

# Southern Silver Exploration Corp.

# NI 43-101 Technical Report

# Mineral Resource Estimate for Cerro Las Minitas Project, Durango State, Mexico

Effective Date: January 8, 2018 Release Date: February 22, 2018 (filing date)

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## 1 SUMMARY

### INTRODUCTION

The Cerro Las Minitas property is located 70km northeast of the City of Durango, the capital of the state of Durango, and 6 km northwest of the town of Guadalupe Victoria, in the municipality of Guadalupe Victoria, Durango. The claims are located in the Minitas mining district in the Guadalupe Victoria mining region. The property consists of 21 mining concessions encompassing 26,270.15 ha.

From 2010-2017 Southern Silver completed programs of geological mapping, surface geochemical sampling and airborne and ground geophysical surveys in support of 49,348 metres of core drilling in 108 holes resulting in the delineation of four mineral deposits: the Blind; El Sol, Las Victorias and Skarn Front deposits on the Cerro Las Minitas Property.

The Blind, El Sol and Las Victorias deposits comprise multiple sub-vertical northwest-southeast trending zones of semi-massive to massive sulphide mineralization. Mineralization is hosted in the skarnoid- and hornfels-altered margins of monzonite and felsite dykes and may be localized along through-going structures or occur as replacements within stratigraphic units. The mineralized zones can be traced for up to 1000 metres along strike and up to 800 metres down dip.

Sulphide mineralization in the Skarn Front deposit is localized at the outer boundary of the skarnoid alteration zone surrounding the Central Monzonite Intrusion at or near the transition to the recrystallized/marbleized carbonate sediments (marmorized zone). Mineralization can be traced for up to 800 metres along strike and up to 1000 metres depth. Geological modelling suggests that intersections between the sub-vertical, northwest-trending Blind and El Sol mineralized zones and the generally more shallowly dipping Skarn Front may localize higher-grade shoots of mineralization.

Mineralization at the outer edge of the Skarn Front tends to be more lead and silver-enriched while mineralization deeper in the skarnoid zone (and adjacent to the central intrusion) more zinc enriched. Approximately 70% of the 2018 resource estimate is contained within this newly-defined Skarn Front deposit.

Exploration in 2017 has identified two new step-out targets for further drill testing. Mineralization in the Skarn Front is open for approximately 500 metres along strike to the southeast of drill holes 17CLM-101 and -105 in what is now termed the Las Victorias zone and is also open for up to 600 metres along strike to the northeast, where mineralization wraps around the northern margin of the Central Intrusion, in the North Skarn zone.

In 2017, three additional claims were staked totalling 12,566 ha to the south and west of the existing claims to cover prospective, gravel-covered ground. These claims are collectively known as the CLM West claim group. Over 2600 rock chip and float samples have been collected in the CLM West claims to date and identify a +12 kilometre long northwest-southeast-trending corridor of anomalous precious-metal and pathfinder values that display a distinct zoning pattern consistent with modelled vertical and



lateral zonation within a large epithermal vein system. Multiple distinct clusters and trends are seen in the metal distribution in the samples which provide potential future targets for further exploration on the property.

Since acquisition of the property in 2010, Southern Silver, both self-funded and funded by option partners, has completed diamond drilling; geological mapping; geochemical rock, soil and acacia sampling; shallow and deep-seated IP surveys; a ground gravity survey; and an airborne magnetic survey.

In April 2015, Southern Silver granted The Electrum Group LLC ("Electrum") the right to earn an indirect 60% interest in the Cerro Las Minitas property by funding exploration and development expenditures of US\$5 million on the Property over a maximum four-year period. Electrum completed its earn-in in October 2016. The project now operates on a joint venture basis by Southern Silver Exploration Corp. (Southern Silver) at 40% interest and Electrum Global Holdings LP (Electrum) at a 60% interest. Southern Silver remains operator of the project.

Core drilling took place between 2011 through 2017 and was contracted out to BD Drilling Mexico, S.A. de C.V. (BDD) of EL Salto, Jalisco. Drilling was completed using both NQ and HQ coring equipment capable of recovering a core 45.1 to 61.1 millimetres in diameter. The 108 drill holes in the database were supplied in electronic format by Southern Silver. This included collars, downhole surveys, lithology data and assay data (i.e., Ag g/t, Au g/t, Cu%, Pb%, Zn%).

### **MINERAL RESOURCE ESTIMATE**

This represents the updated mineral resource estimate for the Cerro Las Minitas deposit, and it is reported above a 175 g/t Silver Equivalent Cu cut-off. Table 1.1 shows the mineral resource estimates for the individual zones along with totals.

The author evaluated the resource in order to ensure that it meets the condition of "reasonable prospects of eventual economic extraction" as suggested under NI 43-101. The criteria considered were confidence, continuity and economic cut-off.

The Mineral Resource Estimate which updates the previously reported March 2016 estimate, incorporates data from new drilling conducted in 2016 and 2017 that successfully delineated a major new deposit on the project and significantly increased the resource base in both the Indicated and Inferred Resource categories.



Indicated															
Zone	Tonnes (Kt)	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	Cu (%)	AgEq (g/t)	ZnEq (%)	Ag TrOz (000's)	Au TrOz (000's)	Pb (Mlbs)	Zn (Mlbs)	Cu Lbs (Mlbs)	AgEq TrOz (000's)	ZnEq Lbs (Mlbs)
Blind Zone	3,168	86	0.05	1.8	2.1	0.11	279	5.9	8,739	5.5	127.7	144.9	8.0	28,461	384
El Sol	1,150	79	0.03	2.0	2.0	0.09	276	5.9	2,931	1.2	51.4	51.9	2.3	10,217	138
Las Victorias	708	122	0.70	2.0	2.5	0.23	403	8.6	2,772	15.8	31.8	38.4	3.5	9,177	124
Skarn Front	5,109	115	0.07	1.0	5.1	0.17	416	8.8	18,915	11.1	108.2	577.9	18.8	68,273	922
Total	10,135	102	0.10	1.4	3.6	0.15	356	7.6	33,356	33.6	319.0	813.1	33	116,127	1,568
Inferred															
Zone	Tonnes (Kt)	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	Cu (%)	AgEq (g/t)	ZnEq (%)	Ag TrOz (000's)	Au TrOz (000's)	Pb (Mlbs)	Zn (Mlbs)	Cu Lbs (Mlbs)	AgEq TrOz (000's)	ZnEq Lbs (Mlbs)
Blind Zone	503	103	0.33	1.9	3.4	0.07	374	7.9	1,662	5.4	20.8	37.5	0.8	6,042	82
El Sol	264	61	0.06	1.7	2.5	0.04	263	5.6	515	0.5	10.2	14.7	0.2	2,233	30
Skarn Front	7,917	73	0.02	0.6	4.7	0.16	332	7.0	18,545	6.3	99.7	817.8	28.4	84,451	1,140
Total	8,685	74	0.04	0.7	4.5	0.15	332	7.0	20.721	12.2	130.6	870.0	29	92.726	1.252

TABLE 1.1: BASE-CASE TOTAL MINERAL RESOURCES AT 175 G/T AGEQ CUT-OFF

Source: Kirkham Geosystems, 2018

Notes:

- 1) The current Resource Estimate was prepared by Garth Kirkham, P.Geo., of Kirkham Geosystems Ltd.
- 2) All mineral resources have been estimated in accordance with Canadian Institute of Mining and Metallurgy and Petroleum ("CIM") definitions, as required under National Instrument 43-101 ("NI43-101").
- 3) Mineral resources were constrained using mainly geological constraints and approximate 10g/t AgEq grade domains.
- 4) AgEq cut-off values were calculated using average long-term prices of \$16/oz silver, \$1,200/oz gold, \$2.75/lb Copper, \$1.00/lb lead and \$1.10/lb zinc and metal recoveries of 82% silver, 86% lead, 80% copper and 80% zinc. Base case cut-off grade assumed \$75/tonne operating and sustaining costs. All prices are stated in \$USD.
- 5) Contained metal calculations assume 100% recoveries.
- 6) Mineral resources are not mineral reserves until they have demonstrated economic viability. Mineral resource estimates do not account for a resource's mineability, selectivity, mining loss, or dilution. *All figures are rounded to reflect the relative accuracy of the estimate and therefore numbers may not appear to add precisely.*

### **CONCLUSIONS AND RECOMMENDATIONS**

The author recommends:

- Several fences of holes stepping out to the southeast into the Las Victoria target area at ~200m intervals in order to test the on-strike potential of the Skarn Front and Blind zone extensions. Infill drilling can follow in order to better define the specific mineralized zones;
- The extension and delineation of the mineralization identified to the northeast of the Skarn Front in the North Skarn Target area. Two potential mineralized shoots are identified in this target area that require testing;
- Further drill testing down dip of the Skarn Front deposit;
- Drilling to further develop and extend high grade trends within the Skarn Front deposit;
- Surface sampling, mapping, prospecting and potentially follow-up drilling in the newly acquired CLM West Claim Group. Exploration in the CLM West claim package is targeting high-grade epithermal silver-gold quartz vein systems within Tertiary volcanic stratigraphy;



- Engineering studies and metallurgical testing to prepare the project for a Preliminary Economic Assessment:
- Complete a Preliminary Economic Assessment.

Tables 1.2 present an ongoing exploration and development program for the Cerro Las Minitas property. Approximate expense items are listed with a description where appropriate and a total cost. The length of this program is approximately nine months from inception through to completion of a status report.

Phased	Exploration: 10,000m Core; 2,	500m RC	Dril	l Program
	Budgetary Period:	Jan 2018 -	Dec 2	2018
	Cummulative Exploration Days	300		
	RC Drill - CLM West	2,500	m	
	Diamond Drilling - Area of the Cerro	10,000	m	
	Surface Samples collected	1200		
	Claim and Property		\$	135,000
	Field Program			
	Project Infrastructure		\$	15,000
	Assaying		\$	265,000
	Drilling		s	1,290,000
	Travel		\$	5,000
	Field Presonnel		\$	375,000
	Field Program Subtotal		\$	1,950,000
	IVA		\$	315,000
	Field Program Expenses		\$	2,265,000
	Oversite / Technical Reporting			
	Project Admin and Oversight		\$	275,000
	Engineering Work and Reporting		\$	325,000
	Oversite and Reporting Expenses		\$	600,000
	Project Total		\$	3,000,000

#### TABLE 1.2: PROPOSED 2018-2019 PROGRAM BUDGET

Source: Southern Silver 2018



# 2 INTRODUCTION

The Cerro Las Minitas Project is an exploration and resource development project located in Mexico, 70 km northeast of the City of Durango, capital of the state of Durango, and 6km northwest of the town of Guadalupe Victoria, in the municipality of Guadalupe Victoria, Durango. The project encompasses several prospects on a 26,270.15 ha property that is owned and operated on a joint venture basis by Southern Silver Exploration Corp. (Southern Silver) at 40% interest and Electrum Global Holdings LP (Electrum) at a 60% interest. Southern Silver remains operator of the project.

This report represents an update of the technical report "Mineral Resource Estimate for the Cerro Las Minitas Project, Durango State, Mexico" with effective date of 21<sup>st</sup> of March, 2016 ("Technical Report") prepared for Southern Silver Exploration Corporation, Vancouver, B.C. A previous technical report (effective date February 2010) documented the exploration work completed by Silver Dragon Resources Inc. (Silver Dragon).

During the 2017, Southern Silver commissioned Garth Kirkham, P.Geo. of Kirkham Geosystems Ltd., to update the technical report to include the exploration work and additional drilling completed by Southern Silver during 2016 and 2017. This technical report also includes an updated Mineral Resource Statement prepared by Kirkham Geosystems Ltd. during the first quarter of 2018.

The updated Mineral Resource Statement was prepared following the guidelines of the Canadian Securities Administrators' National Instrument 43-101 (NI 43-101) and Form 43-101F1. The Mineral Resource Statement reported herein was prepared in conformity with generally accepted CIM *Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (2014)*.

### 2.1 SCOPE OF WORK

The scope of work consisted of the preparation of an independent technical report in compliance with NI 43-101 and Form 43-101F1 guidelines. The technical report was compiled by Garth Kirkham, P.Geo., Principal, Kirkham Geosystems Ltd., and it included the mineral resource estimate and the preparation of the Mineral Resource Statement.

### 2.2 SITE VISIT

In accordance with NI 43-101 guidelines, Garth Kirkham, P.Geo., visited the Cerro Las Minitas Project on March 31, 2015 through April 2, 2015. He was accompanied by Southern Silver representative Robert Macdonald, P.Geo. (General Manager, Exploration).

Mr. Kirkham was given full access to the property and all relevant data.



# **3 RELIANCE ON OTHER EXPERTS**

The author of this technical report is not qualified to provide extensive commentary on legal issues associated with the Cerro Las Minitas property. As such, portions of Section 4 that deal with the types and numbers of mineral tenures and licenses; the nature and extent of Southern Silver's title and interest in the Cerro Las Minitas property; and the terms of any royalties, back-in rights, payments or other agreements and encumbrances to which the property is subject are only descriptive in nature and are provided exclusive of a legal opinion.

This report has been prepared by the author for Southern Silver. The information, conclusions, opinions, and estimates contained herein are based on:

- information available to the author at the time of preparation of this report;
- assumptions, conditions, and qualifications as set forth in this report; and
- data, reports, and other information supplied by Southern Silver and other third-party sources.

Southern Silver reported to the author that, to the best of its knowledge, there are no known litigations that could potentially affect the Cerro Las Minitas Project.



# 4 PROPERTY DESCRIPTION AND LOCATION

The Cerro Las Minitas property is located 70 km northeast of the City of Durango, the capital of the state of Durango, and 6 km northwest of the town of Guadalupe Victoria, in the municipality of Guadalupe Victoria, Durango, Mexico (Figure 4-1). The claims are located in the Minitas mining district in the Guadalupe Victoria mining region. The property consists of 21 mining concessions encompassing 26,270.15 ha (Figure 4-2). Table 4.1 shows the details of the 21 concessions.



#### FIGURE 4-1: CERRO LAS MINITAS LOCATION MAP

Source: Southern Silver 2018

#### 4.1 MINERAL TENURE

In December 2010, Southern Silver announced its agreement with a private vendor that granted Southern Silver the right to acquire 100% interest in the project by making scheduled payments totalling US\$4 million over a three-year period. Initial consideration was a US\$300,000 cash payment with escalating payments every six months for the term of the option.

In December, 2012, the Company re-negotiated the option to extend certain payments to November, 2013 and also to reduce total payment to US\$3,600,000 in the event that the optionor fails to deliver



registered title to a claim adjacent to the core group of claims. To date, title to that claim has not been delivered.

In November 2014, the Company announced that, through its subsidiary Minera Plata del Sur, S.A. de C.V. ("MPS"), it had completed the final payment to acquire a 100% interest in the claims. MPS is now the registered title holder of the claims.

In 2017, the company acquired three contiguous concessions by staking. One of these claims is subject to a finder's fee whereby minimum payments are due on a semi-annual basis accelerating from US \$5,000 to US \$25,000 over a ninety-six month period and a 1% NSR with such periodic payments being credited to NSR payments. After payment of US \$5,000,000 in NSR payments the royalty is reduced to 0.5%. These claims are in the process of being registered and do not yet have title numbers.

The individual claims are summarized in Table 4.1.





FIGURE 4-2: CERRO LAS MINITAS CONCESSION MAP

Source: Southern Silver 2018



TITLE #	ТҮРЕ	FILE #	CLAIM NAME	AREA (Ha)	DATE ISSUED	EXPIRY DATE
164061	EXPLOIT.	09/4375	LA BOCONA	9.00	21/02/1979	20/02/2029
191775	EXPLOIT.	321.1/2-602	MINA PIÑA	17.02	19/12/1991	18/12/2041
186434	EXPLOIT.	321.1/2-603	PIÑA NUEVA	12.73	30/03/1990	29/03/2040
193482	EXPLOIT.	321.1/2-482	LULU	8.36	19/12/1991	18/12/2041
193483	EXPLOIT.	321.1/2-472	VICTORIA UNO	189.33	19/12/1991	18/12/2041
213288	EXPLOR.	025/25591	VICTORIA IV	9.00	2001-10-04	2051-09-04
214313	EXPLOR.	025/25543	LA MURALLA	39.10	2001-06-09	2051-05-09
196146	EXPLOIT.	321.1/2-069	JOSEFINA GRISSTMAN	26.44	16/07/1993	15/07/2043
209851	EXPLOR.	025/23151	MINA LA FE II	61.67	17/08/1999	16/08/2049
227317	MINING	025/32609	GUADALUPE	9.00	09/06/2006	08/06/2056
167210	EXPLOIT.	025/4133	EL SANTO NIÑO	3.32	22/10/1980	21/10/2030
167906	EXPLOIT.	09/14559	EL REFUGIO	6.95	16/12/1980	15/12/2030
167212	EXPLOIT.	025/4374	AMPLIACION DE SANTO NIÑO	21.36	22/10/1980	21/10/2030
167211	EXPLOIT.	025/4134	MARIA LUISA	9.85	22/10/1980	21/10/2030
233341	MINING	025/33338	VICTORIA SILVER	6171.62	13/02/2009	12/02/2059
233343	MINING	025/33413	VALLE SILVER	3394.09	13/02/2009	12/02/2059
241477	MINING	025/38052	VALLE SILVER - I	1200.00	19/12/2012	18/12/2062
241649	MINING	025/38052	VALLE SILVER - I FRACC.	2451.89	30/01/2013	29/01/2063
PENDING	MINING	025/39062	LA BIZNAGA	2000.00	PENDING	PENDING
PENDING	MINING	025/39063	LOS LENCHOS	7600.00	PENDING	PENDING
PENDING	MINING	025/39112	GRAN CRESTON DE ORO	2966.40	PENDING	PENDING
			Total	26270.15		

Source: Southern Silver 2018

A small inlying claim known as the Puro Corazon claim (9 hectares) is not owned or controlled by Southern Silver (see Inset map of the Northern claims in Figure 4-2). This is the site of the historic small-scale Puro Corazon mine.

On October 24, 2011, Minera Plata del Sur, S.A. de C.V., entered into a Property Purchase Agreement with Mr. Julio Cesar Rosales Badillo to acquire a 100% interest in a 5-hectare surface lot which overlies a portion of the mineral claims. The property was acquired to provide a site for construction of a mill or other facilities if warranted and was acquired in consideration for a cash payment of \$US40,000 and issuance of 50,000 common shares of the company. Title to this property is now registered in Southern Silver's name.

In October 2012, the Southern Silver granted Freeport-McMoRan Exploration Corporation ("FMEC") the right to earn an indirect 70% interest in the property.

FMEC had the option to earn respective 51% and 19% indirect interests in the property through the acquisition of common shares of a subsidiary of the Company which has the right to purchase a 100% interest in the property.

On September 11, 2014, the Southern Silver received notice from FMEC of termination of the earn-in agreement. As part of the termination, FMEC assigned to the Company, for no consideration, its option to acquire a 100% interest in the El Sol Concession, which is situated contiguous to the northwest boundary of Cerro Las Minitas. On July 20, 2015, the Company relinquished its interest in the option of the El Sol concession. Pursuant to agreements dated July 7 and July 8, 2015, Southern Silver through its Mexican subsidiary, Minera Plata del Sur, S.A. de C.V., signed an Equipment and Property Purchase Agreement with Sr. Jaime Muguiro Peña to acquire 100% interest in a 5.9 hectare surface lot partially covering the Blind and El Sol Deposits for staged payments totaling US\$200,000. Final Payment has been made and the deed registered with the Mexican authorities.

In April 2015, Southern Silver granted The Electrum Group LLC ("Electrum") the right to earn an indirect 60% interest in the Cerro Las Minitas property by funding exploration and development expenditures of US\$5 million on the Property over a maximum four-year period. Electrum would earn indirect interests in the Property through the acquisition of common shares of a Southern Silver subsidiary company which owns the Mexican company ("MPS") holding a 100% interest in the Property.

Electrum completed its earn-in in October 2016. The project now operates as a joint venture with Southern Silver Exploration Corp. ("Southern Silver") at 40% interest and Electrum Global Holdings LP ("Electrum") at a 60% interest. Southern Silver remains operator of the project

In 2017, three additional claims were staked totalling 16,566.40 ha to the south and west of the existing claims to cover prospective, gravel-covered ground discovered by local prospectors. These claims are collectively called the CLM West claims and are composed of the Las Biznagas claim, the Los Lenchos claim and the Creston de Oro claim.

### 4.2 PERMITTING

Throughout the exploration process, Minera Plata del Sur (MPS) has negotiated and executed Exploration Access agreements with Ejidos having jurisdiction over lands contained within original Cerro Las Minitas claim group and the newly staked CLM West Claim Group. This is a time-consuming process requiring strict adherence to Mexican Law pertaining to the manner of conduct of a series of meetings allowing the respective populace to give informed consent to access and use of the surface of Ejido lands for exploration purposes of the underlying mineral claims. The Consent Agreements are submitted, together with other information and documents such as an Environmental Report (re: Permit application) to SEMARNAT, the relevant Mexican permitting authority.

Exploration on the original Cerro las Mintas claim group operates under a four-year SEMARNAT permit. The permit was issued in October 2016 and allows for 150 drill holes and 40 trenches. The project remains in good standing and continues to follow the reclamation and environmental plan laid out in the permit. During 2017, Minera Plata del Sur (MPS) has been in the process of negotiating and executing Exploration Access agreements with Ejidos having jurisdiction over lands contained within the CLM West Claim Group. Consent Agreements are being submitted, together with other information and documents to SEMNARAT. Approval and the grant of Exploration Permits from SEMARNAT are anticipated to be issued prior to May 2018.

### 4.3 ENVIRONMENTAL AND SOCIO-ECONOMIC

The surface access to the area of the mineral resource is controlled by the Ejidos of Guadalupe Victoria and Ignacio Ramirez. Southern Silver's Mexican subsidiary Minera Plata del Sur S.V. has 25-year surface access exploration agreements covering the common ground of the Guadalupe Victoria Ejido and the Ignacio Ramirez Ejido that lies within the Cerro Las Minitas concessions. Agreements with individual Ejido landowners are negotiated as needed to cover deeded lands.

On the CLM West claims, surface rights are owned by the Ejido communities of Francisco I Madero, Geronimo Hernandez, Librado Rivera and Guadalupe Victoria. Exploration agreements with these Ejido communities are in the process of being finalized and are summarized below. Similarly, agreements with individual Ejido landowners are negotiated as needed to cover deeded lands.

The status of the agreements with each relevant stakeholder is as follow:

- **Guadalupe Victoria**: Signed and registered 25-year Exploration Access Agreement, 2016. This was completed as part of permitting for core drilling in the Area of the Cerro Minitas Project.
- Librado Rivera: Signed and registered 5-year Exploration Access Agreement, Dec 2017.
- **Francisco I Madero**: Signed and registered (submitted, notice of registration pending) 5-year Exploration Access Agreement, January 2018.
- **Geronimo Hernandez**: Signed (registration pending) 5-year Exploration Access Agreement, Feb 2018.
- Discussions with the private ranch owners are ongoing. Exploration activity is approved in most cases.

The author is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.



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

### 5.1 ACCESSIBILITY

The Cerro Las Minitas property is located in the Minitas mining district, approximately 6 km northwest of the town of Guadalupe Victoria, Durango and 70 km northeast of the City of Durango, the capital of the state of Durango. The property can be reached from the City of Durango via Interstate Highway 40 (toll road) and Highway 40 (free access), the road from Francisco I. Madero to Cuencamé (Figure 5-1). There is no access to Interstate Highway 40 from Cerro Las Minitas, although the highway bisects the property. A small overpass affords access between the northern and southern portions of the property. From Guadalupe Victoria, a graded dirt road leads north to the property. The property is transected by Interstate Highway 40 (a limited-access freeway) and an overpass over the highway affords access between the north and southern portions of the property.



#### FIGURE 5-1: CERRO LAS MINITAS LOCATION

Source: Google Earth, Map Data: INEGI, Google, Digital Globe, Accessed February 7th, 2018

Source: Southern Silver 2018



### 5.2 CLIMATE

The climate is generally dry with sporadic, occasionally violent rainstorms in the hot summer months (between June and September). The average precipitation in the property area between May and October is about 600 mm. The winter months are cool and dry, and snow is rare, but nighttime temperatures below the freezing mark are common in December and January. The average annual temperature is about 25°C. Grasses, small trees and shrubs, and several varieties of cacti make up most of the vegetation on the steep hillsides, and larger trees are found near springs and streams.

### 5.3 LOCAL RESOURCES AND INFRASTRUCTURE

The broad valley south of the Cerro Las Minitas property is relatively densely populated and well developed. The town of Guadalupe Victoria is a growing farm community (population of about 27,000) that offers most basic services. The quality of infrastructure improves, and the population density increases towards the City of Durango, 70 km to the southwest.

The nearby towns of Guadalupe Victoria and Ignacio Ramirez are serviced by the commercial electrical grid and a regional transmission line of the Comisión Federal de Electricidad (CFE) follows Interstate Highway 40. A 33,000-kVA power drop has been extended from the CFE line to the Mina Piña shaft, and it is serviceable but in need of minor repair.

Any of the materials, supplies, and labour required to support exploration and mining activities are available in the City of Durango and the surrounding region. Telephone service, Internet access, and necessities are available in Guadalupe Victoria.

### 5.4 PHYSIOGRAPHY

The Cerro Las Minitas property lies near the western edge of the Mexican Altiplano, an extensive volcanic plateau characterized by narrow, northwest-trending fault-controlled ranges separated by wide flat-floored basins. In the Durango area, the basins have elevations of 1,900 m to 2,100 m, and the higher peaks rise to 3,000 m.

### 5.5 WATER RESOURCES

Potable water is readily available in nearby towns, and water for drilling and other exploration activities can be obtained from old workings on the property.



## 6 HISTORY

Minimal documentation exists regarding the history and production at Cerro Las Minitas; however, the local legend is that Spaniards from the city of Victoria de Durango (now the City of Durango) originally discovered the silver mineralization at Cerro Las Minitas. The historical information presented herein has been gleaned from discussions with local miners and operators and information found in existing reports relating to the property (Minas de Bacis, 1995; Enriquez, 2005; Proyectos Mineros y Topografia, 2001).

No reliable record of historical production has been found, but local miners and operators report that the mines have been intermittently active since the early 1960s. The properties have passed from hand to hand without documentation. However, concessions that cover the properties have been maintained in good standing since the early 1960s.

The only two areas with significant exploitation in the district are the Santo Niño-Puro Corazón and Mina Piña-La Bocona areas. Informal estimates have been made based on historical and non-verifiable information so they are not included here.

In 1960, Carlos Villaseñor discovered silver-lead-zinc-copper mineralization in the Santo Niño-Puro Corazón area. He explored the deposits and conducted minor exploitation until 1971 when he built a small mill in the Velardeña district. When the mill became operational, mining efforts were stepped up and ore was shipped to the Velardeña mill to be processed. The operations at Villaseñor generated interest in the area, resulting in the discovery of the deposits in the Mina Piña-La Bocona area to the east.

The majority of the mining at Cerro Las Minitas is reported to have occurred between 1970 and 1981, but intermittent mining continues to this day. From 1997 to 2002, the mines were idle due to problems with mine water and a drop in metal prices. Intermittent, small-scale exploitation of the deposits in the Santo Niño-Puro Corazón area continued until 2005 and operations in the Mina Piña-La Bocona area continued into late 2006. Based on the size of the mine workings and the limited sampling, Enriquez (2005) estimated that 0.7 million tonnes were produced from the Santo Niño-Puro Corazón area, and 0.5 million tonnes were produced from the Mina Piña-La Bocona area, for a total production of 1.2 million tonnes.

Since 1977, the Consejo de Recursos Minerales (CRM) has supported miners in the area. In 1979, CRM completed 834.55 m of diamond drilling in seven holes in the Mina Piña area, which belonged, at that time, to Santiago Valdez. Valdez exploited the mine until 1997, when he suspended operations due to a drop in metal prices. CRM discovered additional mineralization in its drilling, but no further exploration or development was completed. CRM delivered drilling and assay data to the operators in the district without interpretation.

In 1981, CRM continued to support the development of the district, completing 77 m of shaft and 80 m of crosscut to cut the upper, oxidized portion of the La Bocona deposit. Following that work, Jaime Muguiro deepened the Mina Piña shaft by 59 m to reach the 210 m level. A 140 m crosscut was driven, encountering a number of thin mineralized horizons and the Huisache mineralized chimney. Muguiro then suspended operations due to problems with water inflow.

From 1999 to 2000, Minerales Noranda, S.A. de C.V. (Noranda) optioned the properties and completed an exploration program, including 861 soil and rock samples, an aeromagnetic survey covering the entire district, and seven widely spaced diamond drill holes (3,886 m in total) within the Cerro Las Minitas dome. Results were encouraging but fell short of Noranda's expectations, so it abandoned the property. Unfortunately, none of the original Noranda data have been found, except for fragmented data presented in a summary report by Proyectos Minerales y Topografia, S.A. de C.V. (2001).

In 2005, Minera Real Victoria (MRV) acquired leases on concessions in the Santo Niño-Puro Corazón area and began an exploration and development program. In May 2005, MRV began driving a 2.5 m × 2.5 m decline into the old Santo Niño-Puro Corazón workings to develop the expected resources. MRV drove 170 m of workings to connect to Level 2 of the Puro Corazón workings and conduct a preliminary exploration of the near-surface portion of the La Chiva mineralized zone. That work was halted in November 2005 when MRV entered into negotiations with Silver Dragon Resources Inc. (Silver Dragon) to acquire the property.

In December 13, 2005, Silver Dragon announced that it had entered into agreements to purchase 100% interest in the Cerro Las Minitas property. In March 2006, Silver Dragon consolidated landholdings in the district, and the claims were held by Silver Dragon Mining de Mexico, S.A. de C.V., a wholly owned Mexican subsidiary of Silver Dragon Resources Inc. by virtue of the 15 mining concession "Agreements to Purchase."

Work by Silver Dragon in 2006-07 consisted of sampling and mapping of the old workings in the Santo Niño – Puro Corazón area, as well as limited diamond drilling to test the continuity at depth of the mineralized contact zone that historically has hosted the bulk of the known deposits around the Cerro Las Minitas Dome. Eleven holes were drilled for an approximate total depth of 2,915 meters. Reconnaissance mapping revealed evidence of both contact metasomatic and manto mineralization in a number of areas surrounding the central intrusive complex. The work concluded that the newly discovered manto mineralization may offer substantial potential for high-grade Ag production in the district and that further work was required to delineate that style of mineralization on the property. Furthermore, the work concluded that additional skarnoid and chimney deposits remain to be discovered in the contact skarn zone at surrounding the Cerro Las Minitas Dome.

In June 2009, Silver Dragon signed a toll-milling agreement with Besmer S.A. de C.V. of Mexico to process up to 12,000 tonnes of ore over 12 months from Cerro las Minitas. During the first two months



of toll-milling, 790 tons of ore were processed, yielding 28.382 tons of silver/lead concentrates and 15.618 tons of zinc concentrates.

In October 2010 Silver Dragon was made aware of land title issues regarding the Cerro las Minitas project and related concessions. In December 2010, Silver Dragon Mining de Mexico S.A. de C.V. counsel filed motions with a tribunal in Durango State court to unseal the judicial file of the foreclosure proceedings initiated by Mr. Jaime Muguiro Pena. SDMM instructed its counsel to assert a Constitutional Rights Claim before the Federal Court in the City of Durango, premised on procedural irregularities in the foreclosure proceedings, for the purposes of re-opening the case. As a result of the foreclosure proceedings, Mr. Muguiro obtained rights to the concessions.

On December 1, 2010, Southern Silver Exploration Corp. announced that it had entered into an option agreement to acquire the mining concessions with Mr. Muguiro.

### 6.1 SGS METALLURGICAL REPORT

Although artisanal miners have been producing ore from Cerro Las Minitas since the early 1960s, no reliable records of either production or mineral processing data have been found. Enriquez (2005) reported that historical recoveries from sulfide ores treated by flotation are on the order of 85% for silver, 75% for gold, 65% for lead, and 75% for zinc. Enriquez did not present any supporting data for the recoveries.

In 1995, Minas de Bacis completed a 30-day review of available data. It reported metal recovery data for sulfides from the La Bocona Mine, and sulfides and oxides from the Puro Corazón Mine. It is uncertain how they obtained this data, but local operators say it was obtained from the artisanal mills that were treating the ore in the Velardeña district. These data are not considered reliable and are reported as historical data (Table 6.1).

	La Bocona Mine Sulfide Ores	Puro Corazón Mine Sulfide ores	Puro Corazón Mine Oxide Ores					
	% Recovery							
Au	51	-	-					
Ag	80	75	70					
Pb	65	75	91					
Cu	82	77	44					
Zn	88	92	68					

#### TABLE 6.1: HISTORICAL METAL RECOVERY DATA FOR SELECTED MINES AT CERRO LAS MINITAS

Source: Minas de Bacis, 1995

Silver Dragon commissioned a metallurgical testing program to support the decision to purchase a crushing and flotation plant. The report indicates over 70% recovery for sulfide silver using a



conventional two-stage crushing and flotation facility. The report indicated that cyanide extraction will yield similar recoveries for oxide ore.

Silver Dragon Mining de Mexico, S.A. de C.V. commissioned the metallurgical laboratory, SGS de Mexico, S.A. de C.V., to perform metallurgical testing on samples from the Cerro Las Minitas property. Six drill samples were received from Silver Dragon de Mexico, S.A. of C.V. to the laboratory facility in Durango, Mexico. The samples were dried at 50°C and crushed to ~80% passing -¼-in. in a two-stage process using a jaw crusher and a cone crusher. Two composites were formed, one sulfide and one oxide. Samples were reduced to -10 mesh.

Silver head assays for both composites were greater than 300 g/t, with very little gold, which is representative of Cerro Las Minitas mineralization.

Results for the sulfide flotation were much more favourable than the oxide flotation. Recoveries for the sulfide flotation were 75% for silver, 84% for lead, and 76% for zinc. Recoveries for the oxide cyanide flotation were moderately favourable, with silver recovery of 73% with reagent consumption of 8.25 kg/t sodium cyanide and 1.05 kg/t for lime.

### 6.2 HISTORICAL RESOURCES

There are no historical resource estimates for the property.



# 7 GEOLOGICAL SETTING AND MINERALIZATION

Cerro Las Minitas Property straddles the geomorphic provinces of the Sierra Madre Occidental and the Mesa Central (Altiplano) of Mexico in the State of Durango. In Durango, the Mesa Central is an elevated plateau at about 2,000 meters elevation traversed by NW-trending mountain ranges and separated by broad NW-trending valleys. Within this province, Cerro Las Minitas occurs within a belt of prolific Au, Ag, Pb, Zn and Cu deposits that stretches from the highly productive vein deposits of Fresnillo in Zacatecas to the south, to the massive manto deposits of Santa Eulalia in Chihuahua to the north. This belt includes the productive replacement deposits of San Martin, Valerdena, Santa Eulalia and Naica as well as the rich vein deposits of Fresnillo, El Bote, San Jose, Cerro Los Gatos and various others.

Terrane terminology in Mexico has evolved over the last several decades. Recent interpretations as adopted by the Servicio Geologico Mexicano (in the Geological-Mining Monograph of the State of Durango, 2013) have the Cerro Las Minitas property located within the Guerrero Terrane near the regional fault which marks its eastern boundary with the Sierra Madre Occidental Terrane. Basement rocks are not exposed in the area, but are now known to be composed of an assemblage of tectono-stratigraphic terranes derived from the Paleozoic Appalachian orogeny and the Mesozoic of the Atlantic and Gulf of Mexico combined with basement rocks of the North American Cordillera (Campa & Coney, 1983, 1987; Figure 7.1) The assemblage includes deformed Pre-Cambrian intrusive and sediments, deformed Lower to Middle Paleozoic sediments and Lower Mesozoic sediments which are all covered with a thick succession of Mesozoic-Cenozoic sedimentary and volcanic strata.

The Tertiary rocks are considered a shared cover (overlapping the Guerrero Terrane) and includes continental sedimentary sequences, rocks associated with the Sierra Madre Occidental magmatism and later Quaternary Magmatism (SGM Monograph of Durango, 2013).

The Guerrero Terrane is the largest exposed in the state of Durango and is considered a tectonostratigraphic element that was part of a series of Mesozoic inter-oceanic island arcs. The Terrane is characterized by a thick Cenozoic sequence of continental volcanics and related sediments, overlying an Upper Mesozoic platformal carbonate sequence deposited on Lower Mesozoic, (arc-related) sedimentary and volcanic strata and is host to some of Mexico's more significant Au, Ag, Pb, Zn and Cu replacement deposits/districts, including San Martin, Velardena and La Parilla. Geological evidence suggests that the arc was accreted to the continent during the Laramide Orogeny.





FIGURE 7-1: TECTONO-STRATIGRAPHIC TERRANES OF MEXICO (CAMPA AND CONEY, 1983, 1987)

The Cerro Las Minitas project is located within the Guadalupe Victoria Mining Region, which includes the districts of Avino (Avino Gold and Silver Mines Ltd.), San Sebastian (Hecla Mining Ltd.) and Cerro Las Minitas that constitute a trend of deposits and workings along a 50-kilometer northwest trend. The Cerro Las Minitas property lies within the Minitas Mining District.

The Cerro Las Minitas property sits within a broad W-NW-trending valley and is covered with a thick succession of Tertiary continental deposits and gravel. The valley is flanked on the north and south by Eocene andesite flows and Oligocene to Miocene felsic volcanic rocks and to the southwest by Miocene – Pliocene basalt flows. Except for the later basalt flows, the volcanic rocks consist principally of dacites, rhyolites and various volcanic breccias and ash flows with minor andesite units (Figure 7.2).







FIGURE 7-2: REGIONAL GEOLOGIC MAP (FROM NIETO-SAMANIEGO ET AL., 2007)

Within the valley, marine sediments of the Lower to Mid Cretaceous Mezcalera and Baluarte Formations crop out locally. Calcareous and clastic rocks of the Baluarte Formation have been structurally uplifted around a central intrusive neck at Cerro Las Minitas that rises about 150 meters above the surrounding plain. The intrusive consists of an unknown number of phases that range in composition from diorite to quartz-monzonite, associated with numerous dikes that range in composition from andesite to rhyolite (Figure 7.3)

An aureole of contact metasomatic and replacement deposits of Au, Ag, Pb, Zn, and Cu was produced during the emplacement of the intrusives and is the subject of past mining activities and exploration currently underway at the Cerro Las Minitas Project.





FIGURE 7-3 GEOLOGICAL CROSS-SECTION ACROSS THE NORTHERN PART OF THE PROPERTY (MODIFIED FROM BAÑALES ET AL, 2003)

#### 7.1 MINITAS MINING DISTRICT GEOLOGY

Portions of the geology of the northern portion of the Cerro Las Minitas concessions were mapped by the Consejo de Recursos Minerales (CRM) in 1988 and Noranda in 1999 and modified by Erme Enriquez in 2005 and Southern Silver's consultants from 2011-15 (Figure 7.4). The geological setting and stratigraphy were originally defined by the Consejo de Recursos Minerales (1993) and later modified when the distinctions within the Cretaceous sedimentary stratigraphy became better defined (Consejo de Recursos Minerales (1998).

No outcrops are known in the much larger southern portion of the property and the claims in this area covers fields under cultivation that are part of the Guadalupe Victoria Ejido. Prospecting following biogeochemical sampling conducted by Freeport MacMoran, identified significant volcanic float in both the western and eastern portions of the claims likely related to Cenozoic cover rocks.

The northern portion of the property is dominated by a NW-SE elongated domal uplift of Cretaceous marine sediments cored by an intrusive porphyry complex. Contact metasomatic (skarnoid) deposits of Au, Ag, Zn, Pb, Cu and W are known to occur at various locations in the contact zone around the central intrusive complex, as well as at the margins of some dikes that emanate from the main intrusive complex. More distal from the main intrusive contact, manto-style Ag, Pb, Zn deposits have been discovered replacing recrystallized carbonate strata.

The domal uplift of Cretaceous sediments is the principal topographic feature on the property and has been the focus of all previous exploration and production there. Past production has occurred principally from contact deposits in the Puro Corazón – Santo Niño and Mina Piña – La Bocona areas. The stratigraphic units in the region of Cerro Las Minitas are described below (Figure 7.5)





FIGURE 7-4: GEOLOGIC MAP OF THE NORTH PORTION OF CERRO LAS MINITAS PROPERTY, DURANGO, MEXICO (SOUTHERN SILVER 2018)

SOUTHERN SILVER EXPLORATION CORP. NI 43-101 TECHNICAL REPORT CERRO LAS MINITAS



#### 7.2 PROPERTY GEOLOGY

Stratigraphy in the Cerro Las Minitas property has not been defined in detail. Detailed mapping, as well as detailed study of drill cores available, will be necessary to define the stratigraphic units and their relationships. Inspection of underground workings indicates that there is a strong stratigraphic control of mineralization on the property, especially in regard to the manto-style mineralization.



#### FIGURE 7-5: STRATIGRAPHY IN THE REGION OF CERRO LAS MINITAS (AFTER BAÑALES ET AL, 2003.)

Regional stratigraphy has been defined by the 2003 1:50,000 geological map covering the northern claims (G13D63) and provides a starting point for definition of the stratigraphy in the Minitas District.



#### 7.2.1 Baluarte Formations

Strata currently assigned to the Baluarte formation are the oldest rocks exposed in the Minitas Mining District (CRM, 1998). Limestone of the formation is black to light grey in colour, very fine-grained and predominantly massive. The limestone units appear to transition outboard from the central intrusion into a mixed carbonate-siliciclastic sequence that contains increasing amounts of thin to medium bedded shales and sandstones which seems to represent lateral facies change from a carbonate platformal to clastic, deeper water environment. Siltstone and shale interbeds are generally 1-20cm and convoluted in places. Diagenetic pyrite is common.

Where affected by contact metamorphism, the limestone beds are typically recrystallized and bleached and are the preferred hosts for both contact metasomatic and manto-style mineralization. More siliceous units are hornfelsed. Limestones containing a quartz sand component have been metamorphosed to garnet (predominantly grossularite) - pyroxene – wollastonite - epidote aggregates. Some of the more siliceous units are hornfelsed and their mineralogic composition is yet to be determined. At the intrusive contact, small amounts of hedenbergite and diopside have been identified, but only rarely. Metamorphism of the calcareous sediments typically only reaches the grade properly described as skarnoid, which is typical of zinc skarns.

Siltstone and shale inter-beds in the limestone are generally darker and contains an increased amount of tiny bioclasts. It is commonly graphitic and individual beds range from 1mm to ~10cm.

### 7.2.2 Intrusive Rocks

Monzonite with minor phases of quartz monzonite and diorite occur as an intrusive stock (Central Intrusion) in the core of the domal uplift and as dykes or sills associated with felsic intrusives within the limestone outboard of Central Intrusion. Contact skarn/hornfels alteration, from several 10s to +100 metres in thickness, wraps around the intrusive neck and hosts most of the historically mined mineralization in the area and forms the weather resistant "cerro" in the topography. Similarly, skarn/horfels margins also form along dyke contacts.

The monzonite and associated phases are light grey in colour and exhibit mainly porphyritic texture which varies to holocrystalline locally. Phenocrysts range in size from ~0.5mm to almost 1cm in size and consist of quartz, (generally larger) plagioclase laths, alkali feldspar, hornblende and biotite (both primary and secondary). Areas of the monzonite that are richer in quartz phenocrysts have a quartz monzonite composition.

The central monzonite contains broad areas of potassic alteration (chlorite-magnetite-biotite) with areas of argillic alteration (clay alteration of feldspars) occasional phyllic alteration (quartz-sericite-pyrite) and a common propylitic overprint (carbonate-chlorite-epidote veins.) Logging and mapping has not been completed in sufficient detail to distinguish alteration zoning patterns at this time.



Disseminated and vein pyrite with minor chalcopyrite and molybdenite occur throughout the intrusive. Pyrite content can range up to 10% locally but chalcopyrite and molybdenite content is generally low throughout the intrusive.

Several phases of veining are present throughout the porphyry, including chlorite-epidote-pyrite+/chalcopyrite+/-calcite veins, quartz+/-pyrite+/-chalcopyrite+/-molybdenite veins, pyrite veinlets. Veining is low to medium density with rare areas of developed stockwork veining.

#### 7.2.3 Felsite and Monzonite Intrusions Outboard of the Central Monzonite

Various intrusions occur outboard of the Central Intrusive stock. Where traceable, are sub-vertical, northwest-trending and range from 1 centimetre to +100 metres in thickness. A series of monzonite/felsite dykes form along the full 1000 metre projection of the Blind zone with much of the modelled mineralization associated with the Blind zone hosted in the skarn/hornfels margins of the dykes and to a lesser extent in fractures and possible endoskarn within the intrusions.

The Aplite/Felsite intrusions are light grey to white in colour and mostly aphanitic. Some areas contain feldspar phenocrysts altered to calcite. Veining is confined to sporadic late calcite veins as well as kspar veins.

Alteration in the aplite/felsite consists of silicification, local kaolinization (clay alteration of feldspars,) weak chlorite alteration as well as iron oxidation of sulphides to hematite and MnOx+/-AsOx, which stains the rock orange and red along fractures. Much of the aplite is heavily fractured.

Mineralization in the aplite/felsite consists of disseminate pyrite, oxidized in most areas+/-disseminate galena/sphalerite up to ~2% sometimes slightly more in areas as well as massive sulphides, commonly near the margins, up to 30% combined galena/sphalerite.

The monzonite intrusions particularly in the Blind Zone are light green in colour and similar in composition and texture to the central monzonite intrusion with a mixture of quartz monzonite and monzonite. Alteration consists of kspar in fractures as well as retrograde chlorite-calcite and hematite in fractures with disseminate magnetite in some areas. Mineralization in the monzonite consists of disseminate pyrite+/-pyrrhotite with galena/sphalerite varying from trace to up to ~5% combined. Locally, sulphide-rich structures form at the edges of the monzonite in contact with the aplite with up to ~20% combined galena/sphalerite. Veining comprises late calcite veinlets as well as occasional quartz+/-pyrite veinlets.

#### 7.2.4 Post-mineral Andesite Dykes

Throughout the drill core, several dark green aphanitic andesite dykes intrude the limestone, some with feldspar phenocrysts. They are weakly altered to chlorite as well as hematite in some areas and heavily oxidized nearer the surface. Mineralization consists of weak disseminate pyrite.



#### 7.2.5 Alluvium

The alluvium is composed principally of red soil overlying caliche deposits that conceal underlying rocks in the areas of lower relief on the property. The alluvium contains gravel to boulder sized clasts of weathered rock. In some areas, the clasts seem to be derived from underlying rocks and in other areas they appear to be alluvium derived from upslope. Mapping on the property is of insufficient detail to distinguish those areas.

### 7.3 STRUCTURE

Detailed mapping of the Cerro Las Minitas property has been initiated but is not complete. Existing mapping was done by CRM in 1980 and modified by Noranda geologists in 1999 and consultants to Silver Dragon Mining de Mexico, S.A. de C.V. in 2006. However, the current detail of mapping is insufficient to define structural relationships or other possible ore controls on the property. Detailed mapping of the Cerro Las Minitas dome will be necessary for effective exploration of the property.

Accordingly, to CRM (1993), the Minitas district, like the neighboring districts Avino, La Preciosa and San Sebastian, lie in a graben formed by the NW-trending Rodeo fault to the west and the NW-trending San Lorenzo fault to the east. Faults were formed by post-Laramide extensional stress that affected the western margin, and in some cases, the central part of Mexico.

Locally, Upper Cretaceous strata were folded about northwest trending axes when they were emplaced as a regional allochthon during Laramide compression. Injection of the Tertiary (?) intrusive complex that forms the core of Cerro Las Minitas further deformed the rocks locally into an elliptical, NW-SE trending dome. As the invading intrusives shouldered aside the sediments, substantial radial and low-angle faulting as well as intense folding of the sediments occurred. Map data from underground workings shows that the faulting at Cerro Las Minitas occurred before, during and after the mineralizing events. Although faults of almost every orientation occur on the property, the dominant trends are northwest and northeast, reflecting the prominent regional structures. The northeast trending faults appear to be most closely associated with mineralization.

### 7.4 ALTERATION

Three distinct alteration assemblages have been recognized at Cerro Las Minitas.

**Skarnoid.** The skarnoid alteration assemblage is a contact metasomatic phenomenon that is genetically intermediate between a purely metamorphic hornfels and a purely metasomatic, coarse-grained skarn and includes variants of both end-members.

At Cerro Las Minitas, high-grade skarn minerals are more rarely seen and usually in only very small quantities. The most prominent assemblage seen in field and underground exposures is a conversion of carbonate rocks to a garnet-pyroxene-wollastonite-epidote assemblage, with minor



accessory minerals. In many places it is evident that the garnetized rocks contained a primary quartz-sand component, but in others it appears that silica was introduced during metasomatism.

Accompanying the garnetization of the rocks is a widespread recrystallization of carbonaceous carbonate rocks (marmorization), generally accompanied by moderate to intense bleaching. In many drill intersections, the original carbon content of the rocks is seen to have migrated, at least in part, into abundant stylolites. The intensity of garnetization and marmorization of the carbonate rocks decreases with distance from the contact with the central intrusive complex as well as away from the contacts of some larger dikes.

**Marmorization**. It is clear that much recrystallization of carbonate rocks occurred during the intrusion of the central intrusive complex at Cerro Las Minitas. However, there are numerous field exposures of recrystallized carbonate rocks at considerable distance from intrusive contacts and it is not clear that the recrystallization seen there is associated with the primary metasomatic event. Marmorization has therefore been recognized as a distinct form of alteration at Cerro Las Minitas. Two types of marmorization have been recognized.

**Non-selective marmorization**. This is seen as a widespread recrystallization of carbonate rocks which shows little or no preference for individual strata. It is a bulk recrystallization most closely associated with the primary metasomatic event.

**Selective marmorization.** This is a visually distinct form of marmorization that is commonly seen to be very bed-selective. Even though it may be confined to thin beds within carbonate rocks that have been only very weakly recrystallized, it is a very strong form of recrystallization that may produce very large grain sizes. When this form of marmorization is well-advanced, a central core of dark brown recrystallized calcite is often seen in the middle of the affected bed. This form of marmorization has now been recognized to be present lateral to Ag-Pb-Zn manto mineralization discovered on the property.

Marmorization is an important exploration guide at Cerro Las Minitas as the preponderance of mineralization that has been seen there is a replacement of recrystallized carbonate rocks.

**Late-Stage Alteration.** This is a form of alteration that is as yet poorly defined at Cerro Las Minitas. It has been seen only in few drill intersections and in poor field exposures. It has been distinguished from other forms of alteration there because it features strong silicification, sericitization of feldspars and pyritization. Little study of late-stage alteration has been made yet, but it appears to represent a later stage of alteration that occurred in a very near-surface environment. It is currently unknown if this form of alteration is associated with mineralization of interest.



# 8 DEPOSIT TYPES

To date, mineralization seen at Cerro Las Minitas has been classified into four types based on surface and underground field observations and the examination of drill core. Although production records from the area are incomplete, sufficient sampling of core dumps, underground exposures and drill core has been completed to estimate typical grades in each of the four deposit types: skarnoid, chimney, manto, and dike margin.

**Skarnoid:** Contact metasomatic gold, silver, zinc, lead and copper mineralization formed within the altered sediments adjacent to contacts with the central intrusive complex or larger dikes. These deposits are characterized by substantial pyrite content, higher copper content, zinc levels that are greater than lead levels, and sphalerite with high iron content. The deposits have been exploited mainly for silver, zinc, lead, and copper by artisanal miners at Cerro Las Minitas, especially in the Santo Niño-Puro Corazón area. The deposits occur as massive replacements of remnant carbonate bodies and disseminated calcite present in the garnet-wollastonite-pyroxene-epidote skarnoid assemblage. The mined bodies were variable in form and distribution. Typical grades in the skarnoid mineralization were 80–300 g/t silver, 2–8% zinc, 2–4% lead, and 0.5–2% copper. Characteristics of this style of mineralization suggest that it is properly classified as zinc skarn (Megaw, 1998).

Drilling in 2016/17 by Southern Silver discovered that skarnoid mineralization is more continuous at depth, beneath the projections of the Blind and El Sol mineralized zones. Mineralization is localized at the outer boundary of the garnet-pyroxene-wollastonite-epidote skarnoid assemblage at or near the transition to the recrystallized/marbleized carbonate sediments (marmorized zone) in an area referred to as the Skarn Front. Mineralization at the outer edge of the Skarn Front tends to be more lead and silver-enriched while mineralization deeper in the skarnoid zone (and adjacent to the central intrusion) more zinc enriched. Approximately 70% of the 2018 resource estimate is contained within this newly-defined Skarn Front deposit.

**Chimney:** Pipe-like bodies of massive to semi-massive zinc, copper, and lead sulfides, often with high silver values, that have been found in and near the intersection of high-angle mineralized structures and the more moderately dipping skarnoid zone. These produced the richer ores in the Santo Niño-Puro Corazón area. Mineralogically, these deposits show characteristics of both the skarnoid and manto styles of mineralization and are believed to have been formed by multiple mineralizing events. The ores consisted mainly of massive to semi-massive aggregates of pyrite, sphalerite, galena, chalcopyrite and bornite replacing recrystallized calcite or filling open spaces. Typical grades in the chimneys were 200–400 g/t silver, 2–10% zinc, 2–6% lead, and 0.5–1.5% copper.

**Manto:** Manto-style silver, lead, zinc, and copper deposits as replacements of carbonate strata peripheral to or outside of the skarnoid aureole. The deposits are typically restricted to selected carbonate strata (favourable beds) that have been replaced by massive to semi-massive lead and zinc sulfides with accessory pyrite, and small amounts of copper sulfides. Recent de-watering and inspection



of underground workings has shown that the La Bocona deposit is a manto deposit. Peripheral silverlead-zinc mantos are commonly associated with zinc skarns. Typical grades in the mantos have yet to be determined, but recent drill intersections suggest that they might be in the range of 300–800 g/t silver, 4–12% zinc, 4–15% lead, with negligible copper.

**Dike Margin:** Replacement mineralization located alongside dikes of various compositions outside the skarnoid aureole of the central intrusive complex. Massive to disseminated sulfides of lead, zinc, and copper are seen replacing carbonate and carbonate-bearing rocks, with or without associated skarnoid alteration. This is a dominant style of mineralization occurring with the Blind, El Sol and Las Victorias deposits.

Of these four deposit types, the skarnoid and chimney deposits have been reported to have produced the bulk of ore exploited in the district and such observation appears to be born out in the most recent drilling and resource modelling by Southern Silver. Recent underground exploration has shown that the La Bocona deposit, which produced the bulk of the ore produced in the Mina Piña – La Bocona area, is a manto deposit.



# 9 EXPLORATION

Since acquisition of the property in 2010, Southern Silver, both self-funded and funded by option partners, has completed diamond drilling; geological mapping; geochemical rock, soil and acacia sampling; shallow and deep-seated IP surveys; a ground gravity survey; and an airborne magnetic survey.

Between 2011 and 2012, Southern Silver explored the property without an option partner. Initially, a program of geophysics and geological mapping was conducted to define and delineate targets for exploration drilling.

The property was surveyed between February 19 and February 22, 2011 with a three-axis helicopterborne magnetic gradiometer (Geotech Ltd., 2011). A total of 1,191 line-km of data was acquired during this survey, which was split into the west block and the east block. The west block (over the Cerro) was flown with north-south lines 100 m apart and east-west tie lines 1,025 m apart. The east block (over the majority of the property) was flown with north-south lines 400 m apart and east-west tie lines 200 m apart (Figure 9-1).

Six magnetic targets were delineated on the property; the most prevalent was the Cerro in the northern block. A series of northeast-southwest IP lines with a northwest-southeast baseline was designed to further explore the magnetic target over the Cerro and delineate targets for drilling. Between February 23 and April 21, 2011, Zonge International Inc. collected dipole-dipole complex resistivity data on 13 lines for a total of 30.6 line-km and 244 receiver stations (Zonge, 2011). Of these 13 lines, 10 were in the area of the Cerro and three were over other magnetic targets on the property. The majority of the IP lines crossing the Cerro were conducted using 100 m dipoles, with 2 lines conducted using 150 m dipoles. The other exploratory lines were conducted using 200 m dipoles. The IP survey delineated several targets which were subsequently drilled (Figure 9-2).





#### FIGURE 9-1: GEOPHYSICS - MAGNETIC

Map Projection: UTM Zone 13N Map Datum NAD27 for US

Source: Southern Silver 2016




FIGURE 9-2: GEOPHYSICS - INDUCED POLARIZATION AT 250M DEPTH

Source; Southern Silver 2016

From 2011 to 2012, Southern Silver completed 62 core holes on the property totalling 15,845 m. Drilling focused on an early new discovery outboard of the central intrusion and zones of historic mineralization known as the *Blind Zone*: a gravel covered, previously unrecognized mineral zone which was then delineated to an approximate 600 m strike-length and to depths of up to 350 m. Other drilling targeted the Mina Piña-La Bocona area, the north skarn and south skarn targets, resulting in several notable silver-gold-lead-zinc-copper mineralized intervals. The details of the drill program are discussed in Section 10.

In October 2012, Freeport optioned the property, and, between 2013 and 2014, it conducted additional diamond drilling, deep penetrating IP surveys, 3D inversions on existing geophysics and gravity surveys. It also collected soil samples and initiated a property-wide acacia biogeochemical survey.

A soil geochemical survey was conducted over three of the pre-existing lines at 25 m intervals, where possible, to investigate whether the Blind Zone had a surface geochemical expression. A total of 125 samples were taken, resulting in a significant surface expression of silver, lead and zinc above many of the known zones of mineralization. The soil survey was followed by an IP survey, where three pre-existing IP lines were surveyed with a deep penetrating 300 m spaced dipole-dipole survey, which confirmed continuity of the IP anomalies at depth. A ground gravity survey was conducted on a 3,000 m x 2,000 m area centred on the Cerro, which outlined gravity highs corresponding to the mapped skarn around the central intrusion. Interestingly, the hornfels mapped to the northwest of the central intrusion also shows a distinct gravity high, suggesting the potential for buried sulfide mineralization. (Robles et al., 2013)

On the larger property, a reconnaissance IP survey was conducted employing three different dipoles. Anomalous responses were detected, but major roads and cultural features might have influenced the results, so caution should be taken during interpretation.

Freeport completed an orientation biogeochemical survey over the area of the Cerro and then expanded the program to cover the entire property. A total of 311 samples were taken from acacia trees with encouraging results. Several anomalies were outlined that warranted follow-up.

The central intrusion and south skarn areas were drilled by Freeport in 2013–14 to investigate the potential for a copper porphyry source to the shallower silver-lead-zinc-enriched mineralization as well as extending the known zones of mineralization to depth. Freeport completed 13 core holes and two holes were extended for a total of 7,877 m. In October 2014, Freeport terminated the option agreement with Southern Silver because it discovered only weak copper mineralization in the central intrusion after drilling to a vertical depth of 1,000 m.

In May 2015, Electrum Global Holdings L.P. signed an option agreement to earn a 60% indirect interest in the Cerro Las Minitas property. In the subsequent 2015 exploration program, additional rock, soil and acacia samples were collected and further diamond drilling was conducted. In the area of the Cerro, an additional 595 soil samples were collected to identify additional geochemical targets for drilling. The survey was highly successful in outlining areas of known mineralization with silver, lead, and zinc anomalies as well as defining a gold anomaly outboard of the known mineralization, the source of which is yet to be discovered. A total of 45 rock samples were collected in targeted areas, which were again successful in identifying targets for drilling.

Diamond drilling in 2015 consisted of 11 holes and the extension of three earlier holes for a total of 9,135 m of drilling. The focus was large offsets of the known mineralization in the Blind Zone and the El Sol Zone with the goal of aggressively expanding the property potential.

Follow-up was also conducted on the regional acacia survey conducted in 2011. An additional 321 soil samples were collected over the geochemically anomalous areas at 25 m spacing in 7 lines across the property. An additional 118 acacia samples were collected over the rest of the property, resulting in several supplementary targets that warrant follow-up.

In March 2016, the Company reported initial grade and tonnage estimates for three mineral deposits on the property, specifically the Blind, El Sol and Santo Nino zones, based on the 2015 and earlier drilling by Southern Silver. Details of the Resource Estimate are contained in the NI-43-101 Technical Report, Mineral Resource Estimate for Cerro Las Minitas Project, Durango State, Mexico (Kirkham, 2016).

Diamond drilling in 2016/17 consisted of 20 holes for a total of 16,110m of drilling. The focus of this drilling was deep offsets of the known mineralization discovered by the 2015 drilling and aggressive expansion of the March 2016 NI43-101 resource report. Drilling was successful in not only expanding the resource estimate, but also refining the geological model and the genetic model of the mineralization.

In January 2018, the company reported an update of the Mineral Resource that significantly increased resource estimate and is the subject of this current report.

Southern Silver conducted surface sampling on the Gran Creston de Oro, Los Lenchos and Biznagas claims (collectively known as the CLM West claim group), throughout the latter part of 2017. Work in the claims involved initial reconnaissance sampling followed by grid sampling over targeted areas on a 100m x 100m pattern.

Over 2600 rock chip and float samples have been collected in the CLM West claims to date and identify a >12-kilometre-long northwest-southeast-trending corridor of anomalous precious-metal and pathfinder values that display a distinct zoning pattern consistent with modelled vertical and lateral zonation within a large epithermal vein system. Multiple distinct clusters and trends are seen in the metal distribution which will form the basis for future drill targeting on the property. See Figure 9-3.

Sampling resulted in several promising targets that warrant follow-up sampling and potentially drill testing.





FIGURE 9-3: SURFACE SAMPLING ON THE CLM WEST CLAIM GROUP

Source: Southern Silver 2018



# 10 DRILLING

Core drilling took place between 2011 through 2017 and was contracted out to BD Drilling Mexico, S.A. de C.V. (BDD) of EL Salto, Jalisco. Drilling was completed using both NQ and HQ coring equipment capable of recovering core 45.1 to 61.1 millimetres in diameter. Table 10.1 shows the drilling by year, the number of drillholes and meterage achieved.

The purpose of the drilling programs was to identify new mineral deposits on the property and to replace and expand on the results of historic drilling performed by previous operators including CRM, Noranda and Silver Dragon Resources as the historic data could not be adequately validated and verified particularly for inclusion for a current resource estimate. The drilling focused on delineating and expanding the known structures at the El Sol, Santo Nino, Mina La Bocona and the North Skarn zones. In addition, exploration drilling was performed to expand upon interesting results from the surface exploration programs which included soil and rock chip sampling, and Induced Polarization and gravity geophysics. New discoveries were made at the Blind Zone, South Skarn and most recently the Skarn Front targets.

Initial drilling in 2011 targeted skarn and replacement deposits in the margin of the central Intrusion in the Santo Nino, Mina La Bocona and the North Skarn zones and also tested several Induced Polarization geophysical targets both within the Central Intrusion and outboard of the known zones of mineralization in gravel covered areas. This initial 11-hole drill program successfully identified extensions to the Santo Nino zone mineralization approximately 100m vertically underneath the lowest historic workings, confirmed previous drill results at the North Skarn and Mina La Bocona targets and resulted in the discovery of the Blind zone, a new high-grade target outboard of the El Sol shaft in a gravel covered field.

The Blind Zone was initially discovered with hole 11CLM-008, which intersected a 10.9 metre down hole interval averaging 268g/t Ag, 4.5% Pb and 3.8% Zn of polymetallic mineralization adjacent to an aplite-monzonite dyke complex outboard of the central intrusion. Subsequent drilling resulted in the discovery in hole 11CLM-011 of a similar sub-parallel zone underneath the El Sol surface showing, which soon developed into the El Sol Zone. The majority of the 2011-12 drillholes were designed to offset these discovery holes at 50-100m intervals.

Other notable targets that returned high-grade polymetallic mineralization include the North Skarn Zone, (discovery hole 11CLM-003), the South Skarn Zone (discovery hole 12CLM-055), which was offset by Freeport McMoran Exploration Corp in 2013/14.

Drilling in 2015 continued to expand the overall size of the Blind and El Sol deposits and identify new zones of high-grade mineralization. Noteworthy milestones from the 2015 drilling program include: the identification of new high-grade Ag-Pb-Zn discoveries in the Mina La Bocona area (eg: 15CLM-078) and outboard of the Blind–El Sol zone (eg: 15CLM-081); the identification of potential new extensions to high-grade mineralization at the Santo Niño Mine (eg: 15CLM-023A); and the identification of thick zones of massive and semi-massive sulphide at depth in the Blind – El Sol zone (eg: 15CLM-077, 15CLM-081 and 11CLM-025).

Drilling in 2017 by Southern Silver completed 18 core holes totaling approximately 13,600 metres and successfully outlined the Skarn Front as a zone of mineralization, located at depth beneath the Blind and El Sol Zones. Mineralization occurs on the outer edge of the skarn alteration zone surrounding the Central Monzonite Intrusion at or near the transition into marble and forms the primary geological control on the distribution of sulphide mineralization. Geological modelling suggests that intersections between the sub-vertical, northwest-trending Blind and El Sol mineralized zones and the generally more shallowly dipping Skarn Front may localize higher-grade shoots of mineralization which may be in part responsible for higher grade intervals identified in some of the 2017 drilling.

Exploration in 2017 has identified two new step-out targets for further drill testing. Mineralization in the Skarn Front is open for approximately 500 metres along strike to the southeast of drill holes 17CLM-101 and -105 in what is now termed the Las Victorias zone and up to 600 metres along strike to the northeast, where the zone wraps around the northern margin of the Central Intrusion, in the North Skarn zone.

For a list of significant intercepts from 2011 to 2017, refer to table 10.3.

Borehole locations were planned and marked by Southern Silver geologists using a handheld GPS and subsequently surveyed with a differential GPS at the end of each year. A compass was used to determine borehole azimuth and inclination. Boreholes were drilled at an angle of between 90 and 45 degrees from the horizontal, depending upon the target. Downhole surveys were completed for all boreholes using a Reflex EZ-Shot<sup>®</sup> electronic single shot (magnetic) device. Downhole deviation of boreholes was measured using these tools at nominal 50-metre intervals.

The drill core is retrieved from boreholes, boxed at the drill site by the Southern Silver geologists and moved to a secure core warehouse on the property. Once at the warehouse, the core is quick logged, photographed, measured and, if the geologist deems it necessary, marked for sampling. Once logging is completed, the core that has been marked for sampling is sawn in half at the warehouse by labourers employed by Southern Silver and placed in sample bags, which are marked and secured by the sampler and checked by the geologist.

All descriptive information was captured digitally on-site using a Microsoft Access database. A listing of Southern Silver drilling is shown in Table 10.2. Table 10.3 lists the significant intervals encountered during the 2011, 2012, 2013, 2014, 2015, 2016 and 2017 drilling campaigns.

Year	# Holes	Drilling (m)
2011	29	7,958
2012	33	7,887
2013	11	5,950
2014	2	1,771
2015	13	9,135
2016	5	4,415
2017	15	12,232
Total	108	49,348

TABLE 10.1: DRILL HOLE SUMMARY BY YEAR



TABLE 10.2: DRILL HOLE SUMMARY

DDH Name	Easting	Northing	Azimuth	Dip	Depth	Elevation
11CLM-001	587926	2710799	40	-60	928.5	2147.6
11CLM-002	588342	2711032	220	-48	198	2170.6
11CLM-003	587682	2711222	165	-65	453	2206.6
11CLM-004	587682	2711221	170	-45	400	2206.6
11CLM-005	587762	2711174	145	-71	223	2214.6
11CLM-006	587389	2710834	90	-55	600	2153.6
11CLM-007	587907	2710611	210	-45	237	2132.6
11CLM-008	587275	2710739	45	-60	243	2133.6
11CLM-009	588880	2711185	227	-45	147.1	2088.6
11CLM-010	588818	2711122	227	-60	843	2091.6
11CLM-011	587239	2710771	45	-45	327	2134.6
11CLM-012	587290	2710675	45	-45	261	2130.6
11CLM-013	587179	2710789	45	-45	225	2132.6
11CLM-014	587161	2710672	54	-50	393	2125.6
11CLM-015	587308	2710845	45	-45	261	2138.6
11CLM-016	587307	2710626	45	-55	208.7	2128.6
11CLM-017	587345	2710582	45	-45	186	2128.6
11CLM-018	587135	2710817	45	-45	240	2132.6
11CLM-019	587211	2710739	45	-55	271	2131.6
11CLM-020	587524	2710986	126	-45	220	2189.6
11CLM-021	587264	2710940	225	-45	105	2147.6
11CLM-022	587083	2710840	45	-45	270	2130.6
11CLM-023	587271	2710547	45	-45	339	2122.6
11CLM-024	587381	2710481	45	-45	291	2125.6
11CLM-025	587401	2710272	53	-45	620	2110.9
11CLM-026	587099	2710998	45	-45	168	2136.6
11CLM-027	587528	2710800	225	-68	468	2168.6
11CLM-028	587026	2711065	45	-45	227.5	2133.6
11CLM-029	587261	2710935	45	-45	171	2147.6
12CLM-030	587246	2710633	45	-55	381	2125.6
12CLM-031	588192	2710161	45	-50	246	2103.6
12CLM-032	587099	2710781	45	-55	468	2128.6
12CLM-033	588237	2710060	45	-55	261	2094.6
12CLM-034	587329	2710904	180	-45	309	2143.6
12CLM-035	588421	2711127	221	-56	287	2134.6
12CLM-036	587381	2710912	180	-45	108	2158.6
12CLM-037	588549	2711011	231	-45	345	2120.6
12CLM-038	587550	2710750	225	-55	281.5	2159.6
12CLM-039	588309	2711442	225	-45	258	2126.6



DDH Name	Easting	Northing	Azimuth	Dip	Depth	Elevation
12CLM-040	587867	2710213	27	-50	315	2119.6
12CLM-041	587141	2710896	45	-45	162	2136.6
12CLM-042	587544	2710400	45	-45	204	2126.6
12CLM-043	587097	2710921	45	-45	210	2134.6
12CLM-044	587503	2710857	200	-45	147	2179.6
12CLM-045	587063	2710960	45	-50	399	2134.6
12CLM-046	587503	2710858	200	-65	237	2179.6
12CLM-047	587044	2711014	45	-50	204	2133.6
12CLM-048	587484	2710875	269	-45	210	2179.6
12CLM-049	586989	2711032	45	-45	231	2131.6
12CLM-050	587524	2710984	100	-50	288.7	2189.6
12CLM-051	587159	2710986	45	-45	117	2140.6
12CLM-052	588431	2711628	225	-45	210	2110.6
12CLM-053	587100	2711062	45	-45	104	2137.6
12CLM-054	586962	2711122	45	-45	195	2133.6
12CLM-055	588663	2710341	300	-45	421.5	2093.6
12CLM-056	587355	2710676	45	-45	87	2133.6
12CLM-057	586942	2710980	45	-45	372	2129.6
12CLM-058	588051	2711215	189	-45	240	2171.0
12CLM-059	587194	2710950	45	-45	75	2142.6
12CLM-060	587305	2710768	45	-45	90	2138.0
12CLM-061	587224	2710832	45	-45	120	2139.0
12CLM-062	587037	2710856	45	-45	303	2130.0
13CLM-063	588793	2710263	300	-65	531	2093.0
13CLM-064	588171	2710581	0	-90	456	2119.0
13CLM-065	587638	2709879	225	-45	321	2095.0
13CLM-066	587315	2710725	90	-70	690	2135.0
13CLM-067	588598	2710240	300	-65	387	2094.0
13CLM-068	588725	2710445	293	-50	369	2093.0
13CLM-069	588722	2710310	295	-55	456	2083.4
13CLM-070	587221	2711526	135	-50	256	2132.2
13CLM-071	587229	2710719	90	-69	816	2126.9
13CLM-072	586840	2711288	45	-45	231	2133.0
13CLM-073	588001	2709956	45	-65	1314	2091.0
14CLM-074	588719	2710307	300	-65	829	2083.4
14CLM-075	587993	2709953	0	-90	942	2091.2
15CLM-023A	587271	2710547	42.94	-45	879	2122.6
15CLM-076	587085	2710685	42.5	-60	750	2118.8
15CLM-077	587605	2711016	222.5	-61	986	2196.7
15CLM-077A	587605	2711016	222.5	-61	23.55	2196.7



DDH Name	Easting	Northing	Azimuth	Dip	Depth	Elevation
15CLM-078	588669	2710994	237.4	-61	531	2100.0
15CLM-079	588793	2710673	257.6	-61	621	2084.8
15CLM-080	588301	2711351	192.6	-60	474	2128.5
15CLM-081	587234	2710267	42.9	-55	834	2104.4
15CLM-082	588793	2710930	237.5	-60	702	2088.6
15CLM-083	588679	2711116	237.5	-60	648	2098.0
15CLM-084	587674	2711211	225	-51	894	2202.0
15CLM-085	588252	2711752	222.5	-45	492	2111.8
15CLM-086	588008	2711279	207.5	-60	570	2171.7
16CLM-087	587231	2710073	42.75	-50	850	2099.0
16CLM-088	587233	2710267	40	-75	798	2104.4
16CLM-089	587222	2709923	45	-50	1052	2093.9
16CLM-090	588642	2711092	222.7	-60	403.5	2101.8
16CLM-091	587305	2710481	42.3	-75	775	2117.0
17CLM-092	588490	2711179	195	-55	444	2116.3
17CLM-093	588677	2711118	202	-60	705	2098.3
17CLM-094	587177	2710397	42.1	-75	935	2108.9
17CLM-095	587272	2710545	38.6	-75	1017.5	2118.4
17CLM-096	587190	2710225	37	-85	1021	2102.5
17CLM-097	587002	2710425	45	-75	1206	2106.8
17CLM-098	586978	2710610	38	-60	1168	2112.5
17CLM-099	586972	2710782	40	-60	752.5	2119.2
17CLM-100	587265	2710933	92	-70	846	2143.4
17CLM-101	587569	2710232	46	-60	528	2109.2
17CLM-102	587660	2711168	100	-56	436	2213.0
17CLM-103	587178	2710788	85	-76	1035	2128.7
17CLM-104	587660	2711169	62	-57	426.8	2213.0
17CLM-105	587512	2710188	42	-60	601	2105.2
17CLM-106	587079	2710838	96	-72	1110.5	2125.9

Source: Southern Silver 2018



2011 Drill H	Highlights									
	From	То	Interval	Thck.	Ag	Au	Cu	Pb	Zn	Zone
Hole No.	m	m	m	m	g/t	g/t	%	%	%	
11CLM-003	419.6	436.2	16.6	UNK	55	0.0	0.8	0.3	1.5	North Skarn
inc.	428.8	430.3	1.5	UNK	72	0.0	1.5	0.5	1.6	
11CLM-006	424.2	427.9	3.7	2.0	184	0.0	2.0	0.3	18.4	Skarn Front
11CLM-008	168.4	179.3	10.9	5.5	268	0.1	0.0	4.5	3.8	Blind Zone
inc.	169.6	171.4	1.8	0.9	1400	0.3	0.0	19.7	14.5	
11CLM-011	131.6	136.6	5.0	3.6	224	0.4	0.0	4.2	5.8	Blind Zone
inc.	134.5	135.6	1.2	0.8	540	0.5	0.1	9.5	18.7	
11CLM-011	311.0	319.2	8.2	6.4	46	0.0	0.1	2.1	2.6	El Sol Zone
inc.	316.7	319.2	2.4	1.9	75	0.0	0.1	3.6	4.2	
11CLM-016	152.4	164.1	11.7	6.5	114	0.0	0.2	3.3	4.9	Blind Zone
inc.	158.2	159.8	1.6	0.9	390	0.1	0.5	11.9	17.1	
11CLM-023	300.1	312.5	12.4	8.5	134	0.1	0.2	4.0	4.5	Blind Zone
inc.	310.0	311.6	1.6	1.1	404	0.0	0.4	13.2	11.5	
11CLM-027	0.6	25.4	24.8	9.3	124	0.0	0.1	1.9	2.1	El Sol Zone
inc.	9.0	11.8	2.8	1.1	404	0.0	0.0	1.4	2.5	

TABLE 10.3: CERRO LAS MINITAS	SIGNIFICANT ASSAY INTERVALS
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2012 Drill H	lighlights									
	From	То	Interval	Thck.	Ag	Au	Cu	Pb	Zn	Zone
Hole No.	m	m	m	m	g/t	g/t	%	%	%	
12CLM-034	170.7	172.2	1.5	0.7	338	0.0	0.5	11.1	15.9	Blind Zone
12CLM-041	138.5	143.1	4.6	3.1	203	0.0	0.3	4.9	4.2	Blind Zone
inc.	141.9	143.1	1.2	0.8	499	0.1	0.4	10.4	10.4	
12CLM-044	57.6	83.6	26.1	17.3	67	0.0	0.1	2.8	3.3	El Sol Zone
inc.	78.3	80.7	2.5	1.6	153	0.1	0.1	6.3	7.5	
12CLM-047	162.6	167.0	4.4	3.0	186	0.0	0.2	5.6	4.6	Blind Zone
inc.	162.6	165.5	2.9	1.9	254	0.0	0.2	7.8	4.9	
12CLM-051	50.9	70.9	20.0	14.7	143	0.0	0.0	2.4	0.6	Blind Zone
12CLM-055	224.1	228.4	4.3	2.7	89	1.4	1.8	0.1	0.2	South Skarn
12CLM-056	12.7	18.4	5.7	4.0	335	0.1	0.8	16.3	4.5	Blind Zone
inc.	13.6	17.8	4.2	2.9	409	0.1	1.0	20.5	4.0	
12CLM-061	86.3	96.8	10.6	8.6	114	0.0	0.0	2.8	0.9	Blind Zone
inc.	86.3	87.5	1.3	1.0	382	0.0	0.2	9.9	5.1	



2013/14 Dr	2013/14 Drilling Highlights											
	From	То	Interval	Thck.	Ag	Au	Cu	Pb	Zn	Zone		
Hole No.	m	m	m	m	g/t	g/t	%	%	%			
13CLM-063	228.6	230.2	1.6	UNK	160	1.0	0.1	3.3	0.4	South Skarn		
13CLM-066	88.4	97.5	9.2	3.1	401	0.1	0.1	8.5	5.1	Blind Zone		
inc.	92.9	95.0	2.1	0.7	1190	0.2	0.0	21.6	13.0			
and	534.6	585.2	50.6	8.9	41	0.0	0.0	0.7	5.3	El Sol Zone		
inc.	573.0	585.2	12.2	2.1	45	0.0	0.0	1.7	10.8			
and	633.3	642.6	9.3	1.6	9	0.0	0.1	0.1	13.0	El Sol Zone		
inc.	638.2	640.4	2.1	0.4	14	0.0	0.4	0.0	20.6			
13CLM-068	285.4	299.3	13.9	8.4	136	0.2	0.0	2.4	1.3	South Skarn		
inc.	285.4	287.8	2.4	1.5	546	0.2	0.1	10.3	3.8			

2015 Drill H	lighlights									
	From	То	Interval	Thck.	Ag	Au	Cu	Pb	Zn	
Hole No.	m	m	m	m	g/t	g/t	%	%	%	
15CLM-077	712.6	714.2	1.6	0.9	569	0.1	0.0	3.4	1.1	Blind Zone
inc.	712.6	713.3	0.6	0.3	1380	0.1	0.0	7.9	2.4	
15CLM-078	77.8	85.6	7.8	3.9	37	13.5	0.0	2.2	1.7	La Bocona
inc.	77.8	79.7	1.9	1.0	74	27.7	0.0	6.4	3.5	
and	195.0	211.5	16.5	8.2	150	0.5	0.0	3.4	0.7	La Bocona
inc.	196.1	196.9	0.8	0.4	1170	1.1	0.0	21.9	1.2	
and	222.2	231.5	9.3	4.6	275	0.9	0.0	4.3	1.9	La Bocona
inc.	222.2	224.2	2.0	1.0	808	2.3	0.0	12.4	3.0	
and	255.4	259.9	4.5	2.2	903	0.2	0.1	16.1	2.2	La Bocona
inc.	256.3	258.0	1.7	0.8	1180	0.4	0.1	20.5	2.1	
and	326.7	331.7	4.3	2.2	405	0.2	0.0	10.0	1.1	La Bocona
inc.	330.9	331.7	0.8	0.4	903	0.8	0.1	20.8	1.1	
15CLM-079	395.0	396.0	1.0	UNK	41	11.7	0.0	0.1	0.0	South Skarn
15CLM-081	616.1	632.9	16.8	8.7	136	0.0	0.5	0.3	4.5	Blind Zone
inc.	616.1	625.1	9.0	4.7	167	0.0	0.7	0.4	8.2	
15CLM-082	184.3	186.9	2.6	1.3	322	5.0	0.2	5.7	7.7	La Bocona
15CLM-083	484.3	490.1	5.8	3.1	275	0.2	0.5	1.1	3.4	La Bocona
inc.	487.4	488.3	0.9	0.5	1050	1.0	1.2	4.3	7.7	
15CLM-084	800.2	808.5	8.4	5.0	112	0.2	0.0	0.5	0.4	Blind Zone
11CLM-010										
(extension)	503.5	509.3	5.8	3.5	130	0.4	1.1	1.3	9.3	La Bocona
	503.5	506.5	3.0	1.8	196	0.1	1.1	2.3	15.1	
15CLM-023A	284.7	299.5	14.8	10.1	231	0.3	0.2	4.5	3.7	Blind Zone
inc.	284.7	286.0	1.3	0.9	891	0.6	0.1	11.3	5.7	
and	677.0	685.4	8.4	5.7	143	0.1	0.3	1.2	6.2	Skarn Front
inc.	681.9	685.4	3.5	2.4	263	0.1	0.3	2.4	12.2	
11CLM-025										
(extension)	488.9	499.7	10.8	6.9	181.7	1.0	0.5	1.6	6.4	El Sol Zone
inc.	493.55	496.0	2.4	1.5	534.0	0.1	1.8	4.6	14.2	



2016/17 Di	rill Highlig	hts								
Hole No.	From m	To m	Interval m	Est. Tr. Thck. m	Ag g/t	Au g/t	Cu %	Pb %	Zn %	
16CLM-088	683.7	714.0	30.4	29.5	107	0.1	0.4	1.1	2.3	Skarn Front
inc.	683.7	691.0	7.3	7.1	190	0.1	0.4	3.4	5.5	
16CLM-091	662.8	677.9	15.1	14.8	39	0.0	0.05	0.1	10.2	Skarn Front
inc.	667.5	672.3	4.8	4.7	39	0.0	0.12	0.1	23.2	
17CLM-094	788.8	798.6	9.8	6.8	65	0.0	0.02	0.3	5.0	Skarn Front
inc.	794.2	798.6	4.4	3.1	92	0.0	0.02	0.4	7.1	
17CLM-095	691.3	700.3	9.0	8.0	602	0.1	0.05	7.1	17.9	Skarn Front
	693.0	700.3	7.3	6.5	737	0.0	0.06	8.6	21.8	
17CLM-098	1086.5	1101.0	14.5	8.7	288	0.0	2.03	0.8	1.2	Skarn Front
	1092.6	1096.7	4.1	2.5	686	0.1	3.65	1.0	1.7	
17CLM-101	229.9	247.4	17.6	12.5	154	2.0	0.21	3.2	3.9	Las Victorias
inc.	235.4	241.0	5.7	4.0	261	4.0	0.2	6.0	6.9	
and	452.5	462.6	10.1	9.2	220	0.0	0.3	3.6	5.4	Skarn Front
inc.	456.9	459.2	2.3	2.1	373	0.1	0.88	7.4	10.3	
17CLM-103	859.3	864.4	5.2	3.3	27	0.0	0.01	0.4	2.6	Skarn Front
inc.	859.3	860.2	1.0	0.6	126	0.0	0.00	1.7	8.2	
17CLM-105	356.9	367.8	10.9	6.8	194	0.8	0.12	4.4	2.0	Las Victorias
inc.	358.2	359.1	0.9	0.6	1100	1.5	0.4	23.2	5.9	
and	507.6	520.9	13.3	13.0	105	0.1	0.1	0.5	0.4	Skarn Front
inc.	510.6	513.2	2.5	2.5	318	0.1	0.41	1.4	0.8	
17CLM-106	889.3	891.7	2.5	2.1	88	0.0	0.04	0.2	10.3	Skarn Front
and	921.3	930.4	9.1	7.7	22	0.0	0.0	0.0	3.6	
inc.	926.2	930.4	4.2	3.5	30	0.0	0.0	0.1	5.8	
and	941.6	943.4	1.8	1.5	30	0.1	0.11	0.0	20.7	

Source: Southern Silver 2018





FIGURE 10-1: CERRO LAS MINITAS DRILL HOLE LOCATIONS

Source: Southern Silver 2018



# 11 SAMPLE PREPARATION, ANALYSES AND SECURITY

# 11.1 CHAIN OF CUSTODY

The drill core is retrieved from boreholes, boxed at the drill site by the Southern Silver geologists and moved to a secure core warehouse on the property where it is quickly logged, photographed, measured and marked for sampling. Once logging is completed, the core that has been marked for sampling is sawn in half at the warehouse by labourers employed by Southern Silver. The core is placed in sample bags, which are marked and secured by the sampler and checked by the geologist. Blanks are inserted at a rate of 1 blank for every 20 samples. The blank material is taken from a local outcrop of barren limestone. Core duplicates are taken at a rate of 1 for every 20 samples by quarter-splitting the sampled half core and inserting each quarter into a separate sample bag. Blank, marked bags are prepared and inserted into the sample stream at a rate of 1 in every 10 samples for insertion of standards in the North Vancouver laboratory. Note: In Mexico, there are export restrictions that prohibit this final *standards* step, so it must occur out of country; therefore, once the samples arrive at the laboratory, the standards, which are stored at the Southern Silver offices, are delivered and inserted into the sample stream.

In Mexico, samples are stored in the secure warehouse. When enough samples have been taken, the samples are driven to ALS Minerals laboratories, Lomas Bizantinas, Zacatecas, Mexico and delivered by the Southern Silver geologist. The samples are bar-coded, weighed and pulverized to 70% passing 2 mm, where a 250 g sample is split and pulverized to 85% passing 75 microns.

The prepared pulps are then shipped by ALS Minerals to its laboratory in North Vancouver, Canada. All core, trench, and grab samples collected between 2011 and 2017 were submitted to ALS Minerals for preparation and assaying. The management system of the ALS Group of Laboratories is accredited ISO 9001:2000 by QMI–Management Systems Registration. Samples were crushed and pulverised by the Zacatecas preparation facility and shipped to North Vancouver for assaying. The North Vancouver laboratory is accredited ISO/IEC 17025:2005 by the Standards Council of Canada for certain testing procedures, including those used to assay samples submitted by Southern Silver.

Standards manufactured by CDN Resource Laboratories Ltd. (CDN), Langley, BC, Canada, that have been securely stored at the head office of Southern Silver in Vancouver, Canada, are then inserted into sample bags, marked and secured by the Southern Silver geologist in Vancouver and sent by corporate courier to ALS Minerals in North Vancouver for insertion into the pulp sample stream.

Prepared samples are then transferred to ALS Minerals laboratory in North Vancouver where they are assayed for gold using a conventional fire assay procedure (ICP-AES) on 30 g subsamples. The samples are also submitted for a suite of 35 elements using a four-acid digestion and ICP-AES finish on 5 g subsamples.



## 11.2 QUALITY ASSURANCE AND QUALITY CONTROL

At the Cerro Las Minitas Project, inserting quality control samples takes place in the core shack before samples are shipped to the lab, with the exception of the standards for the reasons discussed in Section 11.1. These samples are routinely inserted and are used to check for accuracy, precision and cleanliness in the analytical laboratory. At the beginning of the sampling process, sample tags are pre-marked before logging with locations for standards, core duplicates, and field blanks.

The process is as follows:

- Core duplicate samples are taken every 20 samples within the sample series (5%). Core duplicate samples are used to evaluate combined field, preparation and analytical precision. The core duplicate samples are quarter-spilt cores sampled on site before the samples leave camp.
- Field blanks are non-mineralized limestone material collected from a local source, broken with a hammer, and inserted into the sample series every 20 samples (5%). Field blanks are inserted to test for any potential carry-over contamination which might occur in the crushing phase of sample preparation, as a result of poor cleaning practices.
- Standards and prepared blanks are used to test the accuracy of the assays and to monitor the consistency of the laboratory over time. Commercially available multielement assay standards were purchased from CDN. Prepared blanks were purchased from Analytical Solutions Ltd. These standards and prepared blanks are inserted into the sample sequences approximately once every 10 samples (10%). The standards and prepared blanks are stored at the Southern Silver offices in Vancouver and delivered to the laboratory and inserted into the sample stream. This is due to Mexican export restrictions and must occur out of country.

Commercial standards sourced from CDN and prepared blanks from Analytical Solutions Ltd. are used to test the accuracy of the assays and to monitor the consistency of the laboratory over time. All standards listed here are multielement standards with recommended values (between-lab mean  $\pm$  3 standard deviations) for silver, copper, gold, lead and zinc. These standards and prepared blanks were randomly inserted into the sample sequences approximately once every 10 samples. Table 11.1 show the standards and prepared blanks used for the Cerro Las Minitas Project, along with their recommended mean metal concentrations.

For the collection of surface rock samples, the same procedure is followed as above but the insertion rates are approximately 1 standard, 1 prepared blank, 1 field duplicate and 1 field blank for every 60 samples.

STANDARD	GOLD (g/t)	SILVER (g/t)	COPPER (%)	LEAD (%)	ZINC (%)
CDN-ME-5	1.07	205.6	0.84	2.14	0.579
CGS-26	1.64		1.58		
CDN-ME-1605	2.85	274	0.38	4.45	2.15
CDN-ME-1302	2.412	418.9	0.579	4.68	1.2
CDN-ME-17	0.452	38.2	1.36	0.676	7.34
CDN-ME-1414	0.284	18.2	0.219	0.105	0.732

#### TABLE 11.1: RECOMMENDED METAL CONCENTRATIONS OF STANDARDS USED AT CERRO LAS MINITAS

Source: Kirkham Geosystems, 2018

#### Analytical Laboratory Procedures

Prepared samples are then transferred to ALS Minerals laboratory in North Vancouver where they are assayed for gold using a conventional fire assay procedure (ICP-AES) on 30-gram subsamples. The samples are also submitted for a suite of 35 elements using a four-acid digestion and ICP-AES finish on 5-gram subsamples.

### Evaluation of QA/QC Results

Standards, field blanks, and duplicate samples are discussed in the following subsections.

### Standards

Failure of a standard implies that all routine samples within its sphere of influence are also considered to have failed and must be re-analyzed at the same primary laboratory. Standards are considered to have failed if the reported gold, silver, copper lead or zinc assay concentration is greater or less than 3 standard deviations from the recommended mean value for that standard.

In the case of failure of any standard, the procedure is to re-assay the block of samples within its sphere of influence. In practice, this means that all consecutively listed samples, down list from the failing standard to the next passing standard, and up list from the failing standard to the next prior passing standard, are considered to have failed, and must be re-assayed. Table 11.2 shows the standards performance listing number of failures for all metals.



STANDARD	#	GOLD (g/t)	%	ICP SILVER (g/t)	%	COPPER (%)	%	LEAD (%)	%	ZINC (%)	ZINC (%)
CDN-ME-5	53	5	9%	3	6%	1	2%	0	0%	5	9%
CGS-26	47	0	0%		0%	1	2%		0%		0%
CDN-ME-1302	44	0	0%	2	5%	6	14%	0	0%	4	9%
CDN-ME-17	42	2	5%	0	0%	0	0%	0	0%	0	0%
CDN-ME-1414	27	1	4%	2	7%	1	4%	1	4%	2	7%

TABLE 11.2: STANDARDS PERFORMANCE – FAILURES

Source: Kirkham Geosystems, 2016

An analysis of the standards performance illustrates potential issues. Any failures are recorded and the lab requests that the complete job be re-run. Southern Silver is notified and a determination is made as to whether the failure is within the proximity of any mineralized intervals. If so then, the batch is re-run.

There seems to be a relatively high failure rate which appears to be attributable to two specific standards: the CDN-ME-5 standard with a failure rate of 9% gold, 9% zinc, and 6% silver, and the CDN-1302 standard with a failure rate of 5% silver, 14% lead, and 9% zinc. CDN-ME-5 is no longer used in the CDN-1302 standard is not longer sued at the project.

With the exception of the high failure rate of two standards, the author finds the levels of sampling, security, and analytical procedures to be satisfactory.

### **Preparatory Blanks**

For the 2016/17 field season, additional QAQC was inserted in the form of blind prepared blanks inserted in the same way as the standards at a rate of 1 for every 20 samples (5%). The blank was sourced from Analytical Solutions Ltd. and produced by OREAS (Ore Research & Exploration Pty Ltd) of North Bayswater, Australia.

## **Field Blanks**

Field blanks are used to check the level of cleanliness at a laboratory, and more specifically to check for the presence of any carry-over contamination during the crushing phase of sample preparation. Proper cleaning of the coarse crushers between samples, and between sample batches, should ensure that there is no carry-over of material between samples that could produce negligible gold, silver, lead, zinc and copper results on a consistent basis. Field blanks are typically created from barren rock material, preferably of similar hardness to the target lithologies. At Cerro Las Minitas, non-mineralized rock is collected from a local source, and inserted into the sample series every 20 samples (5%).

In general, field blanks exhibit a failure rate of 0% for silver analysis, 1% for gold and approximately 3% for, copper and zinc which indicates that some carry-over contamination at the crusher stage might be occurring.

Towards the end of 2017, a procedure was introduced to request that the lab use preparation blanks in between samples with visible high-grade Cu-Pb-Zn sulphides. In general, current field blanks and related procedures exhibit acceptable results.



### **Duplicate Samples**

Field duplicate samples are added to the assay batches. ALS Minerals laboratories prepared pulp duplicates and inserted these at a rate of one every 20 samples. Figures 11-1 through Figure 11-5 show the results of the duplicate comparison for silver, gold, copper, lead, and zinc, respectively. All metals show an excellent correlation with the exception of copper. It remains unclear as to why this is happening, and this requires investigation.







FIGURE 11-2: FIELD DUPLICATE RESULTS – AU

Source: Kirkham Geosystems, 2018





FIGURE 11-3: FIELD DUPLICATE RESULTS - CU



FIGURE 11-4: FIELD DUPLICATE RESULTS - PB

Source: Kirkham Geosystems, 2018

#### FIGURE 11-5: FIELD DUPLICATE RESULTS – ZN





Source: Kirkham Geosystems, 2018

# 11.3 COMMENTS

With the exception of the high failure rate of two standards, one of which is no longer used, the author finds the levels of sampling, security, and analytical procedures to be satisfactory. In the opinion of the author, the sample preparation, security, and analytical procedures used by Southern Silver are consistent with generally accepted industry best practices and are, therefore, adequate for the purpose of mineral resource estimation.



# 12 DATA VERIFICATION

Garth Kirkham, P. Geo., visited the property between March 31, 2015 and April 2, 2015. The site visit included an inspection of the property, offices, drill sites, outcrops, drill collars, core storage facilities, core receiving area, and tours of major centres and surrounding villages most likely to be affected by any potential mining operation.

The tour of the office and storage facilities showed a clean, well-organized, professional environment. On-site staff led the author through the chain of custody and methods used at each stage of the logging and sampling process. All methods and processes are up to industry standards and reflect best practices, and no issues were identified.

A visit to the collar locations showed that the collars were well marked and labelled; therefore, they were easily identified. The previous drill holes were cased.

The author selected four complete drill holes at random from the database and they were laid out at the core storage area. Site staff supplied the logs and assay sheets for verification against the core and the logged intervals. The data correlated with the physical core and no issues were identified. In addition, the author toured the complete core storage facilities, selecting and reviewing core throughout. No issues were identified, and recoveries appeared to be very good.

Based on the site visit and an inspection of all aspects of the project, the author is confident that the data and results are valid, including all methods and procedures. It is the opinion of the independent author that all work, procedures, and results have adhered to best practices and industry standards required by NI 43-101. No duplicate samples were taken to verify assay results, but the author believes that the work is being performed by a well-respected, large, multi-national company that employs competent professionals that adhere to industry best practices and standards.

The core is accessible, and the core is stored in covered racks. However, going forward it is recommended that the company refurbish some of the core facilities, clean and remove broken pulp bags. In addition, it would be recommended that the core be re-arranged for easier access and analysis along with creating a core map.

The author is confident that the data and results are valid based on the site visit and inspection of all aspects of the project, including methods and procedures used. It is the opinion of the independent author that all work, procedures, and results have adhered to best practices and industry standards required by NI 43-101. No duplicate samples were taken during the April 2015 site visit to verify assay results and the author was satisfied with the results from previous verification sampling. In addition, there were no limitations with respect to validating the physical data or computer-based data. The author is of the opinion that the work was being performed by a well-respected, large, multi-national company that employs competent professionals that adhere to industry best practices and standards.



The data verification process did not identify any material issues with the Cerro Las Minitas sample/assay data. The author is satisfied that the assay data is of suitable quality to be used as the basis for this resource estimate.



# 13 MINERAL PROCESSING AND METALLURGICAL TESTING

Southern Silver reported in July 2015 on encouraging results of preliminary metallurgical testing from the Blind and El Sol Zones. Work was performed at Dawson Metallurgical Laboratories of Midvale, Utah.

Testing was done on a composite of 10 samples taken from the high-grade dump at the La Lupita shaft on the Blind zone. The head analyses of the composite returned 225g/t Ag, 0.06g/t Au, 0.11% Cu, 6.6% Pb and 5.4% Zn.

Both a lead and zinc concentrates were produced via batch flotation with the following results:

- Approximately 82% of the silver, 86% of the lead and 12% of the zinc was recovered into the lead rougher concentrate assaying 2000ppm Ag, 61.5% Pb and 7.2% Zn. The concentrate was later upgrade to 2300ppm Ag and 71.1% Pb, and
- Subsequent zinc flotation recovered 79% of the zinc into a rougher concentrate at a grade of 39.5% Zn. Two-stage cleaning of the concentrate increased the grade to 49.7% Zn

These preliminary results are significant in that two separate, high-grade concentrates were produced from mined material from the Blind zone. Additional test-work is recommended utilizing different reagents in order to further upgrade the final concentrates. Samples charges of the composite have been retained at Dawson Metallurgical in anticipation of further testwork.

In November 2017, Southern Silver commissioned Blue Coast Research to conduct more comprehensive metallurgical study of the Cerro las Minitas Mineralization. Three composites were submitted for testing to reflect the broad variability of the mineralization intersected in the different ore zones: Blind-El Sol sulphide mineralization; Blind El Sol oxide mineralization and Skarn Front sulphide mineralization. The work consisted of kinetic (grindability) tests, a series of batch flotation tests, probe-work and some ICP analyses to determine levels of deleterious metals within the composites. Results were not available at the effective date of this report and at the time of writing.

# 14 MINERAL RESOURCE ESTIMATES

### 14.1 INTRODUCTION

The purpose of this report is to document the resource estimations for the Cerro Las Minitas deposit. This section describes the work undertaken by Kirkham Geosystems, including key assumptions and parameters used to prepare the mineral resource models for Blind El Sol, Las Victorias and Skarn Zones, together with appropriate commentary regarding the merits and possible limitations of such assumptions.

# 14.2 DATA

The 108 drill holes in the database were supplied in electronic format by Southern Silver. This included collars, downhole surveys, lithology data and assay data (i.e., Ag g/t, Au g/t, Cu%, Pb%, Zn%). Validation and verification checks were performed during importation of data to ensure there were no overlapping intervals, typographic errors or anomalous entries. None were found. Figure 14-1 shows a plan view of the supplied drill holes.







## 14.3 GEOLOGY MODEL

Solid models (Figure 14-2 and Figure 14-3) were created from sections and based on a combination of lithology, silver equivalent grades and site knowledge. It is important to note that the understanding and interpretation has evolved to be that of a significant skarn zone flanked by the El Sol, Blind and Las Victorias zones as shown in the figures below.

Every intersection was inspected and the solid was then manually adjusted to match the drill intercepts. Once the solid model was created, it was used to code the drill hole assays and composites for subsequent statistical and geostatistical analysis. The solid zone was used to constrain the block model by matching assays to those within the zones. The orientation and ranges (distances) used for search ellipsoids in the estimation process were derived from strike and dip of the mineralized zone, site knowledge and on-site observations by Southern Silver geological staff.



FIGURE 14-2: PLAN VIEW OF CERRO LAS MINITAS MINERALIZED ZONES AND DRILL HOLES







## 14.4 DATA ANALYSIS

The database was numerically coded by solids for the Blind, El Sol and Santo Nino mineralized zones. The database was then manually adjusted, drill hole by drill hole, to ensure accuracy of zonal intercepts. Table 14.2 shows the statistics for the silver equivalent, silver, gold, copper, lead and zinc assays.

#### TABLE 14.2: STATISTICS FOR SILVER EQUIVALENT, SILVER, GOLD, COPPER, LEAD AND ZINC BY VEIN

Source: Kirkham Geosystems, 2018



		Valid	AI	Max	Mean	CV			Valid	AI	Max	Mean	CV
	AGEQ	152	245.5	1,970.77	122.572	1.9		AGEQ	47	89.6	607.16	60.021	1.7
	DPT	187	320.5	1,153.00	55.466	2.2		DPT	63	128.0	355.00	25.378	2.1
	AU	187	320.5	0.83	0.0268	2.7		AU	63	128.0	0.04	0.0047	0.9
	AG	108	172.2	1,040.00	63.305	1.6		AG	23	40.3	247.00	32.879	1.3
	CU%	187	320.5	1.12	0.0348	2.6		CU%	63	128.0	0.34	0.0219	2.6
BZ1	PB%	187	320.5	18.50	0.81	2.4	BZ4	PB%	63	128.0	6.46	0.403	2.3
	ZN%	187	320.5	20.30	0.726	2.5		ZN%	63	128.0	5.06	0.396	2.1
	<b>S%</b>	187	320.5	10.00	0.941	1.7		5%	63	128.0	2.28	0.422	1.3
	CA%	187	320.5	31.20	10.088	0.9		CA%	63	128.0	34.70	14.35	0.6
	AS	187	320.5	10,000.00	1,839.01	1.5		AS	63	128.0	2,460.00	276.8	1.4
	SB	187	320.5	1,535.00	111.96	1.6		SB	63	128.0	283.00	35.29	1.4
	AGEQ	196	319.1	2,407.45	178.356	1.9		AGEQ	44	62.4	2,244.07	282.011	1.5
	DPT	257	430.2	1,409.00	78.094	2.3		DPT	53	74.6	1,313.00	138.342	1.7
	AU	257	430.2	5.32	0.066	5.2		AU	53	74.6	6.26	0.7269	1.7
	AG	147	222.7	1,380.00	87.243	1.9		AG	34	49.3	1,100.00	114.343	1.6
	CU%	257	430.2	3.27	0.058	3.1	las	CU%	53	74.6	0.99	0.0811	2.0
BZ2	PB%	257	430.2	28.35	1.183	2.7	Victorias	PB%	53	74.6	23.19	1.539	2.1
	ZN%	257	430.2	17.10	0.993	2.4		ZN%	53	74.6	8.69	1.379	1.7
	<b>S%</b>	257	430.2	10.00	1.137	1.8		5%	53	74.6	10.00	3.983	1.0
	CA%	257	430.2	34.50	8.751	1.1		CA%	53	74.6	32.50	6.847	1.2
	AS	257	430.2	10,000.00	2,448.31	1.4		AS	53	74.6	10,000.00	6,294.74	0.7
	SB	256	429.9	8,050.00	208.76	2.7	L	SB	53	74.6	10,000.00	2,331.85	1.3
	AGEQ	177	267.5	2,616.77	179.618	1.8		AGEQ	25	38.1	482.83	142.767	1.0
	DPT	241	387.0	1,531.00	73.562	2.2		DPT	35	57.9	283.00	55.385	1.4
	AU	241	387.0	0.56	0.0315	2.6		AU	35	57.9	0.18	0.0106	2.3
	AG	133	190.2	1,400.00	89.657	1.9		AG	20	30.8	137.00	53.088	0.8
	CU%	241	387.0	1.11	0.0448	2.6		CU%	35	57.9	0.21	0.0349	1.6
BZ3	PB%	241	387.0	19.70	1.1	2.1	ES1	PB%	35	57.9	6.21	0.689	2.2
	ZN%	241	387.0	18.70	0.996	2.4		ZN%	35	57.9	5.60	1.051	1.4
	5%	241	387.0	10.00	1.481	1.5		<b>S%</b>	35	57.9	4.15	0.794	1.4
	CA%	241	387.0	34.10	10.408	0.8		CA%	35	57.9	31.90	16.816	0.5
	AS	241	387.0	10,000.00	1,993.64	1.5		AS	35	57.9	10,000.00	290.73	4.4
	SB	241	387.0	1,275.00	142.61	1.6		SB	35	57.9	282.00	64.87	1.0



		Valid	ىم ا	May	Maan	L CV			Valid	AL	Max	Mean	CV
	ACEO	48	96.7	1329.00	107 141	19		AGEO	20	27.0	1267.34	229.278	14
	AGEQ	40 50	00.1	777.00	101.141 EE EC	10	- 11	DPT	22	315	742.00	115 571	16
	DPI	52	30. r	0.00	0.0004	1.5	- 11		22	315	0.40	0.0478	19
	AU	52	38.7	0.09	0.0084	1.5	- 11	AC	12	12.7	0.40 850.00	100 201	1.0
	AG	36	64.0	745.00	47.962	1.9	40	AG	12	13. r	000.00	0.040	1.2
	CU%	52	98.7	5.10	0.0949	4.7	- H	C0%	22	31.5	0.33	0.043	1.3
ES2	PB%	52	98.7	12.40	0.797	2.2	ESS	PB%	22	31.5	16.00	2.397	1.7
	ZN%	52	98.7	12.85	0.686	2.1		ZN%	22	31.5	3.10	0.913	1.1
	5%	52	98.7	10.00	0.428	2.8		<b>S%</b>	22	31.5	3.93	0.558	1.4
	CA%	52	98.7	35.10	13.79	0.6		CA%	22	31.5	22.10	9.593	0.4
	AS	52	98.7	3,430.00	222.52	1.8		AS	22	31.5	2,015.00	399.71	1.0
	SB	52	98.7	700.00	84.15	1.3		SB	22	31.5	266.00	78.08	0.9
	AGEQ	73	112.5	760.87	134.801	1.5		AGEQ	11	13.6	635.82	173.314	0.9
	DPT	100	161.9	445.00	55.772	1.8	11	DPT	11	13.6	372.00	101.286	0.9
	AU	100	161.9	0.47	0.013	3.5	11	AU	11	13.6	0.06	0.0474	0.2
	AG	37	54.1	238.00	60.275	0.9	11	AG	8	11.6	178.00	43.388	0.8
	CU%	100	161.9	0.61	0.0424	21	11	CU%	11	13.6	0.49	0.0758	1.1
E52	DB%	100	161.9	8.01	0.861	19	ESG	PB%	11	13.6	6.80	1649	0.9
	75/0	100	101.0	9.05	1072	19		7N96	11	13.6	4.80	1 913	0.8
	21176	100	101.3	3.05	1.072	1.3	11	604	11	13.6	4.00	1466	0.0
	5%	100	101.3	10.00	1.31	1.0	- 11	370	-11	10.0	4.00	1.400 C 04E	0.1
	CA%	100	161.9	32.10	14.64	0.5	- 11	CA%	11	10.0	10.00	0.040	0.3
	AS	100	161.9	5,480.00	280.03	2.1	40	AS	11	13.6	290.00	85.41	0.7
	SB	100	161.9	450.00	74.99	1.0		SB	11	13.6	325.00	75.96	0.9
	AGEQ	26	44.0	803.44	227.441	0.8	41.	AGEQ	4	3.4	709.13	267.983	0.9
	DPT	32	53.7	470.00	109.621	1.0		DPT	5	4.4	415.00	123.478	1.2
	AU	32	53.7	0.25	0.0208	2.3		AU	5	4.4	0.13	0.0478	1.1
	AG	21	37.5	391.00	101.152	0.9		AG	4	3.4	432.00	137.43	1.2
	CU%	32	53.7	0.24	0.0596	1.3	11	CU%	5	4.4	0.32	0.1393	1.0
ES4	PB%	32	53.7	9.42	1.482	1.3	ES7	PB%	5	4.4	4.93	1.58	1.1
	ZN%	32	53.7	8.12	1.62	1.1	11	ZN%	5	4.4	1.85	0.873	0.7
	5%	32	53.7	7.26	0.971	1.6	11	5%	5	4.4	10.00	5.091	0.8
	CA%	32	53.7	28.40	13,405	0.5	11	CA%	5	4.4	10.40	7.116	0.5
	45	32	53.7	2 260 00	247.97	18	11	AS	5	4.4	1045.00	442.68	0.9
	CD	32	53.7	363.00	114.42	0.0	11.	SB	5	44	129.00	6127	0.7
_	30	52	33.1	303.00	114.42	0.0		55		7.7	120.00	0.21	0.1
		Valid	AI	May	Mean	47			Valid	اه	May	Mean	C Y J
	4650	11	17.1	299.26	84,815	0.8		4650	1223	1932.3	2.616.77	168 136	18
	DOT	10	27.0	175.00	22 529	12		DOT	1,220	2705.7	1531.00	70.994	21
		10	27.0	0.03	32.533	12			1,040	2705.7	1,331.00	0.0544	2.1 E 0
	AU	0	27.0	0.03	40.405	.2		AU	1,043	2103.1 1000.7	0.30	0.0344	3.0
	AG	8	12.2	137.00	40.435	0.9		AG	000	1306.7	1,415.00	13.555	1.0
	CU%	18	27.0	0.39	0.0345	2.3		CU%	1,649	2705.7	5.56	0.0878	3.5
ES8	PB%	18	27.0	3.55	0.474	1.5	Total	PB%	1,649	2705.7	28.35	0.773	2.7
	ZN%	18	27.0	1.25	0.428	1.1		ZN%	1,649	2705.7	37.33	1.175	2.5
	5%	18	27.0	4.01	1.002	0.8		S%	1,649	2705.7	10.00	1.617	1.5
	CA%	18	27.0	32.80	12.271	0.8		CA%	1,649	2705.7	35.80	12.873	0.7
	AS	18	27.0	259.00	93.11	0.5		AS	1,649	2705.7	10,000.00	1,526.65	1.9
	SB	18	27.0	167.00	42.61	0.9		SB	1,648	2705.4	10,000.00	167.74	4.2
	AGEQ	391	605.9	2,609.57	191.549	1.7		AGEQ	2,470	3960.1	4,508.04	120.073	2.1
	DPT	573	916.7	1,527.00	74.864	2.2		DPT	6,046	10704.7	2,638.00	27.231	3.6
	AU	573	916.7	6.90	0.0393	6.8		AU	6,046	10704.7	34.60	0.0457	11.5
	AG	277	406.7	1,415.00	84.179	1.8		AG	1,438	2114.3	2,430.00	72.43	1.9
	CU%	573	916.7	5.56	0.1635	2.9		CU%	5,886	10396.6	5.56	0.0386	4.6
SKARN	PB%	573	916.7	15.05	0.3	3.8	All	PB%	5,886	10396.6	53.53	0.282	4.7
	ZN%	573	916.7	37.33	1.66	2.5		ZN%	5,886	10396.6	37.33	0.393	4.3
	\$%	573	916.7	10.00	2.422	1.2		5%	6,046	10704.7	10.00	0.947	1.8
	CA%	573	916.7	35.80	16.662	0.4		CA%	6,046	10704.7	38.50	13.061	0.8
	AS	573	916.7	10.000.00	1,195,22	2.2		AS	6,045	10704.2	10,000.00	914.7	2.3
1		570	010.7	E 290.00	04.00	4.1		CD	6.045	10704.4	10,000,00	122.03	4.0



# 14.5 COMPOSITES

It was determined that a 1.5 m composite length offered the best balance between supplying common support for samples and minimizing the smoothing of the grades. The 1.5 m sample length also was consistent with the distribution of sample lengths within the mineralized domains as shown in the histogram of assay lengths in Figure 14-4.





Source: Kirkham Geosystems, 2018

Figures 14-5 through 14-10 show the histograms for silver equivalent, silver, gold, copper, lead, and zinc, respectively, within the mineralized solids for all zones which demonstrate well-formed log-normal distribution for all metals.





FIGURE 14-5: HISTOGRAM OF SILVER EQUIVALENT COMPOSITE GRADES IN ZONES









FIGURE 14-7: HISTOGRAM OF GOLD COMPOSITE GRADES IN ZONES









FIGURE 14-9: HISTOGRAM OF LEAD COMPOSITE GRADES IN ZONES







Table 14.3 shows the basic statistics for the 1.5 m copper composite grades within the mineralized domains. It should be noted that although 1.5 m is the composite length, any residual composites of lengths greater than 0.5 m and less than 1.5 m were retained to represent a composite, while any composite residuals less than 0.5 m were combined with the previous composite.

There is a total of 1,802 composites, with the average silver equivalent, silver, gold, copper, lead, and zinc grades for all zones are 157.6 gpt AgEq, 70.76 gpt Ag, 0.06 gpt Au, 0.09% Cu, 0.80% Pb, and 1.2% Zn, respectively, shown in Table 14.3.

The box plots shown in Figure 14-11 illustrate that the four Blind Zone units, the eight El Sol units, the Las Victorias and Skarn Front zone and their statistical relationship to each other. Blind zone unit #4 and El Sol zone unit #8 are significantly lower grade than other units and Las Victorias zone is the highest grade unit with a mean grade of 273.2 gpt AgEq. In addition, the box plots show that there are grade similarities within the zone groupings where the remaining Blind Zone solids and the El Sol Zone solids are similar, and, therefore, it is acceptable to treat them in a similar manner. The Skarn Front zone is statistically different from all other zones and as such understandably that it is estimated separately.



ZONE		Valid	AI	Max	Mean	CV	ZONE		Valid	AI	Max	Mean	CV
	AGEQ	179	260.7	1110.54	115.68	1.4		AGEQ	43	61.8	1362.89	283.62	1.3
	AU	216	314.4	0.43	0.03	2.2		AU	43	61.8	6.26	0.87	1.4
	AG	136	198.1	380.13	55.51	1.1	Las	AG	36	52.9	678.20	106.30	1.4
BZI	CU%	216	314.4	0.42	0.04	1.7	Victorias	CU%	43	61.8	0.90	0.10	1.6
	PB%	216	314.4	11.50	0.83	1.7		PB%	43	61.8	13.55	1.85	1.6
	ZN%	216	314.4	8.08	0.74	1.9		ZN%	43	61.8	7.58	1.66	1.3
	AGEQ	230	332.8	1995.21	170.69	1.7		AGEQ	30	38.2	482.83	141.13	0.9
	AU	283	409.9	3.63	0.07	4.0		AU	42	55.9	0.12	0.01	1.7
	AG	178	254.9	988.60	76.48	1.6		AG	26	34.2	137.00	48.01	0.8
BZZ	CU%	283	409.9	1.62	0.06	2.5	ES1	CU%	42	55.9	0.21	0.04	1.4
	PB%	283	409.9	26.27	1.24	2.3		PB%	42	55.9	6.21	0.71	2.0
	ZN%	283	409.9	16.95	1.04	2.0		ZN%	42	55.9	5.60	1.08	1.3
	AGEQ	207	305.6	2616.77	157.74	1.7		AGEQ	59	85.9	835.50	107.78	1.4
	AU	265	384.9	0.55	0.03	2.4		AU	64	92.4	0.05	0.01	1.1
	AG	150	218.5	1400.00	77.93	1.8		AG	45	64.9	399.23	47.07	1.4
BZ3	CU%	265	384.9	0.89	0.05	2.2	ESZ	CU%	64	92.4	2.65	0.10	3.3
	PB%	265	384.9	19.70	1.11	1.9		PB%	64	92.4	8.79	0.85	1.7
	ZN%	265	384.9	15.35	1.00	2.0		ZN%	64	92.4	9.16	0.73	1.7
	AGEQ	59	83.5	388.24	62.35	1.4		AGEQ	82	119.2	760.87	127.26	1.4
	AU	70	100.0	0.02	0.01	0.7		AU	109	158.3	0.47	0.01	3.3
	AG	30	44.4	119.00	29.52	0.9		AG	44	63.0	238.00	51.38	0.9
BZ4	CU%	70	100.0	0.34	0.03	2.0	ES3	CU%	109	158.3	0.53	0.04	1.7
	PB%	70	100.0	4.51	0.50	1.6		PB%	109	158.3	6.25	0.88	1.7
	ZN%	70	100.0	5.06	0.48	1.8		ZN%	109	158.3	9.05	1.10	1.7
20115						011	70115						
ZONE	1050	Valid	AI	Max	Mean	CV	ZONE	4050	Valid	AI	Max	Mean	<b>CV</b>
ZONE	AGEQ	Valid 32	AI 46.2	Max 591.64	<b>Mean</b> 216.72	CV 0.8	ZONE	AGEQ	Valid 15	AI 22.5	Max 204.22	<b>Mean</b> 65.81	<b>CV</b> 0.7
ZONE	AGEQ AU	Valid 32 37	AI 46.2 53.7	Max 591.64 0.23	Mean 216.72 0.02	CV 0.8 2.0	ZONE	AGEQ AU	<b>Valid</b> 15 18	AI 22.5 27.0	Max 204.22 0.03	Mean 65.81 0.01	CV 0.7 1.0
ZONE ES4	AGEQ AU AG	Valid 32 37 29	AI 46.2 53.7 42.3	Max 591.64 0.23 391.00	Mean 216.72 0.02 90.05	CV 0.8 2.0 0.9	ZONE ES8	AGEQ AU AG	Valid 15 18 9	AI 22.5 27.0 13.5	Max 204.22 0.03 85.30	Mean 65.81 0.01 35.00	CV 0.7 1.0 0.7
ZONE ES4	AGEQ AU AG CU%	Valid 32 37 29 37	AI 46.2 53.7 42.3 53.7	Max 591.64 0.23 391.00 0.23	Mean 216.72 0.02 90.05 0.06	CV 0.8 2.0 0.9 1.1	ZONE ES8	AGEQ AU AG CU%	Valid 15 18 9 18	AI 22.5 27.0 13.5 27.0	Max 204.22 0.03 85.30 0.32	Mean 65.81 0.01 35.00 0.03	CV 0.7 1.0 0.7 2.0
ES4	AGEQ AU AG CU% PB%	Valid 32 37 29 37 37 37	Al 46.2 53.7 42.3 53.7 53.7	Max 591.64 0.23 391.00 0.23 6.93	Mean 216.72 0.02 90.05 0.06 1.48	CV 0.8 2.0 0.9 1.1 1.2	ZONE ES8	AGEQ AU AG CU% PB%	Valid 15 18 9 18 18	AI 22.5 27.0 13.5 27.0 27.0	Max 204.22 0.03 85.30 0.32 2.21	Mean 65.81 0.01 35.00 0.03 0.42	CV 0.7 1.0 0.7 2.0 1.1
ZONE ES4	AGEQ AU AG CU% PB% ZN%	Valid 32 37 29 37 37 37 37	Al 46.2 53.7 42.3 53.7 53.7 53.7	Max 591.64 0.23 391.00 0.23 6.93 6.27 1993.45	Mean 216.72 0.02 90.05 0.06 1.48 1.62	CV 0.8 2.0 0.9 1.1 1.2 0.9	ES8	AGEQ AU AG CU% PB% ZN%	Valid 15 18 9 18 18 18 18	AI 22.5 27.0 13.5 27.0 27.0 27.0	Max 204.22 0.03 85.30 0.32 2.21 1.16	Mean 65.81 0.01 35.00 0.03 0.47 0.43	CV 0.7 1.0 0.7 2.0 1.1 0.8
ES4	AGEQ AU AG CU% PB% ZN% AGEQ	Valid 32 37 29 37 37 37 37 37 19	AI 46.2 53.7 42.3 53.7 53.7 53.7 28.5 215	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15	Mean 216.72 0.02 90.05 0.06 1.48 1.62 217.63	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2	ES8	AGEQ AU AG CU% PB% ZN% AGEQ	Valid 15 18 3 18 18 18 18 18 444	AI 22.5 27.0 13.5 27.0 27.0 27.0 660.8 917.0	Max 204.22 0.03 85.30 0.32 2.21 1.16 2609.57	Mean 65.81 0.01 35.00 0.03 0.47 0.43 176.19	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6
ES4	AGEQ AU AG CU% PB% ZN% AGEQ AU	Valid 32 37 29 37 37 37 37 19 21	AI 46.2 53.7 42.3 53.7 53.7 53.7 53.7 28.5 31.5 31.5	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.96	Mean 216.72 0.02 90.05 1.48 1.62 217.63 0.05	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6	ES8	AGEQ AU AG CU% PB% ZN% AGEQ AU	Valid 15 18 3 18 18 18 18 444 622 203	AI 22.5 27.0 13.5 27.0 27.0 27.0 660.8 917.0	Max 204.22 0.03 85.30 0.32 2.21 1.16 2609.57 3.33 1221.50	Mean 65.81 0.01 35.00 0.03 0.47 0.43 176.19 0.04	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 18
ES5	AGEQ AU AG CU% PB% ZN% AGEQ AU AG	Valid 32 37 29 37 37 37 37 19 21 21 12	Al 46.2 53.7 42.3 53.7 53.7 53.7 28.5 31.5 17.8 21 5	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.19	Mean 216.72 0.02 90.05 0.06 1.48 1.62 217.63 0.05 129.50 0.04	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1	ES8 SKARN	AGEQ AU AG CU% PB% ZN% AGEQ AU AG	Valid 15 18 3 18 18 18 18 444 622 303 822	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 917.0 450.6 917.0	Max 204.22 0.03 85.30 0.32 2.21 1.16 2609.57 3.33 1221.50 5 13	Mean 65.81 0.01 35.00 0.03 0.47 0.43 176.19 0.04 76.06 0.16	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6
ES5	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU%	Valid 32 37 29 37 37 37 19 21 12 21 21	Al 46.2 53.7 42.3 53.7 53.7 53.7 53.7 28.5 31.5 17.8 31.5 31.5 31.5	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.21	Mean   216.72   0.02   90.05   1.48   1.62   217.63   0.05   129.50   0.04   2.40	CV 0.8 2.0 0.9 1.1 1.2 1.6 1.2 1.1 1.1	ES8 SKARN	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% DB%	Valid 15 18 3 18 18 18 18 444 622 303 622 622	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 917.0 450.6 917.0 917.0	Max 204.22 0.03 85.30 0.32 2.21 1.16 2609.57 3.33 1221.50 5.13 15.05	Mean   65.81   0.01   35.00   0.47   0.43   176.19   0.04   76.06   0.30	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6
ES5	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% PB%	Valid 32 37 29 37 37 37 37 19 21 12 21 21 21	Al 46.2 53.7 42.3 53.7 53.7 53.7 53.7 28.5 31.5 31.5 31.5 31.5 31.5 31.5	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.71 3.10	Mean 216.72 0.02 90.05 0.06 1.48 1.62 217.63 0.05 129.50 0.04 2.40 2.91	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.1 1.4	ES8 SKARN	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% 2N%	Valid 15 18 9 18 18 18 18 444 622 303 622 622 622	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 917.0 450.6 917.0 917.0	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   3108	Mean   65.81   0.01   35.00   0.03   0.47   0.43   176.19   0.04   76.06   0.16   0.30   186	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 2.3
ES4 ES5	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN%	Valid 32 37 29 37 37 37 19 21 12 21 21 21 21 21 21	Al 46.2 53.7 42.3 53.7 53.7 53.7 53.7 28.5 31.5 31.5 31.5 31.5 31.5 31.5 31.5	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.88	Mean 216.72 0.02 90.05 0.06 1.48 1.62 217.63 0.05 129.50 0.04 2.40 0.91 2.40 0.91	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.4 1.1 0.6	ES8 SKARN	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN%	Valid 15 18 9 18 18 18 444 622 303 622 622 622 622 1411	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 917.0 917.0 917.0 917.0 917.0	Max 204.22 0.03 85.30 0.32 2.21 1.16 2609.57 3.33 1221.50 5.13 15.05 31.08 31.08	Mean   65.81   0.01   35.00   0.03   0.47   0.43   176.19   0.04   76.06   0.16   1.66   167.55	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 2.3 1.6
ES5	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ	Valid 32 37 29 37 37 37 37 19 21 12 21 21 21 21 21 9 9	Al 46.2 53.7 42.3 53.7 53.7 53.7 53.7 28.5 31.5 31.5 31.5 31.5 31.5 31.5 31.5 31	Max 531.64 0.23 331.00 0.23 6.33 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.89 0.06	Mean 216.72 0.02 90.05 1.48 1.62 217.63 0.05 129.50 0.04 2.40 0.91 173.32 0.05	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.4 1.1 1.4 0.6 0.1	ES8 SKARN	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEU	Valid 15 18 9 18 18 18 18 444 622 303 622 622 622 622 1,411 1,802	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 917.0 917.0 917.0 917.0 917.0 2063.6 2624.6	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   31.08.7   2616.7   8.26	Mean   65.81   0.01   35.00   0.03   0.47   0.43   176.19   0.04   76.06   0.16   1.30   157.55   0.06	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 2.3 1.6 5.0
ES4 ES5	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU	Valid 32 37 29 37 37 37 37 19 21 21 21 21 21 21 21 9 9 9 9	Al 46.2 53.7 42.3 53.7 53.7 53.7 53.7 28.5 31.5 31.5 31.5 31.5 31.5 31.5 31.5 31	Max 531.64 0.23 331.00 0.23 6.33 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.88 0.06 75.20	Mean   216.72   0.02   90.05   0.06   1.48   1.62   217.63   0.05   129.50   0.04   2.40   0.91   17.32   0.37.82	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.4 1.1 1.4 1.1 0.6 0.1	ES8 SKARN	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG	Valid 15 18 9 18 18 18 18 444 622 303 622 622 622 1,411 1,802 1,010	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 317.0 450.6 917.0 917.0 917.0 917.0 2063.6 2624.6 2624.6	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   31.08   2616.77   6.26   400.00	Mean   65.81   0.01   35.00   0.03   0.47   0.43   176.19   0.04   76.06   0.16   157.55   0.76	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 2.3 1.6 5.0 1.6
ES5 ES5	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AGEQ AU	Valid 32 37 29 37 37 37 37 19 21 21 21 21 21 21 21 21 9 9 9 9 9 9	Al 46.2 53.7 42.3 53.7 53.7 53.7 28.5 31.5 31.5 31.5 31.5 31.5 31.5 31.5 31	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.88 0.06 76.20 0.12	Mean   216.72   0.02   90.05   0.06   1.48   1.62   217.63   0.05   123.50   0.04   2.40   0.91   17.332   0.05   37.82   0.08	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.4 1.1 1.4 1.1 0.6 0.1 0.6 0.5	ZONE ES8 SKARN	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU%	Valid 15 18 9 18 18 18 444 622 303 622 622 622 622 1,411 1,802 1,010 1,802	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 317.0 450.6 917.0 917.0 917.0 917.0 917.0 2063.6 2624.6 1473.2 2624.6	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   31.08   2616.77   6.26   1400.05   5.13	Mean   65.81   0.01   35.00   0.03   0.47   0.43   176.19   0.04   76.06   0.16   157.55   0.06   70.76   0.076	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 2.3 1.6 5.0 1.6 3.1
ES5 ES6	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB%	Valid 32 37 29 37 37 37 37 19 21 21 21 21 21 21 21 21 9 9 9 9 9 9	Al 46.2 53.7 42.3 53.7 53.7 53.7 53.7 28.5 31.5 31.5 31.5 31.5 31.5 31.5 31.5 31	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.88 0.06 76.20 0.16	Mean   216.72   0.02   90.05   0.06   1.48   1.62   217.63   0.05   123.50   0.04   2.40   0.91   173.32   0.05   37.82   0.65	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.4 1.1 1.4 1.1 0.6 0.1 0.6 0.5 0.5	ES8 SKARN	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB%	Valid 15 18 9 18 18 18 18 444 622 303 622 622 622 1,411 1,802 1,010 1,802 1,812	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 317.0 450.6 317.0 917.0 917.0 917.0 917.0 2063.6 2624.6 1473.2 2624.6	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   31.08   2616.77   6.26   1400.03   26.27	Mean   65.81   0.01   35.00   0.03   0.47   0.43   176.19   0.04   76.06   0.16   157.55   0.06   70.76   0.06   70.76   0.080	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 2.3 1.6 5.0 1.6 3.1 2.3
ES5 ES6	AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AGEQ   AU   AGEQ   AU   AG   PB%   ZN%	Valid 32 37 29 37 37 37 37 19 21 21 21 21 21 21 21 21 9 9 9 9 9 9	Al 46.2 53.7 42.3 53.7 53.7 53.7 28.5 31.5 31.5 31.5 31.5 31.5 31.5 31.5 31	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.88 0.06 76.20 0.16 4.00	Mean   216.72   0.02   90.05   0.06   1.48   1.62   217.63   0.05   123.50   0.04   2.40   0.91   173.32   0.05   37.82   0.08   1.62	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.4 1.1 1.4 1.1 0.6 0.1 0.5 0.5 0.6 0.7	ZONE ES8 SKARN Total	AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AGEQ   AU   AG   CU%   PB%   ZN%	Valid 15 18 9 18 18 18 444 622 303 622 622 622 1,411 1,802 1,010 1,802 1,802 1,802 1,802	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 317.0 450.6 317.0 917.0 917.0 917.0 917.0 2063.6 2624.6 1473.2 2624.6 2624.6	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   31.08   2616.77   6.26   1400.00   5.13   26.27   3108	Mean   65.81   0.01   35.00   0.03   0.47   0.43   176.19   0.04   76.06   0.16   157.55   0.06   70.76   0.09   0.80   121	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 2.3 1.6 5.0 1.6 3.1 2.3 2.2
ES4 ES5 ES6	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% CU%	Valid 32 37 29 37 37 37 37 19 21 21 21 21 21 21 21 21 9 9 9 9 9 9	Al 46.2 53.7 42.3 53.7 53.7 53.7 28.5 31.5 31.5 31.5 31.5 31.5 31.5 31.5 31	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.88 0.06 76.20 0.16 4.00 4.00 4.00 4.00	Mean   216.72   0.02   90.05   0.06   1.48   1.62   217.63   0.05   123.50   0.04   2.40   0.91   173.32   0.05   37.82   0.08   1.65   1.91	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.4 1.1 0.6 0.1 0.6 0.5 0.6 0.7 0.6	ES8 SKARN Total	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN%	Valid 15 18 9 18 18 18 444 622 303 622 622 622 1,411 1,802 1,010 1,802 1,802 1,802 3,100	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 317.0 450.6 317.0 317.0 317.0 317.0 317.0 2063.6 2624.6 2624.6 2624.6 2624.6 2624.6	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   31.08   2616.77   5.13   26.27   31.08   26.27   31.08	Mean   65.81   0.01   35.00   0.03   0.47   0.43   176.19   0.04   76.06   0.16   0.30   157.55   0.06   70.76   0.09   0.80   1.21   11102	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 3.6 2.3 1.6 5.0 1.6 3.1 2.3 2.2 2.0
ES5 ES6	AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AGEQ   AU   AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AG   CU%   PB%   ZN%	Valid 32 37 29 37 37 37 37 19 21 21 21 21 21 21 21 21 21 9 9 9 9 9	Al 46.2 53.7 42.3 53.7 53.7 53.7 28.5 31.5 31.5 31.5 31.5 31.5 31.5 31.5 31	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.88 0.06 76.20 0.16 4.00 4.60 361.70 0.08	Mean   216.72   0.02   90.05   0.06   1.48   1.62   217.63   0.05   123.50   0.04   2.40   0.91   173.32   0.05   37.82   0.08   1.65   1.91   211.04   0.05	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.4 1.1 1.4 1.1 0.6 0.1 0.6 0.5 0.6 0.7 0.6 0.6	ES8 SKARN Total	AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AG   ZN%   AGEQ   AU   AG   ZN%   AGEQ   AU   AGEQ   AU   AGEQ   AU   AGEQ   AGEQ   AGEQ   AGEQ   AGEQ   AGEQ   AGEQ   AU   AGEQ   AGEQ	Valid 15 18 9 18 18 18 444 622 303 622 622 622 1,411 1,802 1,010 1,802 1,802 1,802 3,100 8,075	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 317.0 450.6 917.0 917.0 917.0 917.0 917.0 917.0 2063.6 2624.6 2624.6 2624.6 2624.6 2624.6 2624.6 2624.6 1473.2	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   31.08   2616.77   3.03   26.27   31.08   2616.77   27.92	Mean   65.81   0.01   35.00   0.03   0.47   0.43   176.19   0.04   76.06   0.16   0.30   157.55   0.06   70.76   0.09   0.80   1.21   111.02   0.05	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 2.3 1.6 5.0 1.6 3.1 2.3 1.6 3.1 2.3 2.2 2.0 10,1 10,2
ES5 ES6	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU%	Valid 32 37 29 37 37 37 19 21 21 21 21 21 21 21 21 21 9 9 9 9 9	Al 46.2 53.7 42.3 53.7 53.7 53.7 28.5 31.5 17.8 31.5 31.5 31.5 31.5 13.6 13.6 13.6 13.6 13.6 13.6 13.6 13.6	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.88 0.06 76.20 0.16 4.00 4.60 361.70 0.05 21	Mean   216.72   0.02   90.05   0.06   1.48   1.62   217.63   0.05   123.50   0.04   2.40   0.91   173.32   0.05   37.82   0.08   1.65   1.91   210.04   0.05	CV 0.8 2.0 0.9 1.1 1.2 1.6 1.2 1.1 1.4 1.1 1.4 1.1 0.6 0.1 0.6 0.5 0.6 0.7 0.6 0.6 0.8	ZONE ES8 SKARN Total	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG	Valid 15 18 9 18 18 18 444 622 303 622 622 622 1,411 1,802 1,010 1,802 1,802 1,802 1,802 3,100 8,075 1,690	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 317.0 450.6 317.0 917.0 917.0 917.0 917.0 917.0 2063.6 2624.6 26263.6 2624.6 2625.7 2625.	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   31.08   2616.77   5.13   26.27   31.08   2616.77   27.92   1400.00	Mean   65.81   0.01   35.00   0.03   0.47   0.43   176.19   0.04   76.06   0.16   0.30   1.66   157.55   0.06   70.76   0.09   0.80   1.21   111.02   0.05   64.93	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 2.3 1.6 5.0 1.6 3.1 2.3 1.6 3.1 2.3 2.2 2.0 10.1 1.8 1.6 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
ES5 ES6 ES7	AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU% PB% ZN% AGEQ AU AG CU%	Valid 32 37 29 37 37 37 19 21 21 21 21 21 21 21 21 21 9 9 9 9 9	Al 46.2 53.7 42.3 53.7 53.7 53.7 28.5 31.5 31.5 31.5 31.5 31.5 31.5 13.6 13.6 13.6 13.6 13.6 13.6 13.6 13.6	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.88 0.06 76.20 0.16 4.00 4.60 361.70 0.08 205.21 0.22	Mean   216.72   0.02   90.05   0.06   1.48   1.62   217.63   0.05   123.50   0.04   2.40   0.91   173.32   0.05   37.82   0.08   1.65   1.91   211.04   0.05   108.08   0.14	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.4 1.1 0.6 0.1 0.6 0.5 0.6 0.7 0.6 0.8 0.5 0.6 0.8 0.5	ZONE ES8 SKARN Total	AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AG   CU%   PB%   ZN%	Valid 15 18 9 18 18 18 444 622 303 622 622 622 622 1,411 1,802 1,010 1,802 1,802 1,802 1,802 3,100 8,075 1,690 7,835	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 317.0 450.6 317.0 917.0 917.0 917.0 917.0 2063.6 2624.6 2625.7 2655.7 2655.7 2655.7 2655.7 2655.7 2655.7 2655.	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   31.08   2616.77   3.108   264.27   31.08   2616.77   27.92   1400.00   5.13	Mean   65.81   0.01   35.00   0.03   0.47   0.43   176.19   0.04   76.06   0.16   0.30   157.55   0.06   70.76   0.09   0.80   1.21   111.02   0.05   64.93   0.04	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3
ES5 ES5 ES5 ES7	AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AGEQ   AU   AG   CU%   PB%   DB%	Valid 32 37 29 37 37 37 19 21 12 21 21 21 21 21 9 9 9 9 9 9 9 9 9 9 3 3 3 3 3 3 3 3 3 3 3 3 3	AI   46.2   53.7   42.3   53.7   31.5   31.5   31.5   13.6   13.6   13.6   13.6   13.6   13.6   4.4   4.4   4.4	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.88 0.06 76.20 0.16 4.00 4.60 361.70 0.08 205.21 0.22 2.59	Mean   216.72   0.02   90.05   0.06   1.48   1.62   217.63   0.05   123.50   0.04   2.40   0.91   173.32   0.05   37.82   0.08   1.65   1.91   211.04   0.05   108.08   0.15	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.4 1.1 0.6 0.1 0.6 0.5 0.6 0.7 0.6 0.8 0.5 0.6	ZONE ES8 SKARN Total All	AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AG   ZN%   AGEQ   AU   AGEQ   AU   AGEQ   AU   AGEQ   AU   AG   CU%   PB%	Valid 15 18 9 18 18 18 444 622 303 622 622 622 622 1,411 1,802 1,010 1,802 1,802 1,802 1,802 3,100 8,075 1,635 7,835	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 917.0 450.6 917.0 917.0 917.0 917.0 917.0 2063.6 2624.6 2625.3 2625.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.6 2655.	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   31.08   2616.77   5.13   26.27   31.08   2616.77   31.08   2616.77   31.08   2616.77   31.08   2616.77   27.92   1400.00   5.13   262.7	Mean   65.81   0.01   35.00   0.47   0.43   176.19   0.04   76.06   0.16   0.30   157.55   0.06   70.76   0.09   0.80   121   111.02   0.05   64.93   0.04	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 3.6 3.6 3.6 3.1 1.6 3.1 2.3 1.6 3.1 2.3 1.6 3.1 2.3 1.6 3.1 1.3 2.2 2.0 10.1 1.8 4.2 4.1
ZONE ES4 ES5 ES6 ES7	AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AGEQ   AU   AG   CU%   PB%   ZN%	Valid 32 37 29 37 37 37 19 21 21 21 21 21 21 21 21 21 21 9 9 9 9	AI   46.2   53.7   42.3   53.7   31.5   31.5   13.6   13.6   13.6   13.6   13.6   13.6   4.4   4.4   4.4   4.4	Max 591.64 0.23 391.00 0.23 6.93 6.27 1083.15 0.32 551.86 0.18 13.71 3.10 388.88 0.06 76.20 0.16 4.00 4.60 361.70 0.08 205.21 0.22 2.59 1.25	Mean   216.72   0.02   90.05   0.06   1.48   1.62   217.63   0.05   123.50   0.04   2.40   0.91   173.32   0.05   37.82   0.08   1.65   1.91   211.04   0.05   108.08   0.14   1.58   0.87	CV 0.8 2.0 0.9 1.1 1.2 0.9 1.2 1.6 1.2 1.1 1.4 1.1 0.6 0.5 0.6 0.7 0.6 0.5 0.5 0.5 0.6 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	ZONE ES8 SKARN Total All	AGEQ   AU   AG   CU%   PB%   ZN%   AGEQ   AU   AGEQ   AU   AGEQ   AU   AGEQ   AU   AG   CU%   PB%   ZN%	Valid 15 18 9 18 18 18 444 622 303 622 622 622 1,411 1,802 1,010 1,802 1,802 1,802 1,802 3,100 8,075 1,635 7,835 7,835	Al 22.5 27.0 13.5 27.0 27.0 27.0 660.8 917.0 450.6 917.0 917.0 917.0 917.0 917.0 917.0 2063.6 2624.6 2624.6 2624.6 2624.6 2624.6 2624.6 2624.6 2624.6 2624.6 2624.6 2624.6 10704.8 2353.3 10396.7 10396.7	Max   204.22   0.03   85.30   0.32   2.21   1.16   2609.57   3.33   1221.50   5.13   15.05   31.08   2616.77   5.13   26.27   31.08   2616.77   21.02   1400.00   5.13   26.27   31.08	Mean   65.81   0.01   35.00   0.47   0.43   176.19   0.04   76.06   0.16   0.30   1.66   157.55   0.06   70.76   0.09   0.80   1.21   111.02   0.05   64.93   0.04   0.28   0.39	CV 0.7 1.0 0.7 2.0 1.1 0.8 1.6 4.9 1.8 2.6 3.6 3.6 3.6 3.6 3.1 1.6 3.1 2.3 1.6 3.1 2.3 1.6 3.1 2.3 1.6 3.1 1.3 2.2 2.0 10.1 1.8 4.2 4.2 4.2 3.8 4.2 3.6 3.1 3.1 3.1 3.1 3.3 3.1 3.1 3.3 3.4 3.1 3.1 3.3 3.4 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1

### TABLE 14.3: COMPOSITE STATISTICS WEIGHTED BY LENGTH





FIGURE 14-11: BOX PLOT OF AGEQ COMPOSITES BY ZONE

Note: Blue box is normal distribution. Red box is log-normal, black box is the data range with mean grade. Source: Kirkham Geosystems, 2018

## 14.6 EVALUATION OF OUTLIER ASSAY VALUES

An evaluation of the probability plots suggests that there may be outlier assay values that could result in an overestimation of resources. Although it is believed that this risk is relatively low, it was considered prudent to cut the silver, gold, copper, lead and zinc composites to 700 g/t, 1.5 g/t, 1.4%, 5% and 19%, respectively to reduce the effects of outliers.

## 14.7 SPECIFIC GRAVITY ESTIMATION

Bulk densities were based on a total of 106 individual measurements taken by Southern field personnel from nine mineralized zones ranging from 2.9m to 10.9m in thickness. These density values ranged from 2.51 t/m<sup>3</sup> to 4.15 t/m<sup>3</sup>. However, an average value of 2.85 t/m<sup>3</sup> was used as it was thought to representative of the densities within the Blind, El Sol, Las Victorias and Skarn Front zones.

## 14.8 VARIOGRAPHY

Experimental variograms and variogram models in the form of correlograms were generated for silver, gold, copper, lead and zinc grades. However, the individual zones do not have sufficient data to generate meaningful variogram results. For this reason, it was decided at this time to use inverse distance to the second power as the interpolator.



### 14.9 BLOCK MODEL DEFINITION

The block model used to estimate the resources was defined according to the limits specified in Figures 14-12 and 14-13. The block model is orthogonal and non-rotated, reflecting the orientation of the deposit. The chosen block size was 10 m by 10 m by 2 m, roughly reflecting the drill hole spacing (i.e., 4– 6 blocks between drill holes) which is spaced at approximately 50 m centres. Note:  $MineSight^{TM}$  uses the centroid of the blocks as the origin.





Source: Kirkham Geosystems, 2018

Coordina	te	Min	Max	Block	Number	
Direction				size	of blocks	
X ( colum	nns/i)	-200	1200	2	700	
Y (rows	/j)	-200	1800	10	200	
Z (level	s/k)	1000	2200	10	120	
- Project B	iounds –	Min	73)		Max	
- Project B Easting	iounds - (	Min 586403.7	73)	(	Max 588697.7 ) 7.69	
- Project B Easting	iounds - (	Min 586403.7 5.75 2709721.	73) 45)	( 58869 ( ;	Max 588697.7 ) 7.69 2712162.77 )	
- Project B Easting Northing	ounds - (	Min 586403.7 5.75 2709721. 21.5	73) 45)	( 58869 ( 27121	Max 588697.7 ) 7.69 2712162.77 ) 62.75	
- Project B Easting Northing	( 586403 ( 2 270972	Min 586403.7 575 2709721. 21.5 ( 1000 )	73) 45)	( 58869 ( 27121	Max 588697.7 ) 7.69 2712162.77 ) 62.75 ( 2200 )	



Source: Kirkham Geosystems, 2018

# 14.10 RESOURCE ESTIMATION METHODOLOGY

The resource estimation plan includes the following items:


- mineralized zone code and percentage of modelled mineralization in each block; and
- estimated block silver, gold, copper, lead, and zinc grades by inverse distance to the third power, using a two-pass estimation strategy for the mineralized zone. The two passes enable better estimation of local metal grades and infill of interpreted solids.

Table 14.4 summarizes the search ellipse dimensions for the two estimation passes for each zone.

Zone	Pass	Major Axis	Semi- Major Axis	Minor Axis	1 <sup>st</sup> Rotation Angle Azimuth	2 <sup>nd</sup> Rotation Angle Dip	3 <sup>rd</sup> Rotation Angle	Min. No. Of Comps	Max. No. Of Comps	Max. Samples per Drill Hole
Blind	1	100	100	20	50	-90	0	2	12	4
El Sol	1	100	100	20	225	-80	0	2	12	4
Las Victoria	1	100	100	20	225	-80	0	2	12	4
Skarn*	1	100	100	20	145	-75	0	2	12	4
Blind	2	150	150	25	50	-90	0	1	12	4
El Sol	2	150	150	25	225	-80	0	1	12	4
Las Victoria	2	150	150	25	-80	0	0	1	12	4
Skarn*	2	150	150	25	280	-75	0	1	12	4

TABLE 14.4: SEARCH ELLIPSE PARAMETERS FOR THE CERRO LAS MINITAS DEPOSIT

Source: Kirkham Geosystems, 2018

\*See Section 14.11

### 14.11 RELATIVE ELEVATION ESTIMATION FOR SKARN ZONE

The Skarn Zone is a deposit that poses a number of challenges with respect to modeling and interpolation. The first challenge is that, based on data and observations, the mineralization, and more importantly, the grade is layered or banded. In addition, due to the abrupt change in strike of the deposit and undulations as shown in Figure 14-14, using a standard oriented ellipse to guide the estimation process does not account for, nor does it adequately deal with, significant changes in dip, and more importantly, the layered deposits that are angled.

Grades in the model have been estimated using inverse distance. In an attempt to adequately account for the changes in strike and dip, a *relative elevation* modeling approach has been used. Distances relative to the footwall contact of the domains are stored in both model blocks and composited drill hole samples. These Footwall Distance Values (FWDIS) are linked during interpolation to ensure that samples will only correlate with data within its stratigraphic position.

These relative elevations essentially *flatten out* the deposit for interpolation. Using relative elevations are a reflection of the continuity of the mineralization in relation to the orientation of the deposit.



The grade models have been developed using the relative elevation approach (as described in this section) and anisotropic search ellipses.



FIGURE 14-14: PLAN VIEW OF SKARN DEPOSIT ILLUSTRATING ESTIMATION CHALLENGES

Source: Kirkham Geosystems, 2018

### 14.12 RESOURCE VALIDATION

A graphical validation was completed on the block model. This type of validation serves the following purposes:

- checks the reasonableness of the estimated grades based on the estimation plan and the nearby composites;
- checks that the general drift and the local grade trends compare to the drift and local grade trends of the composites;
- ensures that all blocks in the core of the deposit have been estimated;
- checks that topography has been properly accounted for;
- checks against manual approximate estimates of tonnages to determine reasonableness; and
- inspects for and explains potentially high-grade block estimates in the neighbourhood of the extremely high assays.

A full set of cross sections, long sections and plans were used to digitally check the block model; these showed the block grades and composites. There was no indication that a block was wrongly estimated, and it appears that every block grade could be explained as a function of the surrounding composites and the applied estimation plan.



The validation techniques included the following:

- visual inspections on a section-by-section and plan-by-plan basis;
- use of grade-tonnage curves;
- swath plots comparing kriged estimated block grades with inverse distance and nearest neighbour estimates; and
- inspection of histograms showing distance from first composite to nearest block, and average distance to blocks for all composites (this gives a quantitative measure of confidence that blocks are adequately informed in addition to assisting in the classification of resources).

### 14.13 MINERAL RESOURCE CLASSIFICATION

Mineral resources were estimated in conformity with generally accepted CIM *Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines* (2003). Mineral resources are not mineral reserves and do not have demonstrated economic viability.

The mineral resources may be impacted by further infill and exploration drilling that may result in an increase or decrease in future resource evaluations. The mineral resources may also be affected by subsequent assessment of mining, environmental, processing, permitting, taxation, socio-economic and other factors. There is insufficient information in this early stage of study to assess the extent to which the mineral resources will be affected by factors such as these that are more suitably assessed in a scoping or conceptual study. As such, a Preliminary Economic Assessment is recommended.

Mineral resources for the Cerro Las Minitas deposit were classified according to the *CIM Definition Standards for Mineral Resources and Mineral Reserves* (2014) by Garth Kirkham, P.Geo., an "independent qualified person" as defined by National Instrument 43-101.

Drill hole spacing in the Cerro Las Minitas deposit is sufficient for preliminary geostatistical analysis and evaluating spatial grade variability. Kirkham Geosystems is, therefore, of the opinion that the amount of sample data is adequate to demonstrate very good confidence in the grade estimates for the deposit.

The estimated blocks were classified according to the following:

- confidence in interpretation of the mineralized zones;
- number of data used to estimate a block;
- number of composites allowed per drill hole; and
- distance to nearest composite used to estimate a block.

The classification of resources was based primarily on distance to the nearest composite; however, all of the quantitative measures, as listed here, were inspected and taken into consideration. In addition, the



classification of resources for each zone was considered individually by virtue of their relative depth from surface and the ability to derive meaningful geostatistical results.

Blocks were classified as indicated if they were within 65 m of a composite and were interpolated with a minimum of one drill holes. Note: There were no blocks classified as Measured resources. Blocks were classified as Inferred if the nearest composite was less than 100 m from the block being estimated. The remaining blocks were unclassified.

### 14.14 SENSITIVITY OF THE BLOCK MODEL TO SELECTION CUT-OFF GRADE

The mineral resources are sensitive to the selection of cut-off grade. Table 14.5 shows the total resources for all metals at varying AgEq cut-off grades. The reader is cautioned that these values should not be misconstrued as a mineral reserve. The reported quantities and grades are only presented as a sensitivity of the resource model to the selection of cut-off grades.

Note: The base case cut-off grades presented in Tables 14.5 and 14.6 are based on potentially underground, mineable resources at the base case of 175 g/t AuEq.

	Tonnes (Kt)	Ag (a/t)	Au (a/t)	Pb (%)	Zn (%)	Cu (%)	AgEq (q/t)	ZnEq (%)	Ag TrOz (000's)	Au TrOz (000's)	Pb (Mlbs)	Zn (Mlbs)	Cu Lbs (Mlbs)	AgEq TrOz (000's)	ZnEq Lbs (Mlbs)
150g/t AgEq Cut-off	· · ·	(3.7	(3)	()	()	()	(3-7	()	(,	(,	(,	(,	(	()	(,
Indicated	11,920	94	0.10	1.4	3.3	0.14	327	6.9	36,027	37.4	356.6	863.8	35.9	125,438	1,694
Inferred	10,272	68	0.04	0.6	4.2	0.15	306	6.5	22,540	13.5	143.6	945.0	33.3	101,114	1,365
175g/t AgEq Cut-Off															
Indicated	10,135	102	0.10	1.4	3.6	0.15	356	7.6	33,356	33.6	319.0	813.1	32.7	116,127	1,568
Inferred	8,685	74	0.04	0.7	4.5	0.15	332	7.0	20,721	12.2	130.6	870.0	29.4	92,726	1,252
250g/t AgEq Cut-Off															
Indicated	6,140	130	0.12	1.7	4.8	0.18	453	9.6	25,699	22.8	228.5	648.8	23.8	89,352	1,206
Inferred	5,165	93	0.05	0.9	5.7	0.19	419	8.9	15,431	8.4	99.2	653.9	22.0	69,552	939
350g/t AgEq Cut-Off															
Indicated	3,701	162	0.15	1.9	6.0	0.21	558	11.8	19,259	17.8	156.5	492.0	17.4	66,359	896
Inferred	3,115	114	0.06	1.1	6.7	0.25	498	10.6	11,455	6.2	72.2	458.6	16.9	49,850	673

TABLE 14.5: SENSITIVITY ANALYSES OF GLOBAL TONNAGE AND GRADES AT VARIOUS AUEQ CUT-OFF GRADES

Source: Kirkham Geosystems, 2018

Notes:

- 1) The current Resource Estimate was prepared by Garth Kirkham, P.Geo., of Kirkham Geosystems Ltd.
- 2) All mineral resources have been estimated in accordance with Canadian Institute of Mining and Metallurgy and Petroleum ("CIM") definitions, as required under National Instrument 43-101 ("NI43-101").
- 3) Mineral resources were constrained using mainly geological constraints and approximate 10g/t AgEq grade domains.
- 4) AgEq cut-off values were calculated using average long-term prices of \$16/oz silver, \$1,200/oz gold, \$2.75/lb Copper, \$1.00/lb lead and \$1.10/lb zinc and metal recoveries of 82% silver, 86% lead, 80% copper and 80% zinc. Base case cut-off grade assumed \$75/tonne operating and sustaining costs. All prices are stated in \$USD.
- 5) Contained metal calculations assume 100% recoveries.
- 6) Mineral resources are not mineral reserves until they have demonstrated economic viability. Mineral resource estimates do not account for a resource's mineability, selectivity, mining loss, or dilution. *All figures are rounded to reflect the relative accuracy of the estimate and therefore numbers may not appear to add precisely.*



### 14.15 MINERAL RESOURCE STATEMENT

Table 14.6 shows the Mineral Resource Statement for the Cerro Las Minitas deposit.

The author evaluated the resource in order to ensure that it meets the condition of "reasonable prospects of eventual economic extraction" as suggested under NI 43-101. The criteria considered were confidence, continuity and economic cut-off. The resource listed below is considered to have "reasonable prospects of eventual economic extraction".

The Mineral Resource Estimate which updates the previously reported March 2016 estimate, incorporates data from new drilling conducted in 2016 and 2017 that successfully delineated a major new deposit on the project and significantly increased the resource base in both the Indicated and Inferred Resource categories.

Indicated															
Zone	Tonnes (Kt)	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	Cu (%)	AgEq (g/t)	ZnEq (%)	Ag TrOz (000's)	Au TrOz (000's)	Pb (Mlbs)	Zn (Mlbs)	Cu Lbs (Mlbs)	AgEq TrOz (000's)	ZnEq Lbs (Mlbs)
Blind Zone	3,168	86	0.05	1.8	2.1	0.11	279	5.9	8,739	5.5	127.7	144.9	8.0	28,461	384
El Sol	1,150	79	0.03	2.0	2.0	0.09	276	5.9	2,931	1.2	51.4	51.9	2.3	10,217	138
Las Victorias	708	122	0.70	2.0	2.5	0.23	403	8.6	2,772	15.8	31.8	38.4	3.5	9,177	124
Skarn Front	5,109	115	0.07	1.0	5.1	0.17	416	8.8	18,915	11.1	108.2	577.9	18.8	68,273	922
Total	10,135	102	0.10	1.4	3.6	0.15	356	7.6	33,356	33.6	319.0	813.1	33	116,127	1,568
Inferred															
Zone	Tonnes (Kt)	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	Cu (%)	AgEq (g/t)	ZnEq (%)	Ag TrOz (000's)	Au TrOz (000's)	Pb (Mlbs)	Zn (Mlbs)	Cu Lbs (Mlbs)	AgEq TrOz (000's)	ZnEq Lbs (Mlbs)
Blind Zone	503	103	0.33	1.9	3.4	0.07	374	7.9	1,662	5.4	20.8	37.5	0.8	6,042	82
El Sol	264	61	0.06	1.7	2.5	0.04	263	5.6	515	0.5	10.2	14.7	0.2	2,233	30
Skarn Front	7,917	73	0.02	0.6	4.7	0.16	332	7.0	18,545	6.3	99.7	817.8	28.4	84,451	1,140
Total	8,685	74	0.04	0.7	4.5	0.15	332	7.0	20,721	12.2	130.6	870.0	29	92,726	1,252

#### TABLE 14.6: BASE-CASE TOTAL MINERAL RESOURCES AT 175 G/T AGEQ CUT-OFF

Source: Kirkham Geosystems, 2018

Notes:

- 7) The current Resource Estimate was prepared by Garth Kirkham, P.Geo., of Kirkham Geosystems Ltd.
- 8) All mineral resources have been estimated in accordance with Canadian Institute of Mining and Metallurgy and Petroleum ("CIM") definitions, as required under National Instrument 43-101 ("NI43-101").
- 9) Mineral resources were constrained using mainly geological constraints and approximate 10g/t AgEq grade domains.
- 10) AgEq cut-off values were calculated using average long-term prices of \$16/oz silver, \$1,200/oz gold, \$2.75/lb Copper, \$1.00/lb lead and \$1.10/lb zinc and metal recoveries of 82% silver, 86% lead, 80% copper and 80% zinc. Base case cut-off grade assumed \$75/tonne operating and sustaining costs. All prices are stated in \$USD.
- 11) Contained metal calculations assume 100% recoveries.
- 12) Mineral resources are not mineral reserves until they have demonstrated economic viability. Mineral resource estimates do not account for a resource's mineability, selectivity, mining loss, or dilution. All figures are rounded to reflect the relative accuracy of the estimate and therefore numbers may not appear to add precisely.



## 15 MINERAL RESERVE ESTIMATES

There are no reserves at this time.



## **16 ADJACENT PROPERTIES**

The Cerro Las Minitas property is located 70 km northeast of the City of Durango, capital of the state of Durango, and 6 km northwest of the town of Guadalupe Victoria, in the municipality of Guadalupe Victoria, Durango. All mineral ground surrounding the Cerro Las Minitas concessions is held under concessions of Industrias Peñoles. The closest projects adjacent to Cerro Las Minitas are the San Sebastian (Au-Ag) Project and the La Preciosa (Ag-Au) Deposit (Figure 16-1) and the Avino (Ag-Au-Cu) Project (not shown on the map).



FIGURE 16-1: LOCATION MAP OF ADJACENT PROPERTIES

The San Sebastian (Au-Ag) Project operated by Hecla Mining Company is located ~10 km to the east of the property and mining began in December 2015. Gold and silver mineralization is hosted in multiple structurally controlled low and intermediate sulfidation epithermal veins hosted in shales and finegrained sandstones of the Cretaceous Caracol formation. At the end of 2016, the proven and probable reserves on the San Sebastian Mine were 326,000 tons at a grade of 17.2 oz/ton silver and 0.11 oz/ton

Source: Kirkham Geosystems, 2016



gold for total contained metal of 5,600,800 oz silver and 37,000 oz gold. (Source: Annual Report 2016, Hecla Mining Company).

La Preciosa (Au-Pb-Zn) Project, situated ~50 km to the west of the property, is an advanced gold and silver project owned by Coeur Mining. Precious metal mineralization is hosted in a series of Tertiary age low and intermediate sulfidation epithermal quartz veins hosted in Tertiary age polylithic conglomerates, arkosic sandstones as well as intermediate tuffs and agglomerates. Table 16.1 shows the resources for La Preciosa.

		GR/ (Ozł	ADE Ton)	CONTAINED O	UNCES
	SHORT TONS	SILVER	GOLD	SILVER	GOLD
MEASURED					
	18,156,000	3.21	0.006	58,225,000	108,000
INDICATED					
	20,818,000	2.75	0.004	57,198,000	88,000
INFERRED					
	1,359,000	2.33	0.004	3,168,000	5,000

1. Effective December 31, 2015 except Endeavor, effective June 30, 2015.

2. Assumed metal prices for estimated reserves were \$17.50 per ounce silver and \$1,250 per ounce gold, except for San Bartolomé, Rosario and lower 76 underground deposits at Palmarejo at \$15.50 per ounce of silver and \$1,150 per ounce of gold, Endeavor at \$2,400 per tonne zinc, \$2,200 per tonne lead and \$17.00 per ounce of silver, and Wharf at \$1,275 per ounce of gold. Proven and probable reserves (other than Endeavor) were also evaluated using \$15.50 per ounce of silver and \$1,150 per ounce of gold. It was determined that substantially all proven and probable reserves could be economically and legally extracted or produced at these lower price assumptions.

3. Mineral resources are in addition to mineral reserves and do not have demonstrated economic viability. Inferred mineral resources are considered too speculative geologically to have the economic considerations applied to them that would enable them to be considered for estimation of mineral reserves, and there is no certainty that the inferred mineral resources will be realized.

 Rounding of tons and ounces, as required by reporting guidelines, may result in apparent differences between tons, grade, and contained metal content.

#### Source: Coeur Mining website

Avino Silver and Gold Mines Ltd. operates the Avino Project located in the Durango region of North Central Mexico in the heart of the Sierra Madre Silver Belt. Table 16.2 shows a summary of current mineral resources at the San Gonzalo and Avino Mines as well as the oxide tailings resource (as reported in the July 2013 Technical Report on the Avino Property) grouped into the Measured, Indicated and Inferred categories. The effective dates of the resource estimates are June 10, 2013 for San Gonzalo and Avino Mines, and July 24, 2012 for the Oxide Tailings, but it is still considered current.



					Contained	Metal		Grade					
Resource Category	Deposit	Cut-off Ag Eq"	Tonnes	Ag_Eq (oz)	Ag (oz)	Au (oz)	Cu (t)	Ag_Eq (g/t)	Ag (g/t)	Au (g/t)	Cu (%)		
Measured	San Gonzalo System	150	71,416	914,791	759,801	3,288	N/A	398	331	1.432	N/A		
Total Measured - A	All Deposits		71,416	914,791	759,801	3,288	N/A						
Indicated	Avino System	100	4,253,968	23,838,629	10,835,338	72,207	30,914	174.3	79.2	0.528	0.727		
Indicated	San Gonzalo System	150	222,407	2,763,069	2,043,514	15,263	N/A	386	286	2.134	N/A		
Total Indicated - A	II Deposits		4,476,375	26,601,698	12,878,852	87,470	30,914						
Total Measured & Indica	ited - All Deposits		4,547,791	27,516,489	13,638,653	90,758	30,914						
Inferred	Avino System	100	3,220,896	16,262,944	7,068,831	75,858	17,719	157	68.3	0.733	0.55		
Inferred	San Gonzalo System	150	1,085,276	10,494,843	8,158,834	49,549	N/A	300.8	233.8	1.42	N/A		
Inferred	Oxide Tailings	50*	2,340,000	N/A	6,660,000	39,530	N/A	N/A	91.3	0.54	N/A		
Total Inferred - All Deposits		6,646,172	26,757,787	21,887,665	164,937	17,719							

#### TABLE 16.2: AVINO PROJECT RESOURCES

\*Ag Eq not calculated for the oxide tailings resource; cut-off in g/t Ag.

#### Source: Avino website

The reader is cautioned that this information is supplied for information purposes only and in the interest of providing a complete report. However, there has been no work in the creation of this report to link these deposits or to draw definitive comparisons or associations. In addition, the author has not confirmed this publicly available disclosure and has not talked to companies to confirm the data.

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# 17 OTHER RELEVANT DATA AND INFORMATION

There is no additional relevant data or information.



## **18 INTERPRETATION AND CONCLUSIONS**

The Cerro Las Minitas property is located 70 km northeast of the City of Durango, the capital of the state of Durango, and 6 km northwest of the town of Guadalupe Victoria, in the municipality of Guadalupe Victoria, Durango, Mexico. The property consists of 21 mining concessions encompassing 26,270.15 ha.

Mineral resources on the Cerro Las Minitas project are hosted within a prominent domal uplift of Cretaceous marine sediments cored by an intrusive porphyry complex. Contact metasomatic (skarnoid) deposits of Ag, Zn, Pb, Cu and Au are known to occur at various locations in the contact zone around the central intrusive complex, as well as at the margins of some dikes that emanate from the main intrusive complex.

To date, mineralization seen at Cerro Las Minitas has been classified into four types based on surface and underground field observations and the examination of drill core: skarnoid, chimney, manto, and dike margin.

Since acquisition of the property in 2010, diamond drilling; geological mapping; geochemical rock, soil and acacia sampling; shallow and deep-seated IP surveys; a ground gravity survey; and an airborne magnetic survey have been completed. In addition, 2011 and 2012 a program of geophysics and geological mapping was conducted to define and delineate targets for exploration drilling.

A total of 108 holes totalling 49,348 m have been drilled at Cerro Las Minitas resulting in the delineation of four mineral deposits: the Blind; El Sol, Las Victorias and Skarn Front deposits and several additional target areas of high exploration potential.

The Blind and El Sol deposits comprise multiple sub-vertical northwest-southeast trending zones of semi-massive to massive sulphide mineralization. Mineralization is hosted in the skarnoid- and hornfelsaltered margins of monzonite and felsite dykes may be localized along through-going structures or occur as replacements within stratigraphic units. The mineralized zones can be traced for up to 1000 metres along strike and up to 800 metres down dip.

Sulphide mineralization in the Skarn Front deposit is localized at the outer boundary of the skarnoid alteration zone surrounding the Central Monzonite Intrusion at or near the transition to the recrystallized/marbleized carbonate sediments (marmorized zone). Mineralization can be trace for up to 800 metres along strike and up to 1000 metres depth. Geological modelling suggests that intersections between the sub-vertical, northwest-trending Blind and El Sol mineralized zones and the generally more shallowly dipping Skarn Front may localize higher-grade shoots of mineralization.

Initial drilling in 2011 targeted skarnoid and replacement deposits in the margin of the central Intrusion in the Santo Nino, Mina La Bocona and the North Skarn zones and also tested several Induced Polarization geophysical targets both within the Central Intrusion and outboard of the known zones of mineralization in gravel covered areas. This initial 11 hole drill program successfully identified extensions to the Santo Nino zone mineralization approximately 100m vertically underneath the lowest historic



workings, confirmed previous drill results at the North Skarn and Mina La Bocona targets and resulted in the discovery of the Blind zone, a new high-grade target outboard of the El Sol shaft in a gravel covered field.

The Blind Zone was initially discovered with hole 11CLM-008, which intersected a 10.9 metre down hole interval averaging 268g/t Ag, 4.5% Pb and 3.8% Zn of polymetallic mineralization adjacent to an aplite-monzonite dyke complex outboard of the central intrusion. Subsequent drilling resulted in the discovery in hole 11CLM-011 of a similar sub-parallel zone underneath the El Sol surface showing, which soon developed into the El Sol Zone. The majority of the 2011-12 drillholes were designed to offset these discovery holes at 50-100m intervals.

Drilling in 2015 continued to expand the overall size of the Blind and El Sol deposits and identify new zones of high-grade mineralization. This and subsequent drilling delineated these mineralized zones for up to 1000 metres strike and up to 650 metres depth.

Drilling in 2017 by Southern Silver successfully outlined the Skarn Front as a zone of mineralization, located at depth beneath the Blind and El Sol Zones. Mineralization occurs on the outer edge of the skarnoid alteration zone surrounding the Central Monzonite Intrusion at or near the transition into marble and forms the primary geological control on the distribution of sulphide mineralization.

Subsequent geological modelling suggests that intersections between the sub-vertical, northwesttrending mineralized zones of the Blind and El Sol deposits and the generally more shallowly dipping Skarn Front may localize higher-grade shoots of mineralization which may be in part responsible for higher grade intervals identified in some of the 2017 drilling.

Exploration in 2017 has identified two new step-out targets for further drill testing. Mineralization in the Skarn Front is open for approximately 500 metres along strike to the southeast of drill holes 17CLM-101 and -105 in what is now termed the Las Victorias zone and up to 600 metres along strike to the northeast, where the zone wraps around the northern margin of the Central Intrusion, in the North Skarn zone.

Other notable targets that returned high-grade polymetallic mineralization include the North Skarn Zone, (discovery hole 11CLM-003), the South Skarn Zone (discovery hole 12CLM-055), which was offset by Freeport McMoran Exploration Corp in 2013/14 and the Mina La Bocona Zone (discovery hole 15CLM-078), where gold and silver-lead-zinc mineralization was discovered in a series of intercepts outboard and adjacent to the historic workings.

In 2017, three additional claims were staked totalling 12,566 ha to the south and west of the existing claims to cover prospective, gravel-covered ground. These claims are collectively known as the CLM West claim group. Over 2600 rock chip and float samples have been collected in the CLM West claims to date and identify a >12 kilometre long northwest-southeast-trending corridor of anomalous precious-metal and pathfinder values that display a distinct zoning pattern consistent with modelled vertical and lateral zonation within a large epithermal vein system. Multiple distinct clusters and trends are seen in the metal distribution in the samples which provide potential future targets for further exploration on the property.



The purpose of this Technical Report was to present an update of the 2016 resource estimate for the Cerro Las Minitas Project. In addition, it served as an update on the exploration activities.

Based on a 175 g/t Silver Equivalent cut-off grade, Indicated resources are 10,135,000 tonnes at a grade of 356 g/t AgEq, 102 g/t Ag, 0.10 g/t Au, 0.15% Cu, 1.4% Pb and 2.6% Zn while Inferred resources are 8,685,000 tonnes at a grade of 332 AgEq, 74 g/t Ag, 0.04 g/t Au, 0.15% Cu, 0.7% Pb and 4.5% Zn. This resource is relatively large, of significant grade, and is close to infrastructure.

Potential risks related to the project include metallurgy, continuity of the structures and continued ability to expand resources. Further metallurgical testing is required in order to clearly understand recoveries. In addition, although the mineralized zones appear to be relatively continuous and predictable, faults and other structures may be encountered that would pose interpretation challenges. The Skarn zone appears to be amenable to more bulk underground mining methods. However, thickness can vary particularly in the Blind and El Sol zones which may require more selective mining methods which will increase costs and require higher cut-off grades to justify.

Opportunities related to the project are reflected in the fact that Cerro Las Minitas has potential as a district play with a variety of deposits types which poses excellent exploration and expansion potential.

The exploration completed by Southern Silver between 2010 and 2017 on the Cerro Las Minitas property indicates that the presence of Indicated and Inferred resources justifies the cost of ongoing exploration and development.



## **19 RECOMMENDATIONS**

From 2010-2017 Southern Silver completed programs of geological mapping, surface geochemical sampling and airborne and ground geophysical surveys in support of 49,348 metres of core drilling in 108 holes resulting in the delineation of four mineral deposits: the Blind; El Sol, Las Victorias and Skarn Front deposits on the Cerro Las Minitas Property.

This mineralization in the Skarn Front deposit is hosted within the contact skarn on the western margin of the central intrusion and is hosted in the skarn- and hornfels-altered zones forming on the margins of monzonite to felsite dykes in the Blind, El Sol and Las Victorias mineral deposits. Within each deposit, mineralization may be localized along through-going structures or occur as replacements within stratigraphic units. The mineralized zones can be traced for up to 1000 metres along strike and up to 1000 metres down dip. Mineralization appears open to the southeast, northeast and at depth.

Drilling in the Skarn Front zone was not evenly spaced and as a result, it would be prudent to target these areas with drillhole intercepts to confirm continuity and have the potential to extend high grade trends. Primarily these target areas include a region down dip from drill hole 17CLM-095 and an area adjacent to drill hole 16CLM-088.

Thick and high-grade zones of mineralization were identified in drilling in the Las Victorias target area along the southeast margin of the Blind and Skarn Front deposits in drill holes CLM-101 and CLM-105. Each hole intersected an upper zone of mineralization correlating to the faulted offset of the Blind Zone and a lower zone correlating to the Skarn Front deposit. Mineralization is open for up to 500 metres along strike and at depth. Further expansion of the mineral resources to the southeast should be a focus of additional drilling in this new target area.

Mineralization is also open for up to 600 metres along strike to the northeast, where the Skarn Front zone wraps around the northern margin of the Central Intrusion, known as the North Skarn target area. Earlier shallow drilling identified two potential ore shoots which require drill testing to depth. One of these is the extension of the historic Santo Nino ore shoot which has been developed to over 200 metres depth as a small-scale historic mining operation.

Mineralization is open at depth in the Skarn Front deposit specifically in the area of drill hole CLM-098 which returned strongly anomalous copper mineralization over several tens of metres. Future drilling should test down dip of this mineralized intersection.

Other targets include the Mina La Bocona area, located on the eastern side of the central intrusion and South Skarn area. These targets are currently a lower priority but continue to have good exploration potential.

Rock chip and float samples from the recently staked CLM West claim group outline a >12-kilometrelong northwest-southeast-trending corridor of anomalous precious-metal and pathfinder values that display a distinct zoning pattern consistent with modelled vertical and lateral zonation within a large



epithermal vein system. Multiple distinct clusters and trends are seen in the metal distribution which form the basis for future drill targeting on this part of the property.

The author recommends:

- Several fences of holes stepping out to the southeast into the Las Victoria target area at ~200m intervals in order to test the on-strike potential of the Skarn Front and Blind zone extensions. Infill drilling can follow in order to better define the specific mineralized zones;
- The extension and delineation of the mineralization identified to the northeast of the Skarn Front in the North Skarn Target area. Two potential mineralized shoots are identified in this target area that require testing;
- Further drill testing down dip of the Skarn Front deposit;
- Drilling to further develop and extend high grade trends within the Skarn Front deposit;
- Surface sampling, mapping and prospecting and potentially follow-up drilling in the newly acquired CLM West Claim Group. Exploration in the CLM West claim package is targeting high-grade epithermal silver-gold quartz vein systems within Tertiary volcanic stratigraphy;
- Engineering studies and metallurgical testing to prepare the project for a Preliminary Economic Assessment:
- Complete a Preliminary Economic Assessment.

Table 19.1 present an ongoing exploration and development program for the Cerro Las Minitas property. Approximate expense items are listed with a description where appropriate and a total cost. The length of this program is approximately twelve months from inception through to completion of a status report.



Phased Exploration: 10,000m Core; 2,500m RC Drill Program									
Budgetary Perio	d: Jan 2018 -	Dec	2018						
Cummulative Exploration Da	ys 300								
RC Drill - CLM We	st 2,500	m							
Diamond Drilling - Area of the Cer	ro 10,000	m							
Surface Samples collect	ed 1200								
Claim and Property		\$	135,000						
Field Program			I						
Project Infrastructure		s	15,000						
Assaying		\$	265,000						
Drilling		\$	1,290,000						
Travel		\$	5,000						
Field Presonnel		\$	375,000						
Field Program Subtotal		\$	1,950,000						
IVA		\$	315,000						
Field Program Expenses		\$	2,265,000						
Oversite / Technical Reporting			I						
		-							
Project Admin and Oversight		\$	275,000						
Engineering Work and Reporting		s	325,000						
<b>Oversite and Reporting Expense</b>	5	\$	600,000						
Project Total		\$	3,000,000						

### TABLE 19.1: PROPOSED 2018-2019 PROGRAM BUDGET

Source: Southern Silver 2018



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## 21 CERTIFICATES

I, Garth David Kirkham, P.Geo., do hereby certify that:

- 1) I am a consulting geoscientist with an office at 6331 Palace Place, Burnaby, British Columbia.
- This certificate applies to the entitled "Updated Mineral Resource Estimate for the Cerro Las Minitas Project, Durango State, Mexico" with effective date of 23<sup>rd</sup> of February, 2018 ("Technical Report") prepared for Southern Silver Exploration Corporation, Vancouver, B.C.
- 3) I am a graduate of the University of Alberta in 1983 with a BSc. I have continuously practiced my profession since 1988. I have worked on and been involved with NI43-101 studies on the Kutcho Creek and Debarwa poly-metallic deposits along with the initial resource estimate on the Cerro Las Minitas Project.
- 4) I am a member in good standing of the Association of Professional Engineers and Geoscientists of BC (EGBC).
- 5) I have visited the property on March 31, 2015 through April 2, 2015.
- 6) In the independent report titled entitled "Updated Mineral Resource Estimate for the Cerro Las Minitas Project, Durango State, Mexico" with effective date of 22<sup>nd</sup> of February, 2018. I am responsible all Sections.
- 7) I had had prior involvement with the property and was the author of the independent technical report titled entitled "Mineral Resource Estimate for the Cerro Las Minitas Project, Durango State, Mexico" with effective date of 21<sup>st</sup> of March, 2016.
- 8) I am independent of Southern Silver Exploration Corporation as defined in Section 1.5 of National Instrument 43-101.
- 9) I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by reason of education, experience, independence and affiliation with a professional association, I meet the requirements of an Independent Qualified Person as defined in National Instrument 43-101.
- 10) I am not aware of any material fact or material change with respect to the subject matter of the technical report that is not reflected in the Technical Report and that, at the effective date of the Technical Report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.



11) I have read National Instrument 43-101, Standards for Disclosure of Mineral Projects and Form 43-101F1. This technical report has been prepared in compliance with that instrument and form.

Dated this 22<sup>nd</sup> day of February, 2018 in Burnaby, British Columbia

"Garth Kirkham" {signed and sealed}

Garth Kirkham, P.Geo. Kirkham Geosystems Ltd.