates**

Section 12 Mineral Reserve Estimates is not applicable for the current level of study and has not been included in this report.

## 13 Mining Methods

Section 13 Mining Methods is not applicable for the current level of study and has not been included in this report.

Mining is completed using a mechanized Cut and Fill mining method with rockfill and with tailings (hydraulic) and dry tailings. Ramps and levels are developed to provide access to the ore. Attack ramps are then driven to access each cut. The ramps and level development are performed using jumbos. San Martín has been testing the long hole stopping mining methodology after the operation resuming.

## 14 Processing and Recovery Methods

Section 14 Processing and Recovery Methods is not applicable for the current level of study and has not been included in this report.

Mineral Processing is completed via conventional flotation processes, including crushing, milling, flotation, filtration, thickening and conduction and disposal of tailings. The Minera San Martín unit has two processing plants or concentrators, one with an operating capacity of 2,400 tons/day (plant 2-400) and another with a capacity of 4,400 tons/day (plant 4-400). Three concentrates are produced:

- Zinc Concentrate
- Copper Concentrate
- Lead Concentrate

Figure 10-1 shows the general flow chart of the mineral processing at San Martín.

## 15 Infrastructure

The project does have some existing infrastructure which support the current operation. However, the QP has not inspected the infrastructure to sufficient levels to support the declaration of Mineral Reserves at this stage.

## **16 Market Studies**

Section 16 Market Studies is not applicable for the current level of study and has not been included in this report. SRK has used costs, pricing and criteria as supplied by the operation which were reviewed and considered to be reasonable to support the current level of studies. To support the declaration of Mineral Resources at minimum a pre-market study of the various concentrates will need to be completed.

## **17 Environmental Studies, Permitting, and Plans, Negotiations, or Agreements with Local Individuals or Groups**

Section 17 Environmental Studies, Permitting and Plans, Negotiations, or Agreements with Local Individuals or Groups is not applicable for the current level of study and has not been included in this report.

## **18 Capital and Operating Costs**

Section 18 Capital and Operating Costs is not applicable for the current level of study and has not been included in this report.



## **19 Economic Analysis**

Section 19 Economic Analysis is not applicable for the current level of study (Mineral Resource) and has not been included in this report.

## 20 Adjacent Properties

The most important operation located 1 km to the south of Sabinas, which is an old mine that Peñoles acquired in 1994. The following is the public information of Sabinas:

(<https://www.penoles.com.mx/nuestras-operaciones/unidades-mineras/sabinas.html>):

In 2006, the installation of a lead-copper separation circuit was completed. Likewise, important investments in exploration have confirmed additional reserves and justified subsequent increases in its milling capacity, from 150,000 tons per year to 1.3 million in 2020.

- Relevant information
  - Location: Sombrerete, Zacatecas
  - Ownership: 100% Peñoles
  - In operation (under Peñoles control): 1995-present
  - Facilities: Underground mine and two beneficiation plants
  - Production: Polymetallic (silver, zinc, lead, copper) in three types of concentrates: lead, zinc and copper
  - Deposit type: Underground with massive bodies and veins
  - Installed capacity: 1.3 million tons / year of ground ore
  - Reserves: 22.7 million tons of mineral (2020)
  - Years of life: 17 (2020)
  - Employees: 659 (2020)

The QP has done insufficient work to confirm the basis for these numbers and has been unable to verify the information and that the information is not necessarily indicative of the mineralization on the property that is the subject of the technical report summary.

## 21 Other Relevant Data and Information

The San Martín Mine is currently in production and has previously disclosed Mineral Resources under S-K 1300. This update replaces the previous estimates.

## 22 Interpretation and Conclusions

SRK is of the opinion that the data and analysis presented herein is of sufficient quality and completeness to support the estimation of mineral resources. The skarn and vein deposits at San Martín have been mine historically and are currently in production, processing three concentrates (Zinc, Copper and Lead) via underground mining operations.

The drilling and analytical work is supported by surveys and limited quality control measures to support confidence in the accuracy and precision of the data. The mine geology department has not implemented quality controls for the samples collected from drilling and rock sampling from underground workings, which SRK considers that is not in line with the industry best practices and represents a source of uncertainty for the data collected by the mine geology department.

The exploration department have procedures for drilling and core sampling which the QP considers in line with the industry best practices. The QP notes the following key conclusions:

### 22.1 Geology and Mineralization

- The geology and mineralization controls of the San Martín project are very well known, supported by the more than 60 years of the mining operation. Geological information supporting mineral resources is available in paper documents and partially in digital format.
- No certification has been completed in the current mine laboratory which in the QP's opinion does not meet the required standards for reporting under international best practice. More detailed validation and external checks should be completed if the laboratory is not certified given the lack of independence presented. The QP recommends that IMMSA undertake a program to certify the laboratory.
- There is not a QA/QC protocol implemented for drilling and sampling (core and channel sampling) completed by the mine geology department for the historical and recent information and those activities are not in line with the industry standards.
- The estimate was categorized in a manner consistent with industry standards. Mineral resources have been categorized based on relative confidence in the modeling, estimation or reporting of the tonnage and grades from the model. There are no Measured mineral resources, primarily due to a lack of density measurements and insufficient QA/QC protocols in the mine samplings protocols. The Indicated mineral resources disclosed herein have significant evidence in the QP's opinion to support the interpolation of both the geological and grade continuity in these areas.
- The latest drilling and core sampling completed by the exploration department are in line with the industry standards, including the QA/QC protocols.

### 22.2 Mineral Resource and Mineral Reserve Estimates

- The estimate was categorized in a manner consistent with industry standards. Mineral resources have been reported using economic and mining assumptions to support the reasonable potential for eventual economic extraction of the resource. A cut-off grade has been derived from these economic parameters, and the resource has been reported above this cut-off. The mineral resource is reported exclusive of mineral reserves, as no reserves have been declared in line with the S-K 1300 guidelines.

- In SRK's is of the opinion, that the mineral resources stated herein are appropriate for public disclosure and meet the definitions of Indicated and Inferred resources established by SEC guidelines and industry standards.
- The methodology of geological modeling and mineral resource estimation changed from 2D, completed primarily on paper to the 3D implicit geological modeling, geostatistical analysis, block model construction and mineral resource estimation using Leapfrog Geo software.
- The reduction in grades compared to 2022 is due to some smoothing due to the use of statistical methods to define different levels of capping and the use of estimation algorithms based on variography and statistical parameters that reduce the estimation error.
- The new methodology included changes in the method of evaluating capping, using statistical tools to assess each element by domain or group of domains, and evaluating grade continuity through variography analysis.
- The inferred continuity of the mineralized structures was based on the variography analysis and the geological evidence that resulted in a significant increase in inferred resources. Previous estimates defined inferred resources solely based on fixed distances to data.
- The inferred areas are now more continuous and will represent a target for future work to upgrade the classification to Indicated material.
- Indicated 2D panels around mined areas that are not appropriately defined or unknown historical mining zones, that represent a moderate to high level of uncertainty were downgraded to inferred.

## 23 Recommendations

It is the QP's opinion the following measures should be taken to mitigate the uncertainty include but are not limited to:

- Continual infill drilling in the most critical areas of the deposit, locally to spacing of less than 50 m x 50 m.
- The inferred areas and the 3D geological model will define new targets for future works to upgrade the classification to Indicated material.
- SRK recommends reviewing the procedures of drilling and sampling and design and implement a complete QA/QC protocol for the drilling and rock sampling activities performed by the mine geology department of San Martín.
- QA/QC protocol of the Exploration Department: Implement the use of an umpire laboratory (commercial laboratory) to send the second laboratory check samples periodically (e.g., quarterly), and the review of the acceptability ranges for duplicates (10% and 20% relative error).
- Obtain certification for the internal mine laboratory to international standards.
- Digitization of all geological information and storage of data into a commercial secure database.
- Detailed geological modeling methods using the new digital database which integrates all relevant geological data into defining the model and achieving the most accurate model possible at the current level of study.
- Extensive QA/QC analysis and monitoring to understand relative impacts to local inherent variability within resource domains.
- Introduction of more routine density sampling within the mineralization in all the areas of the deposit to confirm level of fluctuation from the current uniform assignment of a single 3.3 t/m<sup>3</sup> value.

### 23.1 Mineral Resource and Mineral Reserve Estimates

- SRK recommends digitizing all the existing information in paper related to geological interpretations and new results of drilling and rock sampling.
- Continue updating the 3D geological model with the new collected data. This will serve as a basis for the future Mineral Resource and Reserve Estimations.

### 23.2 Recommended Work Programs

The recommended work program includes the following activities:

- Continue the new collected data digitalization and update the geological model, block model and mineral resource estimate.

### 23.3 Recommended Work Program Costs

Table 23-1 shows the approximate budget of the work program for 2022.

**Table 23-1: Recommended Work Program Costs**

<b>Discipline</b>	<b>Program Description</b>	<b>Cost (US\$M)</b>
Geology and Exploration	Ongoing exploration and grade-control drilling	1.9
Updated MREs	Generation of geological model and mineral resource estimates	0.1
Mining Methods/Mineral Reserve Estimates	Development of mine plan and optimization of mining methodology	0.4
<b>Total US\$</b>		<b>2.4</b>

Source: SRK, 2023

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## 25 Reliance on Information Provided by the Registrant

SRK was provided legal documentation by IMMSA and has relied on that information for the purposes of this section. SRK has relied on this information and disclaims responsibility for its accuracy or any errors or omissions in that information.

The Consultant’s opinion contained herein is based on information provided to the Consultants by IMMSA throughout the course of the investigations. Table 25 1 of this section of the Technical Report Summary will:

- (i) Identify the categories of information provided by the registrant;
- (ii) Identify the particular portions of the Technical Report Summary that were prepared in reliance on information provided by the registrant pursuant to Subpart 1302 (f)(1), and the extent of that reliance; and
- (iii) Disclose why the qualified person considers it reasonable to rely upon the registrant for any of the information specified in Subpart 1302 (f)(1).

**Table 25-1: Reliance on Information Provided by the Registrant**

Category	Report Item/ Portion	Portion of Technical Report Summary	Disclose Why the QP Considers it Reasonable to Rely Upon the Registrant
Legal Opinion	Sub-sections 3.3, 3.4, 3.5, 3.6, and 3.7	Section 3	IMMSA has provided a document summarizing the legal access and rights associated with leased surface and mineral rights. This documentation was reviewed by IMMSA’s legal representatives. The QP is not qualified to offer a legal perspective on IMMSA’s surface and title rights but has summarized this document and had IMMSA personnel review and confirm statements contained therein.

## Signature Page

This report titled “SEC Technical Report Summary, Initial Assessment on Mineral Resources, San Martín, Zacatecas, México” with an effective date of December 31, 2023, was prepared and signed by:

**SRK Consulting (U.S.) Inc.**

***(Signed)* SRK Consulting (U.S.) Inc.**

Dated at Denver, Colorado

February 5, 2024

February 5, 2024

Southern Copper Corporation  
7310 North 16th Street, Suite 135  
Phoenix, Arizona 85020  
USA

Attention: Oscar Gonzalez Rocha  
President and Chief Executive Officer

**Subject** Consent Letter – San Martín Technical Report Summary

Dear Mr. Rocha,

In connection with the Annual Report on Form 10-K for the fiscal year ended December 31, 2023, and any amendments thereto (collectively the, "Form 10-K") to be filed by Southern Copper Corporation (the "Company") with the U.S. Securities and Exchange Commission ("SEC"), SRK Consulting (U.S.), Inc. ("SRK"), hereby consents to:

- (1) the filing and/or incorporation by reference by the Company and use of the Technical Report Summary titled "SEC Technical Report Summary Initial Assessment on Mineral Resources San Martín Zacatecas, México" with an effective date of December 31, 2023, and a report date of February 5, 2024 (the "Technical Report Summary"), that was prepared in accordance with Subpart 1300 of Regulation S-K promulgated by the SEC, as an exhibit to and referenced in the Form 10-K;
- (2) the use of and references to SRK's name as a "qualified person" (as defined in Subpart 1300 of Regulation S-K promulgated by the SEC), in connection with the Form 10-K and any such Technical Report Summary;
- (3) the use of any quotation from, or summarization of, the particular section or sections of the Technical Report Summary in the Form 10-K, to the extent it was prepared by SRK, that SRK supervised its preparation of and/or that was reviewed and approved by SRK, that is included or incorporated by reference to the Form 10-K; and
- (4) to the incorporation by reference of the Technical Report Summary into the Company's Registration Statement on Form S-3 (Registration No. 333-203237) and Registration Statements on Form S-8 and any amendments thereto (Registration No. 333-150982).

SRK is responsible for authoring the Technical Report. SRK certifies that it has read the Form 10-K and that it fairly and accurately represents the information in the Technical Report Summary for which it is responsible.

Dated at Denver, Colorado this 5th of February 2024.

/s/ Ben Parsons

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Ben Parsons, Practice Leader/Principal Consultant  
**SRK Consulting (U.S.), Inc.**