Amended NI 43-101 Technical Report Prefeasibility Study Update Segovia Project Colombia

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Report Prepared for

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Table of Contents

List of Tables

List of Figures

Appendices

1 Summary

This report was prepared as a prefeasibility-level Canadian National Instrument 43-101 (NI 43-101) Technical Report (Technical Report) for Gran Colombia Gold Corp. (Gran Colombia or Company) by SRK Consulting (U.S.), Inc. (SRK) on the Segovia Project, which is comprised of several areas named Providencia, El Silencio, Sandra K, Carla, and Las Verticales Veins System (Las Aves, Pomarosa and Pomarosa 2 shears). The Las Verticales Vein System is currently considered at the exploration stage and is there reported within the Mineral Resources but excluded from the prefeasibility study due to the level of confidence at the current stage.

1.1 Property Description and Ownership

The Segovia Project (Segovia or the Segovia Project) is an operational gold mine located in Colombia's Segovia-Remedios mining district, Department of Antioquia, north-west Colombia approximately 180 kilometers (km) northeast of Medellín (the Department capital of Antioquia), at 74° 42' W and 7° 04' N. The Carla Project (Carla, or the Carla Project) is an exploration prospect located approximately 10 kilometers (km) southeast of Segovia at approximately 7° 04' 18.0'' N, 74° 41' 55.5' W.

1.2 Geology and Mineralization

Gold mineralization at Segovia occurs in mesothermal quartz-sulfidic veins hosted by quartz diorite to granodiorite rocks of the Segovia Batholith. The well-known, partially exploited veins dip at approximately 30° to the east or north-east. There are also a number of steeply dipping shear-zones hosting quartz veins with a N40W trend in the western part of the concession, termed the Las Verticales Veins System.

The modeled vein at Providencia is broadly E-W striking and is geologically continuous along strike for approximately 2.0 km and has a confirmed down dip extent that ranges from 690 meters (m) to greater than 1.3 km, and an average thickness of 0.9 m, reaching over 5 m in areas of significant swelling or thrust duplex and less than 0.1 m where the vein pinches. Locally, the Providencia vein displays significant disruption by faulting, pinch and swell structures, fault brecciation and fault gouge. The sample data for Sandra K and El Silencio, both striking broadly N-S, confirms geological continuity along strike for 1.2 km and 2.2 km respectively and indicates down-dip extents of up to 900 m, with thicknesses and structural complexities that are comparable to the Providencia vein. The mineralized structures show a close spatial relationship with mafic dykes, which are interpreted as pre-dating the gold mineralization.

Although currently less well defined by sampling, the Las Verticales Veins System, which is broadly NW-SE striking, appears geologically continuous along strike for more than 3.0 km, and has an average thickness of 0.5 m, reaching over 2.0 m in areas of vein swelling. The Carla Project is located on a separate license located approximately 10 km south of the Segovia town.

Gold mineralization at the Carla Project also occurs in mesothermal quartz-sulfide veins hosted by quartz diorite to granodiorite of the Segovia Batholith. The Carla vein dips at approximately 35° to the east and is offset by three broadly NW-SE trending, steeply dipping faults, which reflect a dominantly strike-slip sinistral sense of movement. As at Segovia, the mineralized structure at Carla shows a close spatial relationship with mafic dykes, which are interpreted as pre-dating the gold mineralization.

The modeled structure at Carla is geologically continuous along strike for approximately 900 m and has a confirmed down-dip extent that ranges from 400 m to greater than 750 m, and an average thickness of 0.8 m, reaching over 3.5 m in areas of significant swelling and less than 0.1 m where the vein pinches.

1.3 Status of Exploration, Development and Operations

It is understood that the previous owners of the Segovia Project, Frontino Gold Mines (FGM), did not complete any regional surface geological mapping, geochemistry, or surface or airborne geophysics. Historical exploration data is mainly limited to underground mapping, sampling and drilling for resource development.

The historical underground channel sampling database made available to SRK consists of more than 100,000 samples and is understood to incorporate data from the past 30 years. The database provided is largely restricted to vein samples only, with the hanging-wall, footwall and face 'composite' data stored separately. SRK completed a validation exercise on the electronic database provided, where potentially erroneous data exists in the database SRK has accounted for these areas during the classification process. SRK has reviewed all quality assurance/quality control (QA/QC) information available and has deemed the assay database to be in line with industry best practice and therefore deemed it acceptable for the determination of Mineral Resource estimates.

SRK has previously made a number of recommendations for improvement in terms of further verifying the historic underground database and, as such, the Company has continued with verification channel sampling programs between 2013 and 2017 at the Providencia and Sandra K Mines. SRK recommends this work extend to El Silencio.

Since 2015, the Company began completing infill drilling at Providencia using underground drill rigs, with the aim of infill drilling via fan drilling to approximately 20 m x 20 m spacing. Drilling is completed using industry-standard underground rigs using NQ core diameter which is consistent with the surface drilling.

During 2016, Gran Colombia completed an infill program designed to confirm and increase the confidence in the grade distribution of the eastern fault block at the Sandra K Mine. The program consisted of 34 holes drilled from surface for a total of 6,493.85 m (including two re-drills). All diamond core has been logged and sent for preparation and fire assay to SGS laboratories (SGS) facility in Medellín. Additionally, at Sandra K, 11 underground holes were drilled on the Chumeca vein totaling some 2,038.3 m.

In 2017 the Company expanded the program to include underground infill drilling programs at the Providencia, Sandra K and El Silencio mine. The program consisted of 157 holes drilled for a total of 20,509 m of additional sampling information in the databases provided. All diamond core has been logged and sent for preparation to the SGS facility in Medellín. Additionally, 5,894 channel samples totaling some 5,931 m in length have been completed. The routine infill underground drilling programs designed to confirm and increase the confidence in the grade distribution at the mines.

During 2018, Gran Colombia continued its infill underground drilling programs designed to confirm and increase the confidence in the grade distribution at its mines. The results included the discovery of new structures at El Silencio and Sandra K and two new zones at Providencia, all of which have the potential to add mineral resources and mine life and are being followed up in the 2019 drilling program.

The updated MRE for the Segovia Operations incorporates assay results from an additional 286 diamond drillholes totaling 30,457 m of sampling information in the databases compared to the previous model, inclusive of the 2018 drilling program and the ongoing validation exercises of historical information being completed by the Gran Colombia's geologists. All diamond core has been logged and sent for preparation at the SGS laboratories in Medellin. In addition to the drilling, a total of 6,078 channel samples totaling some 6,837 m in length were completed in 2018.

1.4 Mineral Processing and Metallurgical Testing

The Maria Dama process plant has been in production for years and the metallurgical requirements for processing ore from the Providencia, El Silencio and Sandra K mines are well understood, and as such, no new metallurgical studies have been conducted.

GCM ore is processed through the Maria Dama process plant at the rate of 1,500 tonnes/day (t/d) utilizing a process flowsheet that includes crushing, grinding, gravity concentration, gold flotation, cyanidation of the flotation concentrate, Merrill-Crowe zinc precipitation and refining of both the zinc precipitate and gravity concentrate to produce a final gold/silver doré product.

1.5 Mineral Resource Estimate

At Providencia, El Silencio and Sandra K, updated Mineral Resources have been defined based on the revised database provided by Gran Colombia. The Mineral Resource model prepared by SRK utilizes some 1,250 diamond drillholes for a combined length of 147,007 m, 32,378 underground channel sample, and a further 101,273 historical samples contained in the databases. The number of historical sample points represents a reduction of 668 from the December 31, 2017 estimate, as a result of reallocation of some historical samples, and removal of some samples which were replaced with newer channel sampling information.

The resource evaluation work was completed by Mr. Benjamin Parsons, MAusIMM (CP#222568). The effective date of the Mineral Resource Statement is December 31, 2018 which is the last date assays were provided to SRK.

SRK has been supplied with an export of the geological database and preliminary interpretations of the main faults and veins in DXF format by the Company. The database used to estimate the Project Mineral Resources was audited by SRK. SRK is of the opinion that the current drilling information is sufficiently reliable to interpret with confidence the boundaries for gold mineralization and that the assay data are sufficiently reliable to support Mineral Resource estimation.

The Mineral Resource estimation process was a collaborative effort between SRK and Gran Colombia staff. Gran Colombia provided to SRK an exploration database with flags of the main veins as interpreted by Gran Colombia. In addition to the database Gran Colombia also supplied a geological interpretation comprising preliminary three-dimensional (3D) digital files (DXF) through the areas investigated by core drilling for each of the main veins.

SRK imported the geological information into Seequent Leapfrog® Geo (Leapfrog®) to complete the geological model. Leapfrog® was selected due to the ability to create rapid, accurate geological interpretations, which interact with a series of geological conditions.

Statistical analysis and visual validation indicated the presence of two sample populations (medium and high grade), at El Silencio and Providencia (and to a limited extent at Sandra K). SRK considers that the application of internal high-grade domains (orientated to the northeast) should continue to be required at both these mines and has introduced the same procedures at Sandra K within the northern fault block where the majority of the channel sampling has been completed to date. SRK completed an estimation domain analysis and worked with Gran Colombia and the mining teams to aid the definition of the high-grade domains at the two main mines.

SRK has produced block models using Datamine™ Studio RM Software (Datamine™). The procedure involved construction of wireframe models for the fault networks, veins, definition of resource domains (high-grade sub-domains), data conditioning (compositing and capping) for statistical analysis, geostatistical analysis, variography, block modeling and grade interpolation followed by validation. Grade estimation has been based on block dimensions of 5 m x 5 m x 5 m, for the updated models. The block size reflects that the majority of the estimates are supported via underground channel sampling and spacing ranging from 2 to 5 m.

Datamine™ Studio RM (Datamine™) was used to domain assay data for statistical and geostatistical analysis, construct the block model, estimate metal grades and tabulate the resultant Mineral Resources. Phinar X10 Geo was used to conduct the capping analysis with Snowden Supervisor software was used for geostatistical analysis, variography and statistical validation of the grade estimates. All samples have been capped and composited based on the statistical review with a default composite of 3 m, selected in an attempt to model a single composite across the width of the vein, given the varying widths of the veins. A minimum composite length of 0.2 m has been used.

SRK has not updated the Mineral Resource models for the Carla and Las Verticales areas as no new information is currently available and therefore the last estimate remains valid.

Gold grades have been interpolated using nested three pass approaches within Datamine™, using an Ordinary Kriging (OK) routine for the main veins. In the cases of Providencia and El Silencio, where minor veins or splays off the main structure exist, SRK has used Inverse Distance weighted squared (ID2). The search ellipses follow the typical orientation of the mineralized structures, and where appropriate, were aligned along higher-grade plunging features within the mineralized veins.

The classification is based on standards as defined by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards - For Mineral Resources and Mineral Reserves, prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council on May 14, 2014. The Resources at the Project have been classified as Measured, Indicated and Inferred at Providencia. At El Silencio and Sandra K, only Indicated and Inferred Resources have been defined. SRK has limited the Indicated Mineral Resources to the lower portion of the mine (previously flooded), where the depletion limits are considered more accurate due to a lack of mining activity over prolonged periods of time by Contractor mining.

SRK has defined the proportions of Mineral Resource to have potential for economic extraction for the Mineral Resource based on a single cut-off grade (CoG). An investigation into CoG's was completed by SRK as part of the previous (2017) Preliminary Economic Assessment. Based on the US$1,400/oz gold price and an average mining cost SRK has limited the Resource based on a CoG of 3.0 g/t Au over a (minimum mining) width of 1.0 m.

The classified Mineral Resource is sub-divided into material within the remaining pillars (pillars), and the long-term resource material (LTR) outside of the previously mined areas, with the classification for the pillars considered separately given the uncertainty of the extent of remnant pillar mining currently being undertaken by Company-organized co-operative miners. The Mineral Resource statement for the Project is shown in Table 1-1.

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Table 1-1: SRK Mineral Resource Statement for the Segovia and Carla Projects with Effective Date of December 31, 2018

Project	Deposit	Type	Measured			Indicated			Measured and Indicated			Inferred		
			Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)
Segovia	Providencia	LTR	110	16.7	59	299	16.6	159	409	16.6	218	192	10.1	63
		Pillars	108	23.5	81	107	15.8	54	215	19.7	136	380	19.9	244
	Sandra K	LTR				329	9.8	103	329	9.8	103	321	7.1	73
		Pillars				105	11.5	39	105	11.5	39	0	6.7	0
	El Silencio	LTR				853	11.1	304	853	11.1	304	1,276	9.1	374
		Pillars				1,444	10.3	480	1,444	10.3	480	442	12.3	174
	Las Verticales	LTR										771	7.1	176
	Subtotal Segovia Project	LTR	110	16.7	59	1,480	11.9	566	1,590	12.2	625	2,561	8.3	686
		Pillars	108	23.5	81	1,655	10.8	573	1,763	11.5	654	823	15.8	418
Carla	Subtotal Carla Project	LTR				154	9.7	48	154	9.7	48	178	9.3	53

Source: SRK, 2019

The Mineral Resources are reported at an in situ cut-off grade of 3.0 g/t Au over a 1.0 m mining width, which has been derived using a gold price of US$1,400/oz, and suitable benchmarked technical and economic parameters for underground mining and conventional gold mineralized material processing. Each of the mining areas have been sub-divided into Pillar areas (“Pillars”), which represent the areas within the current mining development, and LTR, which lies along strike or down dip of the current mining development. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimate. All composites have been capped where appropriate.

- Continued infill drilling using underground drill-rigs ahead of the planned mining faces to a minimum of 20 m x 20 m pattern;
- Creation of a 3D interpretation of all mining development and stoped areas;
- Continuation of the verification channel sampling at the Segovia Project to further increase the geological confidence in the associated block estimates, with a priority on El Silencio Mine. SRK recommends this starts within the lower levels of the mine;
- Gran Colombia have identified areas for possible extension and infill drilling within the 2019 budget. SRK has reviewed the proposed program and agrees these areas provide near term targets. The exploration targets depth extensions at the three operating mines in the following locations:
    - El Silencio: In the northern portions of the Veta Manto (HG10 and HG20), and at depth in Veta National (HG30);
    - El Silencio: An area has been identified within El Silencio where the current mining is interpreted to have occurred within an un-named hanging-wall vein. If correct, then potential exists for Veta Manto to remain undeveloped in the footwall. An underground exploration drilling program should be designed to test the footwall for possible Veta Manto mineralization. This area has been classified as Inferred in the 2017 estimate;
    - Providencia: Further drilling will be required to trace the potential offset of the high-grade mineralization (HG20) across a large fault, with the current known mineralization extending beyond the current boundary of the RPP license, limiting further growth in the Mineral Resource to the north; and
    - Sandra K: Drilling at depth below the current main mining operations targeting extensions to the current high-grade mineralization projections.
- SRK recommends the Company look towards the use of localized short-term planning models to improve the understanding of the short scale variation in grade and improve the potential to monitor the current estimates. These short-term models should include results from the underground infill drilling areas and adjustments to the high-grade domain boundaries; and
- Prior to completing any brownfields exploration in the areas surrounding the current three operating mines, SRK has recommended generation of the regional geological model, which Gran Colombia is currently in process. The regional model will be a combination of the existing mine data, plus other historical records from other known veins/mining areas within the RPP license. This work will form the basis for more accurate exploration planning in the future, and all priorities to be assigned to proposed future drilling budgets.

1.6 Mineral Reserve Estimate

Mineral reserves stated here for the Segovia operations include four distinct areas named Providencia, El Silencio, Sandra K, and Carla. There are other mines in the vicinity, owned by Gran Colombia, however there are no indicated resources stated outside of these four areas at this time. There are also other mines in the vicinity owned by others. The general dip of the orebodies in all four areas is 30° to 40°. The veins are narrow and range from several centimeters (cm) to over 1 m. Providencia, El Silencio, and Sandra K are actively being mined. Carla has been mined historically however is currently not operating.

The mines are currently accessed using an apique hoisting system which approximately follows the dip of the orebody. Mining method currently is use is predominantly room and pillar with some areas of Providencia that are cut and fill. In the cut and fill areas ramps are developed in waste and an attack ramp system is used to access various levels of the ore. In room and pillar areas access is via on-ore openings/apiques.

A 3D mine design has been created representing the reserve areas. The underground mine design process resulted in underground mining reserves of 1.9 Mt (diluted) with an average grade of 11.02 g/t Au. The Mineral Reserve statement, as of December 31, 2018, for the Gran Colombia Segovia is presented in Table 1-2. Mineral Reserves were classified using the 2014 CIM Definition standards.

Table 1-2: Gran Colombia Segovia Mineral Reserves Estimate as of December 31, 2018

Segovia Mineral Reserves		**Cut-off (1):**	**3.25 - 4.31 g/t**	
Category	**Area**	**Tonnes**	**Au Grade (g/t)**	**Oz (in situ)**
Proven	Providencia	79,031	11.72	29,783
	Carla	-	-	-
	Sandra K	-	-	-
	El Silencio	-	-	-
Subtotal Proven		**79,031**	**11.72**	**29,783**
Probable	Providencia	319,315	18.50	189,897
	Carla	104,007	10.06	33,646
	Sandra K	170,840	9.82	53,914
	El Silencio	1,268,008	9.34	380,685
Subtotal Probable		**1,862,171**	**10.99**	**658,143**
Total	**Proven + Probable**	**1,941,202**	**11.02**	**687,926**

Source: SRK

(1) Ore reserves are reported using a gold cut-off grade (CoG) ranging from 3.25 to 4.31 g/t depending on mining area and mining method. The CoG calculation assume a $1,275/oz Au price, 90.5% metallurgical recovery, $6/oz smelting and refining charges, $25/t G&A, $24/t Processing cost, and mining costs ranging from $71 to 110/t. Note that costs/prices used here may be somewhat different than those in the final economic model. This is due to the need to make assumptions early on for mine planning prior to finalizing other items and using long term forecasts for the life of mine plan.

- Mining dilution is applied to a minimum mining height and to estimate overbreak (values differ by area/mining method) using a zero grade.
- Reserves are inclusive of Mineral Resources. All figures are rounded to reflect the relative accuracy of the estimates. Totals may not sum due to rounding.
- Mineral Reserves have been stated on the basis of a mine design, mine plan, and cash-flow model.
- The underground Mineral Reserves are effective as of December 31, 2018.
- There are potential survey unknowns in some of the mining areas and lower extractions have been used to account for these unknowns.
- At Sandra K, Gran Colombia personnel are able to hear others mining underground adjacent to current workings. These appear to be artisanal miners working on Gran Colombia leases. In this area there may be potential unknowns regarding what material is in situ and what has been mined. Overall this general area makes up a small proportion (<5%) of the Sandra K reserves.
- The Mineral Reserves were estimated by Fernando Rodrigues, BS Mining, MBA, MMSAQP #01405, MAusIMM #304726 of SRK, a Qualified Person.

1.7 Mining Methods

Geotechnical

SRK reviewed all geotechnical data acquired by Geomecanica del Peru Consulting (Geomecanica del Peru, 2018) and, in conjunction with the Gran Colombia Gold geotechnical personnel, conducted a geotechnical investigation to support mine design at PFS level. SRK also reviewed and validated the geotechnical data collected by the Segovia exploration group and data from the field geotechnical investigation is appropriate for supporting a PFS based on field observations and the work conducted by Gran Colombia. The data collection process is adequate and consistent with international standards.

SRK believes that there is a good opportunity for implementing a pillar recovery plan. Pillar recovery is among the most dangerous and complex operations in underground mining. The plan should be reviewed in more detail by a geotechnical engineer with experience in pillar recovery and ground control practice in extreme ground conditions. A detailed plan is key to reducing the risk of overall mine instability that could jeopardize future mine plans and worker safety.

The use of timber packs and cement pillars help to increase the extraction ratios. However, the timbers and/or cement pillars must be well designed and follow specifications. Segovia should also implement a monitoring system to identify any excessive pillar deformation that could produce room instability. SRK recommends performing first pass mining and additional pillar recovery using timber and/or cemented pillars to give an overall extraction ratio of approximately 85%.

Groundwater

The mine area is in the hydrogeological regional area of Magdalena Cauca. Most of this region is comprised of igneous and metamorphic rocks with limited groundwater storage capacity and hydraulic conductivity. The fractured rocks within the Antioquia department might host local aquifers (IDEAM, 2013). Saprolite and bedrock are the two major hydrogeological units in the mine area. The saprolite is a low conductivity unit draped on the top of the bedrock as a surficial layer and has a thickness from 5 to 45 m. The bedrock is formed primarily by the Segovia Batholith and dykes, covering almost all of the mine levels. There is a high density of fractures and cracks in this unit, an assumed consequence of the long-term mine activity. The presence of deep aquifers cannot be ignored due to the lack of piezometric and hydrological field data.

Dewatering System

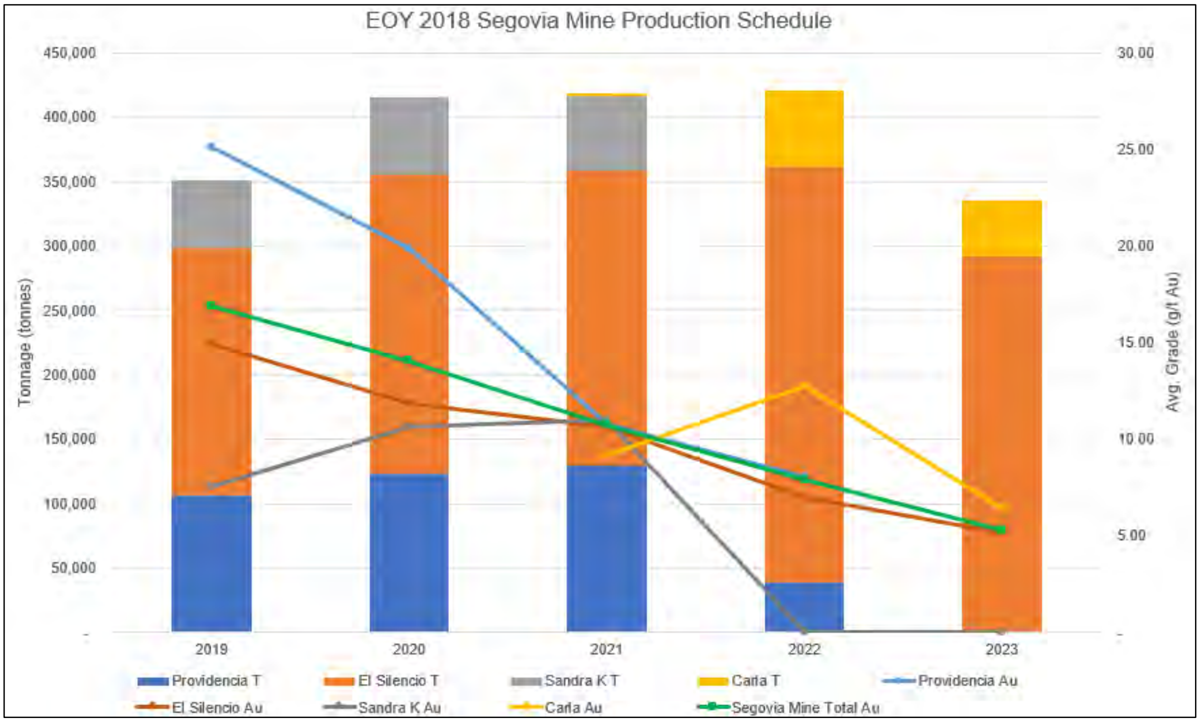
Dewatering systems are in operation at the Sandra K, Providencia and El Silencio mines, recording an average of 464, 1,068 and 1,007 gallons per minute (gpm) respectively during 2016 and 2017 and an average of 526, 1,342 and 930 gpm respectively during 2018. This system fits the needs for the mine operations in each mine. Future mine plans however are up to 70 m deeper than the current mining levels, and this will increase the groundwater inflow into the mine as well as the lift head. The mine dewatering system will need to accommodate future development. The design should consider potential inrush flow from deep aquifers, and/or high-pressure water in the fracture/fault systems. Such a design will need to be based on drilling and hydraulic testing to estimate static heads and the potential for large inrush events from faults or fracture sets.

Mine Design

To determine minable areas, the grades in the block model were diluted to include a minimum mining height and expected overbreak dilution. The diluted grades above cut-off, based on mining method, were then displayed on the screen and polygons were drawn around minable panel areas. This was done for each individual vein (as some veins are stacked on top of each other).

Once mining areas were identified, the geologic vein triangulations were cut to the polygons giving a 3-D shape showing the mining area (without dilution). Cut and fill area triangulations were further cut into 3 m high levels to provide specific tonnage/grade information for each cut. Tonnages and grades for each of the shapes was then reported based on the diluted tonnages and grades in the block model.

Existing apique systems are used/extended in most areas, with new apique systems as necessary. New raises to surface are also included for ventilation and egress where necessary. The production and development schedules were completed using iGantt software. Figure 1-1 shows the production by area.



Source: SRK, 2019

Figure 1-1: Segovia Mine Production by Area

The mine utilizes jacklegs for a large part of the underground mining. Where possible, jumbos are used for cut and fill areas and for all development. The existing diesel operated mobile equipment includes jumbos, trucks, and LHDs along with some support equipment. Gran Colombia has a large number of track and air powered overshot muckers and jackleg style drills that are used for general production as well as air and electric slushers. The El Silencio mine has a mechanical workshop for diesel repairs on Level 19. At Providencia there is a diesel shop on level 12. In addition, all of the mines have underground workshops to repair jacklegs.

1.8 Recovery Methods

Gran Colombia processes ore from the Providencia, El Silencio and Sandra K Mines at its 1,500 tonnes per day (t/d) Maria Dama process plant which includes crushing, grinding, gravity concentration, gold flotation, cyanidation of the flotation concentrate, Merrill-Crowe zinc precipitation and refining of both the zinc precipitate and gravity concentrate to produce a final gold/silver doré product. SRK makes the following conclusions and recommendations regarding Gran Colombia's processing facilities:

- Plant production for the period 2014 to 2018 increased from 237,740 t at an average gold grade of 10.92 g/t Au in 2014 to 368,825 t at an average gold grade of 1812 g/t Au;
- Overall gold recovery has been relatively constant at about 90% over the period from 2014 to 2018;

- Silver recovery is not monitored, but is a relatively minor contributor to overall project economics;
- During 2016, the process plant operating cost averaged US$29.51/t processed and was equivalent to US$66.58/Au oz produced. During 2017, the process plant operating cost averaged US$31.88/t processed and was equivalent to 66.71/Au oz produced. During 2018, the process plant operating cost averaged US$28.88/t processed and was equivalent to 58.29/Au oz produced;
- Process plant capital expenditures for 2018 total US$2.94 million for completed projects. The major capital expenditure in 2018 was the installation of the tailings filter plant located at El Chocho that cost US$2.16 million;
- Planned capital expenditures for 2019 total US$1.71 million with US$202,000 devoted to the metallurgical laboratory;
- Tailings is discharged to dehydration cell where the tailings are partially dewatered and then transferred to the final Tailings Storage Facility (TSF) El Chocho:
  - Slurry tailings are discharged to the TSF treated for cyanide by hydrogen peroxide; and
  - A filter plant consisting of one 1,500 t/d plate and frame filters is being installed and will be commissioned in 2019. This filter plant will provide sufficient capacity for current production rates but lacks redundancy. A second identical filter is planned to be installed in 2020 to ensure plant availability. In 2017, Gran Colombia installed a hydrogen peroxide base cyanide detoxification system at Maria Dama and installed the Stari Water Treatment Plant to treat barren solution prior to discharging it to the environment. In 2018, the Maria Dama plant started to add hydrogen peroxide and iron sulfate to their tailing discharge stream as a form of cyanide detoxification. The tailings slurry began being treated for cyanide destruction in 2018.

1.9 Project Infrastructure

The infrastructure for the Project is in place and fully functional. Additional work is ongoing improving the power system and mining underground infrastructure. All major facilities are in place and have been in use for a number of years. Ongoing focus on the tailings storage and associated equipment (filters) will be important.

Tailings Management Area

The El Chocho tailings storage facility (TSF) has been designed as a dry stack TSF. The tailings production rate is currently around 900 t/d and may ultimately be increased to 1,500 t/d with a total estimated volume of tailings storage at 1.36 Mt to meet the life-of-mine (LoM) requirements.

A Geotube embankment is currently being constructed by stacking Geotubes filled with tailings slurry currently produced by the mine to form a buttress embankment approximately 15 m high. The Geotube embankment was designed by Maccafferi and is intended to provide for interim containment of tailings while design and construction of the Fase 1C embankment is completed.

The Fase 1C starter embankment is currently being designed by Wood as a 15 m high starter embankment constructed out of waste rock from underground mining. The embankment will be constructed downstream of the existing Fase 1A embankment and will provide a buttress for placed and compacted filtered tailings.

The filtered tailings will be transported from the filter press by haul trucks and a dozer will be used to spread the filtered tailings to a specified lift thickness and compaction. The outer 20 m perimeter of each tailings lift will be compacted to a higher compaction specification to improve mechanical and erosional stability of the tailings.

To facilitate feasibility and detailed design of the Fase 1C embankment, it is recommended that Gran Columbia retain qualified professional engineers to further evaluate seismic stability and liquification, minimum design criteria, geotechnical properties of filtered tailings, hydrological evaluation and hydraulic design for stormwater management. SRK also recommends that Gran Columbia evaluate the phreatic conditions in and below the Fase 1A embankment and complete stability and liquefaction analyses to determine the current factor of safety against mass failure, including additional field and laboratory characterization as required.

1.10 Environmental Studies and Permitting

PMA Approval: The site Environmental Management Plan ("Plan de Manejo Ambiental" or PMA) was first. Throughout the application and multiple renewal processes, a number of environmental studies have been completed to satisfy the Regional Environmental Authority (Corantioquia), some of which are detailed below.

Changes to Groundwater Regime: The 2012 PMA application (unapproved) highlighted a lack of information regarding the groundwater regime in the operating mines and suggests that changes to the groundwater levels through dewatering activities of the mines may lead to geotechnical instabilities and increase the potential for subsidence from the underground workings. This is a significant risk given the location of residential buildings at Segovia above the workings. The PMA currently awaiting final approval includes measures to complete a conceptual hydrogeological model and a numerical model of the mining area to predict and manage changes to the hydrogeological setting. Gran Colombia anticipated initiating this hydrogeological investigation in 2019.

Health and Safety of Contract Miners: Gran Colombia employs groups of contract miners to extract high grade run-of-mine (RoM) mill feed from in the operating mines. Although each mining group is required to meet contractual health, safety and environmental standards set by the Company, historically there has not been sufficient auditing of compliance with these standards. Significant health and safety risks may be associated with uncontrolled (uncontracted and unauthorized) mining of support pillars (outside of the direct control of the Company), which may potentially lead to ground collapse and loss of life.

El Chocho Tailings Storage Facility Area: The permits for the El Chocho TSF have been obtained: Channel Occupation Permit (Resolution 130ZF-1501-6959 File ZF8-12-4-736), Forestry Permit (Resolution 130ZF-1310-6201 File ZF5-12 -14-736), and the Discharge Permit (Resolution 130ZF-1311-6218 File ZF7-12-9-736). The Discharge Permit was renewed in December 2017 for an additional five years. Phase 1 of the facility has authorization for forest harvesting as granted by Corantioquia through Resolution No. 160ZF-RES1811-6282 on November 15, 2018. The Channel Occupation Permit has not had any modifications and remain in effect until 2025. The Company has indicated that no recent modification or amendments have occurred at the site which would require additional permitting or changes to existing permitting. According to the company, the El Chocho site has been secured in its entirety and is under administrative protection from continued artisanal mining.

Geochemistry

A substantial effort is needed to bring the mine into conformity with international best practices of data collection, management, and geochemical characterization, though some initial static testing has been conducted indicating limited acid generating potential. Kinetic testing is proposed to begin in 2019. Implementation of a more comprehensive data collection and management program will form the quantitative basis for understanding the current status, forecasting future impacts, and designing concurrent and post-closure mitigation measures to minimize environmental impacts. The primary areas of risk related to geochemistry are summarized below and discussed in more detail in the sections that follow:

ARD/ML

There is insufficient data to fully understand the current and future acid rock drainage and metal leaching (ARD/ML) potential, though early indications suggest that acid-generating potential, especially in the tailings, may be limited. A substantial data collection effort needs to be designed and implemented for tailings, waste rock, and ore from the mine workings.

Tailings

Current and future tailings are the mining waste components that represent the greatest risk in terms of environmental geochemistry. Of the five composite samples that were tested, one sample showed acid-generating potential, three showed no acid-generating potential, and one was indeterminate. The tailings must be subjected to a detailed and comprehensive geochemical characterization program, which in conjunction with a water balance, will allow quantification and forecasting of geochemical loadings to the environment in the near term and after closure.

Waste Rock

Current and future waste rock represent a risk as a potential source of ARD/ML. To provide geochemical data for current and future waste rock, a comprehensive geochemical characterization program for waste rock on the project should be made a priority. While some of the samples were collected during the initial characterization program, the scope and duration of the program is insufficient to meet international best practices and should be expanded and continued.

Mine Water

While some effort has been put into identifying the inflows to the underground mine workings, a more comprehensive, system-wide water balance is needed to understand the quantities and management requirements for contact water both during operations and post closure. Mine water (e.g., dewatering effluent) and contact water associated with tailings and waste rock dumps will be specifically pertinent to geochemistry.

Closure Water Treatment

Closure scenarios may involve some form of water collection and water treatment. Thus, detailed geochemical characterization is needed to more accurately understand the potential for mining wastes to generate poor quality contact water that might persist into closure and post closure. SRK (2014) observed that the largest uncertainty regarding closure costs is the potential need for long-term water treatment from the mine workings after closure. A requirement for long-term post-closure water treatment would add significant cost to closure estimates.

1.11 Capital and Operating Costs

The Segovia Project is a currently operating underground mine, the estimate of capital includes only sustaining capital to maintain the equipment and all supporting infrastructure necessary to continue operations until the end of the projected production schedule.

The capital cost estimates developed for this study include the costs associated with the engineering, procurement, acquisition, construction and commissioning. The cost estimate is based on budgetary estimates prepared by Segovia and reviewed by SRK. All estimates are prepared from first principles based on site specific recent actuals. The budget and estimates indicate that the project requires sustaining capital of US$131.8 million throughout the LoM based on the current production schedule/reserves.

Table 1-3 summarizes the sustaining capital estimate.

Table 1-3: Segovia Sustaining Capital Cost Estimate Summary

Description	LoM Sustaining (US$000's)
Development	26,256
Exploration	16,331
Providencia	8,824
El Silencio	25,650
Sandra K	10,410
Carla	11,259
Mine Planning	677
Maria Dama Plant	4,357
Assay Lab	202
Maintenance	5,806
Civil	28
Logistics	73
Environment	12,006
Health and Safety	2,187
Security	625
IT	1,472
Administration	3,179
Finance	4
HR	196
Carry Over (2018 Projects)	2,277
Total Capital	**131,820**

Source: Gran Colombia/SRK, 2019

The operating cost is based on budgetary estimates from Gran Colombia, reviewed by SRK, and were modeled as entirely variable costs.

SRK and Segovia prepared the estimate of operating costs for the reserves production schedule. These costs were subdivided into the following categories:

- Mining operating expenditure;
- Processing operating expenditure; and
- Site G&A operating expenditure.

Site-specific budget estimates were used to estimate the LoM operating costs for Providencia, Sandra K, El Silencio and Carla. The mine production is also supported by contract miner operations, which operate in areas of Providencia (Masora) and El Silencio (Navar). These are paid for as cost per recovered (Mine and Plant Recovery) gold ounces, which LoM average is estimated at US$612/recovered Au-oz. Note that LoM/yearly variable operating costs vary due to this.

The resulting LoM operating cost estimate is presented in Table 1-4.

Table 1-4: Segovia Operating Costs Summary

Description	LoM (US$000's)	LoM (US$/t-Ore)	LoM (US$/oz-Au)
Mining	299,661	154.37	481.32
Process	49,878	25.69	80.12
G&A	51,483	26.52	82.69
Total Operating	**401,023**	**206.58**	**644.13**

Source: Gran Colombia/SRK, 2019

The costs presented above include costs associated with materials originated from an owner mining operation and third-party operation that takes place within the deposits' reserves.

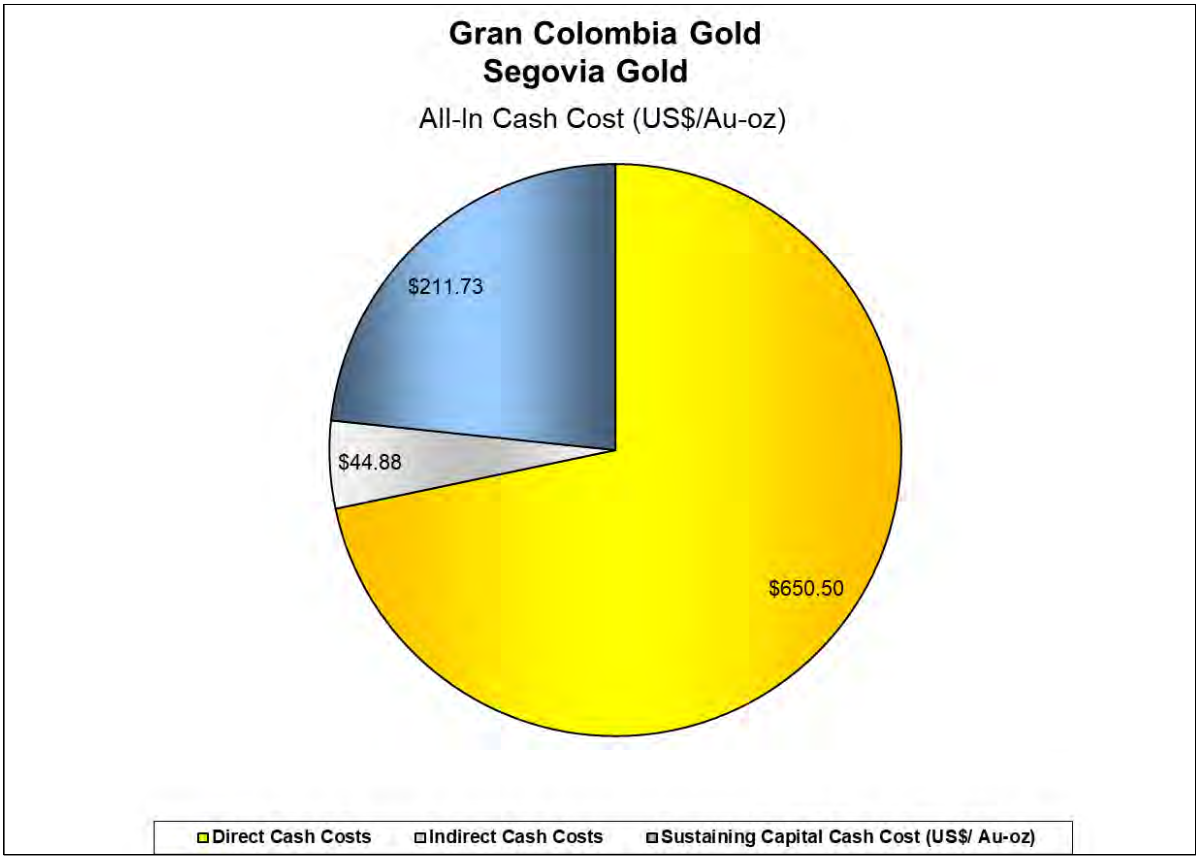
The estimated cash cost, including direct and indirect production cost, is US$650/Au-oz, while All-in Sustaining Costs (AISC), including sustaining capital, is US$907/Au-oz. Table 1-5 presents the make-up of the Segovia cash costs.

Table 1-5: Segovia Cash Costs

Cash Costs	US$000's
Direct Cash Cost	
Mining Cost	$299,661
Process Cost	$49,878
Site G&A Cost	$51,483
Smelting & Refining Charges[(1)]	$3,969
Direct Cash Costs	$404,992
$/t-ore	$208.63
$/ Au-oz	$650.50
Indirect Cash Cost	
Royalties	$27,942
Indirect Cash Costs	$27,942
$/t-ore	$14.39
$/ Au-oz	$44.88
Total Direct + Indirect Cash Cost	**$432,933**
$/t-ore	$223.02
$/ Au-oz	$695.38
Sustaining Capital Cash Cost (US$/ Au-oz)	$211.73
All-In Sustaining Cash Costs (US$/ Au-oz)	$907.11

Source: SRK, 2019
(1) SRK's standard Cash Cost reporting methodology for NI 43-101 reports includes smelting/refining costs; whereas Gran Colombia's basis of reporting treats these costs as a reduction of realized gold price (the refinery discounts the selling price by a factor to cover these charges) and excludes them from its reported "total cash cost per ounce".

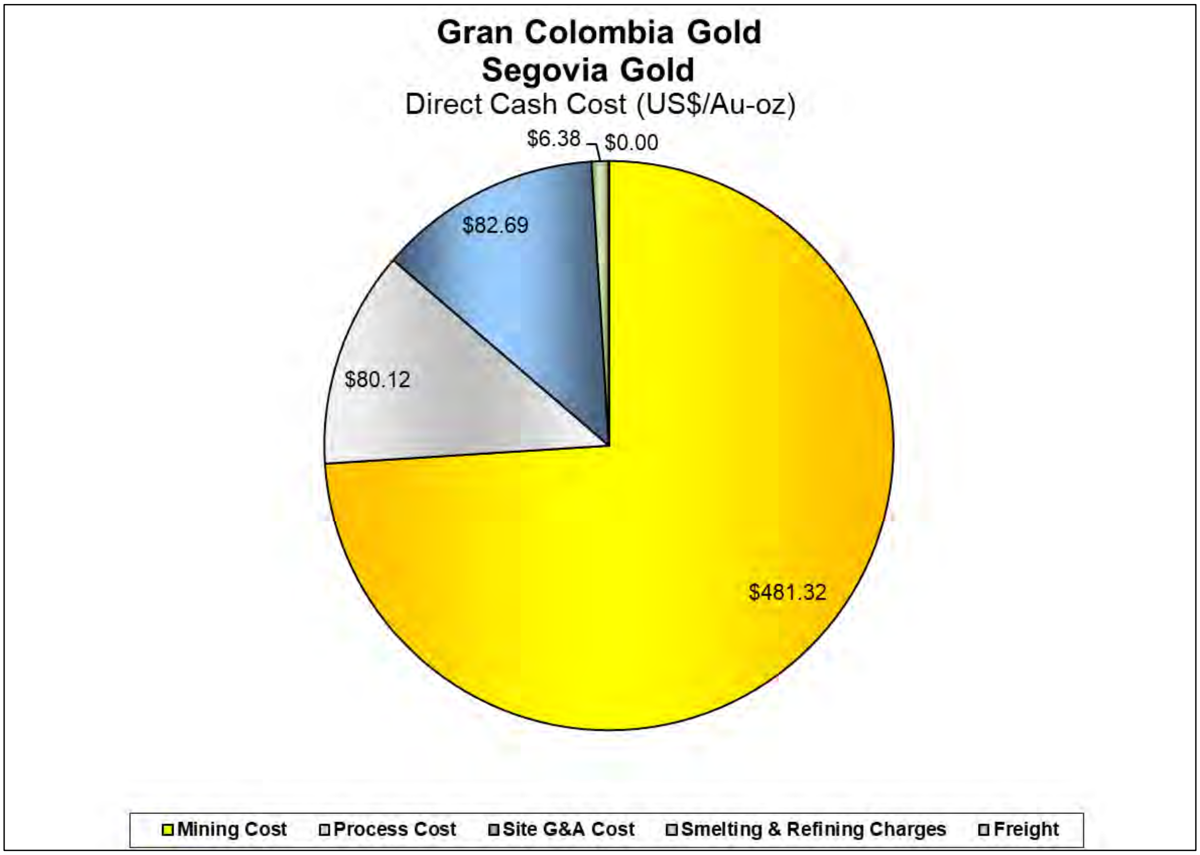
Figure 1-2 presents the breakdown of the estimated all-in sustaining cash costs associated with the reserves. Direct cash costs are the clear majority of the AISC cash cost, while the sustaining capital is a distant second.



Source: SRK, 2019

Figure 1-2: All-In Sustaining Cash Cost Breakdown

Figure 1-3 presents the breakdown of the estimated direct cash costs associated with the reserves. Mining costs represent the clear majority of the direct costs, while processing and general and administrative costs are about the same. It is interesting to note that the G&A costs are actually a bit higher than the processing costs.

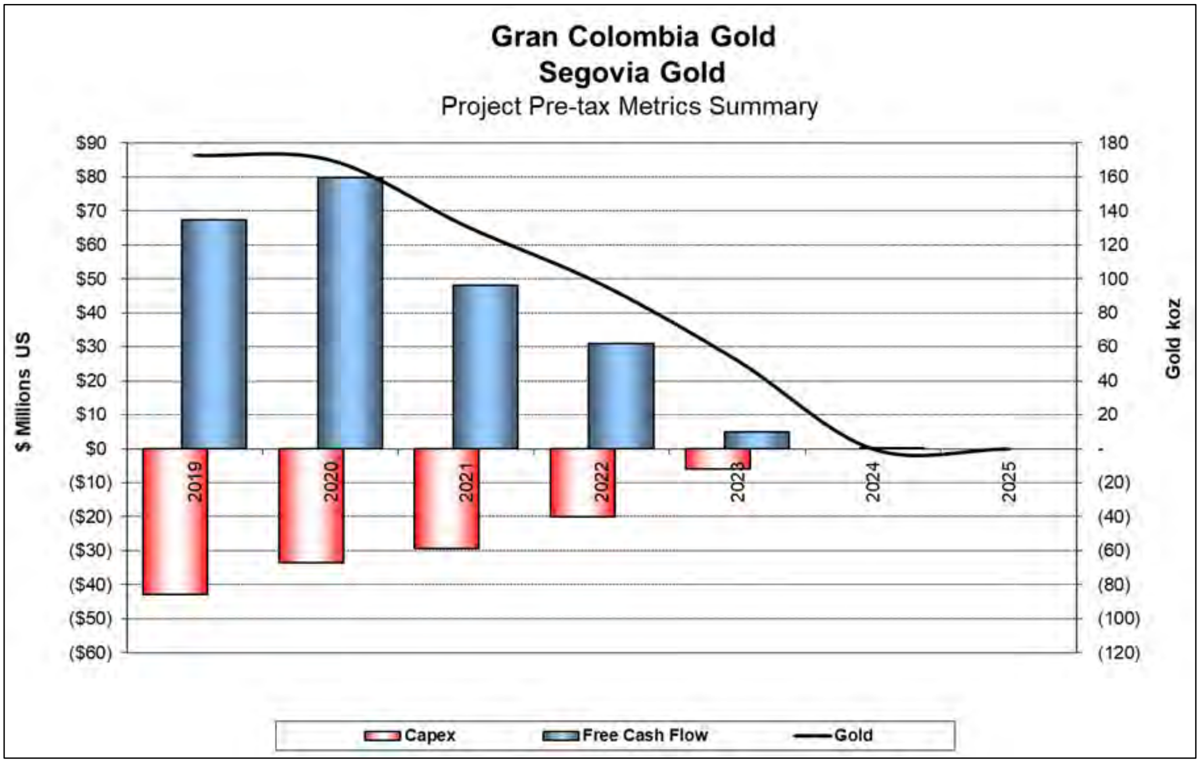


Source: SRK, 2019

Figure 1-3: Direct Cash Cost

1.12 Economic Analysis

The valuation results of the Segovia Project indicate that the Project has an after-tax Net Present Value (NPV) of approximately US$135.9 million, based on a 5% discount rate. The operation is projected to have no negative cash flow periods. Revenue generation is similar in years 2019 and 2020, it is slightly higher in 2020 due to lower capital requirements, as both years have similar gold grades. The following years see a steady decrease of revenue generation, what is related to the lower gold grades in the later years. The annual free cash flow profile of the Project is presented in Figure 1-4.



Source: SRK, 2019

Figure 1-4: Segovia After-Tax Free Cash Flow, Capital and Metal Production

Indicative economic results are presented in Table 1-6. The Project is a gold operation, with gold representing 100% of the total projected revenue. The underground mining cost is the heaviest burden on the operation, followed by the sustaining capital (mostly from capitalized mine development) as a distant second.

Table 1-6: Segovia Indicative Economic Results

Description	Value	Unit Cost
Market Prices		
Gold (US$/oz)	1,275	US$/oz-Au
Estimate of Cash Flow (all values in $000's)		
Concentrate Net Return		
Gold Sales	$793,794	$1,275.00
Total Revenue	**$793,794**	**$1,275.00**
Smelting and Refining Charges	($3,969)	($6.38)
Net Smelter Return	$789,825	
Royalties	($27,942)	($44.88)
Net Revenue	$761,883	
Operating Costs		
Underground Mining	($299,661)	($481.32)
Process	($49,878)	($80.12)
G&A	($51,483)	($82.69)
Total Operating	**($401,023)**	**($644.13)**
Operating Margin (EBITDA)	$360,861	
Initial Capital	$0	
LoM Sustaining Capital	($131,820)	
Working Capital	$2,303	
Income Tax	($83,457)	
After Tax Free Cash Flow	$147,887	
NPV @: 5%	$135,918	

Source: SRK, 2019

Silver was not included in the analysis, as it is not included in the resources not the reserves. It should be noted, however, that past production indicates the production of silver in the doré and its revenue could represent an addition of about 1% to 2% to the revenue presented above.

Table 1-7 shows annual production and revenue forecasts for the life of the project. All production forecasts, material grades, plant recoveries and other productivity measures were developed by SRK and Gran Colombia.

Table 1-7: Segovia LoM Annual Production and Revenues

Period	RoM (kt)	Plant Feed (kt)	Doré (koz)	Free Cash Flow (US$000's)	Discounted Cash Flow (US$000's)
2019	351.02	351.02	172.77	40,517	39,356
2020	415.47	415.47	169.93	51,824	48,265
2021	418.68	418.68	131.02	30,727	27,314
2022	420.50	420.50	96.79	21,065	17,853
2023	335.54	335.54	52.07	4,055	3,366
2024	0.00	0.00	0.00	(301)	(236)
Total	**1,941**	**1,941**	**623**	**147,887**	**135,918**

Source: SRK, 2019

The reserves disclosed in the present report are enough to feed the existing plant for about five years of operation.

2 Introduction

2.1 Terms of Reference and Purpose of the Report

This report was prepared as a prefeasibility-level Canadian National Instrument 43-101 (NI 43-101) Technical Report (Technical Report) for Gran Colombia Gold Corp. (Gran Colombia) by SRK Consulting (U.S.), Inc. (SRK) on the Segovia Project, which is comprised of the Providencia, El Silencio, Sandra K Mines, and the Carla Project.

The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in SRK's services, based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended for use by Gran Colombia subject to the terms and conditions of its contract with SRK and relevant securities legislation. The contract permits Gran Colombia to file this report as a Technical Report with Canadian securities regulatory authorities pursuant to Canadian National Instrument 43-101 (NI 43-101), Standards of Disclosure for Mineral Projects. Except for the purposes legislated under provincial securities law, any other uses of this report by any third-party is at that party's sole risk. The responsibility for this disclosure remains with Gran Colombia. The user of this document should ensure that this is the most recent Technical Report for the property as it is not valid if a new Technical Report has been issued.

This report provides Mineral Resource and Mineral Reserve estimates, as well as a classification of resources and reserves prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum Standards on Mineral Resources and Reserves: Definitions and Guidelines, May 10, 2014 (CIM, 2014). Mineral Resources are reported inclusive of the Mineral Reserves.

2.2 Qualifications of Consultants

The Consultants preparing this technical report are specialists in the fields of geology, exploration, Mineral Resource and Mineral Reserve estimation and classification, underground mining, geotechnical, environmental, permitting, metallurgical testing, mineral processing, processing design, capital and operating cost estimation, and mineral economics.

None of the Consultants or any associates employed in the preparation of this report has any beneficial interest in Gran Colombia. The Consultants are not insiders, associates, or affiliates of Gran Colombia. The results of this Technical Report are not dependent upon any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings between Gran Colombia and the Consultants. The Consultants are being paid a fee for their work in accordance with normal professional consulting practice.

The following individuals, by virtue of their education, experience and professional association, are considered Qualified Persons (QP) as defined in the NI 43-101 standard, for this report, and are members in good standing of appropriate professional institutions. QP certificates of authors are provided in Appendix A. The QP's are responsible for specific sections as follows:

- ***Ben Parsons***, MSc, MAusIMM (CP), Principal Resource Geologist, is the QP responsible for property, geology and mineral resources Sections 1.1 through 1.3, 1.5, 4 (except for 4.5), 5 (except 5.5), 6 through 12, 14, 23, 25.1 and 26.1.

- ***Brian Olson***, BS Chemical Engineering, Senior Metallurgist, is the QP responsible for mineral processing, metallurgical testing and recovery, Sections 1.4, 1.8, 5.5.6, 13, 17, 25.3 and 26.3.
- ***Cristian A. Pereira Farias***, SME-RM, Senior Hydrogeologist, is the QP responsible for hydrogeological Sections 16.5, 16.7, 26.5.3 and groundwater and dewatering portions of 1.7.
- ***David Bird***, MSc, PG, RM-SME, Principal Geochemist, is the QP responsible for geochemistry Sections 16.8, 20.1.3 and 26.5.1.
- ***Fredy Henriquez***, MS Eng, SME, ISRM, Principal Consultant, Rock Mechanics, is the QP responsible for geotechnical Section 16.4.
- ***Jeff Osborn***, BEng Mining, MMSAQP, Principal Mining Engineer, is the QP responsible for infrastructure, capital and operating costs, economic analysis and general report Sections 1.9, 1.11, 1.12, 2, 3, 5.5 (except 5.5.4 and 5.5.6), 18 (except for 18.2), 19, 21, 22, 24, 25.4, 25.5, 25.7, 25.8, 26.4.1, 26.5.2, 26.7, 27, and 28.
- ***Fernando Rodrigues***, BS Mining, MBA, MAusIMM, MMSAQP, Practice Leader/Principal Mining Engineer, is the QP responsible for mining and mineral reserves Sections 1.6, 1.7 (except for groundwater and dewatering), 15, 16 (except for 16.4, 16.5, 16.7 and 16.8), 25.2, and 26.2.
- ***Joshua Sames***, PE, Senior Consultant (SRK Consulting), is the QP responsible for tailings Sections 5.5.4, 18.2, and 26.4.2.
- ***Mark Willow***, MSc, CEM, SME-RM, Practice Leader/Principal Environmental Scientist, is the QP responsible for environmental studies, permitting and social or community impact Sections 1.10, 4.5, 20 (except 20.1.3), 25.6, and 26.6.

2.3 Details of Inspection

Table 2-1 lists the SRK team members who visited the Project site. During the various site visits, the group toured the general areas of mineralization, historic and current mining and drilling sites, reviewed existing infrastructure, observed drill core and reviewed Project data files with Segovia's technical staff.

Table 2-1: Site Visit Participants

Personnel	Company	Expertise	Date(s) of Visit	Details of Inspection
Ben Parsons	SRK	Mineral Resources	April 11, 2018 to April 13, 2018	Underground site inspection, drilling station audit, mine laboratory visit, review drill core
		Mineral Resources	January 22, 2018 to January 25, 2018	Database review, and geological modeling
		Mineral Resources	February 6, 2017 to February 10, 2017	Database Review, site discussions, review drill core
		Mineral Resources	November 26, 2016 to December 12, 2016	Technical Meetings, database review, laboratory inspection
		Mineral Resources	May 29, 2016 to June 4, 2016	Underground site inspection, review sampling protocols
		Mineral Resources	March 15, 2015 to March 20, 2015	Database review, and geological modeling
		Mineral Resources	August 21 to August 23 2018	Database review and geological modeling
Fernando Rodrigues	SRK	Mining	November 29, 2016 to November 30, 2016	Cost review, mine planning discussions.
		Mining	February 6, 2018 to February 8, 2018	Cost review, mine planning discussions,
		Mining	September 11, 2017	Cost review, mine planning discussions, visit underground infrastructure
		Mining	July 24 2017	Cost review, mine planning discussions, visit underground infrastructure
		Mining	May 8 2017	Cost review, mine planning discussions, visit underground infrastructure
		Mining	November 29, 1016 to November 30, 2016	Cost review, mine planning discussions.
		Mining	March 13, 2017 to March 15, 2017	Cost review, mine planning discussions.
		Mining	October 25, 2017 to October 27, 2017	Cost review, mine planning discussions.
		Mining	June 11, 2018 to June 14, 2018	Cost review, mine planning discussions.
		Mining	Nov 11, 2018 to Nov 21, 2018	Cost review, mine planning discussions.
		Mining	Jan 7, 2019 to Jan 10, 2019	Cost review, mine planning discussions.
		Mining	February 7 to February 8, 2019	Cost review, mine planning discussions.
Joanna Poeck	SRK	Mining	October 25, 2017 to October 27, 2017	Cost review, mine planning discussions.
		Mining	February 7 to February 8, 2019	Cost review, mine planning discussions.
Mike Levy	SRK	Geotechnical	November 29, 2016 to November 30, 30162016	Mining area / Drill Core
Fredy Henriquez	SRK	Geotechnical	February 6, 2018 to February 9, 2018	Underground Geotechnical Mapping
Brian Olson	SRK	Processing/ Metallurgy	February 6, 2018 to February 8, 2018	Process Plant, laboratory review, TSF

Personnel	Company	Expertise	Date(s) of Visit	Details of Inspection
Mark Willow	SRK	Environmental/ Permitting	November 29, 2016 to November 30, 2016	Project area, TSF
Jeff Osborn	SRK	Infrastructure	February 6, 2018 to February 8, 2018	Project area, TSF
	SRK	Infrastructure	October 1, 2018 to October 4, 2018	Cost review, plan update discussions

Source: SRK, 2019

2.4 Sources of Information

This report is based in part on internal Company technical reports, previous feasibility studies, maps, published government reports, Company letters and memoranda, and public information as cited throughout this report and listed in Section 27 References.

SRK has been supplied with numerous technical reports and historical technical files. SRK's report is based upon:

- Numerous technical review meetings held at Gran Colombia's offices in Medellín;
- Discussions with directors, employees, and consultants of the Company;
- Data collected by the Company from historical exploration on the project;
- Access to key personnel within the Company, for discussion and enquiry;
- A review of data collection procedures and protocols, including the methodologies applied in determining assays and measurements;
- Existing reports provided to SRK, as follows:
    - Medoro Resources Ltd., Gran Colombia Gold, S.A., Tapestry Resource Corp, NI43-101 Technical Report Frontino Gold Mines Ltd. Antioquia Colombia June 9, 2010 (SEWC);
    - Review of Exploration at the Gran Colombia Gold Mine, Municipalities of Segovia and Remedios, Department of Antioquia, Colombia, 10 July 2011 (Dr. Stewart D. Redwood);
    - Structural Review of the Zandor Capital Project Colombia, November 2011 (Telluris Consulting);
    - Structural Review of the Zandor Capital Project Colombia, January 2013 (Telluris Consulting);
    - El Chocho Tailings Storage Facility, Final Design Report, prepared for Gran Colombia Gold Corp, Segovia Project, Knight Piésold, July 2012;
    - Presa El Chocho Para Almacenamiento de Lodos, Optimización del Volumen de Almacenamiento, Revision de Diseno Definitivo, prepared for Gran Colombia Gold Corp. Proyecto Pampa Verde, iConsult, February 2013;
    - Revisión Técnica del Informe de Diseño Final – Deposito de Almacenamiento de Relaves El Chocho, Auditoría de Residuos Sólidos Industriales por Beneficio de Minerales Auríferos, prepared for Gran Colombia Gold Corp., Amec Foster Wheeler, November 2016a;
    - Análisis del Sistema de Manejo Actual de Relaves – Alterativas de Corto, Mediano, y Largo Plazo, Auditoría de Residuos Sólidos Industriales por Beneficio de Minerales Auríferos, prepared for Gran Colombia Gold Corp., Amec Foster Wheeler, November 2016b; and
    - Preliminary design drawings provided by Gran Colombia Gold Corp for Fase IB of the El Chocho tailings storage facility prepared by Wood (dated December 2018).

- Data files provided by the Company to SRK as follows:
  - Topographic grid data in digital format;
  - Drillhole database including collar, survey, geology, and assay;
  - QA/QC data including details on duplicates, blanks and certified reference material (CRM); and
  - DXF files, including geological interpretation, vein domain digitized two-dimensional (2D) section interpretations, stope outlines and mined depletions.

2.5 Effective Date

The effective date of this report is December 31, 2018.

2.6 Units of Measure

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

3 Reliance on Other Experts

The Consultant's opinion contained herein is based on information provided to the Consultants by Gran Colombia throughout the course of the investigations. SRK has relied upon the work of other consultants in the project areas in support of this Technical Report.

SRK relied on Gran Colombia's legal representation to describe the:

- Geopolitical;
- Mineral Rights;
- Nature and Extent of Ownership; and
- Royalties, Agreements and Encumbrances.

These items have not been independently reviewed by SRK, and SRK did not seek an independent legal opinion of these items.

SRK has relied on publicly available data and the Gran Colombia management for information to address various Project financial aspects including:

- Information based on the standard Colombian corporate income tax (CIT) regime;
- Carry forward losses; and
- Depreciation methods and eligible assets.

These items have not been independently reviewed by SRK and SRK did not seek an independent legal opinion of these items. The Consultants used their experience to determine if the information from previous reports was suitable for inclusion in this technical report and adjusted information that required amending. This report includes technical information, which required subsequent calculations to derive subtotals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, the Consultants do not consider them to be material.

4 Property Description and Location

4.1 Property Location

The Segovia Project is an operational gold mine, located in Colombia's Segovia-Remedios mining district, Department of Antioquia, north-west Colombia approximately 180 km northeast of Medellín (the Department capital of Antioquia), at 74° 42' W and 7° 04' N. The Carla Project is an exploration prospect located approximately 10 km southeast of Segovia at approximately 7° 04' 18.0'' N, 74° 41' 55.5'' W (Figure 4-1).

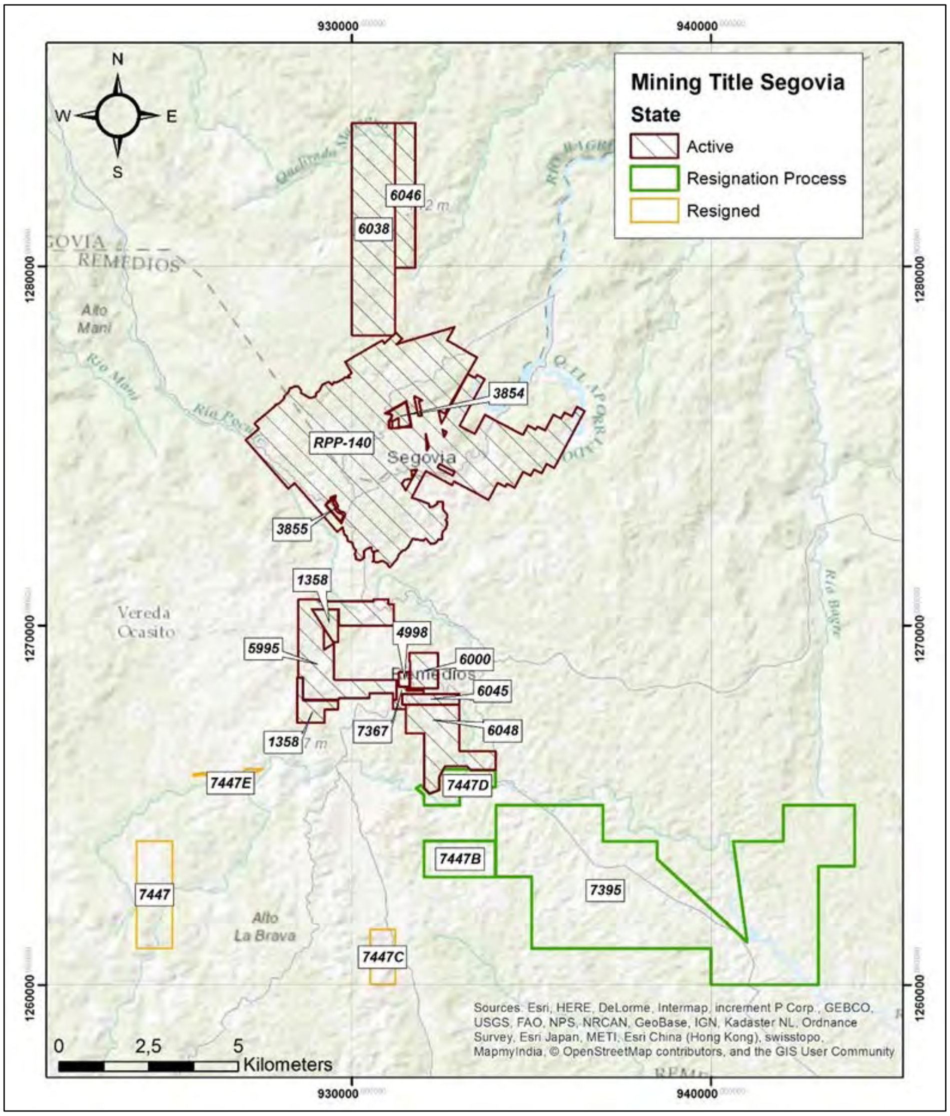
Source: SRK, 2017

Figure 4-1: Location Map of the Segovia Project

4.2 Mineral Titles

The mining rights for the Segovia Project comprise of Mining Title No. RPP 140 and two Exploration Licenses with a total area of approximately 2,906 hectares (ha), located in the municipalities of Segovia and Remedios, in the Department of Antioquia. The license was previously held by FGM but, as of August 2010, is now owned by Zandor Capital S.A. Colombia (Zandor) a subsidiary of Gran Colombia. The Carla Project comprises 9 Concessions, which have a combined area of approximately 1,915 ha, and are located largely to the south of the Segovia License.

The location of the Segovia and Carla License boundaries are shown in Figure 4-2.



Source: Gran Colombia, 2018

Figure 4-2: License Boundaries for Segovia and Carla Projects

SRK has not performed an independent verification of land title and tenure as summarized and has relied on Gran Colombia’s legal advisor for land title issues.

The RPP type of contract license means Private Property Recognition of a Mining Title (Reconocimiento de Propiedad Privada or RPP) and it is not a Concession Contract. RPPs were created by Law 20 of 1969. The law respected prior mining and land rights and required that proof of mining be submitted. The RPP title is an old freehold property dating from the 19th Century. The RPP titles grant mining rights in perpetuity. Exploitation is required in order to maintain the validity of an RPP license.

The title was unified from RPP numbers 140 to 198 on March 27, 1998 by Resolution No. 700371. The original area of the mining titles was about 14,000 ha and was reduced to the present 2,871 ha due to a lack of mine production from the now relinquished area. The title was registered as RPP 140 on April 4, 1983 by Resolution No. 000410 of the Colombia Ministry of Mines and Energy. The private property of this mining title was granted to FGM in perpetuity until the depletion of mineral resources in the area covered by the title. Since RPP 140 is not a Concession Contract, the titleholder does not have to comply with the obligations imposed on Concessionaires or Licensees under Concession Contracts and Exploration or Exploitation Licenses. The main legal obligation that the titleholder of RPP 140 has is not to suspend exploitation for more than one year. The property is currently in exploitation. Other obligations such as payment of taxes (property tax, surface tax, etc.), payment of the compensation and royalties for exploited minerals and the presentation of semi-annually Basic Mining Reports and Technical Reports must be complied with but are not mandatory conditions to be met in order to retain the property of Mining Title RPP 140.

- Exploration License No. 3855 was issued to FGM on July 27, 1998 (Resolution 10397) and was registered on May 24, 2005 for a one-year term; and
- Exploration License No. 3854 was issued on August 3, 1998 (Resolution 10440) and was registered on June 14, 2005 for a one-year term.

Within its term, FGM applied for the conversion of Exploration Licenses No. 3854 and 3855 into Concession Contracts. The Company informed SRK that the required documents for the exploration license No. 3855 were filed on June 19, 2013, and Zandor is waiting for a pronunciation from the mining authority granting the area under a concession contract. As to the case of the Exploration License No. 3854, the Programa de Trabajos y Obras (PTO) was filed on 2013 and added in 2016, and Zandor is waiting as well for a pronunciation from the mining authority granting the area under a concession contract.

Concessions issued as per the conversion of Exploration Licenses will have a duration of 30 years from the date of registration, of which the initial one-year term of the Exploration License will be deducted.

There are also seven “Other titles” that belong to third parties surrounded by the area of RPP 140 with a total area of 35.81 ha. These are shown on Figure 4-3 and summarized in Table 4-1.

The exploration licenses and third-party titles are in gaps between the original mining titles which were unified to create RPP 140 in 1998. The area of 2,871 ha for RPP 140 is net of the exploration licenses and third-party titles.

Table 4-1: Mineral Tenure Information

Title Number	Area (ha)	Type	Date Awarded	Expiration Date
RPP 140	2,871	RPP Exploitation	May 16,1990	Granted in perpetuity
No. 3854	25.809	Exploration	June 14, 2005	13/06/2006 Undergoing conversion to concession
No. 3855	9.727	Exploration	May 24, 2005	23/05/2006 Awaiting
Total	**2,906**			
Other (7 minor licenses)	35			

Source: SRK, 2018

Source: Gran Colombia, 2018

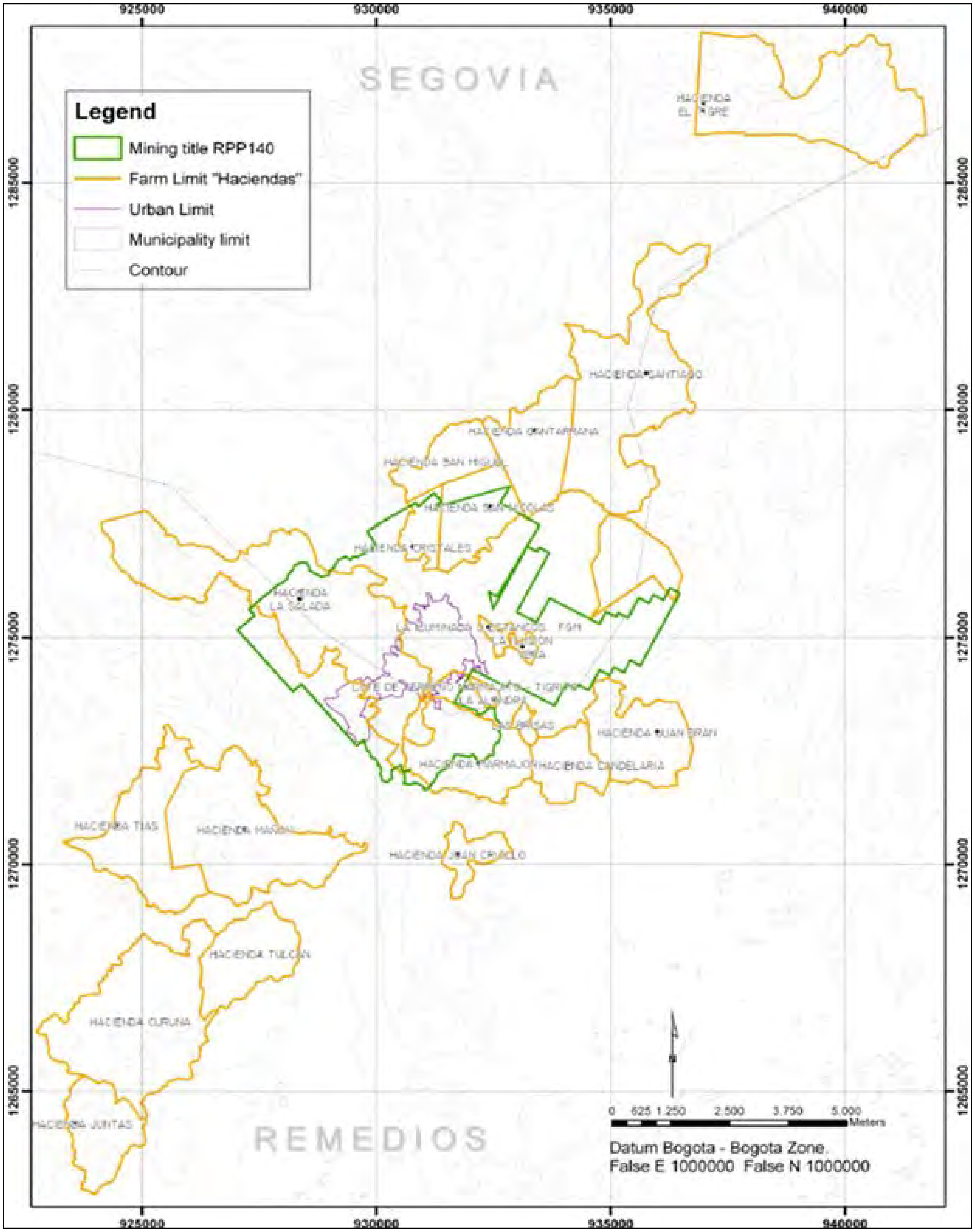
Figure 4-3: Location Map showing Segovia License Boundary and Current Mines

4.3 Surface Land Rights

The Company owns 177 surface land properties (lotes and haciendas or farms) in the municipalities of Segovia and Remedios, above and adjacent to the mining title RPP 140 and ancillary facilities such as the hydroelectric plants (Figure 4-4). These have a total area of about 6,406.8 ha. The surface land properties include essential properties and non-essential properties for the development of mining activities.

There are four surface land properties which are essential for the development of the mining activity, due to their geographic location regarding access to the mines. These properties are described as follows:

- La Salada Property (1,108 ha) – Located above the El Silencio Mine;
- Marmajon Property (238 ha) – Located above the Providencia Mine;
- Santiago Property (134 ha) – Located above the Providencia Mine; and
- La Llumidada Property (16.8 ha) – Located above the Sandra K Mine.



Source: Gran Colombia

Figure 4-4: Land Tenure Map

4.4 Royalties, Agreements and Encumbrances

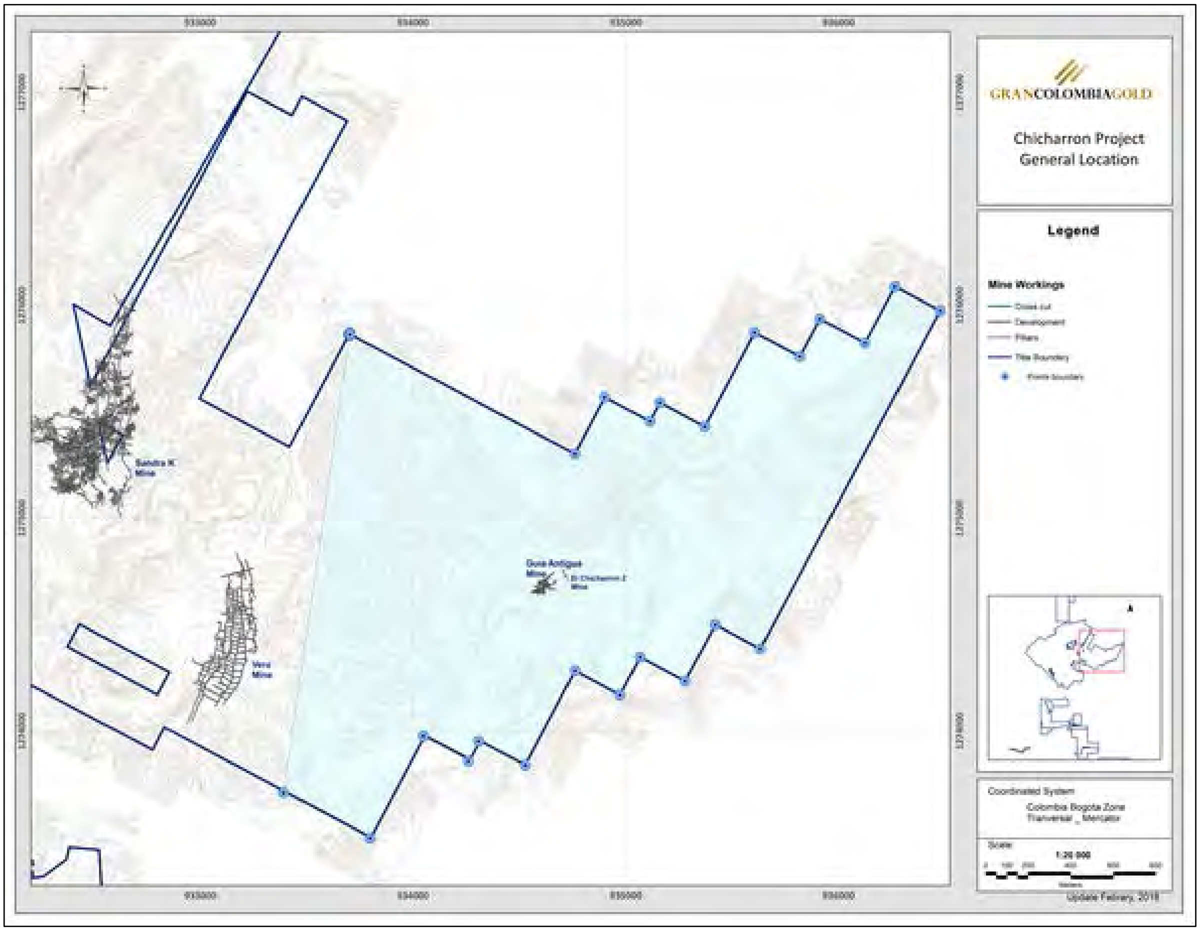
The Company has historically leased several other mines to 29 third-party operators through Mining Association Agreements (which are detailed in the June 9, 2010 NI43-101 completed by SEWC). The Company monitors production at these operations. The agreements were initially setup on a short-term basis of typically in the order of six months, which in most cases have expired. The Company has continued some of the contracts on a rolling monthly basis, under the original terms and conditions of the contract, and, over the years, new Mining Association Agreements have been subscribed as an ongoing program for the integration of informal small miners into the supply chain, with added environmental, social and security benefits.

In November 2002, FGM entered into a Commodatum Agreement (non-remunerated mining rights) with the Municipality of Segovia to mine the Marmajito vein, which is located in the hanging-wall of the Providencia Mine. The agreement was for a term of ten years and expired in Q4 2012.

In September 2003, FGM entered into a similar agreement with “Association Mutual El Cogote” to mine the El Cogote vein at the old El Cogote mine, which is north of the Providencia Mine and south of the Sandra K Mine. The agreement is for a term of ten years and expired in Q3 2013. Gran Colombia is currently in discussions with representatives of the Cogote mine, to bring mining operations under the Company’s contract mining model, while also pursuing the legal adjudication of the mining rights back to the Company through several judicial actions.

The Company also leases sections of the Providencia and El Silencio mines to third-party artisanal contractors known as Navar y Masora. The Masora (Providencia Mine) and Navar (El Silencio Mine) contracts started in 2013. The Company buys RoM material from the contractor but SRK has not been provided with details of the annual production.

On 26 July 2018 Sandspring Resources Ltd. (TSX-V: SSP, OTCQX: SSPXF) (“Sandspring”) and Gran Colombia announced completion of the acquisition of the rights to a 386-hectare land package located in the Segovia Remedios mining district of Antioquia, Colombia (the “Chicharron Project”), which includes the historic silver-gold producing Guia Antigua Mine (Figure 4-5).



Source: Gran Colombia, 2018

Figure 4-5: Map showing the location and boundaries defining the Chicharron Project

The Chicharron Project was previously held through an unincorporated joint venture arrangement between Industrias Argentum SAS, a Colombian company, and a Colombian branch office of a subsidiary of Gran Colombia Gold Corp. (TSX: GCM) ("Gran Colombia"). Sandspring has acquired control of one-hundred percent (100%) of the Chicharron Project in consideration for the issuance of 36,000,000 common shares, a cash payment of US$1,000,000, and the reimbursement of certain expenses.

4.5 Environmental Liabilities and Permitting

4.5.1 Environmental Liabilities

The Company's subsidiary, Zandor, made an agreement dated March 29, 2010 to purchase the mining and other assets of FGM under a Promise to Sell governed by Colombian agreement, which was approved by the Liquidation Advisory Board. The sale included all assets of FGM with no associated financial liability. The assets also include RPP 140, plus several lots of land covering the location of the mines and ancillary facilities, as well as processing, power generation, accommodation and medical facilities, among others.

The 2001 Mining Code requires the concession holder to obtain an Insurance Policy to guarantee compliance with mining and environmental obligations which must be approved by the relevant authority, annually renewed, and remain in effect during the life of the project and for three years from the date of termination of the concession contract. The value to be insured will be calculated as follows:

- During the exploration phase of the project, the insured value under the policy must be 5% of the value of the planned annual exploration expenditures;
- During the construction phase, the insured value under the policy must be 5% of the planned investment for assembly and construction; and
- During the exploitation phase, the insured value under the policy must be 10% of the value resulting from the estimated annual production multiplied by the pithead price established annually by the Government.

According to the Code, the concession holder is liable for environmental remediation and other liabilities based on actions and/or omissions occurring after the date of the concession contract, even if the actions or omissions occurred at a time when a third-party was the owner of the concession title. The owner is not responsible for environmental liabilities which occurred before the concession contract, from historical activities, or from those which result from non-regulated mining activity, as has occurred on and around the Segovia Project site.

As noted above, given the tenure of Mining Concession RPP 140, the Environmental Insurance Policy is not required for the Segovia Operation. Current liabilities at the site are generally associated with the reclamation and closure of the mining facilities and tailings disposal areas. Given the extensive impacts associated with artisanal mining in the area, a clear delineation between possible environmental liabilities attributable to the Company and those from unregulated mining activities is not possible; however, the Company has been making a concerted effort to deal with legacy environmental issues in order to better make that separation. The social issues related to mining in Colombia, especially the interactions between mining companies and artisanal operators, have been violent at times, and could continue to pose a health and safety liability for Company employees and the neighboring communities.

4.5.2 Required Permits and Status

Discussion related to mining in Colombia, the Mining and Environmental Codes, as well as the permits and authorizations necessary for mineral exploration and exploitation is provided in Section 20.3.

4.6 Other Significant Factors and Risks

SRK is not aware of any other factors or risks that affect access, title or right or ability to perform work on the property other than those stated in the above sections which SRK would expect to have a material impact on the resource statement.

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Topography, Elevation and Vegetation

The Project is located in the foothills of the north-eastern part of the Central Cordillera of the Colombian Andes. The topography is a low-lying plateau or erosional surface at 600 to 850 m altitude, which is incised by valleys with a relief of less than 250 m, but with steep slopes of between 20° and 40°. The drainage pattern is dendritic.

The principal rivers in the Project area are the Pocuné, Bagre and Ité. On the west side of Segovia, the Pocuné River drains north into the Nechi River, which hosts major placer gold mining operations. The Nechi is a tributary of the Cauca River, which in turn joins the Magdalena River which flows into the Caribbean Sea at Barranquilla. The Bagre River drains the northeast part of the area and is also a tributary of the Nechi. On the east side of Segovia, the Ité River flows southeast and then northeast directly into the Magdalena River.

Vegetation in the local area in its primary state is tropical forest, but most areas have been cleared for cattle grazing with some degree of secondary forest growth.

5.2 Accessibility and Transportation to the Property

Segovia is located 180 km NE of Medellín in the Segovia-Remedios mining district, Department of Antioquia, north-western Colombia, at 74° 42’ W and 7° 04’ N.

Road access from Medellín to Segovia is 225 km, which has recently been upgraded and is now paved the entire length. Going northwards, there is a 61-km road from Segovia to Zaragoza, and a further 120 km to Caucasia, to connect with roads that lead to the Atlantic ports of Colombia.

Air access is by a 30-minute charter flight from Medellín to Otú, 15 km south of Segovia, which has an asphalt-surfaced airstrip. From Otú, it is a 20-minute drive to Segovia via the towns of Remedios and La Cruzada.

Source: SRK: 2017 (via the Colombia Ministry of Transport website)

Figure 5-1: Map Showing Road Access to Segovia Property and Major Routes through the Department of Antioquia

5.3 Climate and Length of Operating Season

Different climates can be found within the region and vary with elevation. These climates can be defined as:

- Hot (>24°C) below 1,000 m in the Cauca River valley;
- Temperate (18°C to 24°C) between 1,000 and 2,000 m; and
- Cold above 2,000 m (12°C to 18°C).

Segovia is situated within the hot zone where the climate is tropical and wet with an annual rainfall of approximately 2,670 millimeters (mm). The town of Segovia has an average temperature of 25°C. Rainfall has a bimodal distribution with the wettest months from May to December and a dry season from December to May. A weather station at La Cruzada, Remedios recorded an annual rainfall of 2,670 mm, with an average temperature of 25°C, and a relative humidity of 70%.

5.4 Sufficiency of Surface Rights

See Section 4.3.

5.5 Infrastructure Availability and Sources

5.5.1 Power

The Project is well supplied with power from two sources. The first is a large utility company Empresas Públicas de Medellín E.S.P (EPM). EPM is a major utility, that in addition to power, supplies natural gas and water. EPM supplies about 20% of Colombia's power. The second source of power comes from Proveniente de Central Dona Teresa (PCH), that is a smaller independent producer that operates the 8.6 million watts (MW) Doña Teresa hydroelectric project approximately 20 km from the Segovia site, Power reliability has much improved from the past with good consistency.

5.5.2 Water

The Project has water supplied from the underground dewatering efforts and rainwater. The water is stored in a pond named La Tupia lake near the Maria Dama processing facility. The plant uses approximately 100 cubic meters per hour (m^3/hr) supplied mainly by La Tupia.

5.5.3 Mining Personnel

The project has good access to skilled mining personnel as there has been mining in the area for well over 100 years. There are a large number of artesian miners in the area and Gran Colombia has a successful recruiting program when personnel are needed. A substantial number of contract miners are available for hire to supplement the Gran Colombia work force. The miners are available from Segovia, La Cruzada and the surrounding communities.

5.5.4 Potential Tailings Storage Areas

The site has two tailings storage facilities. The first is the Shaft site which now not used with the El Choco facility now in service. The second, El Chocho, is the long-term solution for tailings storage for the currently envisioned LoM is in construction with the initial utilization in April 2018 and in full operation in August 2018.

5.5.5 Potential Waste Disposal Areas

Waste is stored at the mine sites and is used productively throughout the operation. Adequate sites exist to manage the waste for the LoM.

5.5.6 Potential Processing Plant Sites

The Project is utilizing the existing Maria Dama plant to process the mined ore. A second site is available if needed at the nearby Pampa Verde location where a mill construction was initiated but then halted as the gold price dropped. There are no current plans to utilize the Pampa Verde site.

6 History

In preparing these sections of this report relating to background and historical information, exploration and geological setting, SRK has relied upon previous Technical Reports by SRK, SEWC and Dr. Stewart Redwood.

Initial exploration activity began in the town of Remedios in 1560, but activity was limited due to the location and difficult terrain to access mineable areas. By the mid-18th century mining activity was almost abandoned. A second phase of gold mining began following independence and an influx of investment from Great Britain, through London-registered mining companies. Mining in the district began in large around the early 1850s, with the town of Segovia founded in 1869, a few kilometers north of the town of Remedios. Segovia was declared a separate municipality in 1885.

6.1 Prior Ownership and Ownership Changes

FGM is reported to have been founded in 1852 but was only detailed as the Frontino and Bolivia (South American) Gold Company Limited in 1864. The company mined in the Municipality of Frontino and the Bolivia Mine at Remedios. It was formed to buy and work the mines of El Silencio, Cordoba, La Salada and San Joaquin in a property of 5,000 acres.

In 1874, the operations in Frontino were floated off as a separate company, the Antioquia (Frontino) Gold Mining Co Ltd. The company then focused on the Remedios district, where it purchased additional mines, and by the late 19th century it was one of the largest companies in Colombia, with 700 employees. Gold production from the whole district was 24,666 ounces in 1888 and 41,250 ounces in 1893.

Gran Colombia Gold Corp. through its subsidiary Zandor, made an agreement dated March 29, 2010 to purchase the mining and other assets of FGM under a Promise to Sell governed by Colombian agreement, which was approved by the Liquidation Advisory Board. The sale included all assets of FGM with no associated financial liability. The assets also included RPP 140, plus several lots of land covering the location of the mines and ancillary facilities, as well as processing, power generation, accommodation and medical facilities, among others.

The sale price was COP380,000,000,000 (approximately US$200 million) net of taxes, as adjusted, with the exclusive purpose of paying FGM’s labor and pension liabilities. Zandor will have no further liabilities with respect to any historical pension liabilities, severance costs and other liabilities. The Company announced the completion of the acquisition on August 23, 2010.

In March 2010, Medoro and Gran Colombia Gold Corp. (Gran Colombia) entered into an agreement for Gran Colombia to acquire a 50% interest in Zandor and the FGM assets. This was later modified (June 8, 2010), and as part of the agreement Gran Colombia would be responsible for all the acquisition costs (approximately US$7.5 million) for a 95% interest in Zandor, with Medoro retaining 5% (with the option of acquiring an additional 45% interest in Zandor). The agreement also included Gran Colombia acting as the operator at the project.

On June 13, 2011, Gran Colombia Gold Corp. and Medoro Resources Ltd, merged to form a single company Gran Colombia Gold Corp., which is the 100% owner of Zandor.

6.2 Exploration and Development Results of Previous Owners

It is understood that the previous owners of the Segovia Project (FGM) did not complete any regional surface geological mapping, geochemistry, or surface or airborne geophysics. Historical exploration data is limited to underground mapping and sampling and drilling for resource development.

In addition to the operating mines included in the current Mineral Resource a number of other mines exist within the RPP license. SRK does not consider the exploration databases to be of sufficient levels to produce a compliant Mineral Resource estimate but recommends that Gran Colombia begin the process of capturing the available information and to generate a regional model to assist in planning future exploration programs.

6.3 Historic Mineral Resource and Reserve Estimates

A number of different Mineral Resource estimates have been completed on the property during the history of the project.

In June 2010, SEWC reported a Mineral Resource estimate based on a variable cut-off reflecting different gold price assumptions (US$1,000/oz and US$850/oz) for Indicated and Inferred Mineral Resources respectively and a Probable Mineral Reserve estimate. These estimates are dated and were based on only a small sub-section of database and are therefore superseded by the on-going work completed by SRK.

On April 2, 2012, SRK produced a Mineral Resource Statement for the Carla Project, reported at a CoG of 3.0 g/t Au. CoG's are based on a price of US$1,400 per ounce of gold and gold recoveries of 85% for resources. The Carla Mineral Resource statement is presented in Table 6-1.

Table 6-1: SRK Carla Mineral Resource Statement with Effective Date of April 2, 2012 using 3 g/t Au Cut-off (1)

Carla Underground			
Category	**Quantity (t)**	**Grade (Au g/t)**	**Metal (oz)**
Measured			
Indicated	245,000	7.5	59,000
Total M&I	**245,000**	**7.5**	**59,000**
Inferred	341,000	4.9	54,000

Source: SRK

(1) Mineral Resources are reported at a cut-off grade of 3.0 g/t Au. Cut-off grades are based on a price of US$1,400 per ounce of gold and gold recoveries of 85% for resources, without considering revenues from other metals. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimate. All composites have been capped where appropriate. The Concession is wholly owned by and exploration is operated by the Company.

Between 2010 and 2018 SRK has produced a number of Mineral Resource estimates for the Segovia Project. The most recent Mineral Resource Statement for the Project has an effective date of December 31, 2017, which is the last date assays were provided to SRK.

The Mineral Resource estimation process was a collaborative effort between SRK and Gran Colombia staff. Gran Colombia provided to SRK an exploration database with flags of the main veins as interpreted by Gran Colombia. SRK completed a statistical analysis, including a capping and compositing analysis on the coded samples.

SRK imported the geological information into Aranz Leapfrog® Geo (Leapfrog®) to complete the geological model. Leapfrog® was selected due to the ability to create rapid, accurate geological interpretations, which interact with a series of geological conditions.

SRK has produced block models using Datamine™ Studio RM Software (Datamine™). The procedure involved construction of wireframe models for the fault networks, veins, definition of resource domains (high-grade sub-domains), data conditioning (compositing and capping) for statistical analysis, geostatistical analysis, variography, block modeling and grade interpolation followed by validation. Grade estimation has been based on block dimensions of 5 m x 5 m x 5 m, for the updated models. The block size reflects that the majority of the estimates are supported via underground channel sampling and spacing ranging from 2 to 5 m. Gold grades have been interpolated using nested three pass approaches within Datamine™, using an Ordinary Kriging (OK) routine for the main veins.

The Mineral Resources were reported in situ based on modeled geological boundaries and do not include the additional material required to be mined by the minimum stoping width. Additionally, Mineral Resources in pillars in the mined-out areas were only reported in the inferred category as the remaining volume is uncertain given artisanal mining activity.

The classification is based on standards as defined by the CIM Definition Standards - For Mineral Resources and Mineral Reserves, prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council on May 14, 2014. The Resources at the Project have been classified as Measured, Indicated and Inferred at Providencia. At El Silencio and Sandra K, only Indicated and Inferred Resources have been defined. The main changes in the classification compared to the previous estimates, occurred at El Silencio where previously all material was classified as Inferred due to a lack of verification sampling or confidence in the depletion/pillar outlines. SRK limited the Indicated Mineral Resources to the lower portion of the mine (previously flooded), where the depletion limits are considered more accurate due to a lack of mining activity over prolonged periods of time by Contractor mining.

SRK reported the Mineral Resource based on a single cut-off and assumptions for potential for economic extraction using an assumed minimum mining width. An investigation into CoG’s was completed by SRK as part of the previous (2014) Preliminary Economic Assessment. Based on a US$1,400/oz gold price and an average mining and processing costs, SRK limited the Mineral Resource using a CoG of 3.0 g/t Au over a (minimum mining) width of 1.0 m.

The classified Mineral Resource is sub-divided into material within the remaining pillars (pillars), and the long-term resource material (LTR) outside of the previously mined areas, with the classification for the pillars considered separately given the uncertainty of the extent of remnant pillar mining currently being undertaken by Company-organized co-operative miners. The Mineral Resource statement for the Project is shown in Table 6-2.

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Table 6-2: SRK Mineral Resource Statement for the Segovia and Carla Projects with Effective Date of December 31, 2017

Project	Deposit	Type	Measured			Indicated			Measured and Indicated			Inferred		
			Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)
Segovia	Providencia	LTR	122	24.2	95	327	14.0	147	449	16.8	242	179	9.4	54
		Pillars	91	17.3	51	110	10.4	37	202	13.5	88	378	19.8	241
	Sandra K	LTR				288	9.3	86	288	9.3	86	313	8.4	85
		Pillars				111	10.8	39	111	10.8	39	2	9.6	1
	El Silencio	LTR				782	11.0	276	782	11.0	276	1,203	8.8	339
		Pillars				1,416	10.3	468	1,416	10.3	468	396	12.5	159
	Las Verticales	LTR										771	7.1	176
	Subtotal Segovia Project	LTR	122	24.2	95	1,397	11.3	508	1,519	12.4	603	2,466	8.3	654
		Pillars	91	17.3	51	1,638	10.3	544	1,729	10.7	594	776	16.1	400
Carla	Subtotal Carla Project	LTR				154	9.7	48	154	9.7	48	178	9.3	53

Source: SRK, 2018

The Mineral Resources are reported at an in situ cut-off grade of 3.0 g/t Au over a 1.0 m mining width, which has been derived using a gold price of US$1,400/oz, and suitable benchmarked technical and economic parameters for underground mining and conventional gold mineralized material processing. Each of the mining areas have been sub-divided into Pillar areas (“Pillars”), which represent the areas within the current mining development, and LTR, which lies along strike or down dip of the current mining development. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimate. All composites have been capped where appropriate.

6.4 Historic Production

It has previously been reported that the historic production from FGM between 1869 and 2010, contained more than 4.6 million ounces of gold.

Total gold production by the Providencia, El Silencio and Sandra K mines between 2000 and 2018 is given in Table 6-3, with the majority of production noted to be from the Providencia Mine.

Table 6-3: Summary Statistics for Total Gold Production at Providencia, El Silencio and Sandra K Mines 2000 to 2018 (1)

Year	Tonnes (t)	Gold (oz) Total	Rec (%)	Gold Grade (g/t)
2000	149,925	85,146	100.1	17.7
2001	170,135	50,996	98.0	9.7
2002	168,220	42,353	101.0	7.8
2003	144,141	42,794	88.0	9.2
2004	158,304	51,553	91.0	10.1
2005	178,528	54,858	91.0	9.6
2006	202,168	60,873	86.9	9.4
2007	218,963	40,673	94.0	5.8
2008	185,816	33,199	100.8	5.6
2009	175,230	61,136	90.3	10.9
2010	149,214	46,389	92.2	9.8
2011	173,684	64,544	93.3	6.0
2012	260,806	97,061	81.6	11.0
2013	303,131	76,461	86.7	8.8
2014	186,315	63,293	89.3	11.5
2015	145,772	82,242	90.4	18.3
2016	202,727	114,760	90.1	17.4
2017	194,143	137,339	90.5	21.2
2018	302,509	181,831	90.1	19.6

Source: Gran Colombia, 2019

(1) Excludes tonnes processed, gold grade and gold ounces produced by the Company from materials sourced from contract miners operating outside of the Providencia, El Silencio and Sandra K mines.

A big contributor to the ounces produced are the contract miners. Table 6-4 shows the tonnes milled, gold sales in ounces, silver sales in ounces, realized gold and silver prices and FX rate for the last six years.

Table 6-4: Summary Statistics for Total Production Including Contractors 2012 to 2018

Description	2013	2014	2015	2016	2017	2018
Tonnes Milled						
Company operated	188,401	104,359	104,346	145,541	108,486	187,128
Contract miners	139,013	133,380	106,703	139,353	169,715	183,278
Total	**327,414**	**237,739**	**211,049**	**284,894**	**278,201**	370,406
Per day	897	651	578	778	762	1,015
Gold Sales (oz)						
Company operated	24,016	15,237	15,935	30,075	50,264	88,275
Contract miners	55,483	58,604	77,358	95,772	98,248	102,140
Total	**79,499**	**73,841**	**93,293**	**125,847**	**148,512**	190,415
Per day	218	202	256	344	407	522
Silver Sales (oz)	**111,173**	**86,445**	**99,236**	**144,178**	**126,384**	158,050
Realized Prices (net of refining charges) (US$ per oz)						
Gold	$1,418	$1,237	$1,125	$1,220	$1,226	$1,239
Silver	$23	$18	$14	$14	$14	$13
COP/US$ FX Rate	1,869	2,002	1,743	3,051	2,951	2,956

Source: Gran Colombia, 2019

Table 6-5 shows the production per mine for Company operated mining areas.

Table 6-5: Summary Statistics for Company-operated Production 2012 to 2018

	2013(1)	2014(1)	2015	2016	2017	2018
Milling days	365	365	365	366	365	365
Company-Operated Mining Areas						
Mina Providencia						
Tonnes milled			27,800	49,355	44,795	77,907
Head grade (g/t)			4.51	6.60	19.6	22.6
Recovered gold (oz)			3,640	9,435	25,608	62,131
Mina Sandra K						
Tonnes milled			7,523	5,296	14,052	41,696
Head grade (g/t)			4.30	10.11	9.3	7.0
Recovered gold (oz)			938	1,551	3,786	8,436
Mina Carla						
Tonnes milled						
Head grade (g/t)						
Recovered gold (oz)						
Mina El Silencio						
Tonnes milled			69,025	90,890	49,639	67,525
Head grade (g/t)			3.30	2.58	2.3	4.7
Recovered gold (oz)			6,612	6,788	3,372	9,160
Mill Circuit Inventory Change	1,856	1,915	4,679	12,400	17,482	9,770
Total Company-Operated						
Tonnes milled	188,401	104,358	104,348	145,541	108,486	187,128
Tonnes milled per day	516	286	286	398	297	513
Average mill head grade	4.35	4.45	3.69	4.22	10.4	14.7
Mill Recovery (excluding mill circuit)	86.0%	89.2%	90.3%	90.1%	90.6%	90.0%
Total Gold Production (oz)	**24,526**	**15,235**	**15,869**	**30,174**	**50,248**	**89,497**

Source: Gran Colombia, 2018
(1) Detailed information by mine is not available for 2013 and 2014.

Table 6-6 shows the production per mine for Contract Miner operated mining areas.

Table 6-6: Contract Miners Operated Mining Areas Summary Statistics for 2013 to 2018

	2013	2014	2015	2016	2017	2018
Milling days	365	365	365	366	365	365
Processed at Maria Dama Plant						
Mina Providencia						
Tonnes milled	33,102	33,029	13,282	13,102	17,029	23,820
Head grade (g/t)	15.39	21.94	55.07	53.00	40.0	31.1
Recovered gold (oz)	14,294	20.786	21,289	20,119	19,802	21,506
Mina Sandra K						
Tonnes milled	15,066	11,678				
Head grade (g/t)	11.47	11.43				
Recovered gold (oz)	4,816	3,834				
Mina El Silencio						
Tonnes milled	66,562	37,250	28,144	44,084	68,628	91,561
Head grade (g/t)	17.64	21.91	55.14	50.50	33.7	26.7
Recovered gold (oz)	32,825	23,438	45,086	64,467	67,289	70,828
Other						
Tonnes milled	24,283	51,423	65,277	82,168	84,058	67,897
Head grade (g/t)	5.52	7.61	5.42	4.73	4.6	5.7
Recovered gold (oz)	3,765	11,213	10,295	11,262	11,254	11,219
Total Contract Miners						
Tonnes milled	139,013	133,380	106,702	139,355	169,715	183,278
Tonnes milled per day	381	365	292	381	465	502
Average mill head grade	14.32	15.49	24.72	23.75	19.9	19.5
Mill Recovery	87.0%	89.2%	90.4%	90.1%	90.5%	90.1%
Recovered gold (oz)	55,700	59,271	76,669	95,847	98,345	103,553
Processed at Contract Miner Facility (1)						
Total Gold Production (oz)			**357**	**240**	**66**	

Source: Gran Colombia, 2019

(1) Represents gold production from mill feed mined under contract by a third-party and processed at their own plant for delivery directly to the refinery on Gran Colombia's behalf. As such, tonnes, grade and recovery data are not available.

7 Geological Setting and Mineralization

The Project license boundaries are separated into a number of identified exploration prospects and operating mines, which all form part of the Segovia-Remedios gold district.

7.1 Regional Geology

The Segovia-Remedios gold district is located in and around the Municipalities of the same names within the Colombian Central Cordillera. This region is dominated by metamorphic and igneous rocks which are broadly orientated north-south. The region also contains minor/localized deposits of unconsolidated alluvial material and the prevailing climatic conditions have resulted in the formation of a thick layer of yellow to brownish saprolite which may exceed 60 m in depth.

The district is hosted by the Segovia Batholith of granodiorite to diorite composition (Gonzalez, 2001; Alvarez et al, 2007) Figure 7-1. The batholith is 10 km wide at Segovia and is elongated N-S. The region is structurally controlled by a number of faults oriented north-south to 350°, most notably the Otú-Pericos, which post-dates the Nus and Bagre faults, and these are all considered to be younger than the Lower Cretaceous and form part of the regional Palestrina Fault System that bound the Segovia Batholith.

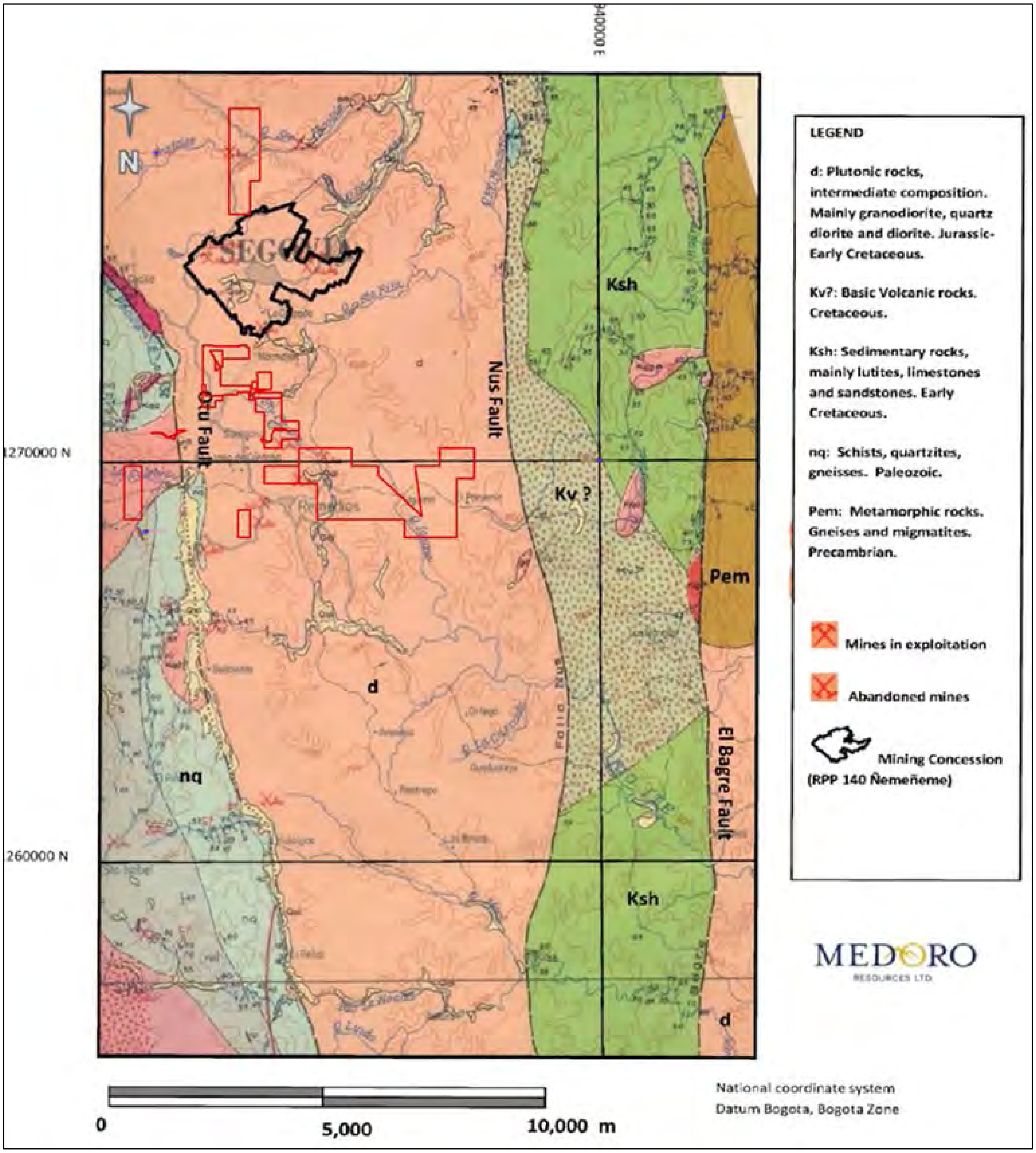
The Otú fault is steeply dipping, trends 340° and has a lateral-sinistral displacement of approximately 66 km. It defines the contact between Paleozoic rocks comprising quartz-sericite and graphitic schist, metavolcanic schist of the Cajamarca Group with felsic gneissic intercalations and the Cretaceous Antioquia Batholith and Santa Isabel Stock to the west and the Segovia Batholith, and Cretaceous basic volcanic rocks and sediments and minor Paleozoic gneiss, micaceous schist, quartzite, marble and associated calcareous rocks to the east.

The Bagre fault trends 020° in the south and 010° in the north and has a lateral sinistral displacement interpreted to be >50 km. The Nus fault trends 350° and was interpreted to have a steep dip and lateral dextral displacement >50 km.

The Segovia Batholith (160 ± 7 Ma K/Ar in hornblende; Feininger et al, 1972) comprises a total of some 5,600 square kilometer (km^2) orientated north-south to 030°, and predominantly comprises grey-green medium grained diorite to quartz diorite with local rapakivi textures and variations from quartz monzonite to granodiorite and gabbro (González and Londoño, 2002). It is intruded by dolerite and andesitic dykes along discontinuities that are considered to comprise one of the controls of the gold mineralization.

Faulting and fracturing within the Segovia batholith forms an important control on mineralization and is considered to comprise three sets:

- Early compression to produce 010 040º towards 030º and shallow dipping represented by diorite-andesite dykes and quartz-pyrite veins of 0.15 to 2.60 m in width that have been mined for gold mineralization associated with sphalerite, galena, chalcopyrite, and rare scheelite, pyrrhotite, with variable calcite content;
- Clean fractures at 310° to 270º which dip 25° to 30º towards north; and
- Vertically dipping fractures which trend 325º (González and Londoño, 2002).



Source: Gran Colombia, (under previous ownership Medoro), 2012

Figure 7-1: Regional Geologic Map Illustrating the Location of the Segovia Mining Concession

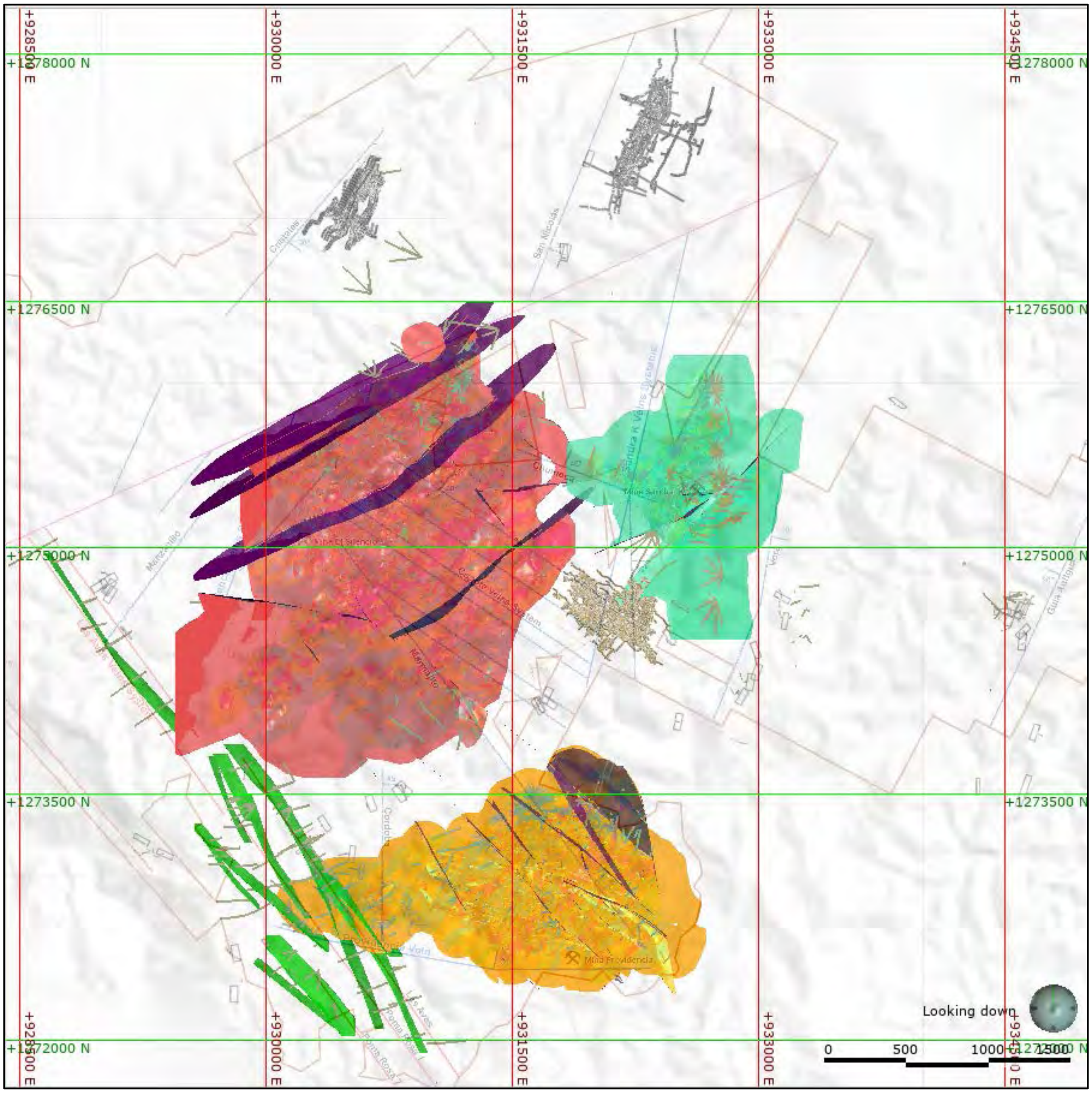
7.2 Local Geology

Within the current RPP property boundaries there are a number of operating mines or projects, with the main areas of interest being:

- Providencia;
- El Silencio;

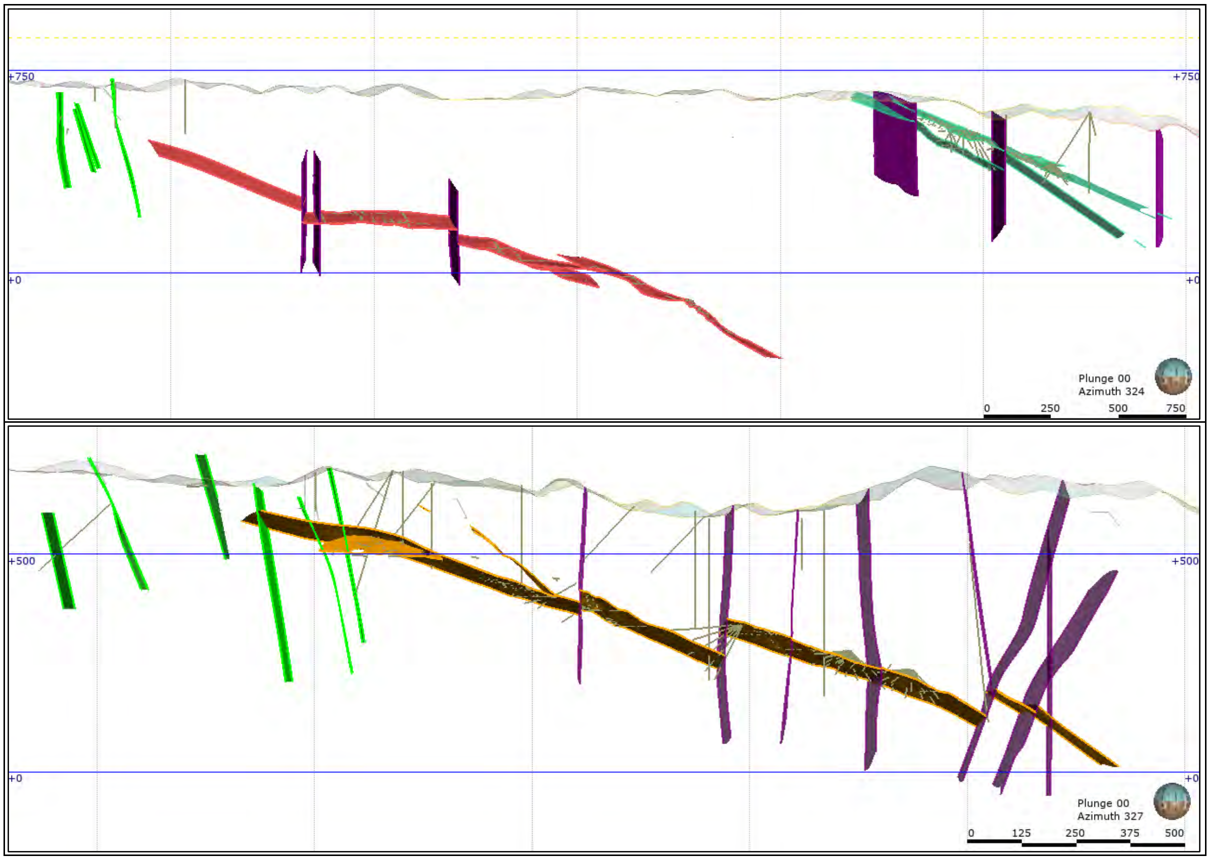
- Sandra K; and
- Las Verticales.

Each of the mines has been focused on one of the main vein structures, but typically have a number of minor veins or splays which are also known to have geological continuity. Figure 7-2 shows a plan of the main veins, which have been subsequently cut by late stage faulting. The known strike length of the Providencia mineralization is approximately 2 km, and El Silencio 2.7 km, while Sandra K has only been explored over 1 km in strike length. With the exception of Las Verticales each of the veins dip on average between 25° and 35°. The current known dip extension on the Providencia mineralization is approximately 1.2 km, at El Silencio it is reported at approximately 2.0 km and Sandra K is approximately 900 m within the license boundary but is known to extend beyond this limit. The Las Verticales Vein System is made up of a series of shear-zones which strike to the northwest and are considered steeply dipping (>80º).



Source: SRK, 2019

Figure 7-2: Schematic Plan Showing the Main Mineralization Zones at Segovia



Source: SRK, 2018

Figure 7-3: Schematic Cross Section (SW-NE) Showing Example of the Mineralized Veins (a) El Silencio and Sandra K (b) Las Verticales and Providencia

7.3 Property Geology

7.3.1 Segovia RPP License

The only published description of the geology of Frontino is by Tremlett (1955) who described the structure of the mineralized veins. There are also several unpublished reports for FGM (Bonoli, 1960; Wieselmann & Galay, 1982; Castaño Gallego, 2008; Muñoz, 2008).

The Frontino mines are hosted entirely by granodiorite/granitoid rocks of the Segovia Batholith that has been recorded as being of late Jurassic age (150.25 ± 0.73 Ma) but some dating of rocks in the region suggest it may be much younger and mid- to late-Cretaceous in age (~68.4 ±5.5 Ma to 84.1 ± 5.5 Ma, Echeverry et al., 2009). The granodiorite is coarse grained (about 5 mm), equigranular and fairly dark colored with white plagioclase, quartz and dark green hornblende.

Mineralization

Gold mineralization at Segovia occurs in mesothermal quartz-sulfidic veins hosted by diorite to granodiorite rocks of the Segovia Batholith. The well-known, partially exploited veins dip at approximately 30° to the east or north-east. There are also a number of steeply dipping shear-zones hosting quartz veins with a N40W trend in the western part of the concession, termed the Las Verticales Veins System.

In general, the veins are formed of quartz with minor calcite and coarse-grained sulfides comprising pyrite, galena and sphalerite, and typically show a close spatial relationship with lamprophyre to adakite dykes. Gold and electrum occur as fine grains (<20 microns) and visible gold is generally common in the high-grade shoot sectors of the mines. Native silver has been reported. The wallrock alteration to the veins affects the basalt dykes and the granodiorite in a narrow zone a few meters wide with potassic (biotite), argillic (illite) and propylitic alteration most commonly encountered along with selective mineral replacement by chlorite, epidote, pyrite and calcite.

Gold mineralization is hosted by a series of quartz-sulfide veins. The main sulfides present are pyrite, chalcopyrite, sphalerite, and galena with higher grades seemingly related to high proportions of the latter two. The veins themselves exhibit three main trends:

- N-S to NE strike, with a dip of 30° E;
- E-W to NW strike, with a dip 30° to N or NE; and
- NW strike, with a dip of 65-85° NE. These occur on the west side parallel to a NW -trending segment of the Otú Fault.

The low angle veins have formed along thrust faults. These often have thrust duplex structures, resulting in pinching and swelling of the veins; these is no evidence to suggest any systematic change in grade through these pinch and swell structures. The average width of the quartz veins is 0.95 m, with a maximum width of up to 9.00 m. On occasion, a clear intersection lineation can be observed in the veins plunging toward 060°, sub-parallel to the plunging high-grade mineralization observed in the Mineral Resource modeling suggesting the importance of cross cutting structures.

The quartz veins commonly follow dykes or sills with a width of about 2 to 3 m. These dykes can be found in the hanging-wall or the footwall material, both, or in the middle of the mineralized vein. The lamprophyre dykes have very fine phenocrysts of white plagioclase in a fine grained, dark-colored matrix, whereas the adakite dikes show coarse phenocrysts (7 mm) of white plagioclase in a fine grained, light-colored matrix.

There is always a close spatial relationship between the veins and dykes, and the dykes are used as a guide to mineralized structures during exploration drilling or drifting.

The mineralized zone observed in drill core for Providencia is shown in Figure 7-4 and Figure 7-5, as photographed by SRK, and illustrated in Figure 7-6 as procedurally documented by the Company. Figure 7-7 shows the typical thickness of the Providencia and Sandra K veins as exposed in the underground workings. Figure 7-8 presents the well documented relationship between the mineralized vein and lamprophyre dykes as observed underground at El Silencio. Figure 7-8 also provides an image of the recently dewatered Mine Level 29 at El Silencio, and the typical thickness of the mineralized zone is illustrated.

The veins are offset vertically by more than 50 m by high angle faults which show a reverse sense of displacement. The principal fault trends are NE with dip of 65° to 85° NW, and NW with dip of 85° W to 65° E.

The geological history is summarized as follows:

- Intrusion of granodiorite;

- Development of low angle fault system;
- Intrusion of the dykes along the low angle faults;
- Formation of quartz-sulfide veins along the low angle faults; and
- Late stage high angle reverse fault movement causes vertical off-sets of the quartz veins.

The structural data and dating results indicate that the intrusive-related gold-rich, base metal mineralization accompanied early-Tertiary deformation related to oblique accretion of outboard terranes (D2) and was subsequently reactivated during late-Miocene post-mineralization deformation (D3, the event associated with porphyry Au-Cu mineralization in the Cauca belt).

Source: Gran Colombia, 2014

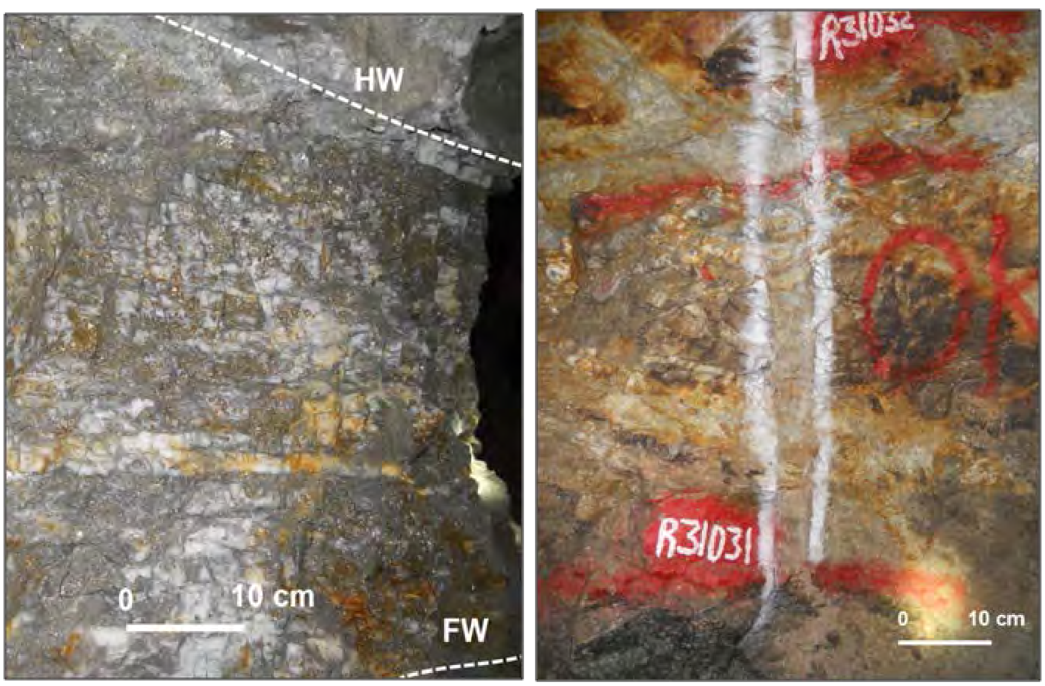
Figure 7-4: Mineralized Zone at Providencia, Intersected in Drillhole DS0089 at 453.20 m, as Observed by SRK (Highest Grade Areas Highlighted by Magenta Tags)

Source: Gran Colombia, 2014

Figure 7-5: Significant Mineralization at Providencia, Intersected in Drillhole DS0089 at 453.54 m, as Observed by SRK

Source: Gran Colombia, 2014

Figure 7-6: Procedural Core Photography for Drillhole DS0089 Completed by the Company during Data Acquisition



Source: SRK, 2014

Figure 7-7: Typical Thickness of the Providencia (left) and Sandra K (right) Veins, as Exposed in Underground Workings

Source: SRK, 2018

Figure 7-8: Vein Exposures in Underground Workings at El Silencio Showing Relationship with Dykes (left) and Typical Vein Thickness (right)

Structural Analysis

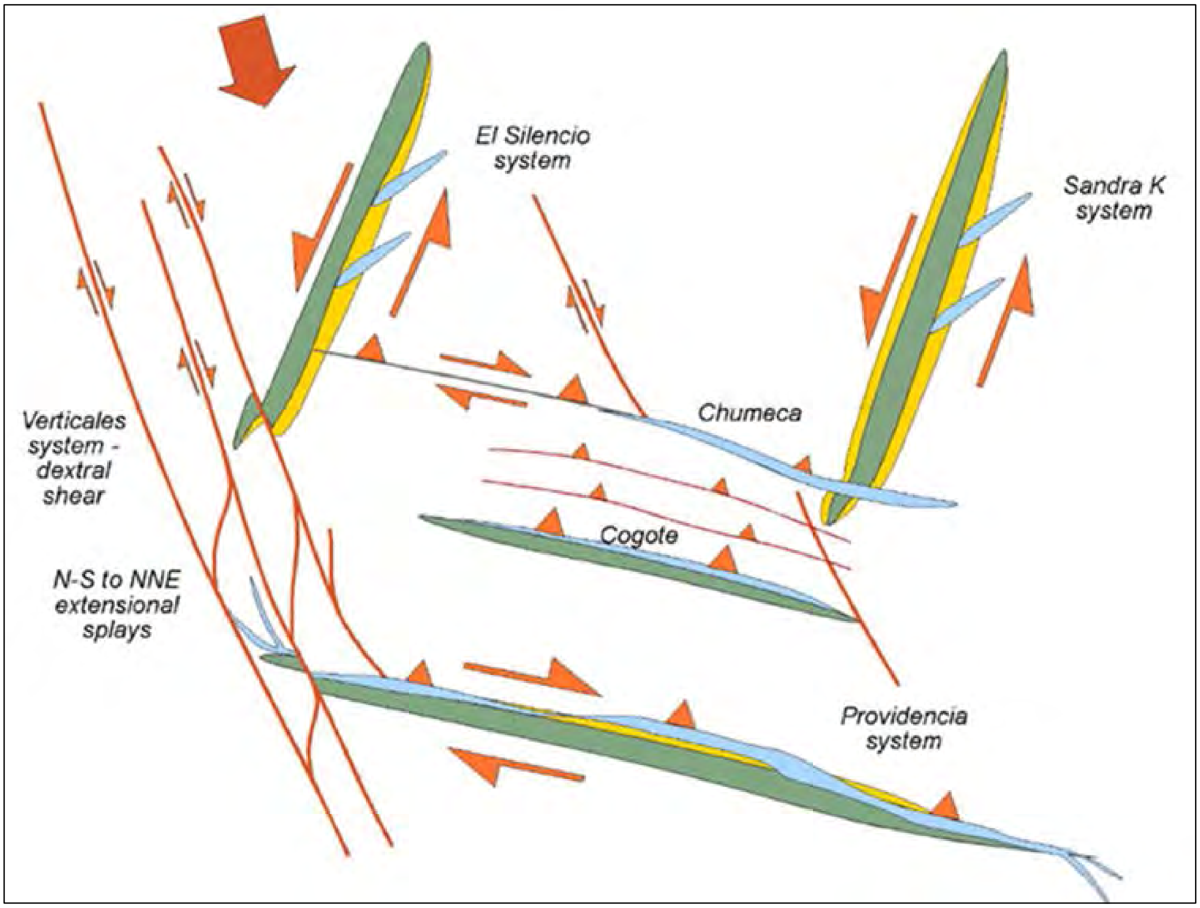
SRK notes that detailed structural analysis per vein at the Segovia project has been completed by the Company's external structural consultant (Dr. Tony Starling), considering controls on dike emplacement, phases of quartz veining and deformation, vein morphology and termination, and kinematic evolution of the veins. A simplified structural model is presented in Figure 7-7.

In the portion of the Segovia-Remedios district covered by the Project, three principal phases of deformation are recognized, comprising:

- An early phase of deformation associated with the emplacement of a series of both steep and shallow dipping, pre-mineralization dykes (D1);
- A stage of broadly N-S to NNE-SSW oriented compression (D2); and
- A phase of E-W to WNW-ESE oriented post-mineralization compression (D3).

Most significantly (from a grade distribution perspective), review of the kinematic evolution of the veins within the Segovia-Remedios mining district has allowed an initial understanding of and interpretation for the orientation of the high-grade shoots reflected in the close spaced sample data of mineralized structures. It is considered that the NE to ENE-trend of the high-grade shoots in the principal veins reflects the NNW-trending compression direction (relating to the activation of NNW-trending Nus fault system around the western margin of the granodiorite batholith) which, whilst also appearing to represent the main stage of vein formation and mineralization at Providencia, caused strong deformation of the original vein contacts. In consequence, phases of folding, shearing and thrusting occurred along the ENE corridors, orthogonal to the compression direction and hence directing hydrothermal fluid flow to form the main high-grade shoots.

Continued deformation and shearing along the Nus fault system resulted in the development of NNW-trending steep dextral faults that hosted quartz veins, relatively low grade in terms of mineralization, which form the Las Verticales Veins System.



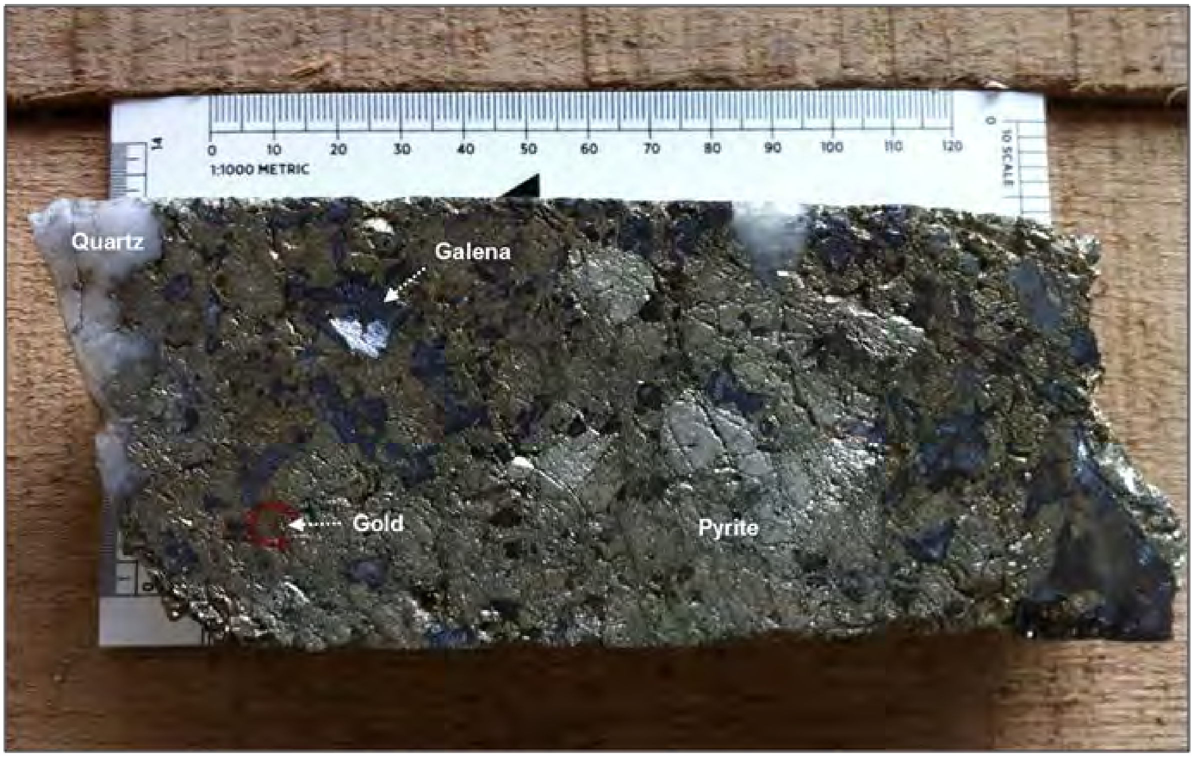
Source: Telluris Consulting, 2013

Figure 7-9: Sketch Model for Syn-Mineralization Deformation at Segovia

The Providencia veins discussed in this report have a typical strike of 100° E dipping 30° to the NE and can be traced for around 2 km, while the Las Verticales Veins System strikes more than 3.0 km on a trend of 140° S and dip 75º to the NE. The modeled Sandra K and El Silencio veins show typical strike orientations, dips and trace lengths of: 009° N, dip 29° towards E, 1.3 km (Sandra K); and 050°N, dip 27º towards E, 2.2 km (El Silencio).

7.3.2 Mineralization Relationships

SRK noted from discussions with the Gran Colombia geologists, during a review of the drill core at Sandra K that a relationship exists between the presence of galena and significantly elevated gold grades, most notably in the drilling completed down-dip, towards the east of the mine (Sandra K Fault Block), as illustrated in Figure 7-10. During the site visit, SRK investigated the relationship by reviewing a range of mineralized cores from Sandra K where galena had been logged (and where galena was absent) in the database. Analysis of the observations suggested that whilst gold mineralization in general is typically related to the presence of sulfides (most notably pyrite), the most significantly elevated grades in the Sandra K Fault Block are relatively consistently related to the presence of galena, whereby the greater abundance of galena tends to correlate with higher gold and silver grades.



Source: SRK, 2016

Figure 7-10: Presence of Galena Related to Elevated Gold Grades at Sandra K, in Drillhole DS0130 Showing 30 cm at 311.34 g/t gold (Free Gold Highlighted)

Given the positive outcome from the investigation, SRK has used the geological relationship between galena and gold grade to guide the orientation of a potential high-grade shoot in the Sandra K Fault Block during grade estimation.

7.3.3 Carla Licenses

Most of the Carla Licenses (including the area pertaining to this resource estimate) are hosted entirely by the Segovia Batholith and occupy land to the south of the Segovia Mining Operation.

Rocks of the batholith are largely observed as coarse-grained homogenous granodiorite containing narrow (1 to 2 m) later stage mafic dykes. Some occurrences of more aplitic dykes are also noted.

The mineralized quartz-sulfide veins often occupy the same discontinuities as these dykes and form within two main orientation groups including:

- Strike 350°-010° and dip 40° to 55° towards the east; and
- Strike 050°-065° and dip 60° to 80° towards the southeast.

The mineralization is considered to be very structurally controlled, with the main mineralized corridor being defined by the Otú fault in the west and the Nus fault in the east.

The attitude of some the veins suggest that, while a structural corridor is considered to have a sinistral movement, there has also been reactivation with an extensional/ dextral stress environment taking precedence during mineralization.

Historical exploration and mining have suggested that the ground containing the line of intersection of these two dominant vein orientations can host significant higher-grade zones within the plane of the veins. The line of intersection is a suggested plunge at 30° to 150° (SE). While no such arrangement has been noted from the Carla Licenses to date, this hypothesis exists as a notable exploration target.

Gold mineralization at the Carla Project is hosted in quartz veins that vary from a few cm to more than 3 m in thickness, with an average of 1 m and with dips varying from 30° to vertical. The host rock is largely granodiorite with occasional variations of diorite, quartz diorite and tonalite. The gangue mineral of the veins is quartz with subordinate calcite recorded in a number of localities. Accessory minerals present are pyrite, sphalerite, galena, chalcopyrite, bornite, magnetite, and traces of molybdenite. Pyrite is the most dominant sulfide.

Many of the veins exhibit an epidote/ chlorite alteration halo. This is particularly evident within the Carla Project mine exploration adit.

SRK Exploration Services Ltd (2010) has detailed at least four phases of fluid movement during the mineralization of the Carla Project. The petrogenesis of the auriferous veins is considered as follows:

- Precipitation of quartz with minor disseminated pyrite;
- Influx of massive sulfide bearing fluids overprinting earlier quartz;
- Deposition of gold along with secondary pyrite and galena; and
- Late stage minor epithermal mineralization possibly remobilizing gold mineralization.

The mineralized structure located at the Carla Project mine discussed in this report has a typical strike of 002° N dipping 36° to the E and can be traced for around 900 m. Figure 7-11 provides an image of the typical form of the sulfide rich mineralized quartz vein observed in the Gran Colombia exploration adit at the Carla Project.

Source: SRK, 2012 – March 2012 site inspection

Figure 7-11: Mineralized Quartz Vein within the Gran Colombia Exploration Adit

7.4 Significant Mineralized Zones

The modeled vein at Providencia is geologically continuous along strike for approximately 2.0 km and has a confirmed down dip extent that ranges from 690 m to greater than 1.3 km, and an average thickness of 0.9 m, reaching over 5 m in areas of significant swelling or thrust duplex and less than 0.1 m where the vein pinches. Locally, the Providencia vein displays significant disruption by faulting, pinch and swell structures, fault brecciation and fault gouge. The sample data for Sandra K and El Silencio confirms geological continuity along strike for 1.2 km and 2.2 km, respectively, and indicates down-dip extents of up to 900 m, with thicknesses and structural complexities that are comparable to the Providencia vein. Although currently less well defined by sampling, the Las Verticales Veins System appears geologically continuous along strike more than 3.0 km, and has an average thickness of 0.5 m, reaching over 2.0 m in areas of vein swelling.

Gold mineralization at the Carla Project occurs in mesothermal quartz-sulfide veins hosted by granodiorites of the Segovia Batholith. The Carla vein dips at approximately 35° to the east and is offset by three broadly NW-SE trending, steeply dipping faults, which reflects a dominantly strike-slip sinistral sense of movement. The mineralized structure shows a close spatial relationship with mafic dikes, which are interpreted as pre-dating the gold mineralization.

The modeled structure at Carla is geologically continuous along strike for approximately 900 m and has a confirmed down dip extent that ranges from 400 m to greater than 750 m, and an average thickness of 0.8 m, reaching over 3.5 m in areas of significant swelling and less than 0.1 m where the vein pinches.

Continual exploration and underground exploration at El Silencio have identified and increased the mineralization at depth, namely within the Veta National area of the mine at the bottom of the mine. SRK completed a visit during the site inspection to confirm the presence and geological conditions within this area of the mine. Additional areas of higher grades have also been identified within the northern portions of the El Silencio mine (Veta Manto), plus confirmation of the high-grades at depth within Providencia. Infill drilling at Providencia has been focused at depth which confirmed previously defined high-grade mineralization and targeting extensions across faulting present at depth.

8 Deposit Type

8.1 Mineral Deposit

Gold mineralization at Segovia occurs in mesothermal quartz-sulfide veins hosted by a batholith. They have been classified as “Oxidized Pluton-Related Gold Deposits” (Sillitoe, 2008), are thought to have formed after the cooling of the batholith and may have a genetic relationship with the batholith as well as with the regional stress regime related to the Otú fault.

The deposit bears a strong resemblance to the Pataz deposits in northern Peru. The Pataz deposits have been described as orogenic gold deposits or mesothermal gold deposits, and gold mineralization has been linked to a large-scale thermal event that occurred in a thickened collisional belt undergoing uplift tectonics, rather than related to magmatism (Haeberlin, 2002; Haeberlin et al, 2002, 2004).

Mineralization at Pataz occurs over a distance of 160 km in the Pataz Batholith. This is of granodiorite to monzonite composition of calc-alkaline affinity and Carboniferous age (330 to 327 Ma). Mineralization is dated at 314 to 312 Ma, some 18 to 15 Ma younger than the batholith. The main similarities with Frontino are mesothermal gold mineralization in quartz-sulfide veins with a low dip of 20° to 45° to the east, and the predominant N to NW-strike. The main differences are the older age of Pataz, the stronger wall-rock alteration at Pataz, and the absence of pre-mineralization basic dykes along the vein structures.

Production at Pataz has been about 6 million troy ounces (Moz) of gold in 100 years from underground mines. This is similar to the production from Frontino, although at Pataz this is spread out over a much longer strike length. Most of the mines at Pataz have been developed in the past two decades. The district produced 396,371 oz gold in 2004 from three privately-owned mines which are, from north to south, the Poderosa Mine, the Parcoy Mine and the Gigante Mine.

8.2 Geological Model

The geological model described above, for the Segovia deposit is well-understood and has been verified through multiple expert opinions as well as a history of mining. SRK is of the opinion that the model is appropriate and will serve for mining purposes going forward.

At present the geological models have been treated on a mine by mine basis as data has been collected and verified. SRK considers there to be additional benefit from generating a property scale model of existing mines and fault networks along with known mineralized structures to identify potential near mine exploration targets. Gran Colombia has started work on generating the property scale geological model, and the process will be used to prioritize new targets. Any regional review should also consider a structural component to identify not only possible vein locations but also favorable structural settings for the higher-grade mineralization shoots, noted within the current mines. Additional Exploration drilling will be required to identify additional material.

9 Exploration

This section summarises the relevant exploration work completed at the Segovia Project to date.

9.1 Historical Exploration

It is understood that the previous owners of the Segovia Project (FGM) did not complete any regional surface geological mapping, geochemistry, nor surface or airborne geophysics. Historical exploration data is mainly limited to underground mapping and sampling and drilling for resource development.

The historical underground channel sampling database made available to SRK consists of more than 100,000 samples and is understood to incorporate data from the past 30 years. The database provided is largely restricted to vein samples only, with the hanging-wall, footwall and face 'composite' data stored separately.

Channel sampling was carried out by a pair of samplers instructed by the mine geologist. Samples are taken vertically across the vein at approximately 2.0 m intervals and extracted from both walls of the underground drive, in raises and from a proportion of the stoped areas. Samples were taken from the wall of the drive in a continuous channel by hand using a lump hammer or chisel. The sample was collected from a plastic sheet inside a wide bucket, and the sample sheet was replaced every few samples. The sample lengths/widths are then measured vertically and are therefore not true thicknesses.

The sample is then quartered by hand by separating the sample into quarters and discarding opposite quarters. Some of the larger pieces of rock are broken by a hammer during the quartering process. The sample, averaging around 1 to 2 kg is then placed into a small plastic bag with the sample number torn from a book of consecutively numbered assay tags where location and type are recorded. No geological description was made. The mine samplers filled out a daily sample sheet with sample number, sample location and sample type.

Sample locations are limited to an X and Y coordinate, plotted in reference to mine survey pegs (with X, Y and Z data) which are located in the roof of the underground development. Survey and sample data were plotted in 2-D using AutoCAD. Since the 2014 Gran Colombia, has undertaken programs to increase the confidence in the on surveying of the underground workings and development. The improvement in the spatial location of the workings has enabled Gran Colombia and SRK to further increase the confidence in the sampling locations. SRK comments that while this work has been completed in proximity to the current workings, areas of the mines exist where further improvements can be made. SRK recommends Gran Colombia continue to validate workings via survey, and correct the elevations of the sample database, on an on-going basis.

Given the presence of thrust displacements along a number of the fault planes at Providencia, there exists in the database a proportion of overlapping data that cannot be split into upper or lower displacement surfaces as a result of a lack of elevation data. Where this occurs, Gran Colombia has completed a review of the original sample locations underground to verify the location and adjusted the elevation accordingly. SRK completed a number of technical meetings at Gran Colombia offices in Medellín and SRK offices in Denver to review the geological database, as part of the on-going validation phases.

9.2 Relevant Exploration Work

9.2.1 Gran Colombia Exploration Work

The Company exploration staff commenced an underground channel sampling program at Providencia, El Silencio and Sandra K Mines, in an attempt to verify historical underground data and increase the size of higher confidence quality control check samples in the exploration database.

Sampling has been in underground development drives, development raises and from historical pillars. Samples are taken at 5 m intervals (where possible) from the vein, hanging-wall and footwall from both sides of the drive depending on the exposure of the vein (complete exposure). Gran Colombia has continued to complete on-going validation on the locations of the historical sampling, namely related to the elevation.

9.3 Sampling Methods and Sample Quality

The sampling methodology used by Gran Colombia since ownership has changed over time, but in general remains consistent in terms of sample volume.

Sampling is completed by Gran Colombia employees who, prior to conducting any sampling, complete a safety check of any working area, with the back “barred” for any potential risk of rock falls completed. Sampling is completed from floor to ceiling, avoiding contamination of the sample with the fall of splinters of rock from upper sections.

The samples are taken with maximum lengths of 1 m, bearing in mind the following guidelines:

- Minimum length of sampling is 0.3 m; if the sampled structure has a smaller length the channel sample is taken with the backing material to complete the minimum length;
- Greater than 1 m structures will depart in two or more samples, in an equitable manner and always following the principle of rationalization and optimization of resources. Distribution channels and grain samples and mineralized backups); and
- In each sampling point shall be taken as far as possible three samples, thus distributed: footwall, mineralized structure and hanging-wall. In areas where full exposure is not possible, this is noted on the sampling sheet.

The initial process (which is still continued in some portions of the contractor mining) consists of marking and subsequently sampling a vertical reference line (spray paint) down and across the hanging-wall, quartz vein and footwall. Samples were taken using a chisel (Figure 9-1), from the bottom of the face up to avoid contamination and collected on to a plastic sheet at the bottom of the face. Where full exposure of the vein exists, the sampling sequence involves taking the lower footwall (RI), then the structure (VT or ZC) and finally the hanging-wall (RS).

In all sampling completed by the Company, a clean plastic sheet is used to collect each sample to prevent contamination. Gran Colombia guidelines state a channel of 100 cm x 5 cm x 3 cm, should be taken, with a density of rock of 2.7 grams per cubic meter (g/cm^3), (a desired weight of close to 4 kg is collected. In cases where the vein is less than 50 cm the channel is extended in the hanging-wall and footwall homogeneously until a minimum total weight of approximately 4 kg is obtained.

As the sample should weigh approximately 2 kg, the depth of the channel should be varied for those samples of low thickness. Gran Colombia has reported subsequently that the sample depth has been increased to obtain the desired amount of sample which is required by the laboratory. Gran Colombia has not employed any subsampling routines within the mine as testwork indicates that this results in large sampling errors.

Source: SRK, 2016

Figure 9-1: Gran Colombia Sampling Procedures 2012 to 2016

The collected samples are labelled with sample tickets attached to the bag (Figure 9-1). The bagged samples are then taken to surface where they were checked and re-labelled if required prior to dispatch to SGS Medellín for sample preparation and Fire Assay. Sample numbers, lengths and locations in reference to survey pegs are logged on to sample sheets which are subsequently typed in to Excel in the Exploration Department and uploaded to the central database. The location of the samples has been derived for the majority of the database measured from the nearest survey point (Figure 9-1).

For every 50 samples, a hand specimen is collected for density measurements, representing different lithologies present in the work area. It is best practice that these samples are considered fresh rock and have little fracturing, so they retain a length close to 10 cm in its greatest length and do not suffer loss of fragments to be subjected to the measurement process for density. Density measurements are completed at surface using industry standard weight in air versus weight in water methodologies.

The final stage of the process is to mark the wall with all sample numbers, for any surveying requirements and for future reference which is then photographed for a digital archive and for sampling quality control Figure 9-2.

Source: SRK, 2016

Figure 9-2: Channel Sampling Final Markups by Company During Pre-2016 Sampling Program

In 2016 SRK completed a site inspection with the intent to review the current sampling procedures at Segovia. SRK visited Providencia during routine sampling by Gran Colombia at the base of the mine. An example channel sample, completed by the company in 2016, is shown in Figure 9-3. During the review SRK noted the procedures were followed in terms of safety, mark-up, logging, but noted that the chip sampling was not always fully representative of the full width of the marked samples. SRK therefore recommended the Company revised the underground sampling protocol in line with other operations run by the Company with the use of a diamond saw to cut the channels.

The revised procedure includes marking and subsequently sampling a vertical reference line (spray paint) down across the hanging-wall, quartz vein and footwall (Figure 9-3). A diamond saw is then used to cut the channel initially along the edges and then at regular intervals (5 cm). Samples were then extracted using a chisel, from the bottom of the face to the top, and are collected on to a plastic sheet at the bottom of the face. SRK considers the revised process to be in line with generally accepted industry best practice for sampling this style of mineralization.

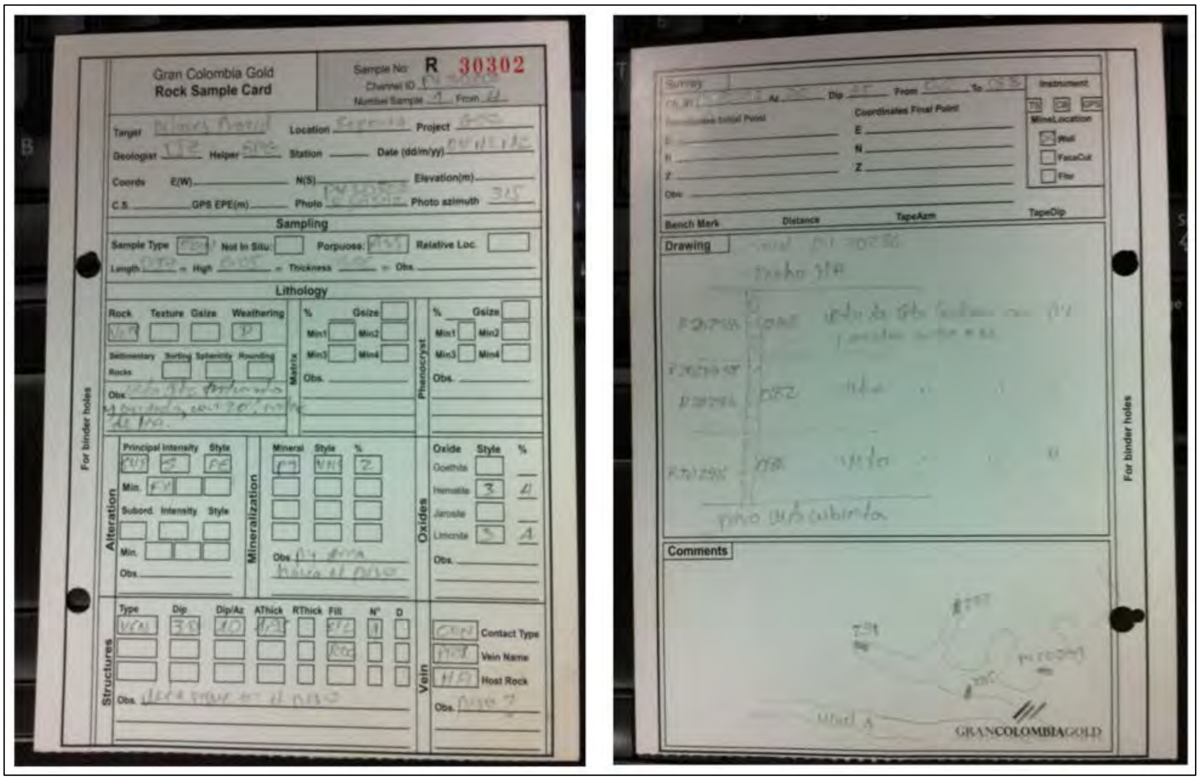
Source: SRK, 2013

Figure 9-3: Channel Sampling Completed by Company During 2016 Sampling Program

9.4 Significant Results and Interpretation

SRK noted during an underground visit that in some cases sampling has been taken where the vein intersection has not been complete, such that the vein goes into the floor or roof of the drive. SRK highlighted the potential issues with how this material may be treated in the modeling and recommended a full review of the sampling cards (Figure 9-4) which highlight under the "Observations" section if the vein is located in the roof or the floor ("*veta sigue en el piso*").

SRK recommended that the Company's review focus on samples in the database where the first or last sample, revisit the channels underground to flag any samples which are not representative of the full vein width. These samples have also been highlighted during the geological modeling phases, with the vein code plus an extension for


Gran Colombia Gold
Rock Sample Card
Sample No: R 30302
Channel ID
Number Sample
Target Location Project
Geologist Helper Station Date (dd/mm/yy)
Coords E(W) N(S) Elevation(m)
C.S. GPS EPE(m) Photo Photo azimuth
Sampling
Sample Type Not In Situ Porpuose Relative Loc.
Length High Thickness Obs.
Lithology
Rock Texture Gsize Weathering
Alteration
Mineralization
Oxides
Structures
Vein
Contact Type
Vein Name
Host Rock
For binder holes

Drawing
Comments
GRANCOLOMBIAGOLD

Source: Gran Colombia, 2017

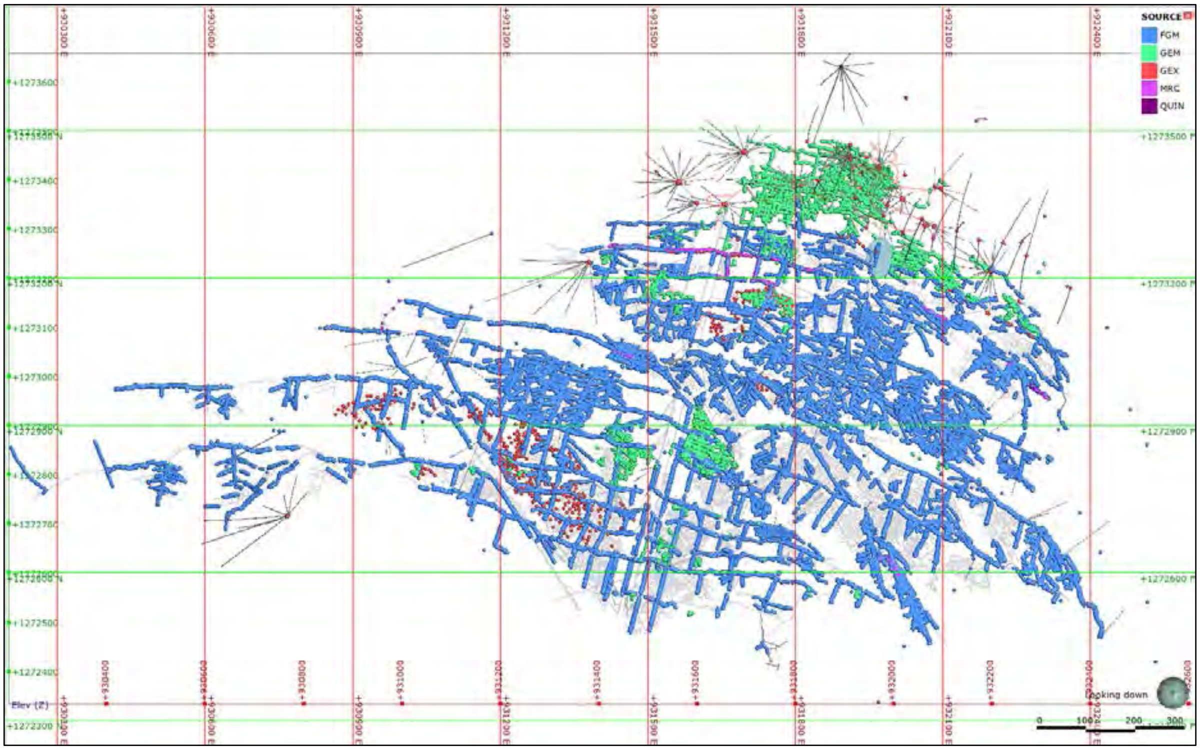
Figure 9-4: Logging Sheets Used for the Company Channel Sampling Program

The data sourced from four companies over the history of the database are summarized in Table 9-1 while mine sampling data sources by location are presented in Figure 9-5 to Figure 9-7.

Table 9-1: Summary of Sampling Sources in Exploration Database

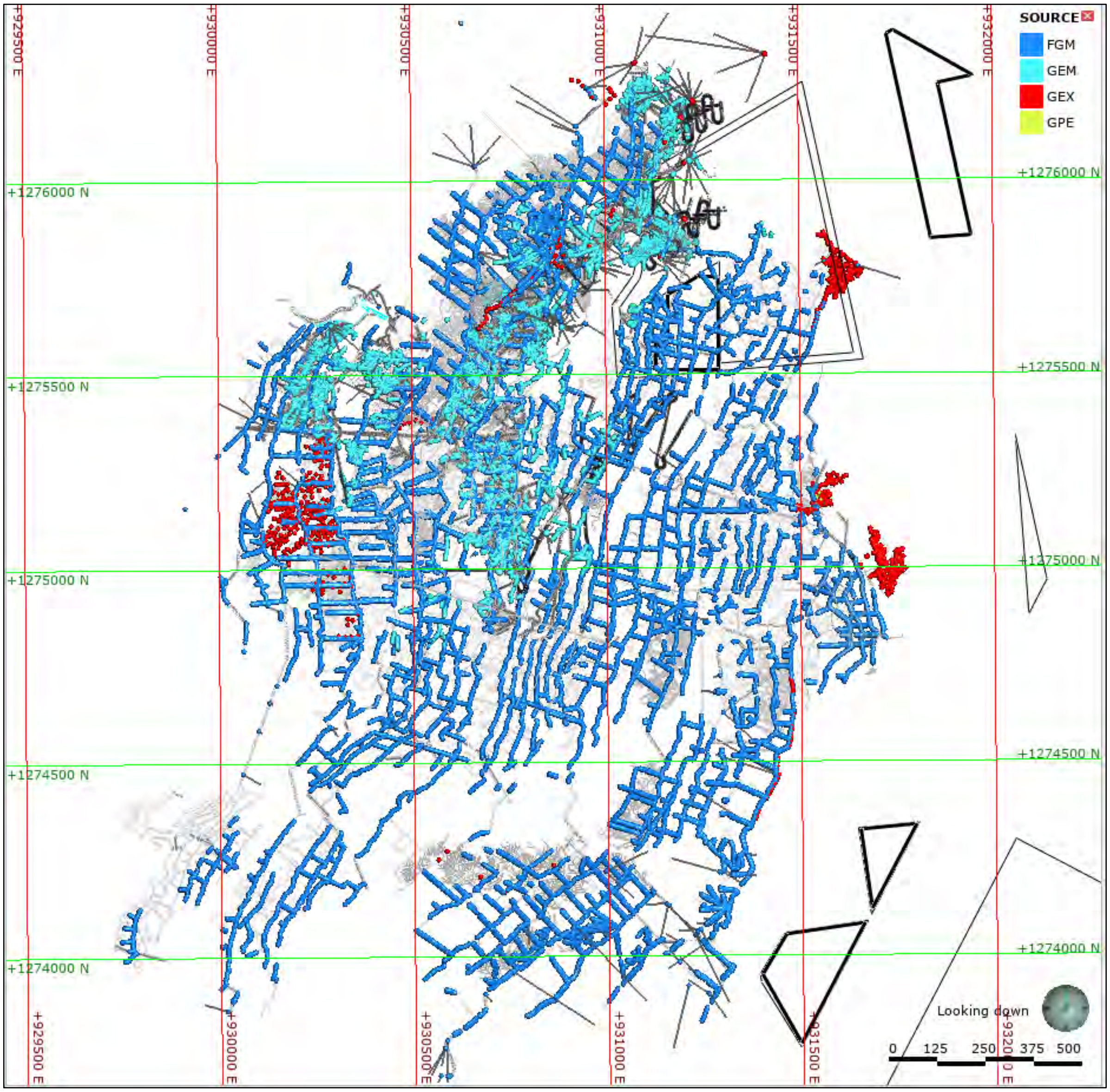
Company	Description
FGM	Frontino Gold Mine
MRC	Medoro Resources
GEM	Mine Samples (Zandor) assayed at Mine Laboratory
GCG	Gran Colombia Gold Exploration (Zandor) assayed at SGS

Source: SRK



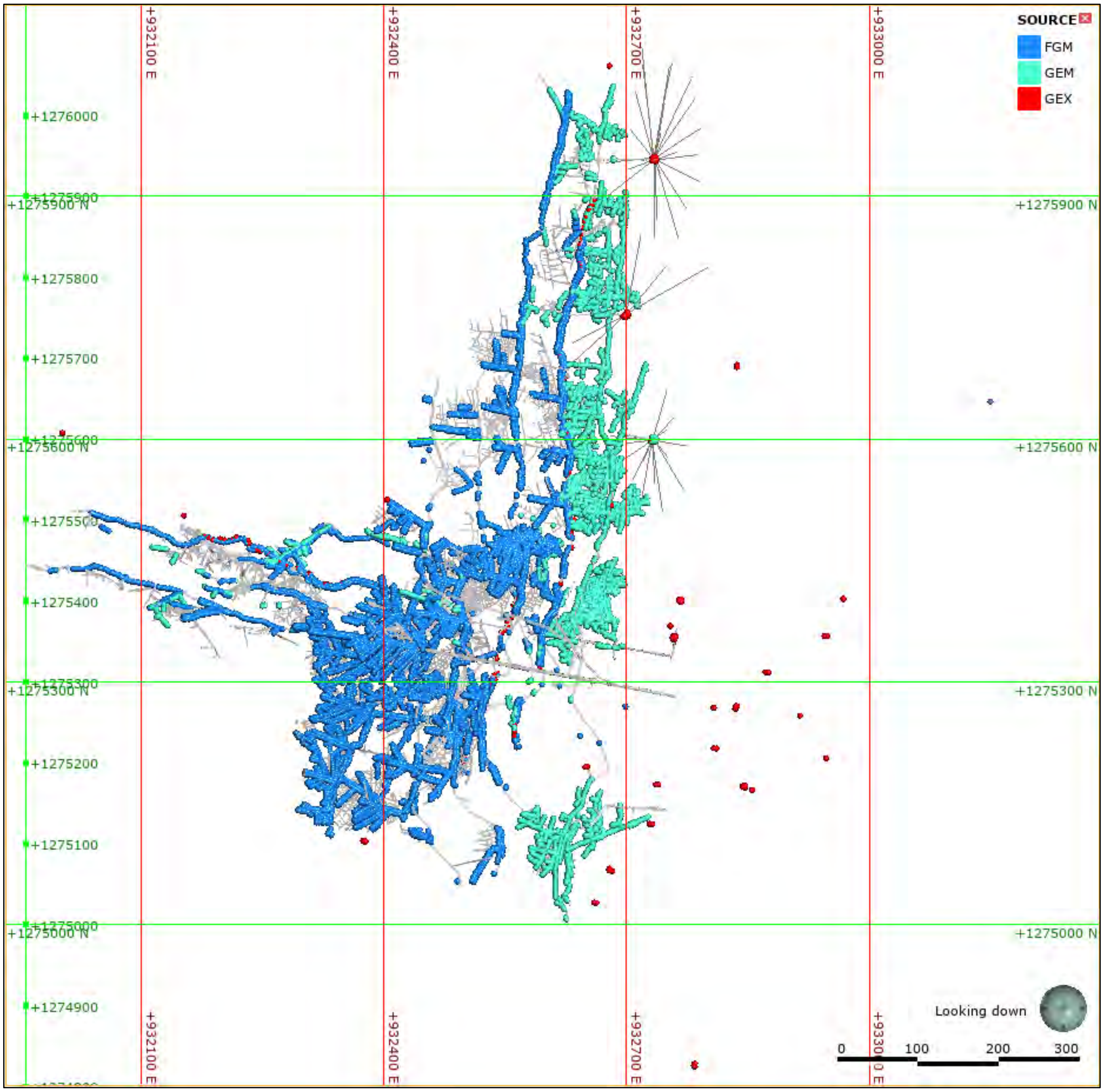
Source: SRK, 2019

Figure 9-5: Mine Sampling Split by Data Source for Providencia



Source: SRK, 2019

Figure 9-6: Mine Sampling Split by Data Source for El Silencio



Source: SRK, 2019

Figure 9-7: Mine Sampling Split by Data Source for Sandra K

Overall, SRK concludes that the underground sampling methodology does not introduce any significant bias and thus is reasonably reliable for the purposes of the data verification program. Areas which are reliant on historical sampling such as El Silencio are limited in terms of lower levels of confidence.

10 Drilling

10.1 Segovia

Historic diamond drilling on the property undertaken by FMG and Zandor consisted of surface drilling oriented broadly perpendicular to the target veins and also underground drilling completed from cross-cuts and platforms on the main levels of the existing mines. Gran Colombia have incorporated all the historical drilling into the base database, but limited holes have been assigned lithology and assay information is not included due to validation issues.

The majority of the historical diamond drilling was carried out by FGM for resource development at the operating mines within the Concession. Limited diamond drilling was carried out for exploration to test extensions to known veins. The main success of exploration drilling was the definition and subsequent development of the Sandra K Mine, located towards the northeast of the Providencia Mine.

Surface drilling was undertaken using a Diamec 262D rig (owned by FGM) which had a 1,000-m depth capacity. The core diameters used were 36 and 46 mm. The drill used conventional diamond drilling rather than wire-line, resulting in the pulling of drill rods to recover the core barrel. Core recovery was not reported to have been an issue at the time, but SRK has not been able to verify this statement. Relatively limited background procedural information has been made available to SRK in terms of the historic drilling.

Drilling programs completed by Gran Colombia are better documented and involved drilling diamond holes collared at surface, which intersected the veins largely from the northeast and southwest orientations.

The drilling for 2011 was performed by six Longyear rigs operated by PERFOTEC Drilling and managed by the Company's geological team. SRK observed drilling during its site visit in November 2011. The 2012/2013 drilling programs were completed by two drilling contractors:

- AKD – AK Drilling International (Peruvian based drilling company); and
- ENE – Energold Drilling.

Drilling was predominately performed with the use of a double tube with casing progressed to around 12 m from surface. On average, HQ drilling continued to around the 200-m depth at which point they were cased-off and continued with NQ rods until their final depth.

SRK notes that core recovery is reported to be good despite the fact that triple tube drilling was not in use, although recoveries were seen to drop towards and at vein intersections. During later drilling programs, contractors used triple tube methods to improve core recovery. The change improved the overall core recoveries within the database such that the average over the mineralized zone is approximately 93%.

Core was produced in 3 m core runs with recovered core lengths measured while encased in the barrel to ensure accurate measurement of crushed material, and then placed by hand into an open V-rail or drain pipe, where the core was re-orientated if required before being transported to the drill site geologist. This geologist then inspected the core before placing the core into numbered aluminum core boxes. Cut wooden blocks were used to record core depths.

Prior to August 15, 2012 samples were sent for preparation to the SGS facility in Medellín, and fire assays for gold were conducted by SGS in Peru. Since August 15, 2012 all sample preparation and fire assays have been completed at the upgraded SGS facility in Medellín.

In 2015, the Company began completing infill drilling programs at Providencia using underground drill rigs (Figure 10-1, Boart Longyear LM30), with the aim of infill drilling via fan drilling to approximately 20 x 20 m spacing. Drilling is completed using industry standard underground rigs using NQ core diameter which is consistent with the surface drilling.

During 2016 to March 2017, Gran Colombia completed an infill program designed to confirm and increase the confidence in the grade distribution of the eastern fault block at the Sandra K Mine. All diamond core was logged and sent for preparation and fire assay to the SGS facility in Medellín. In 2016 an Additional, 11 underground holes were drilled in the Chumeca vein area totaling some 2,038.3 m. Gran Colombia has continued the infill drilling program since 2016 with the focus on drilling the lower levels of Providencia and El Silencio, and the northern portion of Sandra K.

Gran Colombia continued with the process of infill drilling between 2017 to 2018, in addition to the drilling Gran Colombia has continued to validate the locations of historical holes. The result is an increase in the number of drillholes of 314 holes for 32,138.9 m during the period. During this period 144 holes for 13,173 m were added at Providencia, 91 holes for 11,332.2 m were added to the El Silencio database and 79 holes for 7,633.3 m at Sandra K. Note these numbers are inclusive of the 2017 drilling, while a summary of the number of holes per mine split by Company is shown in Table 10-1, and the drillhole and sampling plotted by location are presented in Figure 10-2. Note that no new drilling or sampling has been completed at Las Verticales or Carla during the most recent time period between the previous Mineral Resource statement.

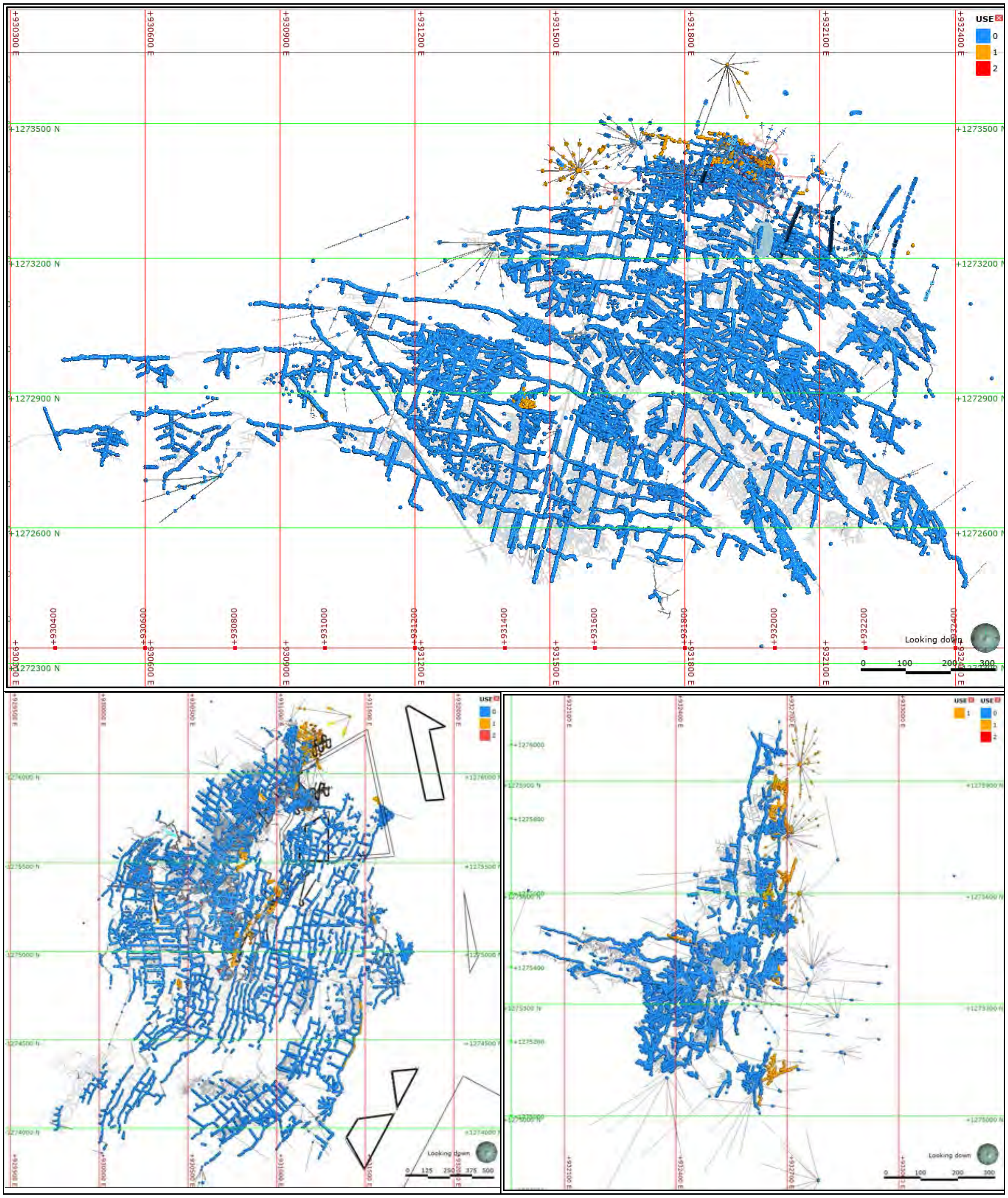
Source: Gran Colombia, 2018

Figure 10-1: Underground Drilling Rig (LM30) in use at Providencia, and (H200) at El Silencio

Table 10-1: Summary of the Data Available per Mine by Sample Type

Sample Type	Providencia	Count	Sum (m)	El Silencio	Count	Sum (m)	Sandra K	Count	Sum (m)	Project Total	Count	Sum (m)
Channel	FGM	3,054.0	2,960.6	FGM	1,586.0	971.8	FGM	1,574.0	1,434.0	FGM	6,214.0	5,366.3
	GEM	7,057.0	7,705.9	GEM	11,893.0	10,570.9	GEM	5,073.0	4,916.4	GEM	24,023.0	23,193.2
	GEX	615.0	1,061.3	GEX	997.0	1,511.8	GEX	223.0	434.5	GEX	1,835.0	3,007.6
	MRC	291.0	241.2	MRC	0.0	0.0	MRC			MRC	291.0	241.2
	Channel	**11,017**	**11,968.9**	**Subtotal**	**14,476**	**13,054.5**	**Subtotal**	**6,870**	**6,784.9**	**Subtotal**	**32,363**	**31,808.3**
Drillhole	FGM	237.0	26,694.1	FGM	198.0	13,922.5	FGM	55.0	4,067.6	FGM	490.0	44,684.2
	GEM	44.0	1,263.7	GEM	93.0	5,937.4	GEM	30.0	1,052.3	GEM	167.0	8,253.4
	GEX	232.0	35,979.2	GEX	96.0	15,791.2	GEX	196.0	36,920.4	GEX	524.0	88,690.8
	GPE	22.0	411.2	GPE	8.0	83.5	GPE	0.0	0.0	GPE	30.0	494.7
	QUIN	12.0	3,238.5	QUIN	0.0	0.0	QUIN	0.0	0.0	QUIN	12.0	3,238.5
	Drillhole	**547**	**67,586.7**	**Subtotal**	**395**	**35,734.7**	**Subtotal**	**281**	**42,040.4**	**Subtotal**	**1,223**	**145,361.7**
Sample Point	SamplePoint	36,918.0	36,404.3	FGM	57,178	64,340.9	FGM	7,177	5,240.6	FGM	101,273	105,985.8
	FGM	**36,918**	**36,404.3**	**Subtotal**	**57,178**	**64,340.9**	**Subtotal**	**7,177**	**5,240.6**	**Subtotal**	**101,273**	**105,985.8**
	Grand Total	**48,482**	**115,960**	**Subtotal**	**72,049**	**113,130**	**Subtotal**	**14,328**	**54,066**	**Subtotal**	**134,859**	**283,156**

Source: SRK, 2019



Source: SRK, 2019

Figure 10-2: Sampling Data Indicating New (1) or Revised (2) Sampling Information at Providencia, Sandra K and El Silencio

10.2 Carla

No new drilling has been completed at Carla since the previous Mineral Resource estimate. During 2011, Gran Colombia delineated a drilling program for the Carla Project, to be undertaken by

PERFOTEC the Colombian drilling contractor, which contemplated approximately 9,000 m of drilling to be completed by end-December 2011.

Per Table 10-2 which shows to date a total of 57 holes totaling some 10,373 m have been completed and designated with the prefix "DRILL-" or "DS-" series holes, in the database provided. All completed drilling has been made available to SRK in producing the geological model and associated Mineral Resource estimate. The location of the drill platforms had the objective to intercept the vein based on 50 m sections and 100 m down-dip (Figure 10-3).

Table 10-2: Summary of Drilling per Company at the Carla Project

GSG Total		GZC Total		Grand Total	
Subtotal		Subtotal		Total	
Count	Total (m)	Count	Total (m)	Count	Total (m)
52	9,523	5	850	57	10,373

Source: Summarized from SRK, 2013

Source: SRK, 2018

Figure 10-3: Drilling and Sampling Locations at Carla Project

10.3 Procedures

10.3.1 Collar Surveys

All drill sites were initially located with the use of a handheld GPS with final locations recorded by a surveyor once the drilling was completed. Each hole underwent a downhole survey once completed.

All Gran Colombia drillhole collars have been surveyed using a precision GPS which is based on Total Station measurements and have been located to a high degree of confidence in terms of the X, Y and Z location. This data has been provided to SRK in digital format using UTM grid coordinates. Details of the survey methods for the historical holes is not known.

10.3.2 Downhole Surveys

The drilling from surface is reported to have been orientated broadly perpendicular to the target vein (access permitting); however, very few collar surveys are available and thus the large majority of traces are shown in the database as vertical. Directional surveys were not carried out during the FGM drilling programs.

Underground drilling appears to have largely been completed from cross-cuts and platforms on the main levels. In places, fan drilling has been completed to maximize the information made available from a single drill site.

Gran Colombia have used downhole geophysical surveys to orientate the holes carried out by the contractor ‘Weatherford’. The downhole tool has a Verticality Sonde instrument that measures azimuth and inclination every 5 m by two level cells and three magnetometers. From the erratic measurements in zones of casing indicate the instrument was affected by magnetic rocks and casing and should be ignored. Outside of the casing in general, the data collected is considered to be of high precision and accuracy suitable for use in this resource estimation.

10.3.3 Core Logging

During the 2012, 2013, 2016, 2017 and 2018 site visits, SRK was able to visit the core shed facilities and observe the underground channel sampling to review the sampling methods currently employed by the Company. The following section relates to the methods and protocols used by the Company in the latest exploration campaign. In terms of the historical sampling methods, SRK has relied on the work completed by Dr. Stewart Redwood, a consultant geologist to the Company.

The Gran Colombia core shed is located near to entrance to the El Silencio Mine on the valley floor. SRK visited the storage facility during the site visit and found the facility to be organized and clean. During the last site inspection SRK noted that the core shed is operating near full capacity and therefore additional storage will be required. It is SRK understanding that Gran Colombia is in the process of transferring a portion of the core to a secondary facility and that there will be sufficient space for the on-going exploration work. The core is currently being stored in a temporary secondary facility located within the fenced Pampa Verde area, but SRK has not inspected the secondary facility. The new core storage facility is due for completion in 2019.

It is SRK’s view that the current sampling methods and approach are in line with industry best practice and should not lead to any bias in the sampling and assay results. Core logging and sampling procedures were consistent throughout the drilling program and were performed by the Company's exploration geology team. The main processes were as follows:

- Core boxes are transported from the drill sites to the core storage and logging facilities, Figure 10-4;
- Technicians at the core shed log the core for recovery and RQD;
- All core is photographed wet (Figure 10-5);
- Core is geotechnically and geologically logged using a paper logging form, specifically designed for vein type deposits, along with a Geology & Mineral Codes Legend;
- Sampling lengths are allocated; only the vein material and through into the hanging-wall and footwall, material is sampled in lengths ranging from 30 cm to 1 m dependent upon geological unit;
- For the purpose of sampling, the alteration (where present) in the wall rock is split into two distinct units, namely argillic dominant (typically more gold-bearing) and propylitic or potassic dominant;
- Sections are then carefully cut with the use of a diamond core cutter into two equal halves;
- Samples are taken and placed into heavy duty plastic bags; care is taken to ensure the same half core is removed throughout the sample interval;
- Quality Control materials are inserted only in the mineralized intervals selected, coarse granitic blank material, different pulped standards and 1/4 core for field duplicates. Any insertion is recorded within the core box by inserting additional wooden core blocks;
- Samples are shipped to the SGS Colombia S.A. facilities in Medellín for sample preparation and fire assay;
- All core boxes are covered and housed in a centralized core storage facility; and
- All data is inputted into a central SQL database maintained on site by one of two responsible data managers.

Source: SRK, 2015

Figure 10-4: Core Storage Facility at Segovia

Source: SRK, 2018

Figure 10-5: Example of Core Photography Setup (left) and Core Photographs (right)

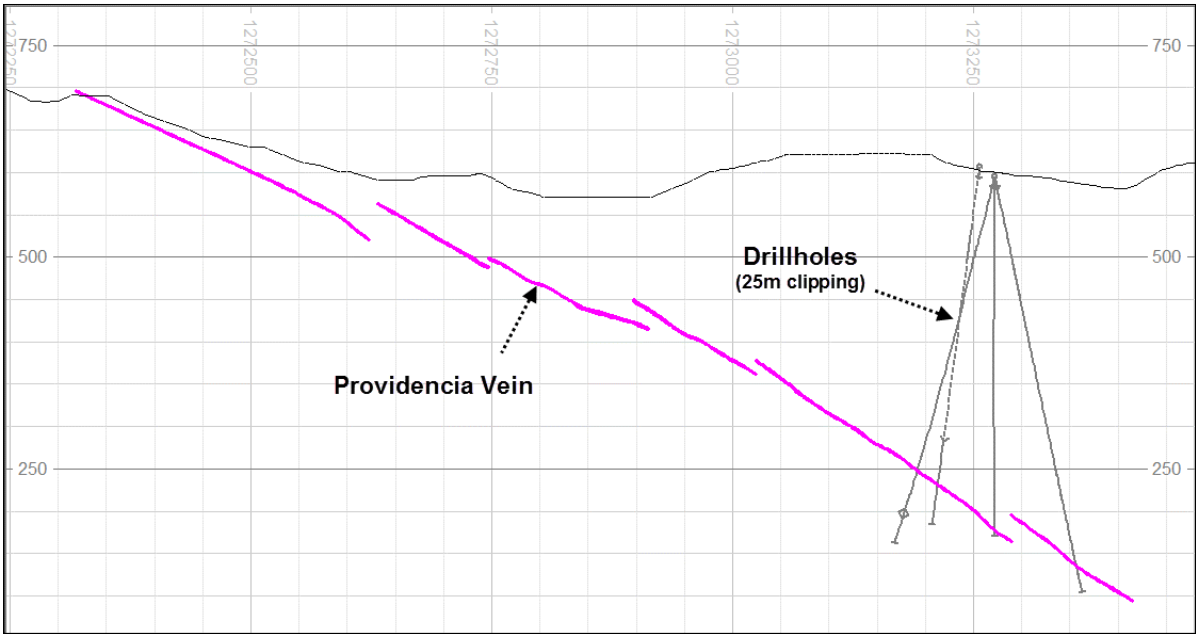
10.3.4 Drillhole Orientation

At Providencia, the drilling intersects the mineralized vein from the northeast, southwest and (predominant) vertical orientations in an attempt to intersect the vein target area with sufficient coverage whilst remaining inside the Segovia Concession boundary. From surface the drillholes dip range from -39° to -90°, with the average dip of the holes in the order of -85º and hole lengths ranging from 45 to 557.0 m. In addition to the surface drilling infill drilling has been completed from underground fan drilling to maximise the information made available from a single drill site. Fan drilling ranges from +39° to -90°, with the average dip reported at -38°. Hole depths from underground drilling at Providencia ranges from 4.2 m to 303.0 m. Infill drilling is aimed to reduce the drillhole spacing to approximately 25 x 25 m spacing.

At El Silencio, the drilling database includes drilling completed on the Las Verticales Area to the west of the El Silencio mine. Drillholes from surface are drilled to the west/south-west/north-west or vertical orientations. The drilling is a mixture of directional and vertical holes with the average dip of the drilling from surface drillholes dip ranging from -40° to -90°, with the average dip of the holes in the order of -66 º and hole lengths ranging from 59.0 to 500.6 m. In 2018 GCM has focused on underground fan infill drilling to reduce the drillhole spacing to approximately 25 x 25 m spacing. Fan drilling ranges from +30° to -84°, with the average dip reported at -33°. Hole depths from underground drilling at Providencia ranges from 30.1 m to 468.8 m.

At Sandra K. from surface the drillholes lengths ranging from 98 to 407.0 m, with an average depth of approximately 235 m, with dips ranging from -27° to -90°, and an average dip of the holes in the order of -70 º. In addition to the surface drilling infill drilling has been completed from underground fan drilling to maximise the information made available from a single drill site. Fan drilling ranges from +14° to -90°, with the average dip reported at -38°. Hole depths from underground drilling at Providencia ranges from 8.2 m to 398.6 m.

The predominant drilling direction at the Las Verticales area has been to the southwest which is perpendicular to the main orientation of the majority of the veins. The drillholes are plotted on sections oriented north 65° east across the principal structural control of the deposit and spaced 100 to 200 m apart. The dips range from -37° to -90°, with the average dip of the holes in the order of -63° and hole lengths ranging from 82.8 to 600.0 m.



Source: SRK, 2017

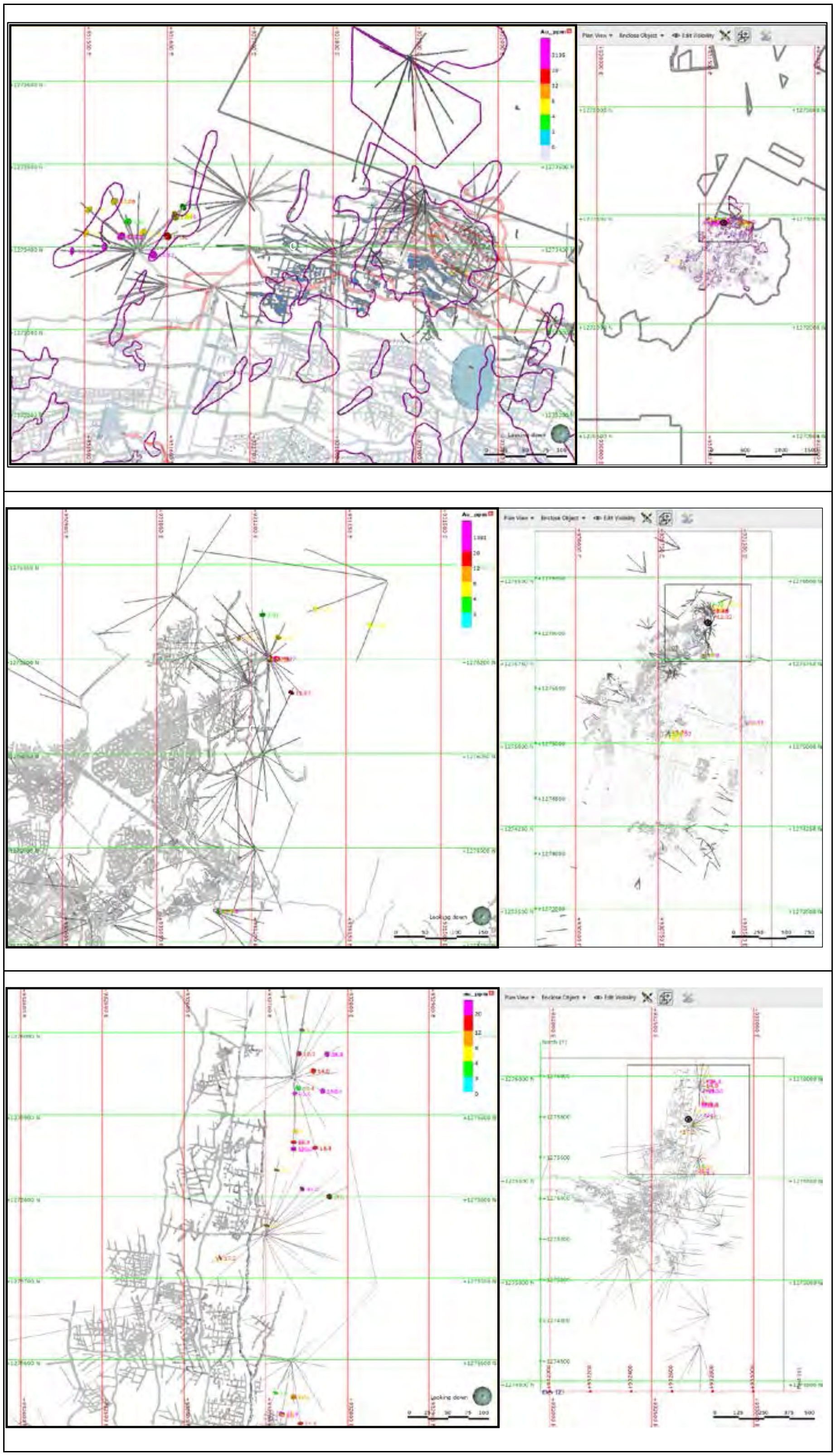
Figure 10-6: Cross Section (25 m Clipping Width) Through the Providencia Deposit, Showing Typical Drillhole Orientation, Looking West

10.4 Interpretation and Relevant Results

The drilling results are used to guide ongoing exploration efforts and to support the resource estimation. SRK notes that for the majority of the individual deposits, drilling is as perpendicular to the deposit as possible although there is a degree of concern relating to the low angle of intersection of the deep drilling with the Las Verticales Veins System (resulting in a vein interval length that does not closely represent true thickness).

It is SRK's view that the drilling orientations are sufficiently reasonable to accurately model the geology and mineralization based on the current geological interpretation. Areas with poor interception angles have been accounted for in the mineral resource classification, and SRK strongly recommends drilling these areas from different positions to improve the angle of intersection in any future programs.

During 2017/2018 Gran Colombia has focused drilling exploration on underground drilling at Providencia, El Silencio and Sandra K. The updated MRE for the Segovia Operations incorporates assay results from an additional 286 diamond drillholes totaling 30,457 m of sampling information in the databases compared to the previous model, inclusive of the 2018 drilling program and the ongoing validation exercises of historical information being completed by the Gran Colombia's geologists. The results of the 2018 drilling program were included the discovery of new structures at El Silencio and Sandra K and two new zones at Providencia, all of which have the potential to add mineral resources and mine life and are being followed up in the 2019 drilling program (Figure 10-7), which indicate the extensions are typically at the edges of known high-grade domains or down dip extensions. This should be considered when planning further exploration, but there is also some evidence of mineralization being noted in areas previously defined as low-grade/waste, which may warrant further exploration.



Providencia

El Silencio

Sandra K

Source: SRK, 2019

Figure 10-7: Plan Views Showing Location of New Underground Drilling at Providencia, El Silencio and Sandra K with Significant Results

11 Sample Preparation, Analysis and Security

Gran Colombia employ material handling protocols at the mines for underground drilling and sampling. All underground sampling is completed by mine personal or mining contractors depending on the location in the mines. Samples are collected in plastic bags and labelled and transported back to surface. Diamond drill core is collected at the rig and measured by the drilling contractors. A Company geologist from the exploration team visits the rig to confirm sampling protocols. Each core box (wooden) is sealed at the drill station prior to transport to surface by Company personnel. All exploration sampling is transferred at surface to the exploration offices, where any logging or subsampling required is completed prior to dispatch to the laboratory.

11.1 Core Logging

Core logging and sampling procedures were consistent throughout the drilling programme and were performed by the Company's exploration geology team. The main processes were as follows:

- Technicians at the drill site log the core for recovery and RQD before transportation to the core shed;
- Core boxes are transported from the drill sites to the core storage and logging facilities within the El Silencio Mine complex (Figure 11-1);
- All core is photographed wet;
- Core is geologically logged using logging sheets designed for detailed descriptions;
- Sampling lengths are allocated; only the vein material and through into the hanging-wall and footwall selvage material is sampled on lengths ranging between 30 cm to 1 m dependent upon geological unit;
- For the purpose of sampling, the alteration (where present) in the wall rock is split in to two distinct units, namely argillic dominant (typically more gold-bearing) and propylitic or potassic dominant;
- Sections are then carefully cut with the use of a diamond core cuter into two equal halves;
- Samples are taken and placed into heavy duty plastic bags; care is taken to ensure the same half of core is removed throughout the sample interval;
- Quality Control materials are randomly inserted, coarse granitic blank material, three different pulped standards and 1/4 core for field duplicates, any insertion is recorded within the core box by inserting additional wooden core blocks;
- Samples are shipped to SGS Colombia S.A. facilities in Medellín for preparation and fire assay;
- All core boxes are covered and housed in a centralized core storage facility; and
- All data is inputted into a central SQL database maintained on site by one of two responsible data managers.

Source: Documented by GeoIntegral, (2011) in Gran Colombia Internal Report
(a) Core photography,
(b) Core logging area,
(c) Checking of recovery and RQD,
(d) Geological logging,
(e) Core cutting; and
(f) Core storage shelving system.

Figure 11-1: Core Storage Facility at the Carla Project

11.2 Sample Preparation for Analysis

11.2.1 Channel/Chip Sampling at Mine Laboratory, Pre-2013

SRK visited the mine laboratory located in close proximity to the Maria Dama Plant during the 2013 site inspection.

The sample preparation method at the mine laboratory consisted of placing samples in individual steel trays, which were then inserted into a large oven (heated at 105ºC for approximately three hours). SRK noted that both folded steel and single pressed steel trays were currently in use at the laboratory.

The entire sample was crushed to >85% passing -10 mesh (2 mm) using a jaw crusher, then spilt to 250-g using a Jones splitter (if required) and pulverized to >90% passing -140 mesh (140 µm) with an LM2 pulverizing ring mill. The fineness of the pulverized sample was reported to be tested using a sieve once per shift.

From the pulverized material, a 50-g sample was selected using a cone and quarter method and mixed with a flux. Gold assays were then taken using fire assay techniques with a gravimetric finish only.

Tested barren silica sand (in addition to compressed air) was used as a clean wash between each sample in the crushing and pulverization stages.

11.2.2 Mine Laboratory, 2015 - Present

Gran Colombia commissioned a new mine laboratory in 2015. The laboratory is located near the current Maria Dama processing facility and can complete sample preparation and fire assay.

SRK visited the facility on August 10, 2016 and April 12, 2018, and noted that the laboratory was organized and clear, with dust extraction units in place to minimize potential contamination. Samples are tracked through the system using barcodes placed on the samples within the sample receipt bay. The sample preparation method follows the same process as the old laboratory.

The sample preparation method at the mine laboratory consisted of placing samples in individual steel trays, which were then inserted into a large oven (heated at 105ºC for approximately three hours).

The entire sample was crushed to >85% passing -10 mesh (2 mm) using a Rocklabs jaw crusher, then spilt to 250 g using a Jones splitter (if required) and pulverized to >90% passing -140 mesh (140 µm) with an LM2 pulverizing ring mill. Tested barren silica sand (in addition to compressed air) was used as a clean wash between each sample in the crushing and pulverization stages.

From the pulverized material, a 50-g sample was selected using a cone and quarter method and mixed with a flux. Gold assays were then taken using fire assay techniques with a gravimetric finish only.

11.2.3 Exploration Channel Sampling and Diamond Drilling SGS Laboratory

Since the 2011 drill programme, samples were sent for sample preparation to the ISO 9001:2000 accredited, SGS laboratories (SGS Medellín) sample preparation facility in Medellín and assayed for gold by SGS in Peru (SGS Peru).

SRK visited the SGS Medellín sample preparation facilities on November 17, 2011. The sample preparation method at SGS Medellín was to dry the sample in a large oven (at 105ºC for approximately three hours) and crush the entire sample to >85% passing -10 mesh (2 mm) using a jaw crusher. The sample is then spilt to 250 g using a Jones splitter and pulverised to >90% passing -140 mesh (140 µm) with an LM2 pulverising ring mill. The fineness of the pulverised sample was reported to be tested using a sieve every 50 samples.

11.3 Sample Analysis

11.3.1 Mine Laboratory, Pre-2013

From the pulverized material, a 50-g sample was selected using a cone and quarter method and mixed with a flux. Gold assays were then taken using fire assay techniques with a gravimetric finish only.

11.3.2 Mine Laboratory, 2015

The only samples assayed in the onsite laboratory and used in the current resource estimate are the channel samples collected by the Mine Geology Department. All exploration drilling and sampling has been dispatched to SGS in Medellín for analysis.

The sample preparation methods are consistent with those used at the SGS facility (Figure 11-2). SGS (Medellín) analyzed the samples for gold by fire assay with AAS finish, using an Aligent Technologies 200 Series AA machine. Silver samples above 100 g/t were assayed by fire assay with gravimetric finish. All information is captured directly into the laboratory database to remove any transcription errors. Samples over 5 g/t Au were assayed by fire assay with gravimetric finish.

Source: SRK, 2016

Figure 11-2: New Mine Laboratory at Segovia, Showing Crusher, Pulverizer, Furnace and AA Assay Capture

11.3.3 SGS Laboratory

Since August 15, 2013, SGS has upgraded the SGS laboratory at Medellín from a sample preparation only facility to both sample preparation and fire assay. SRK completed a visit to the laboratory by

Benjamin Parsons on June 6, 2013. Samples are tracked through the system using barcodes placed on the samples within the sample receipt bay. The sample preparation method follows the same process as the old laboratory.

SGS (Medellín) analyzed the samples for gold by fire assay with atomic absorption spectrophotometer (AAS) finish. Samples over 5 g/t Au were assayed by fire assay with gravimetric finish. Silver was assayed by aqua regia digestion and AAS finish. All field samples and drill samples up to hole ZC-0086 were analyzed for multiple elements by aqua regia digestion and inductively coupled plasma (ICP) finish (39 Element ICP Package).

11.4 Specific Gravity

Gran Colombia, with guidance from SRK, developed a density measurement protocol based on an immersion methodology:

- Weigh dry sample;
- Cover in paraffin wax;
- Weigh sample covered in paraffin;
- Immerse in water on suspended tray;
- Manually record weight; and
- Back-calculate density based on fixed formula within an Excel spreadsheet.

An example of the equipment used to measure the weights during the analysis and a typical prepared core sample with logging sheet is illustrated in Figure 11-3. At Segovia, prior to 2017, the program implemented by the Company for specific gravity included a total of 580 drill core and channel samples analyzed. Density values measured range from 1.51 to 4.97 g/cm^3. Between 2017 and 2018 an additional 179 samples were selected and tested using the same immersion methodology. The density values ranged from 2.58 to 4.86 g/cm^3, with an average specific gravity of 2.77 g/cm^3.

Check samples have been taken in both the historical and more recent sampling. A total of seven samples were sent to SGS Peru in 2012 for external verification. A further 10 check samples were submitted in 2018 to ALS Medellin for analysis. The results of the analysis confirmed the initial values are reasonable with the difference in the mean density reporting within ± 1 %, and therefore SRK has considered the database from the Gran Colombia to be acceptable. Whilst there is a degree of limitation on the sample size and variability in the results, SRK has selected the average value of 2.7 g/cm^3 as a reasonable representation of mineralized vein density.

Source: SRK, 2013

Figure 11-3: Core Sample Coated in Paraffin Wax with Logging Sheet, Prior to Entry to the Database

11.5 Quality Assurance/Quality Control Procedures

Quality Assurance/Quality Control (QA/QC) measures are typically set in place to ensure the reliability and trustworthiness of exploration data. These measures include written field procedures and independent verifications of aspects such as drilling, surveying, sampling and assaying, data management, and database integrity. Appropriate documentation for quality control measures and regular analysis of quality control data are important as a safeguard for project data and form the basis for the quality assurance program implemented during exploration.

A QA/QC program is independent of the testing laboratory. The purpose of a QA/QC program is to ensure reliable and accurate analysis is obtained from exploration samples for use in resource estimation as part of industry best practice. Correctly implemented, a QA/QC program monitors for detects, and corrects any errors identified at a project.

The following control measures were implemented by the Company to monitor both the precision and accuracy of sampling, preparation and assaying. Results shown have been limited to the QA/QC samples inserted during routine 2018 sample submissions. Results from 2016 and 2017 sample submissions are outlined in the report "Gran Colombia Segovia Mineral Resource Estimate December 31, 2017".

CRM, blanks and duplicates were submitted into the sample stream, equating to a QA/QC sample insertion rate of approximately 15%, as illustrated in Table 11-1. In every 100 samples sent to the laboratory, the following QA/QC materials were inserted: seven CRM, three blanks, one field duplicate, two coarse reject preparation duplicates and two sample pulp duplicates.

Table 11-1: Quality Control Data Produced by the Company for the Project (2018)

Sampling Program	Count Gold	Count Silver	Comment
Drilling Fine Blanks	7	0	Sourced from Rocklabs
Drilling Coarse Blanks	272	81	
Drilling CRM Samples	327	31	Sourced from Rocklabs, Oreas, and Geostats
Field Duplicates	199	76	
Coarse Duplicates	27	27	
Pulp Duplicates	31	31	
Re-assay Drilling (Same Lab) 2018	157	0	SGS
Channel Fine Blanks	1	-	
Channel Coarse Blanks	1,145	-	
Channel CRM Samples	1,156	-	Sourced from Rocklabs, Oreas, and Geostats
Pulp duplicates	11	-	
Field duplicates	975	-	
Re-assay Channel Umpire 2018	563	-	Zandor vs SGS
Total QC Samples	**4,871**	**246**	

Source: SRK, 2019

11.5.1 Standards

The Company currently uses 39 different certified reference materials (CRMs) in the sample analysis stream. The CRMs for gold were supplied by Rocklabs, New Zealand, by Geostats, Australia, and by Ore Research and Exploration, Australia. Summary statistics are shown in (Table 11-2) for CRM samples used in the exploration drilling program and (Table 11-3) for CRM samples used in sampling mine geology channels. The Company has defined performance related goals on which batches are accepted or rejected and therefore requested for reanalysis. The guidelines can be summarised as follows:

- A single CRM greater than three times the standard deviation is considered unacceptable and means the subsequent samples are rejected;
- A single CRM greater than two times the standard deviation but less than three standard deviations is considered acceptable and no immediate action is taken; and
- Two consecutive CRMs greater than two times the standard deviation but less than three standard deviations are considered unacceptable, the laboratory is notified and samples falling between the two are re-assayed.

Focusing on the five standards have been most heavily used in 2018: G914-6, SJ80, SN91, G314-5, G315-2, SRK has reviewed the CRM results and associated graphs and is satisfied that they demonstrate in general a high degree of accuracy at the assaying laboratory (with the exception of a limited number of anomalies, generally associated with very high grade assays) and hence give sufficient confidence in the assays for these to be used to derive a Mineral Resource estimate. A summary of the submissions of CRM material separated by drilling and channel sampling submissions is shown in Table 11-2 and Table 11-3.

Table 11-2: Summary of Certified Reference Material Produced by GEOSTATS, Rocklabs and Oreas and Submitted by the Company in Drilling Submissions to External Laboratories in 2018

CRM Number	Material ID	Supplier	Standard Deviation	Certified Value	Count	Average Assay
1	G310-6	GEOSTATS	0.041	0.650	27	0.615
2	G312-4	GEOSTATS	0.171	5.300	3	5.167
3	G313-1	GEOSTATS	0.019	1.000	2	0.992
4	G313-2	GEOSTATS	0.014	2.040	1	2.026
5	G313-6	GEOSTATS	0.256	4.940	22	4.761
6	G313-7	GEOSTATS	0.054	6.930	8	6.882
7	G314-5	GEOSTATS	0.423	5.290	5	4.871
8	G315-2	GEOSTATS	0.016	0.980	29	0.983
9	G315-3	GEOSTATS	0.109	1.970	2	1.862
10	G315-8	GEOSTATS	0.565	9.930	2	10.495
11	G914-10	GEOSTATS	0.713	10.260	4	9.960
12	G914-6	GEOSTATS	0.023	3.210	32	3.198
13	G915-10	GEOSTATS	0.491	48.680	11	48.289
14	G915-3	GEOSTATS	0.691	9.390	2	10.080
15	G915-5	GEOSTATS	1.495	17.950	9	16.912
16	G915-6	GEOSTATS	0.043	0.670	7	0.639
17	G916-6	GEOSTATS	0.936	30.940	2	30.005
18	G917-1	GEOSTATS	0.517	48.520	5	48.014
19	HiSilP3	GEOSTATS	0.379	12.244	20	12.190
20	OREAS 67A	Oreas	0.025	2.238	7	2.240
21	OREAS67A	Oreas	0.049	2.238	14	2.215
22	SE29	Rocklabs	0.069	0.597	3	0.530
23	SF30	Rocklabs	0.124	0.832	2	0.709
24	SF57	Rocklabs	0.073	0.848	2	0.777
25	SG31	Rocklabs	0.092	0.996	2	0.904
26	SG40	Rocklabs	0.073	0.976	1	0.903
27	SH35	Rocklabs	0.057	1.323	2	1.277
28	SJ80	Rocklabs	0.062	2.656	13	2.600
29	SK78	Rocklabs	0.073	4.134	17	4.111
30	SK94	Rocklabs	0.229	3.899	7	3.697
31	SL76	Rocklabs	0.117	5.960	14	5.927
32	SN75	Rocklabs	0.633	8.671	14	8.157
33	SN91	Rocklabs	0.065	8.680	6	8.625
34	SP73	Rocklabs	0.367	18.170	16	17.893
35	SQ87	Rocklabs	0.587	30.870	4	30.333
36	SQ88	Rocklabs	0.587	39.723	9	39.437

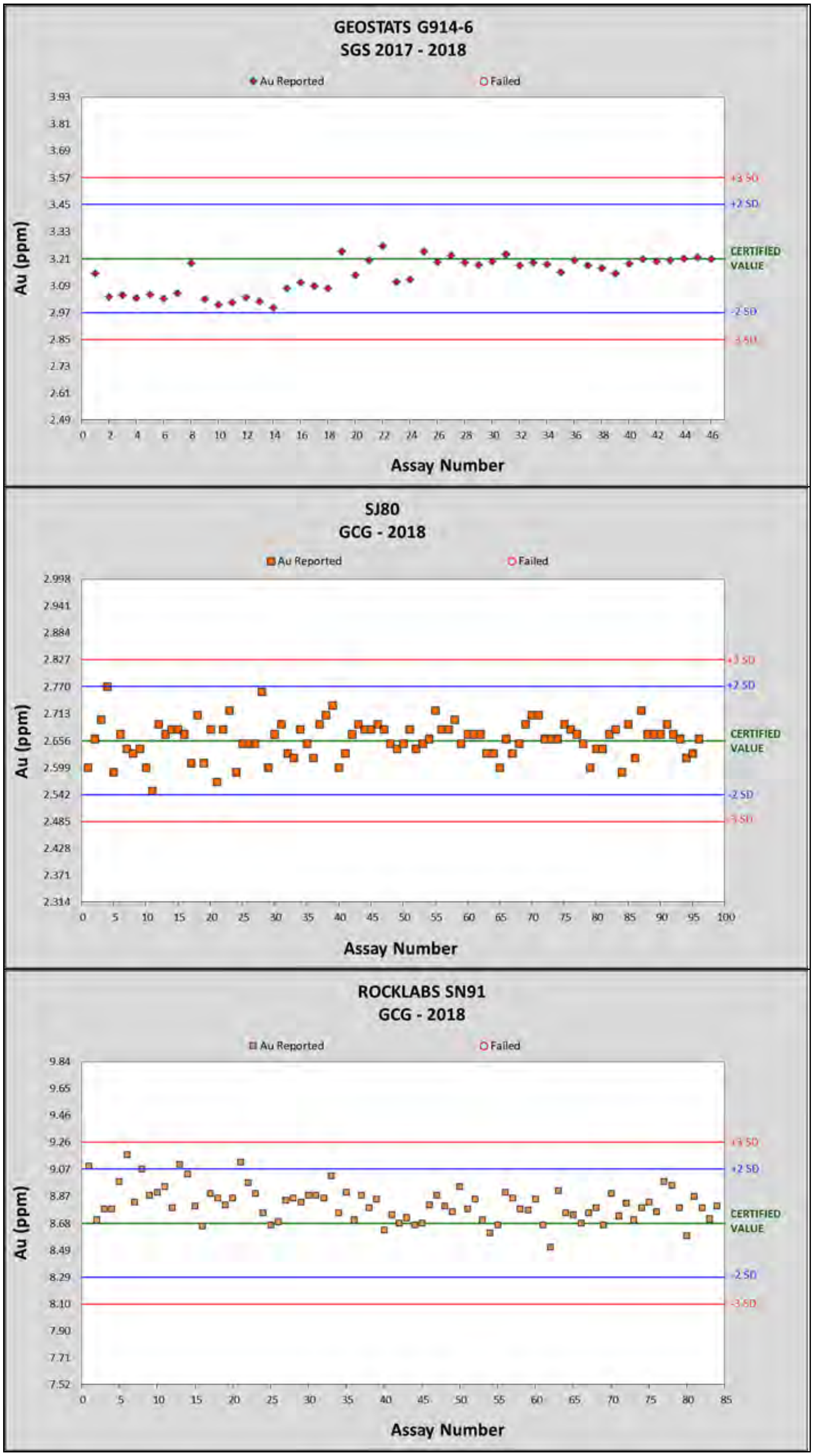
Source: SRK, 2019

Table 11-3: Summary of Certified Reference Material Produced by GEOSTATS and Rocklabs for 2018 Submissions

CRM Number	Material ID	Supplier	Standard Deviation	Certified Value	Count	Average Assay
1	G310-6	GEOSTATS	0.022	0.650	39	0.638
2	G312-4	GEOSTATS	0.082	5.300	22	5.250
3	G313-1	GEOSTATS	0.095	1.000	5	0.936
4	G313-2	GEOSTATS	0.073	2.040	18	1.983
5	G313-6	GEOSTATS	0.191	4.940	52	5.062
6	G313-7	GEOSTATS	0.163	6.930	60	7.026
7	G314-5	GEOSTATS	0.155	5.290	80	5.186
8	G315-2	GEOSTATS	0.208	0.980	71	1.012
9	G315-3	GEOSTATS	0.079	1.970	5	1.914
10	G315-8	GEOSTATS	0.353	9.930	53	10.154
11	G914-10	GEOSTATS	0.202	10.260	50	10.283
12	G914-6	GEOSTATS	0.069	3.210	147	3.211
13	G914-9	GEOSTATS	0.399	16.770	45	16.938
14	G915-10	GEOSTATS	0.601	48.680	18	48.974
15	G915-3	GEOSTATS	0.545	9.390	8	9.643
16	G915-5	GEOSTATS	0.619	17.950	43	17.426
17	G915-6	GEOSTATS	0.017	0.670	7	0.657
18	G916-6	GEOSTATS	0.369	30.940	22	30.943
19	G917-1	GEOSTATS	0.585	48.520	31	48.262
20	HiSILP3	RockLabs	0.361	12.244	96	12.233
21	SJ80	RockLabs	0.042	2.656	106	2.654
22	SN75	RockLabs	0.153	8.671	7	8.803
23	SN91	RockLabs	0.197	8.680	91	8.804
24	SP73	RockLabs	0.288	18.170	16	18.111
25	SQ47	RockLabs	0.882	39.880	16	39.216
26	SQ87	RockLabs	0.605	30.870	20	30.495
27	SQ88	RockLabs	0.830	39.723	28	39.234

Source: SRK, 2019

Figure 11-4 shows the performance of GEOSTATS G914-6, Rocklabs SJ80, and Rocklabs SN91. In general, samples submitted as standards return Au values within two standard deviations of their certified value. When, as occasionally occurs, a standard fails (by falling outside the Company's failure criteria of three standard deviations from the certified value), it is flagged by Gran Colombia personnel, reported to the laboratory, and submitted for re-assay. SRK notes that the majority of standards fall below or are very close to the expected Au value.

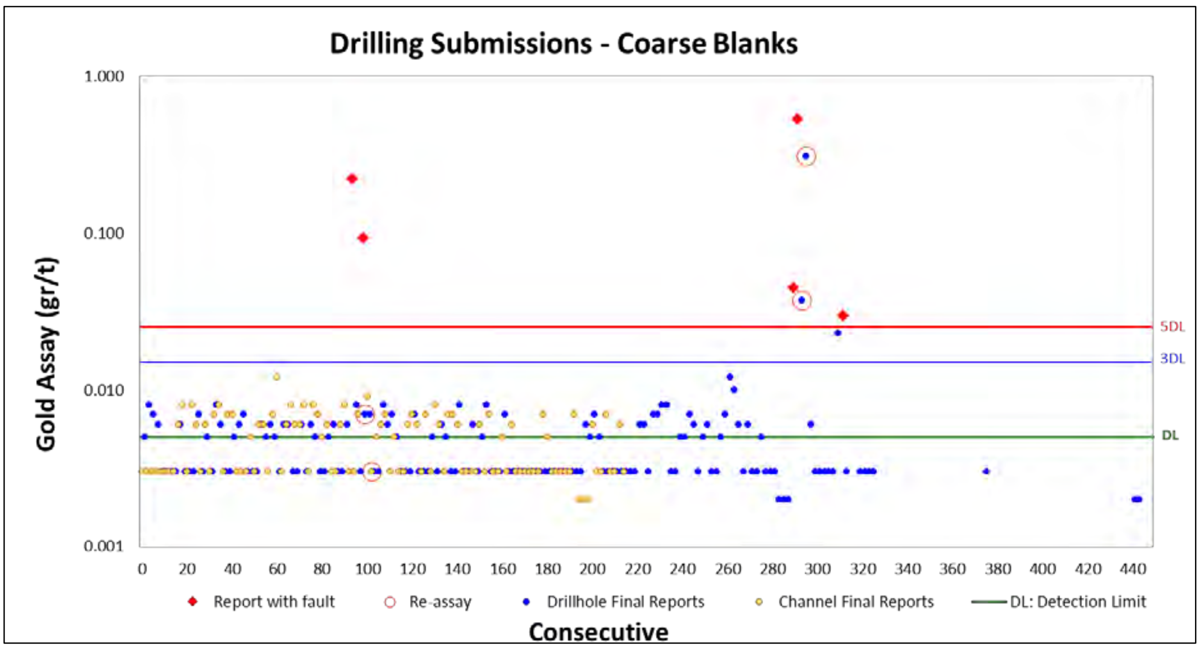


Source: SRK, 2019

Figure 11-4: Control Charts Showing Performance of Au CRMs with Mine Geology Sample Submissions

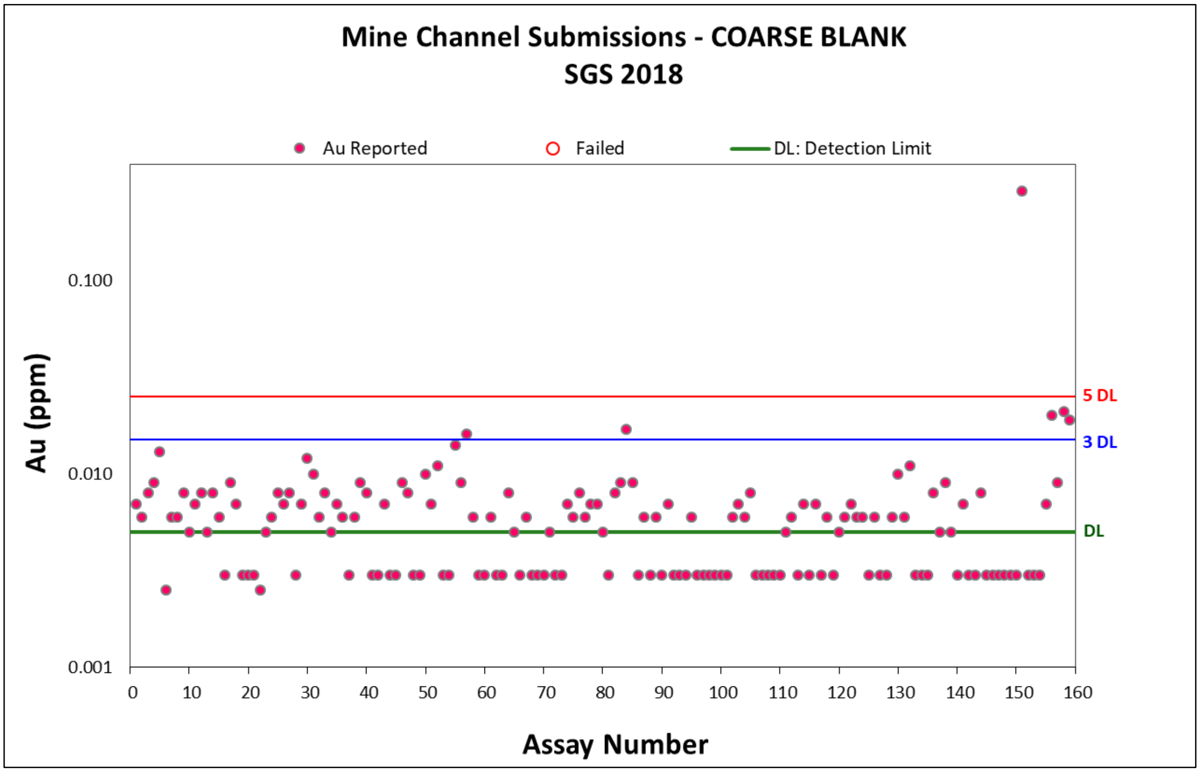
11.5.2 Blanks

Coarse quartz brought in from Medellín, and a certified fine-grained blank from Rocklabs are included in the sample stream. Blank samples were submitted with both mine drill core (Figure 11-5) and mine pulps (Figure 11-6). Through 2018, 279 blank samples were submitted with drilling samples to verify that contamination is not affecting assay results at Segovia. Additionally, 1,146 blanks (1,145 coarse blanks and 1 fine blanks) were submitted with mine pulps. Of the 1,443 total blank samples submitted in 2018 through both programs, 7 were anomalous, of which 4 were in submissions to Actlabs. SRK has reviewed the results from the blank sample analysis and has determined that there is little evidence of sample contamination at SGS or Zandor's facilities. While Actlabs was used with less frequency in 2018, a comparison a review of the results from Actlabs shows that the proportion of cases where the returned values have reported above significant levels is 33% and still of concern. SRK recommends Gran Colombia continue to monitor blanks in Actlabs submissions, and if any suspected contamination continues the frequency of blank insertions is increased to monitor the results more closely. It might also be prudent to request the laboratory increase the amount of barren material used to flush/clean the equipment between uses.



Source: SRK, 2018

Figure 11-5: Blank Analysis (Au) for Drilling at Segovia



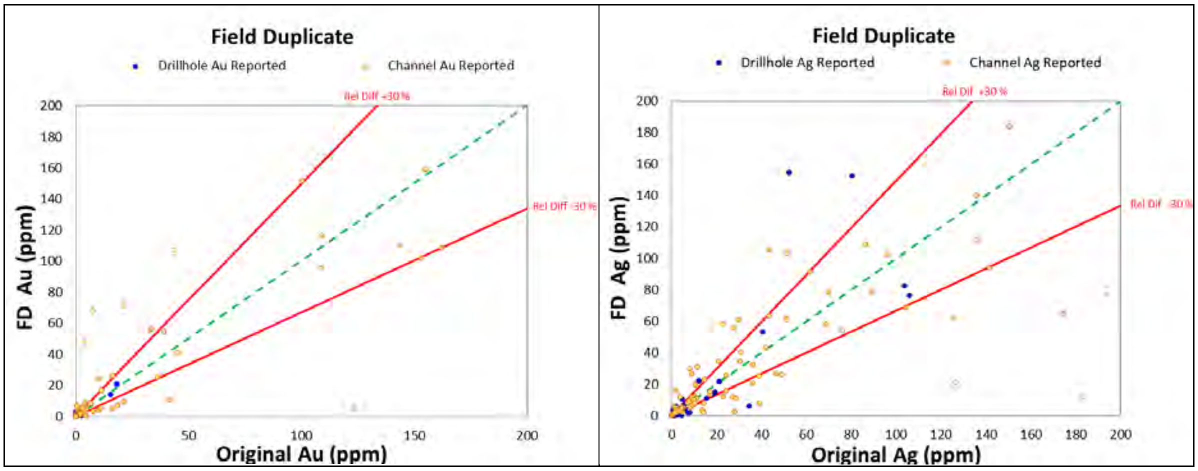
Source: SRK, 2018

Figure 11-6: Blank Analysis (Au) for Mine Channel Samples

11.5.3 Duplicates

Gran Colombia use a combination of field duplicates and third-party duplicates are inserted into the sample stream at Segovia to evaluate the ability of a third-party laboratory to repeat the assay results from the remaining sample. Field duplicates are generated by submitting ¼ core or splitting a channel sample by rock saw or hammer. Third-party laboratory duplicates are generated by the laboratory by generating a new pulp using the rejection material of the original sample. This new pulp is tested, and the results are compared with the results of the original sample assayed.

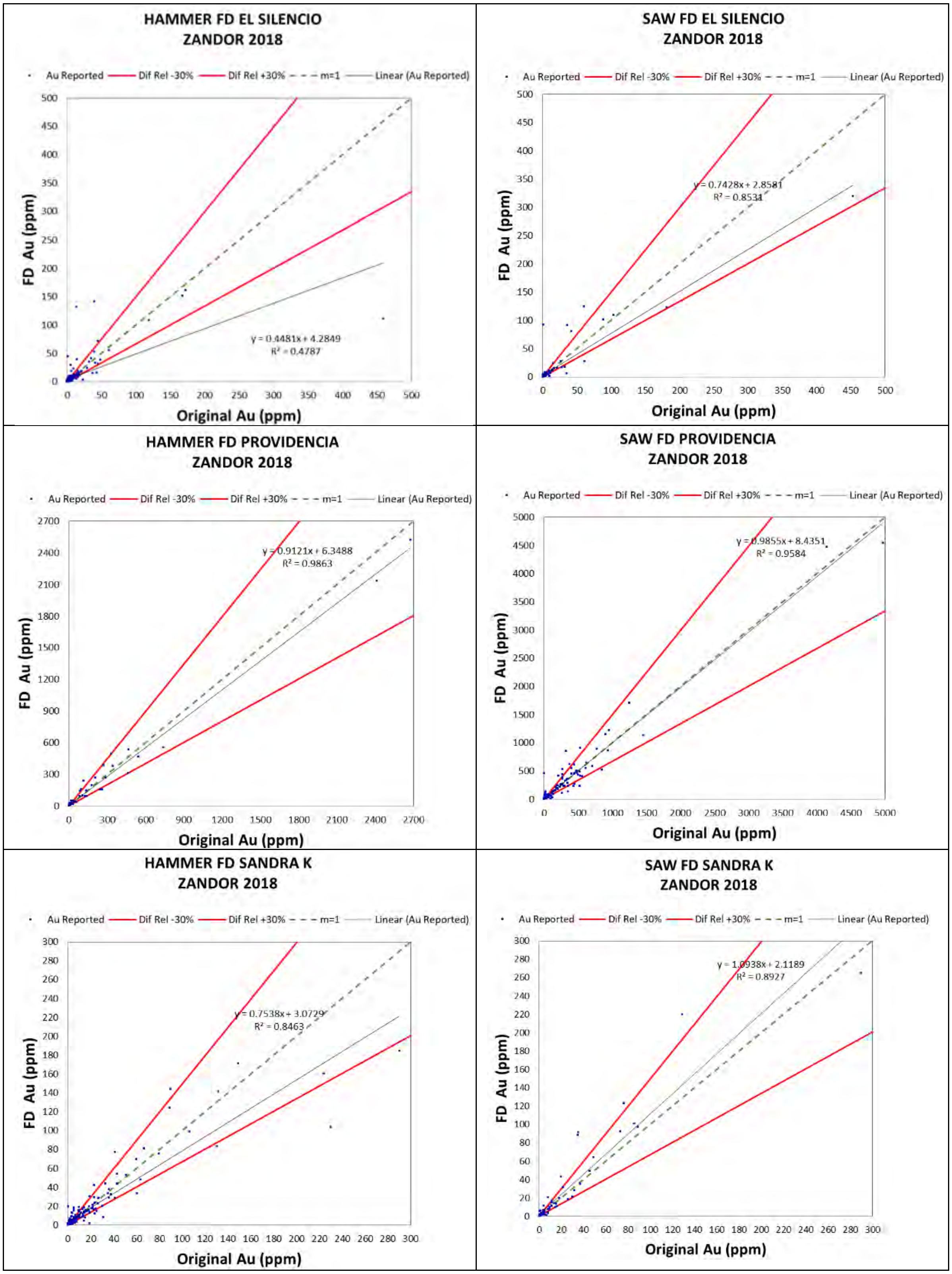
In 2018, 199 drill core field duplicates (1/4 core) were inserted into the routine sample submissions and assayed for Au and Ag to ensure laboratory precision. The field duplicates show a reasonably wide scatter for both Au and Ag. A review of the mean grades for original and duplicates respectively are 4.03 g/t and 36.73 g/t Au for core and field duplicates (a 9% difference), and 70.2 g/t and 70.4 g/t Ag for core and field duplicates (a 0.3% difference). In the context of a deposit with noted high geological variability, SRK is reasonably confident in the repeatability of the sample preparation process but cautions that individual high grades should be treated with caution.



Source: SRK, 2019

Figure 11-7: Au and Ag Dispersion Plots for Segovia Exploration Field Duplicates

During 2018, Gran Colombia submitted 975 channel field duplicates (split by rock saw or hammer) as part of the current mine sampling program. The average grades for the channel duplicates during this period are 57.49 g/t and 58.28 g/t Au for the original and duplicate samples respectively (a 6.6% difference). R^2 values for the duplicate assays ranged from 0.85 to 0.96 except for hammer split duplicates at El Silencio, where the R^2 value was 0.48. Overall, SRK considers the correlation between the two dataset is within acceptable levels for the sampling styles. SRK recommends continuation of the Gran Colombia sampling protocols during 2019.



Source: SRK, 2019

Figure 11-8: Au and Dispersion Plots for Segovia Chanel Field Duplicates

11.5.4 Umpire Laboratory Checks

To confirm the quality of the assays at SGS (Medellín) submitted during the 2018 programs, an umpire laboratory check was completed. To complete the analysis, selected batches sent to SGS Medellín were resubmitted to Zandor Laboratories in Colombia.

The selected samples were sourced reject material from channel sampling from underground drives and pillars. Samples were selected on a batch basis.

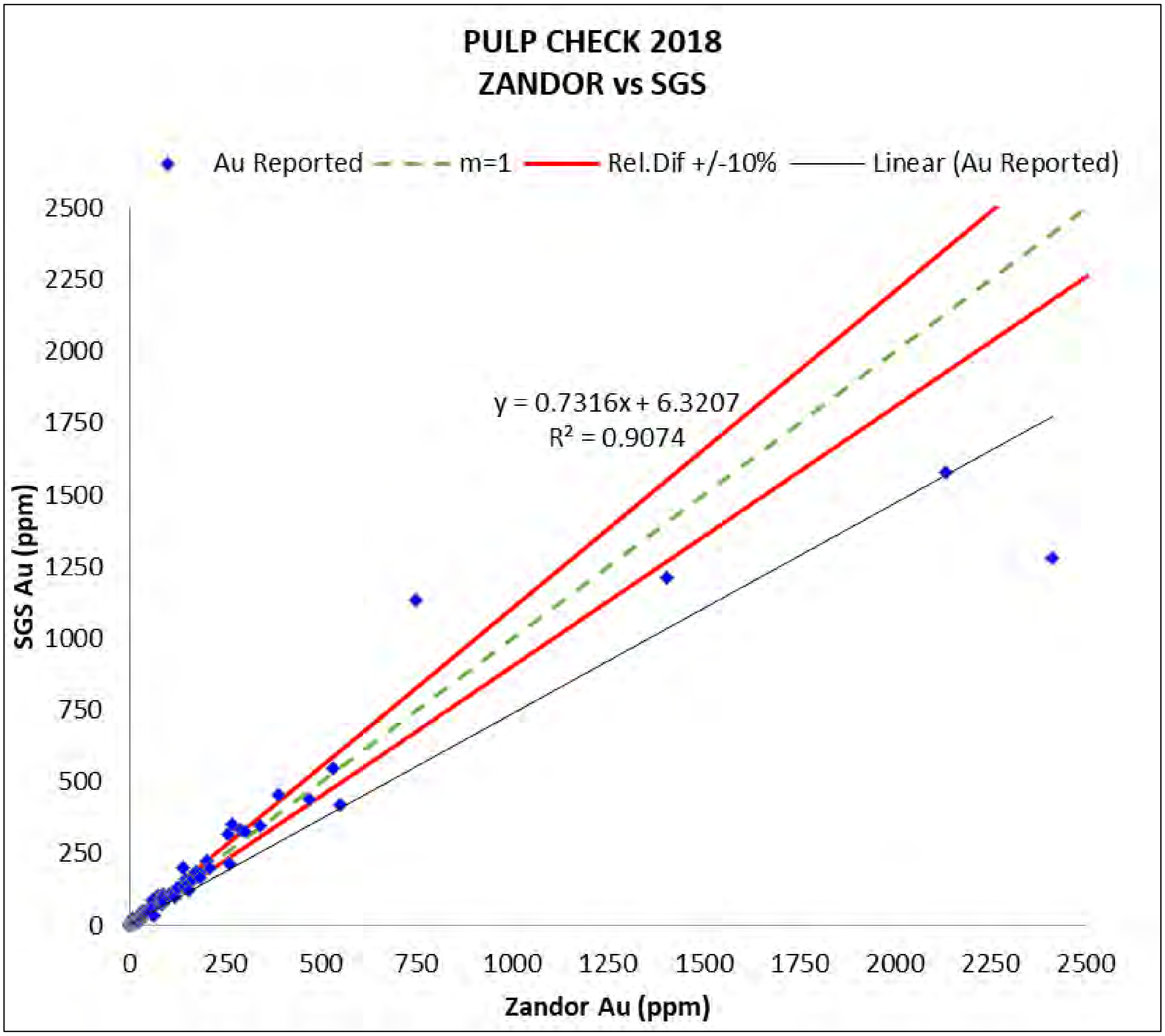
2018 Submissions (Mine Samples)

Samples were submitted on a like for like basis with the original QA/QC samples, including blank and CRM material replaced to ensure thorough quality checks were in place. A total of 519 samples including the associated QA/QC samples were submitted. SRK independently reviewed the results and completed a comparison as shown in Table 11-4. SRK has also reviewed the samples using an XY scatter plot to test the correlation between the original and umpire laboratory analysis. The results are shown in Figure 11-9. The correlation coefficients have been calculated at R^2=0.91, indicating a satisfactory correlation between the two laboratories in the samples submitted. Overall SRK concluded that the level of accuracy/precision is acceptable for the laboratory.

Table 11-4: Summary of Re-analysis of Channel Samples Between Zandor and SGS

Description	Pulp Samples		
	Au (ppm) Zandor	Au (ppm) SGS	% Difference
Mean	30.3	28.1	-7.3%
Standard Error	21.6	21.5	
Median	2.30	2.48	
Standard Deviation	160	124	
Sample Variance	25,883	15,285	
Maximum	2413.0	1579.3	
Sum	16864.0	563.7	
Count	563	563	
Confidence Level (95.0%)			

Source: SRK, 2019



Source: SRK, 2019

Figure 11-9: Dispersion Plots for Umpire Check Channel Samples at Zandor and SGS

2018 Submissions (Exploration Samples)

To confirm the quality of the assays from SGS (Medellín) submitted during the 2018 programs, an umpire laboratory check was completed. To complete the analysis, selected batches sent to Actlabs Medellín in Colombia. GCM completed a check analysis program on selected rejects and pulps from El Silencio during 2018. A total of 74 channel samples were selected and both the reject and pulps were requested for reanalysis. An additional 48 borehole samples were selected for comparison again using both reject and pulp material.

The results of the comparisons are shown in Table 11-5 and Table 11-6, with the scatter plots shown in Figure 11-10 and Figure 11-11. The results of the analysis show a strong correlation in the mean grades for the channel samples with the percentage difference in the mean grades reports less than 2%. In comparison, the reanalysis of the core reject samples showed a high bias in the order of 42%, but on closer inspection this was related to 2 high-grade assays which returned lower values at Actlabs compared to SGS. The comparison of the pulp samples shows the difference in the pulp samples is in the order of 5%, which SRK considers to be within acceptable levels of error. To test the impact on remaining samples SRK removed the two outliers from the analysis and the difference in the mean grades for the remainder of the assays is in the order of 2%. SRK highlights that the issue of differences in the reject sampling of the core highlights the high-grade variability for this style of deposit, and therefore ensuring sample protocols are followed is essential to ensure quality in the database. Continual check analysis is recommended on submissions to ensure these differences are monitored in the near future. The correlation coefficients for all cases have been calculated at R^2>0.95, indicating a satisfactory correlation between the two laboratories in the samples submitted.

Table 11-5: Summary of 2018 Re-analysis of Reject and Pulp Channel Samples Between SGS and Actlabs

Description	SGS	Actlabs		% Difference	
	Au (ppm)	Au (ppm) (Reject)	Au (ppm) (Pulps)	Au (ppm) (Reject)	Au (ppm) (Pulps)
Mean	43.04	43.47	43.65	1.0%	1.4%
Standard Error	11.96	12.04	11.73		
Median	3.27	4.18	3.38		
Standard Deviation	102.86	103.61	100.87		
Sample Variance	10580.24	10735.71	10175.53		
Maximum	671.61	668.65	642.50		
Sum	3184.66	3216.49	3230.15		
Count	74	74	74		

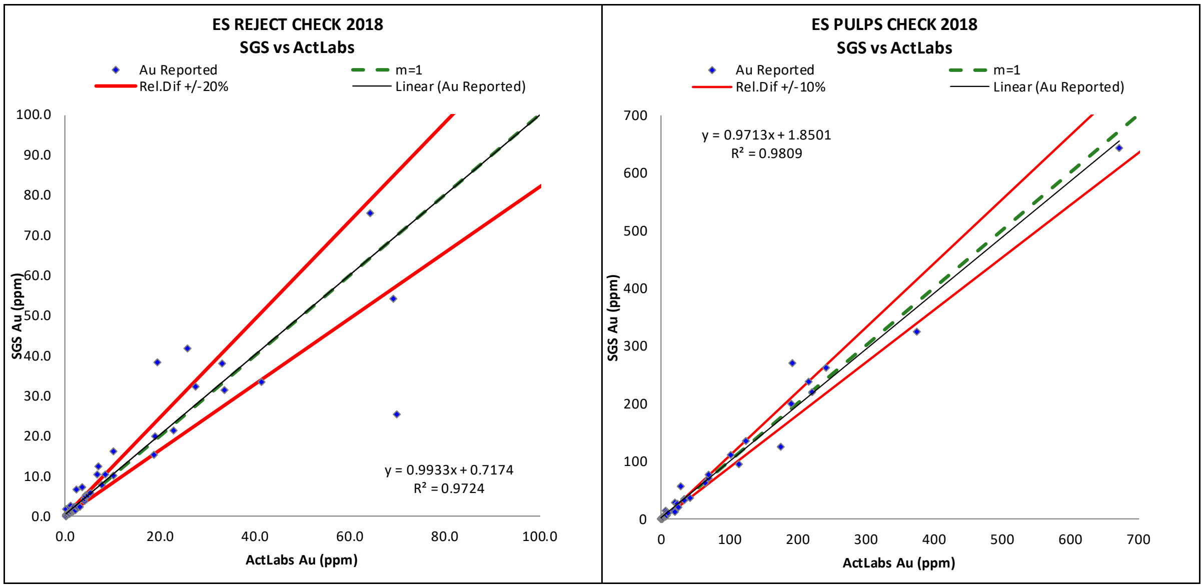
Source: SRK, 2019

Table 11-6: Summary of 2018 Re-analysis of Reject and Pulp Boreholes Samples Between SGS and Actlabs

Description	SGS	Actlabs		% Difference	
	Au (ppm)	Au (ppm) (Reject)	Au (ppm) (Pulps)	Au (ppm) (Reject)	Au (ppm) (Pulps)
Mean	17.93	10.26	18.84	-42.8%*	5.0%
Standard Error	13.73	7.59	14.53		
Median	0.32	0.30	0.29		
Standard Deviation	87.91	48.60	93.04		
Sample Variance	7728.78	2362.00	8657.18		
Maximum	540.03	296.83	573.01		
Sum	735.26	420.57	772.37		
Count	41	41	41		

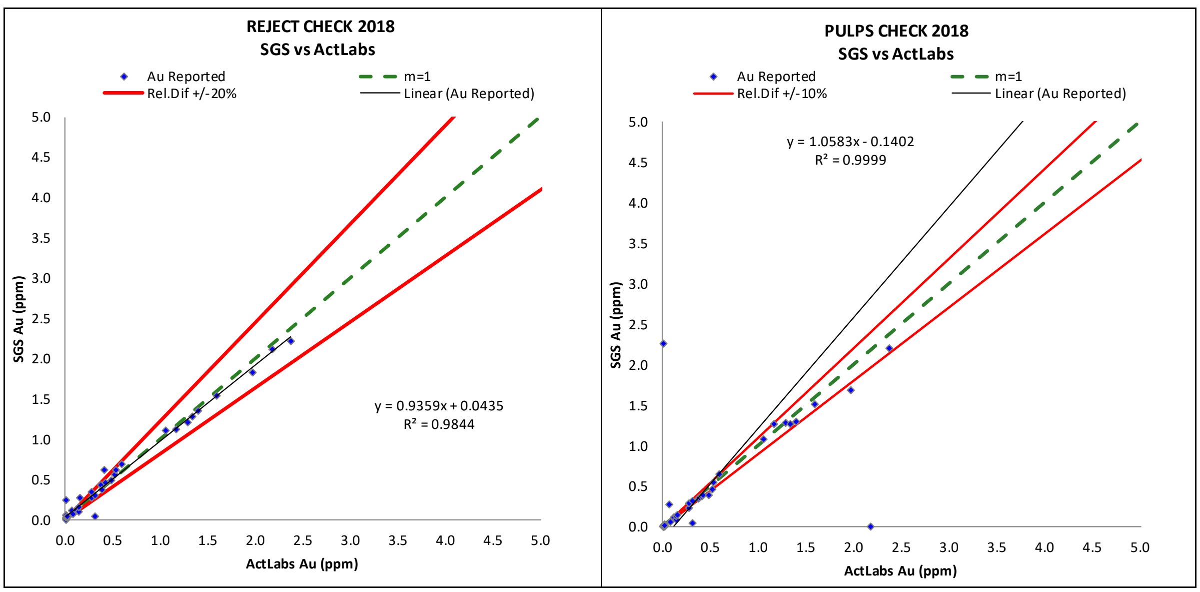
Source: SRK, 2019

* High bias in Reject is result of poor re-assay of two high-grade assays, removal from comparison reduced the % difference to 2%



Source: SRK, 2019

Figure 11-10: Comparison of Check Analysis on Rejects (left) and Pulps (right) between SGS and Actlabs for 2018 El Silencio Channel Sampling



Source: SRK, 2019

Figure 11-11: Comparison of Check Analysis on Rejects (left) and Pulps (right) between SGS and Actlabs for 2018 El Silencio Core Sampling

12 Data Verification

12.1.1 Gran Colombia Verification

The Company has undertaken a number of verification sampling programs to date for the historic underground channel sampling, including the initial check sampling, which concluded a low degree of confidence in the results from the historic mine laboratory (SRK, 2012; previous NI43-101 SRK Mineral Resource Report, dated April 2012).

As a result, it was recommended to increase the confidence in the sampling by increasing the underground mine/channel database completed by Gran Colombia, inclusive of further verification sampling. On the basis of the subsequent verification (2011 to 2012) of the sampling databases (which indicated reasonable sample integrity), SRK used the combined historical and more recent Gran Colombia data for the previous Mineral Resource Estimate.

Additional channel sampling completed at the operating mines between 2013 to 2018, and infill drilling exploration programs has enabled further verification of the historic database, which (whilst indicating a variable correlation) has increased the geological confidence within the re-sampled areas, as discussed in Section 11.5.

Further key verification work completed by the Company during the latest phase of exploration included the following:

- Infill drilling of the historic drillhole database at Sandra K;
- Completing a check assay program for the SGS laboratory Medellín, at ACME laboratory in Chile;
- Data capture and cross checking of historical database of historical plans for the El Silencio Mine;
- Survey and mapping of underground workings, in the case of El Silencio in areas which were previously flooded;
- Validation of the Carla database, including geotechnical re-logging and assaying of previously (selectively) non-sampled core within the mineralized zone, as recommended by SRK; and
- Anomalous Gran Colombia downhole surveys were resurveyed by an external contractor (Weatherford) and all Gran Colombia collars resurveyed by a land survey Company (SIGMA Ingenieria).

12.1.2 Verifications by SRK

In accordance with NI 43-101 guidelines, SRK visited the Project from November 27 to 30, 2016, February 10, 2017, and April 11 to 13, 2018. The main purpose of the site visits was to:

- Observe the extent of the exploration work completed to date;
- Inspect the drilling core and underground channel sampling completed during the latest phase of exploration;
- Visit the Providencia, El Silencio underground mines (SRK previously visited Sandra K and Carla) to ascertain geological characteristics of the mineralized structures;
- Complete an audit of sampling procedures underground;
- Complete an audit of the new laboratory onsite;
- Inspect core logging and sample storage facilities;

- Discuss updated geological and structural interpretations and inspect drill core; and
- Conduct routine visits to Gran Colombia offices in Medellín and site to review the geological database and progress on updating the 3D spatial locations with the new mine survey information.

Since Gran Colombia have taken ownership, SRK has completed reviews of the sample preparation methodology and assay laboratory at SGS Medellín, the old (GEM) Mine Laboratory, and the new mine laboratory, and discussed quality issues, which formed the basis to stop submissions of the mine channel samples to the old GEM facility while construction of the new facility was completed;

SRK completed a phase of data validation on the digital sample database supplied by the Company which included but was not limited to the following:

- SRK completed a two-week meeting with a Gran Colombia geologist in charge of the geological information for the Mineral Resource updates during November 2018. During this meeting the main focus was to correct elevation issues and provide training to Gran Colombia on how to validate and model the veins using Leapfrog® Geo on a regular basis;
- Search for sample overlaps or significant gaps in the interval tables, duplicate or absent samples, errors in the length field, anomalous assay and survey results. The Company's geological team were notified of any issues that required correction or further investigation. No material issues were noted in the final sample database;
- Confirmation of historic assays digitized from 2D mine plans for the El Silencio Mine. Due to the historic method of recording channel sample grade in pennyweights (dwts) and length in inches, SRK cross-checked from original mine plans that the correct conversions had been used (to reflect g/t Au and length in meters). A number of non-converted historic channel samples were noted to exist in the database, which SRK raised with the Company and were resolved prior to estimation; and
- Excluded vein samples that are flagged as having the footwall or hanging-wall of the structure continuing in to the floor or roof of the underground drive (and therefore effectively representing incomplete samples). The exposed hanging-wall or footwall (point) of the flagged vein sample was used to guide the appropriate surface of the geological model, however such samples were excluded from all statistical analyses and the resource estimate.
- Excluded veins samples which have poor control on the survey location relative to known underground workings, these are reported back to Gran Colombia geologist for correction for possible use in future updates;
- SRK noted a minor number of issues within the exported database due to irregular characters within the ascii files. This resulted in a number of samples (<10 samples) not generating valid samples. SRK corrected the issues manually by re-entering the borehole ID's in the ascii files which corrected the issue and allowed the information to be imported into Datamine™.

SRK was able to verify the quality of geological and sampling information and develop an interpretation of gold grade distributions appropriate to use in the Mineral Resource model.

12.2 Limitations

SRK did not review 100% of the analyses from the analytical certificates as part of this report. In addition, SRK reviewed analyses from certificates that are likely to have been reanalyzed either as a part of the recent resampling program or over the normal course of the previous six years of work.

SRK has not completed site inspections to all levels of the mining areas but has focused on the areas operated by Gran Colombia at lower levels.

12.3 Opinion on Data Adequacy

SRK is of the opinion that the data provided is adequate for estimation of Mineral Resources and classification in the Indicated and Inferred categories.

13 Mineral Processing and Metallurgical Testing

The Maria Dama process plant has been in production for years and the metallurgical requirements for processing ore from the Providencia, El Silencio and Sandra K mines are well understood, and as such, no new metallurgical studies have been conducted. The Maria Dama process flowsheet and plant performance are fully discussed in Section 17.

14 Mineral Resource Estimate

The Mineral Resource Statement presented herein represents the latest Mineral Resource evaluation prepared for the Project in accordance with the Canadian Securities Administrators' National Instrument 43-101 (NI 43-101).

The Mineral Resource model prepared by SRK utilizes some 1,250 diamond drillholes for a combined length of 147,007 m, 32,378 underground channel sample, and a further 101,273 historical samples contained in the databases. The number of historical sample points represents a reduction of 668 from the December 31, 2017 estimate, as a result of reallocation of some historical samples, and removal of some samples which were replaced with newer channel sampling information. The Mineral Resource estimate was completed by Mr. Benjamin Parsons, MAusIMM (CP) an appropriate "independent qualified person" as this term is defined in National Instrument 43-101. The effective date of the resource statement is December 31, 2018.

This section describes the Mineral Resource estimation methodology and summarizes the key assumptions considered by SRK. In the opinion of SRK, the Mineral Resource estimate reported herein is a reasonable representation of the global Mineral Resources found at the Project with the current level of sampling. The Mineral Resources have been estimated in conformity with generally accepted CIM "Estimation of Mineral Resource and Mineral Reserves Best Practices" guidelines and are reported in accordance with the Canadian Securities Administrators' National Instrument 43-101. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resource will be converted into Mineral Reserve.

The Mineral Resource model presented herein represents an updated resource evaluation prepared for the Segovia Project. The resource estimation methodology involved the following procedures:

- Database compilation and verification;
- Construction of wireframe models for the fault networks and centerlines of mining development per vein;
- Definition of resource domains;
- Data conditioning (compositing and capping) for statistical analysis, geostatistical analysis;
- Variography;
- Block modeling and grade interpolation;
- Resource classification and validation;
- Assessment of "reasonable prospects for economic extraction" and selection of appropriate reporting CoGs; and
- Preparation of the Mineral Resource Statement.

SRK has been supplied with an export of the geological database and preliminary interpretations of the main faults and veins in DXF format by the Company. The database used to estimate the Project Mineral Resources was audited by SRK. SRK is of the opinion that the current drilling information is sufficiently reliable to interpret with confidence the boundaries for gold mineralization and that the assay data are sufficiently reliable to support Mineral Resource estimation.

Seequent Leapfrog® Geo Modeling Software (Leapfrog®) was used to construct the geological solids, whilst Datamine™ Studio RM (Datamine™) was used to domain assay data for statistical and geostatistical analysis, construct the block model, estimate metal grades and tabulate the resultant Mineral Resources. Phinar X10 Geo was used to conduct the capping analysis with Snowden Supervisor software was used for geostatistical analysis, variography and statistical validation of the grade estimates.

SRK has not updated the Mineral Resource models for the Carla and Las Verticales areas as no new information is currently available and therefore the last estimate remains valid.

14.1 Drillhole Database

SRK was supplied with a Microsoft Excel Database, which was exported from the Company's main (SQL) database. The files supplied had an effective cut-off date of December 31, 2018. Separate files were supplied for the drilling database and channel sampling programmes. The database was reviewed by SRK and imported into Datamine™ to complete the Mineral Resource estimate. A total of 1,250 diamond drillholes for a combined length of 147,007 m have been provided. SRK notes that some holes do not have assays but have been used in the development of the geological model. SRK is satisfied with the quality of the database for use in the construction of the geological block model and associated Mineral Resource estimate.

14.2 Geologic Model

The Mineral Resource estimation process was a collaborative effort between SRK and Gran Colombia staff. Gran Colombia provided to SRK an exploration database with of the main veins as interpreted by Gran Colombia. In addition to the database Gran Colombia also supplied a geological interpretation within Leapfrog® marking the first pass interpretation of the main structures, with the geological logging reflecting through the areas investigated by core drilling for each of the main veins.

SRK reviewed the geological information into Seequent Leapfrog® Geo (Leapfrog®) to complete the geological model. Leapfrog® was selected due to the ability to create rapid accurate geological interpretations, which interact with a series of geological conditions. The following process was undertaken to complete the geological models:

- Reviewed the geological database and checked the standard validation processes have been completed appropriately. Any erroneous data was reported to Gran Colombia for review.
- High-level review of the Gran Colombia geological interpretation, which was in polyline formats.
- Construction of the fault model using polyline inputs from the mine geology team and the initial interpretations from the Gran Colombia exploration team as a guideline.
- Define the timing and interaction of faults to generate fault blocks within which veins can be defined. The veins terminate at the contact with each fault.
- Creation of the veins based initially on lithological coding provided by, then edited by SRK based on either grade or location validation issues. The final model was not snapped to all intersections due to continuing validation of elevations remaining an issue to a degree. SRK would recommend that the elevation validation work continues and that efforts should be made to initially define the mining levels and development in full before reviewing the channel elevations further.

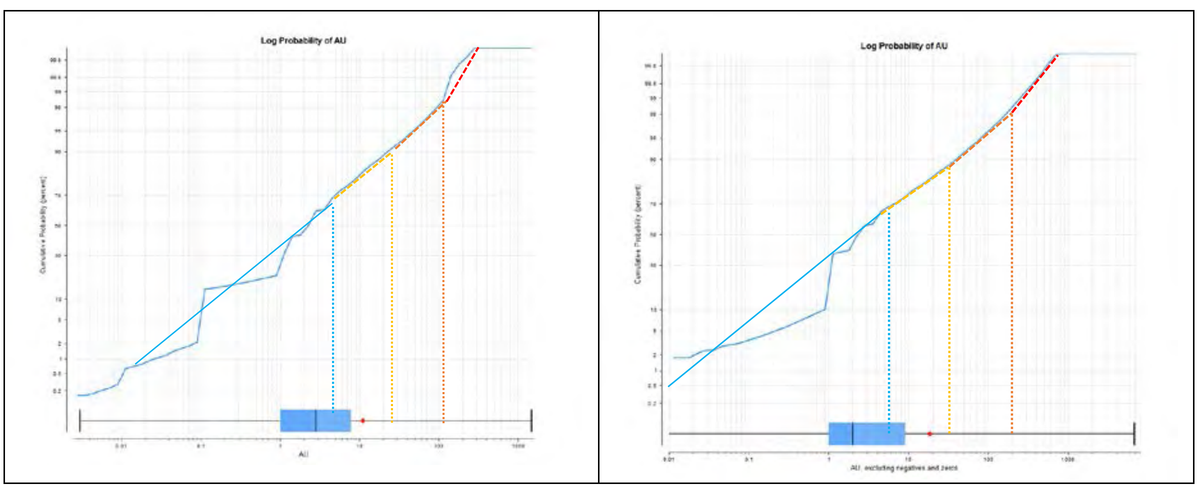
A fault network for Providencia, Sandra K and El Silencio was interpreted by the Company using mine survey points and underground fault mapping. The structural model (provided as surface wireframes or polylines in DXF format), which was approved as a reasonable geological representation by the Company's external structural consultant (Dr. Tony Starling, Telluris Consulting Ltd), was used to define domain breaks for construction of the mineralization wireframes.

In the current model all three of the main operating mines have been treated individually as independent geological models (due to file size). Interpretation of the vein structure in areas of mining development is relatively clear given the abundance of on-vein channel samples and development surveys, whereas in areas of less densely spaced sampling (for example down-dip of the mine) a greater consideration is required. Infill drilling from underground drilling locations has improved the geological knowledge of short to medium scale estimates ahead of the current development. SRK consider the use of tightly spaced infill holes very important and therefore recommend this practice continues across all three operating mines.

For the current Resource update, interpreted vein intervals and vein locations (single plane) were provided by mine geologists and used by the Gran Colombia exploration team as a modeling guide. These interpretations have been used where possible to prevent misallocation of mineralized intercepts where multiple veins exist. SRK modeled vein intervals were selected based on lithology logs, elevated gold grades and knowledge of the relationship between adjacent veins noted from underground mapping. SRK utilized the interval selection tool in Leapfrog® to generate new logging codes to provide a smoothed interpretation of the vein and avoid isolated pinches or pulls in the interpretation.

The initial geological model was reviewed by SRK and Gran Colombia to confirm that the current interpretation is representative of the underlying geological data, and the knowledge of the veins from site.

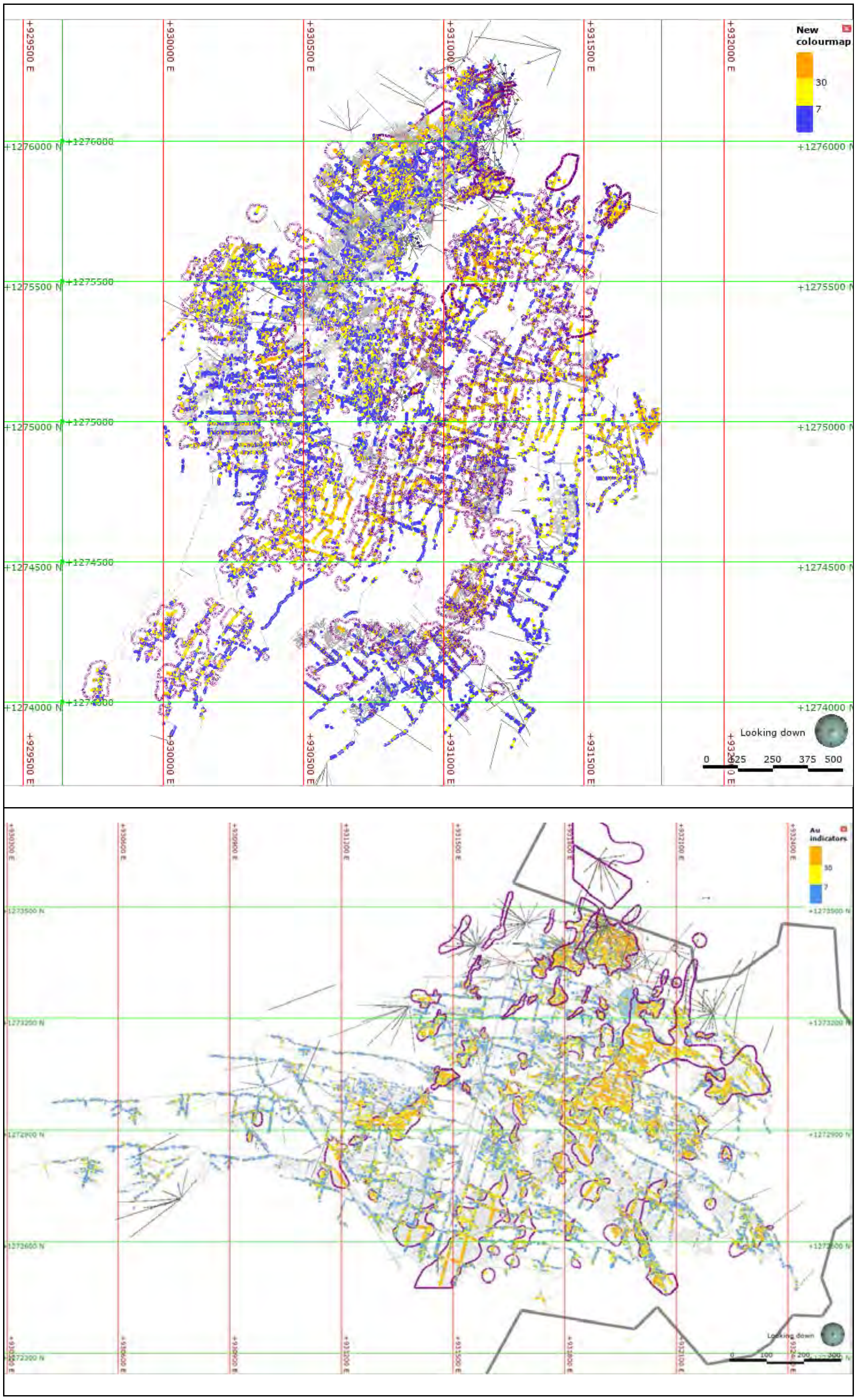
Statistical analysis and visual validation of the database during exploratory data analysis (EDA) indicated the presence of two sample populations (medium and high grade), at El Silencio and Providencia as shown in Figure 14-1 and Figure 14-2, and to a limited extent at Sandra K.



El Silencio Providencia

Source: SRK, 2019

Figure 14-1: Summary of Log-Probability Analysis to Test for Breaks in Trend



El Silencio

Providencia

Source: SRK, 2019

Figure 14-2: Bimodal Populations in Veta Providencia Showing High (>7.0 g/t Au) and Lower Grade Internal Distribution of Grade

SRK considers that the application of internal high-grade domains should continue to be required at both the main mines, and only in the northern portion of the Sandra K mine, where the data density is higher. SRK worked with Gran Colombia and the mining teams to aid the definition of the high-grade domains at the two main mines.

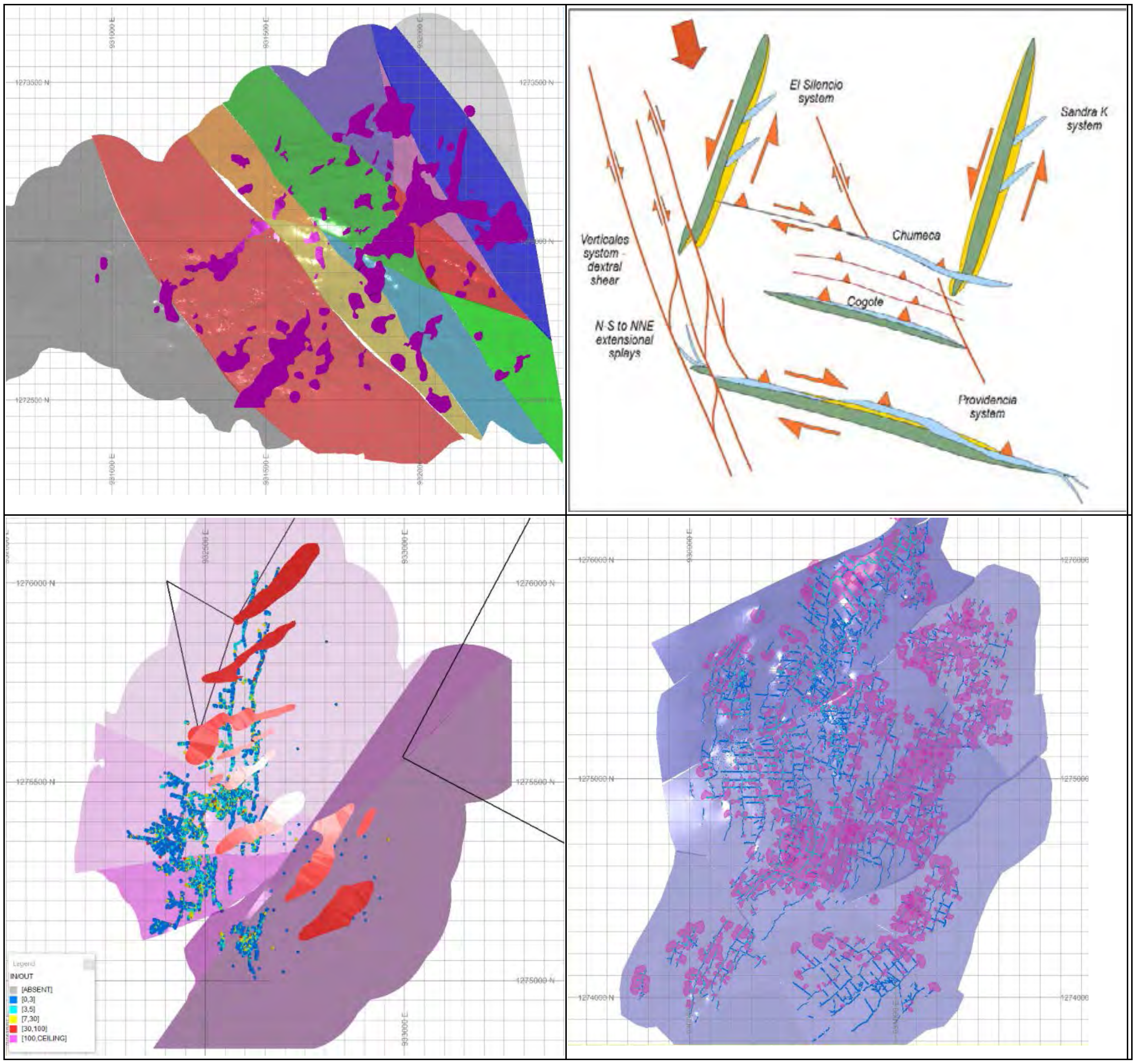
During the review of the high-grade domains SRK noted that the orientation of the high-grades is to the north east on all three mines (Figure 14-3) which could be due to some regional structural controls creating preferential situations for the deposition of gold mineralization. This is consistent with the structural model proposed by Telluris Consulting in September 2017 (Figure 14-3).

The high-grade domains for each of the three mines were created using a form of Indicator modeling using either Leapfrog® (Providencia and Sandra K), or Vulcan™ (El Silencio), with the first pass imported into Datamine™ mining software for review. SRK used variable caps on all three deposits based on initial review of the grade histograms as follows:

- Providencia – 7 g/t Au;
- El Silencio – 7 g/t Au; and
- Sandra K – 5 g/t Au.

To remove any potential small areas or isolated pockets created by the estimation process, SRK generated a series of strings from the initial interpretation and manually edited the interpretation to provide reasonable representation of the underlying grade continuity.

The final geological coding was stored in the block model under the field “HG” for the main domains, but each individual wireframe was coded into the model dependent on its various fault block locations in sequence under the field “KZONE”. A summary of the final domains is provided in Figure 14-3 and a description of the files used to define each domain in Table 14-1.



Source: SRK, 2017

Figure 14-3: Plots Showing Orientation of High-Grade Shoots. from Top Left (clockwise), Providencia, Telluris Consulting Structural Control Model, El Silencio, and Sandra K

Table 14-1: Summary of Final Geological Domain and Coding

Mine	HG	Wireframe/Coding	Description
Providencia	10	pro_vn_1010 - pro_vn_1160	LG
	20	pv_shoot_0119	HG
	30	pro_vn_2010	COR & 3180
	40	pro_vn_2090	PISO
	50	pro_vn_2100	PISO
	60	pro_vn_2860	2860
	70	pro_vn_3680	3680
	80	pro_vn_2845	3845
	90	pro_vn_4020	4020 & 4021
	100	pro_vn_4150	4150
	110	pro_vn_4320	4320
	120	pro_vn_4380	4380
El Silencio	10	vem1001 - vem1011	VEM - LG
	20	es_shoot_0119	VEM - HG
	30	nal2001 - nal2004	nal
	40	vep3001	vep
	50	esi4001	esi
	60	lan5001	lan
	70	unk6001	unk
	80	sal7001	sal
	90 to 100	sno8001, sno9001, sno9002, sno1330, sno1320	Sno, 1320, 1330
	110	sno1330	1330
	120	sno1320	1320
	130	sno650	650
	140	snocog	cog
Sandra K	10	sk_1001 - sk_1004 & sk_1007	Techo North LG
	15	sk_1005 & sk_1006	Techo South LG
	20	sk_shoot_0119	Techo HG
	30	sk_2001 - sk_2002	Piso 1
	31 - 32	sk_2003 – sk_2004	Piso 2
	33	sk_2005	4660
	40	sk_3001 & sk_3002	Chumeca

Source: SRK, 2019

14.3 Assay Capping and Compositing

SRK evaluated capping of outlier populations and compositing of variable-length data to minimize variance prior to the estimation as well as to obtain a more reasonable approximation of grades during the resource estimation.

14.3.1 Outliers

High grade capping is undertaken where data is no longer considered to be part of the main population. SRK completed the analysis based on log probability plots, raw and log histograms which can be used to distinguish the grades at which samples have significant impacts on the local estimation and whose affect is considered extreme. SRK notes that the mean grades within the different veins are sensitive to changes in the capping values.

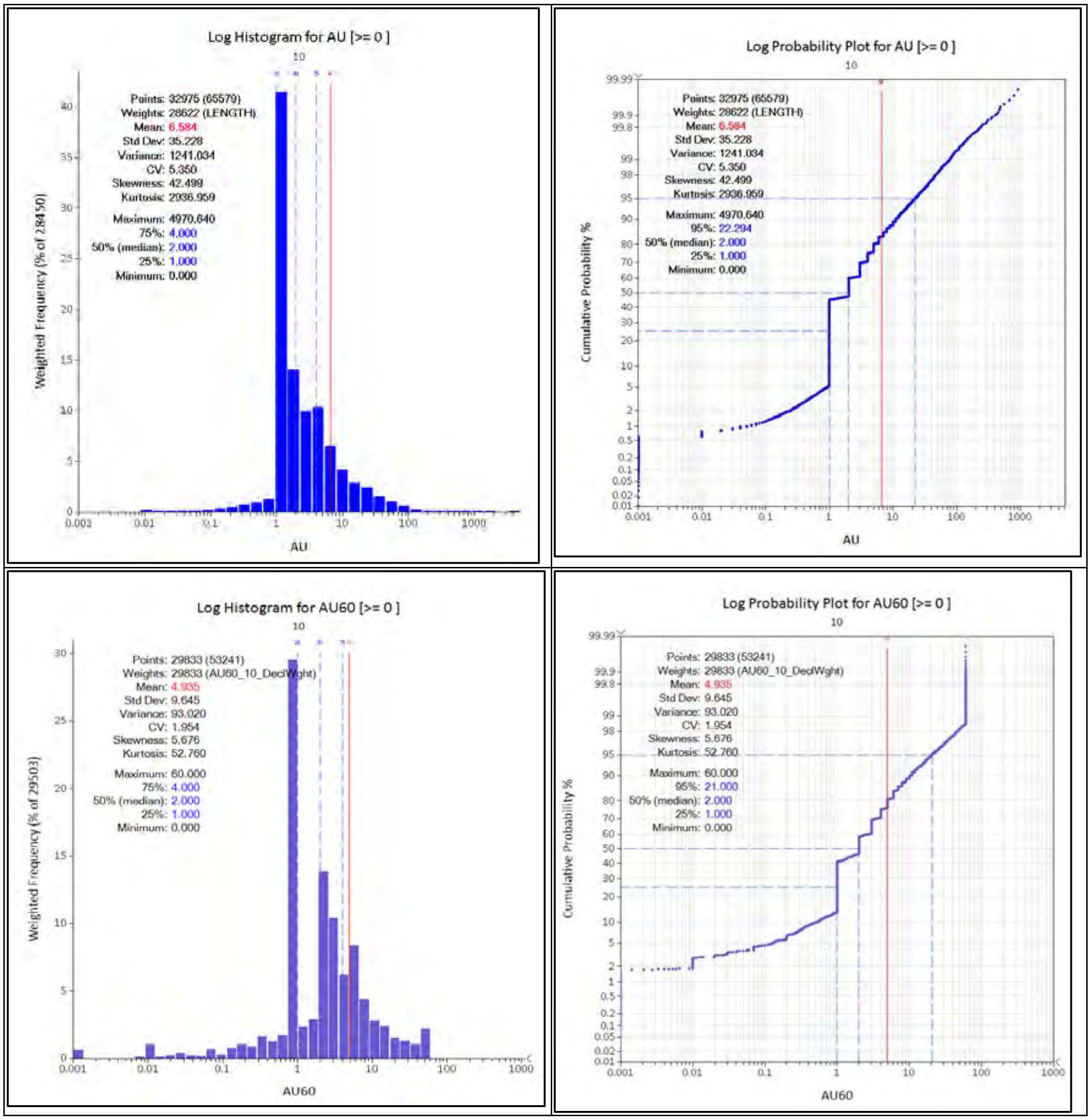
SRK completed a statistical analysis of the impact of grade capping by importing the geologically domained coded samples into Phinar's X10 Geo Software ("X10"). The raw assay data was first plotted on histograms and cumulative distribution plots (Figure 14-4**Error! Reference source not found.**) to understand its basic statistical distribution. High-grade capping was applied based on a combination of these plots, plus log histogram information.

The plots can be used to distinguish the grades at which the sample population starts to break down and that additional samples will likely have significant impacts on the local estimation and whose affect is considered extreme (Figure 14-4). Using this methodology top-cuts were defined for each domain by reviewing the information from the different sample types.

The spatial occurrence of the capped values was visually verified to determine if they formed discrete zones which could potentially be modeled separately.

During the on-going work with SRK and Gran Colombia at the Segovia the capping levels in the minor veins should be considered with caution considered high and that stricter application of capping would be more appropriate. SRK therefore reviewed the statistics and lognormal probability plots per domain to determine appropriate grade capping thresholds, and in the minor structures selected.

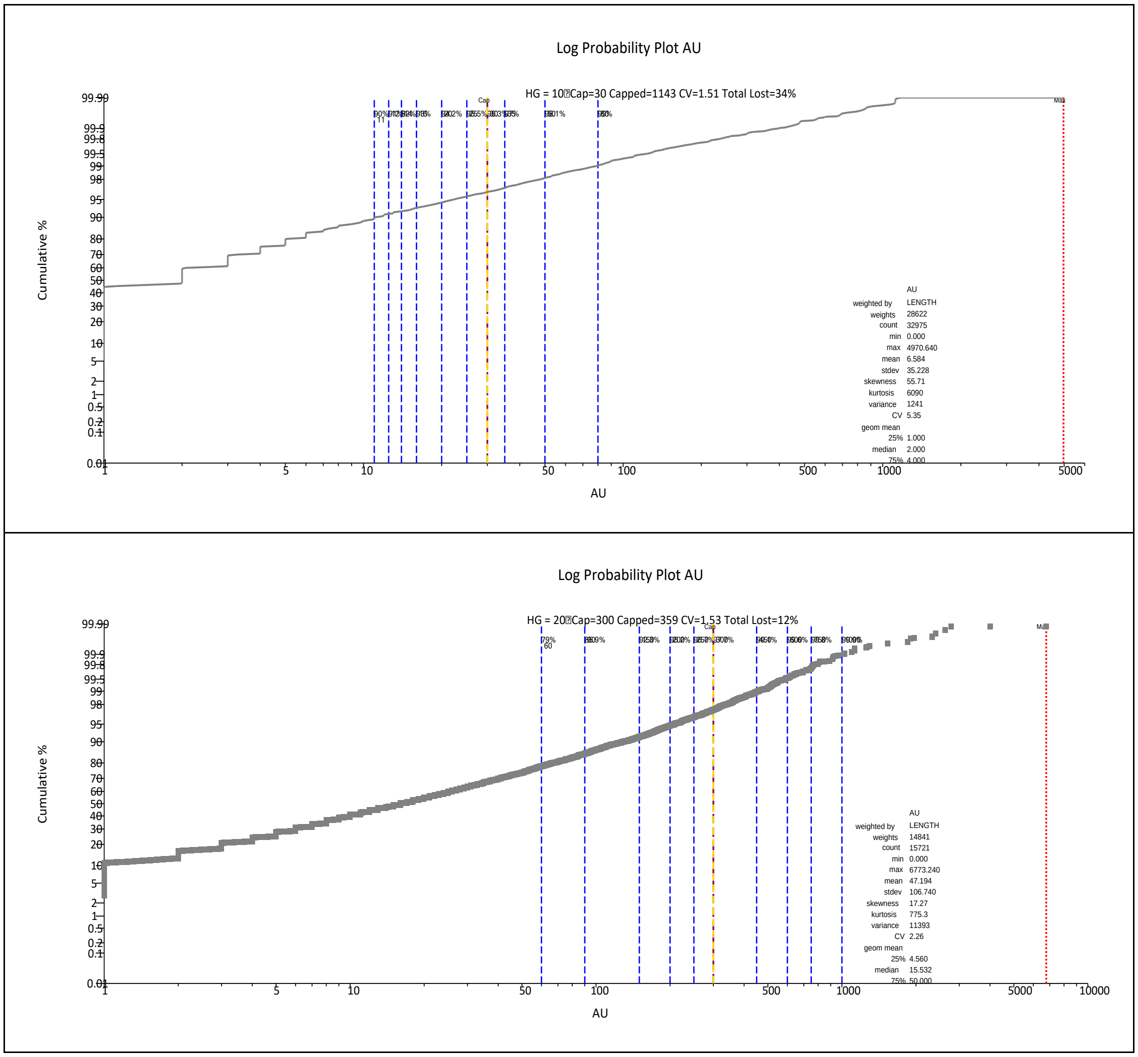
Two caps were applied at Carla of 100 g/t Au and 50 g/t Au, to limit the influence of a limited number of high-grade samples on the estimate.



Source: SRK, 2019

Figure 14-4: Example of Raw versus Capped Histogram and Log-Probability Plots for Providencia Low-Grade Domain

The influence of the capping was reviewed by SRK, to confirm the potential impact on the number of samples capped and the mean grades within each estimation domain, within X10 (Figure 14-5). To assess the impact on sampling the following statistical parameters have been considered, cap value, percentage of samples capped per domain, total metal reduction from capped values, percentage change in the coefficient of variation (CV), Mean grade and the CV. An example of the analysis is shown in Table 14-2. These results are tabulated for ease of comparison with the aim to reduce the CV below a value of 1.5 where reasonable.



Source: SRK, 2019

Figure 14-5: Log Probability Plots Showing Impact of Capping to Various Levels on the Mean (Providencia High-grade Domain)

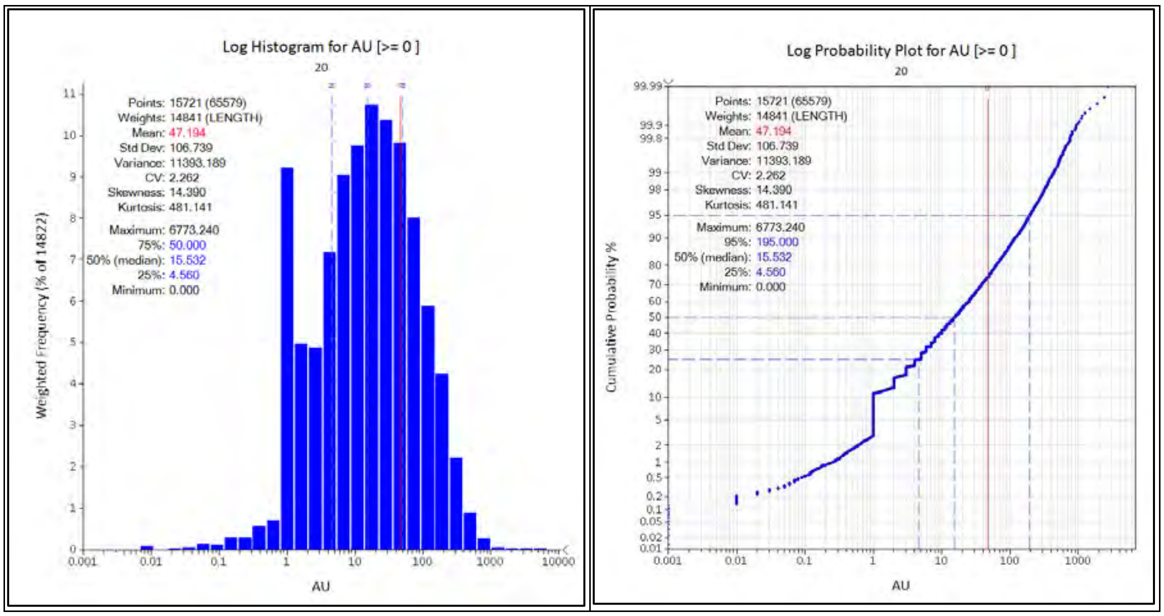
Table 14-2: Example of Capping Statistical Analysis Completed per Domain (High-grade Providencia)

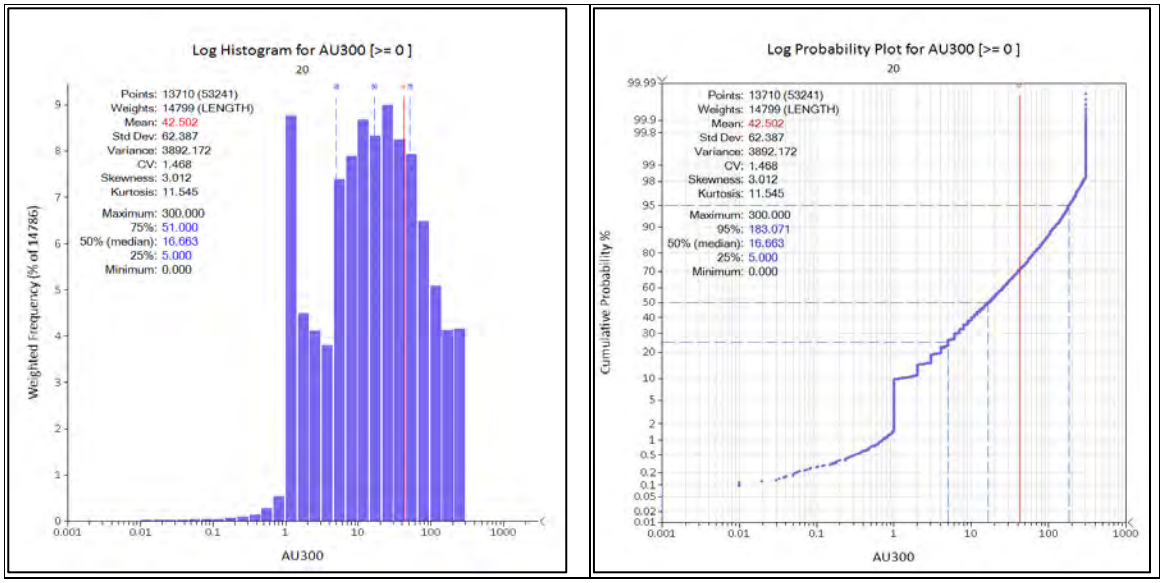
Column	_Filter	Cap	Capped	Percentile	Capped%	Lost Total%	Lost CV%	Min	Max	Mean	Variance	CV
AU	HG = 20							0	6,773	47.19	11,393	2.26
AU	HG = 20	435	167	99.0%	1.10%	7.5%	26%	0	435	44.51	5,533	1.67
AU	HG = 20	300	359	98.0%	2.30%	12.0%	32%	0	300	42.46	4,245	1.53
AU	HG = 20	265	445	97.0%	2.80%	14.0%	34%	0	265	41.54	3,803	1.48
AU	HG = 20	223	579	96.0%	3.70%	17.0%	37%	0	223	40.09	3,217	1.41
AU	HG = 20	195	716	95.0%	4.60%	20.0%	40%	0	195	38.83	2,790	1.36
AU	HG = 20	175	854	94.0%	5.40%	22.0%	42%	0	175	37.73	2,469	1.32
AU	HG = 20	161	980	93.0%	6.20%	24.0%	43%	0	161	36.81	2,229	1.28
AU	HG = 20	146	1113	92.0%	7.10%	26.0%	45%	0	146	35.70	1,968	1.24
AU	HG = 20	133	1276	91.0%	8.10%	28.0%	47%	0	133	34.58	1,734	1.20
AU	HG = 20	120	1414	90.0%	9.00%	31.0%	48%	0	120	33.37	1,511	1.17
AU	HG = 20 - AU > 300							301	6,773	504.43	163,098	0.80
AU	HG = 20 - AU <= 300							0	300	36.35	2735	1.44

Source: SRK, 2019

Given the high-grades noted at Providencia SRK elected to use a sliding cap away from the high-grade samples, whereby the initial cap was set to 300 g/t Au (in the first estimation pass of the high-grade shoot), dropping to 200 g/t Au in the second and third search ranges, with a more significant cap in the low-grade domain of 60 g/t Au at Providencia. At El Silencio, a maximum of 120 g/t Au was used within the high-grade domain, and 30 g/t Au within the low-grade vein material. The other veins at El Silencio were reviewed on a vein by vein basis with the selected caps ranging between 15 and 90 g/t Au.

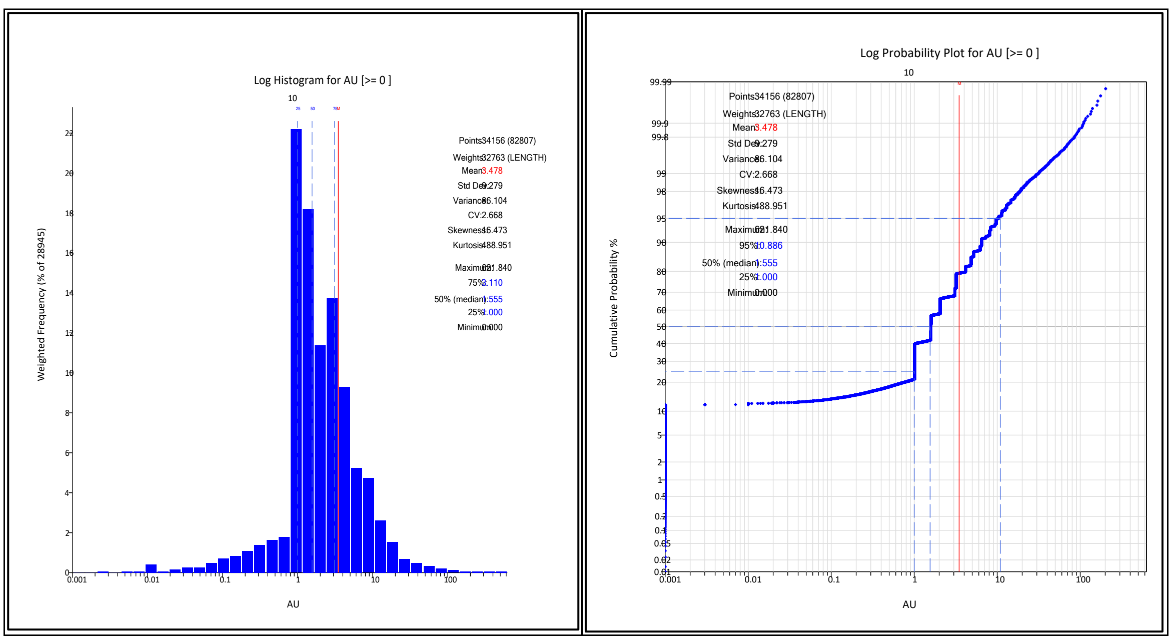
Table 14-3 through Table 14-6 show a comparison of the mean grades within each domain based on the grade capping applied. The percentage difference for the less densely sampled zones between the raw and the capped mean is reasonably elevated, namely in the Carla and Las Verticales vein domains. SRK noted during the investigation that the difference in the mean grade (in the context of a relatively small sample population) is skewed by a limited number of high-grade samples which (prior to capping) were visually checked to see whether they form separate populations. A comparison of the raw versus capped statistical analysis for the key domains is shown in Figure 14-6 to Figure 14-10.

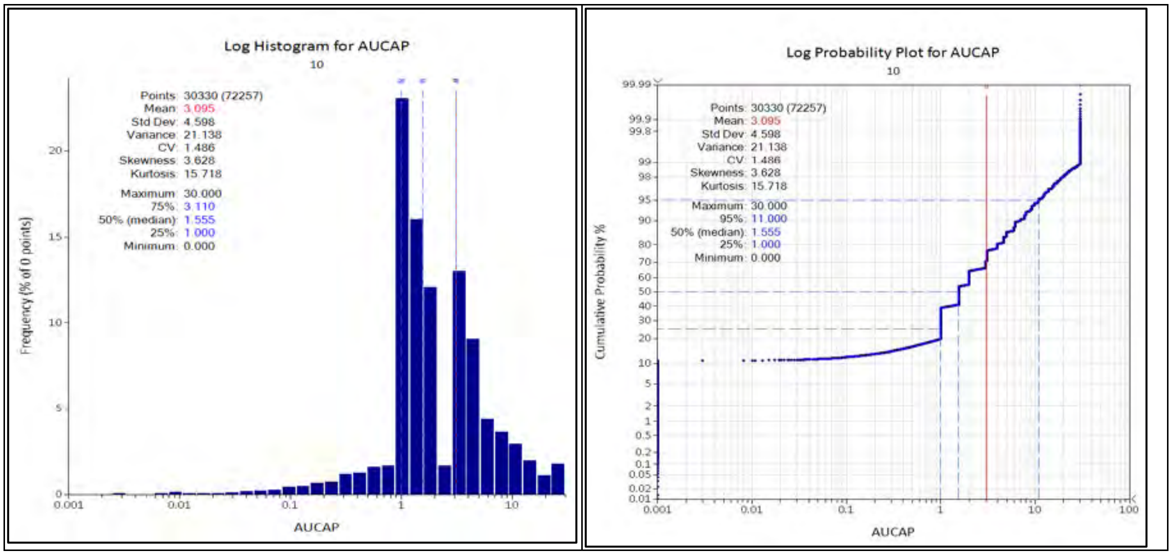




Source: SRK, 2019

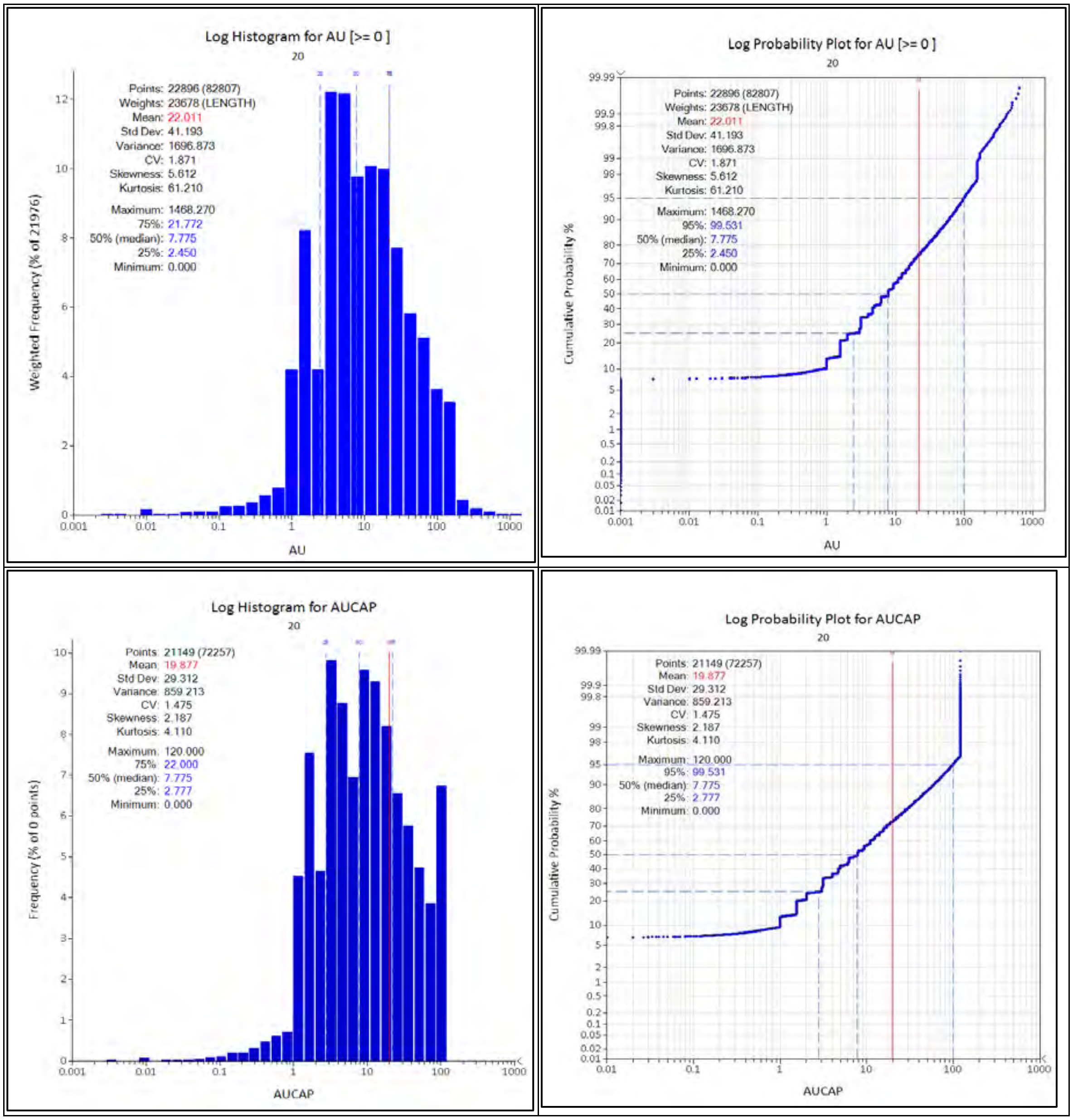
Figure 14-6: Example of Raw versus Capped Histogram and Log-Probability Plots for Providencia High-Grade Domain





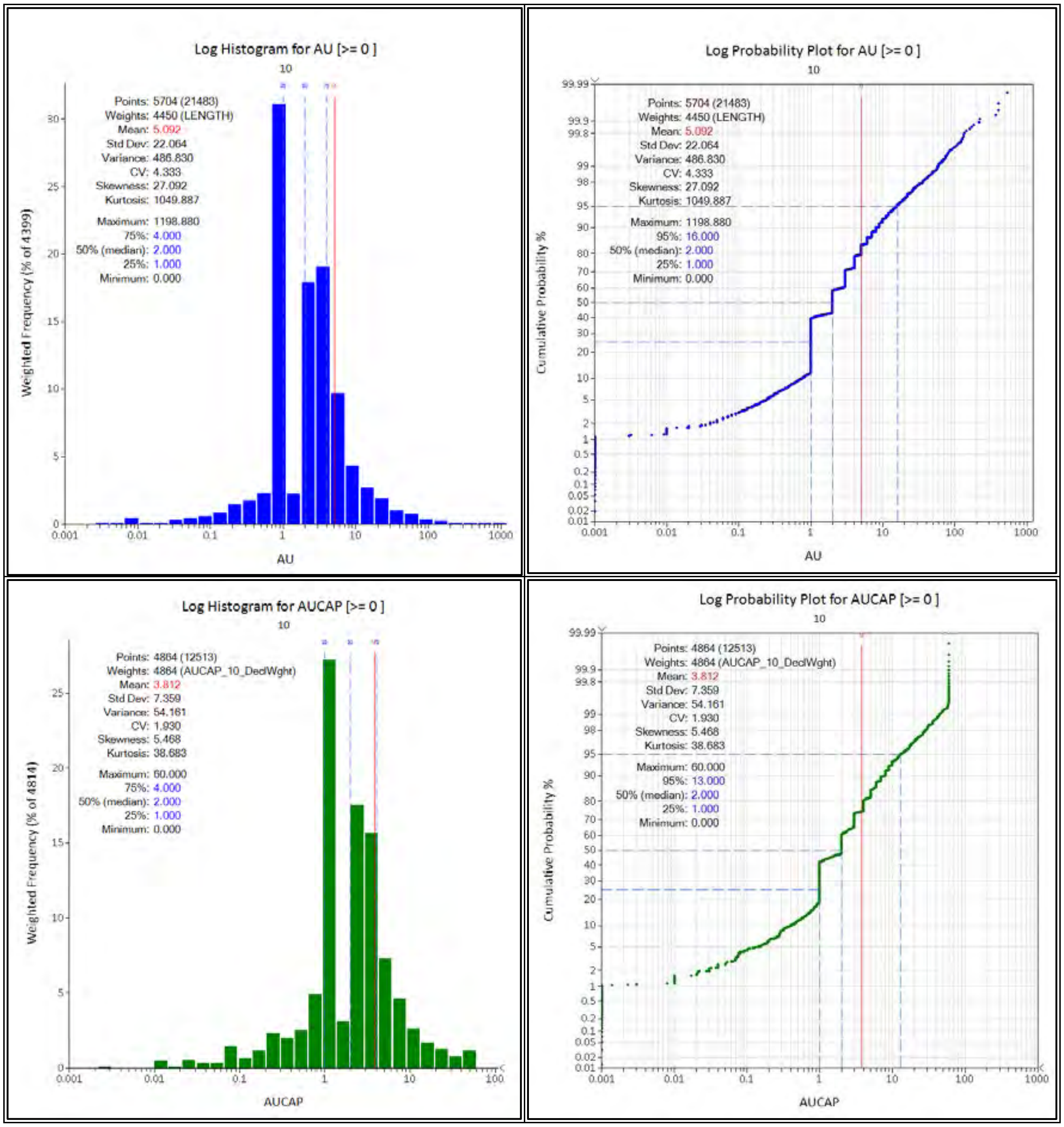
Source: SRK, 2019

Figure 14-7: Example of Raw versus Capped Histogram and Log-Probability Plots for El Silencio Veta Manto Low-Grade Domain (HG=10)



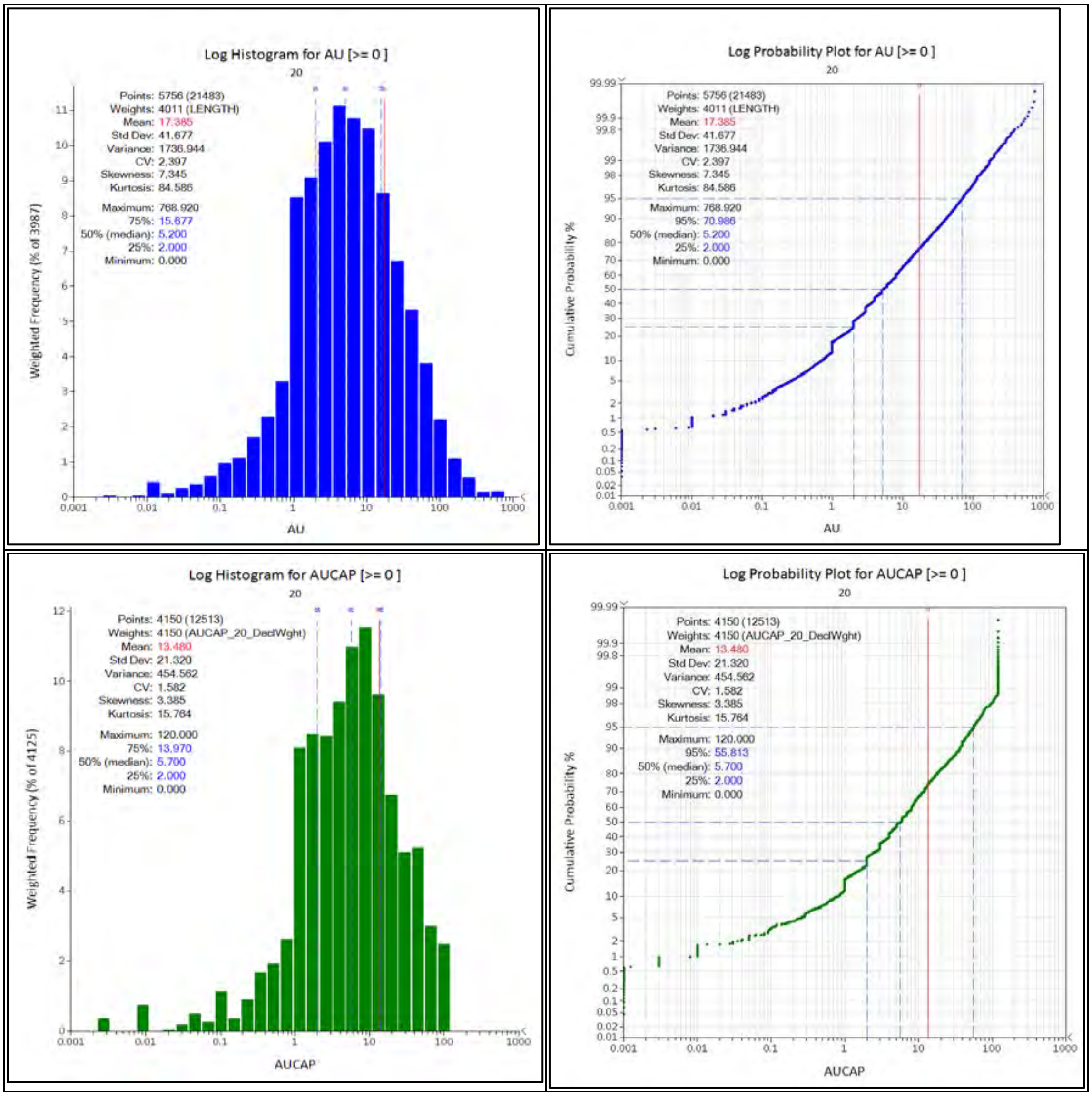
Source: SRK, 2019

Figure 14-8: Example of Raw versus Capped Histogram and Log-Probability Plots for El Silencio Veta Manto High-Grade Domain (HG=20)



Source: SRK, 2019

Figure 14-9: Example of Raw versus Capped Histogram and Log-Probability Plots for Sandra-K Veta Techo Low-Grade Domain (HG=10)



Source: SRK, 2019

Figure 14-10: Example of Raw versus Capped Histogram and Log-Probability Plots for Sandra-K Veta Techo High-Grade Domain (HG=20)

Table 14-3: Summary of Raw versus Capped Samples

Vein	Domain	Field	Count	Minimum Au (g/t)	Maximum Au (g/t)	Mean Au (g/t)	Standard Deviation	Coefficient of Variation	% Difference
PV	10 - LG	Raw	32,975	0	4970.64	6.58	35.23	5.35	
		Capped	32,992	0	60.00	5.11	9.83	1.92	-22.34%
		Composite	29,833	0	60.00	5.11	9.70	1.90	-22.31%
PV	20 - HG	Raw	15,721	0	6773.24	47.19	106.74	2.26	
		Capped	15,725	0	300.00	42.45	65.15	1.53	-10.04%
		Composite	13,710	0	300.00	42.50	62.39	1.47	-9.93%
PV	30 - Other	Raw	281	0	119.00	4.39	11.51	2.62	
		Capped	282	0	30.00	3.54	5.51	1.56	-19.36%
		Composite	221	0	30.00	3.54	5.26	1.48	-19.27%
PV	40	Raw	929	0.01	967.48	28.14	74.96	2.66	
		Capped	930	0	120.00	20.01	33.70	1.68	-28.89%
		Composite	595	0.01	120.00	19.97	29.55	1.48	-29.04%
PV	50	Raw	Insufficient coded samples to define a sample population						
		Capped							
		Composite							
PV	60	Raw	235	0	78.00	6.24	11.02	1.77	
		Capped	235	0	60.00	6.11	10.24	1.68	-2.08%
		Composite	200	0	60.00	6.17	10.30	1.67	-1.11%
PV	70	Raw	308	0.15	92.00	4.22	7.46	1.77	
		Capped	308	0.15	15.00	3.55	3.67	1.03	-15.88%
		Composite	239	0.34	15.00	3.55	3.36	0.95	-15.90%
PV	80	Raw	97	0	236.29	11.07	26.93	2.43	
		Capped	97	0	15.00	5.93	5.11	0.86	-46.43%
		Composite	82	0	15.00	5.84	4.40	0.75	-47.24%
PV	90	Raw	619	0.01	5070.36	165.81	378.03	2.28	
		Capped	619	0.01	300.00	91.21	117.79	1.29	-44.99%
		Composite	381	0.01	300.00	90.83	103.15	1.14	-45.22%
PV	100	Raw	330	0	223.76	20.26	31.62	1.56	
		Capped	330	0	90.00	18.30	24.02	1.31	-9.67%
		Composite	241	0	90.00	18.59	23.09	1.24	-8.25%
PV	110	Raw	110	0	99.00	3.82	10.14	2.65	
		Capped	110	0	15.00	2.90	3.25	1.12	-24.08%
		Composite	105	0	15.00	2.87	3.21	1.12	-24.76%
PV	120	Raw	67	1	163.00	21.93	29.54	1.35	
		Capped	67	1	60.00	18.77	19.28	1.03	-14.41%
		Composite	61	1	60.00	18.51	18.70	1.01	-15.59%

Source: SRK, 2019

Table 14-4: Summary of Raw versus Capped Samples at El Silencio

Vein	Domain	Field	Count	Minimum Au (g/t)	Maximum Au (g/t)	Mean Au (g/t)	Standard Deviation	Coefficient of Variation	% Difference
ES	10 - VEM LG	Raw	34,156	0	621.84	3.48	9.28	2.67	
		Capped	34,156	0	30.00	3.07	4.63	1.51	-11.76%
		Composite	30,330	0	30.00	3.10	4.60	1.49	-11.01%
ES	20 - VEM-LG	Raw	22,896	0	1468.27	22.01	41.19	1.87	
		Capped	22,896	0	120.00	19.85	29.42	1.48	-9.84%
		Composite	21,149	0	120.00	19.88	29.31	1.48	-9.70%
ES	30 - NAL	Raw	7,621	0	1381.00	12.29	35.17	2.86	
		Capped	7,621	0	90.00	10.05	19.70	1.96	-18.22%
		Composite	6,772	0	90.00	9.96	18.88	1.90	-18.99%
ES	40 - VEP	Raw	911	0	1220.00	19.56	59.15	3.02	
		Capped	911	0	90.00	15.04	23.10	1.54	-23.14%
		Composite	818	0	90.00	13.17	21.37	1.62	-32.67%
ES	50 - ESI	Raw	182	0	63.44	2.97	6.40	2.15	
		Capped	182	0	30.00	2.79	4.98	1.79	-6.13%
		Composite	115	0	30.00	3.07	4.75	1.55	3.27%
ES	60 - LAN	Raw	2,388	0	392.00	10.00	23.03	2.30	
		Capped	2,388	0	60.00	8.48	13.30	1.57	-15.16%
		Composite	2,060	0	60.00	7.99	13.16	1.65	-20.08%
ES	70 - UNK	Raw	1,679	0	311.00	13.89	26.21	1.89	
		Capped	1,679	0	60.00	11.46	16.58	1.45	-17.53%
		Composite	1,573	0	60.00	10.98	16.14	1.47	-20.96%
ES	80 - SAL	Raw	19	3.1	12.40	5.59	3.10	0.55	
		Capped	19	3.1	12.40	5.59	3.10	0.55	0.00%
		Composite	17	3.1	12.40	5.93	3.21	0.54	6.03%
ES	90 - SNO	Raw	86	1	408.00	13.64	53.70	3.94	
		Capped	86	1	30.00	4.89	7.44	1.52	-64.19%
		Composite	86	1	30.00	4.84	7.36	1.52	-64.54%
ES	100 - SNO	Raw	Insufficient coded samples to define a sample population						
		Capped							
		Composite							
ES	110 - SNO	Raw	50	0	28.40	4.81	6.90	1.43	
		Capped	50	0	15.00	4.07	4.89	1.20	-15.51%
		Composite	45	0	15.00	5.32	5.56	1.05	10.52%
ES	120	Raw	235	0	280.92	12.94	25.58	1.98	
		Capped	235	0	30.00	8.76	10.38	1.18	-32.25%
		Composite	187	0	30.00	9.18	10.13	1.10	-29.06%

Vein	Domain	Field	Count	Minimum Au (g/t)	Maximum Au (g/t)	Mean Au (g/t)	Standard Deviation	Coefficient of Variation	% Difference
ES	130	Raw	1,595	0	241.24	11.74	23.03	1.96	
		Capped	1,595	0	241.24	11.74	23.03	1.96	0.00%
		Composite	1,574	0	241.24	10.76	22.39	2.08	-8.32%
ES	140	Raw	124	0	155.50	14.66	25.84	1.76	
		Capped	124	0	155.50	14.66	25.84	1.76	0.00%
		Composite	101	0	155.50	13.18	19.46	1.48	-10.08%

Source: SRK, 2019

Table 14-5: Summary of Raw versus Capped Samples at Sandra K

Vein	Domain	Field	Count	Minimum Au (g/t)	Maximum Au (g/t)	Mean Au (g/t)	Standard Deviation	Coefficient of Variation	% Difference
SK	10 TECHNO - LG1	Raw	5,704	0	1198.88	5.09	22.06	4.33	
		Capped	5,704	0	60.00	4.31	8.33	1.93	-15.36%
		Composite	4,864	0	60.00	3.81	7.36	1.93	-25.14%
SK	15 TECHNO - LG2	Raw	951	0	252.96	6.83	16.58	2.43	
		Capped	951	0	90.00	6.41	12.64	1.97	-6.15%
		Composite	572	0	90.00	4.72	8.44	1.79	-30.89%
SK	20 - TECHO HG	Raw	5,756	0	768.92	17.39	41.68	2.40	
		Capped	5,756	0	120.00	15.11	24.60	1.63	-13.09%
		Composite	4,150	0	120.00	13.48	21.32	1.58	-22.46%
SK	30 - PISO	Raw	2,052	0.04	1840.00	12.59	47.80	3.80	
		Capped	2,052	0.04	90.00	10.66	17.91	1.68	-15.29%
		Composite	1,403	0.04	90.00	9.79	16.77	1.71	-22.25%
SK	31 - PISO	Raw	20	0.003	9.38	1.86	3.07	1.65	
		Capped	20	0.003	9.38	1.86	3.07	1.65	0.00%
		Composite	16	0.003	9.38	1.79	3.05	1.71	-3.66%
SK	32 - PISO	Raw	14	0.005	47.72	4.68	12.62	2.70	
		Capped	14	0.005	47.72	4.68	12.62	2.70	0.00%
		Composite	12	0.113	47.72	4.85	12.86	2.65	3.61%
SK	33 - 4660	Raw	235	0.008	90.00	13.75	22.41	1.63	
		Capped	235	0.008	90.00	13.75	22.41	1.63	0.00%
		Composite	201	0.008	90.00	13.47	22.74	1.69	-2.04%
SK	40 - CHUMECA	Raw	1,821	0	386.00	9.74	31.34	3.22	
		Capped	1,821	0	60.00	7.12	12.80	1.80	-26.93%
		Composite	1,295	0	60.00	5.84	10.46	1.79	-40.07%

Source: SRK, 2019

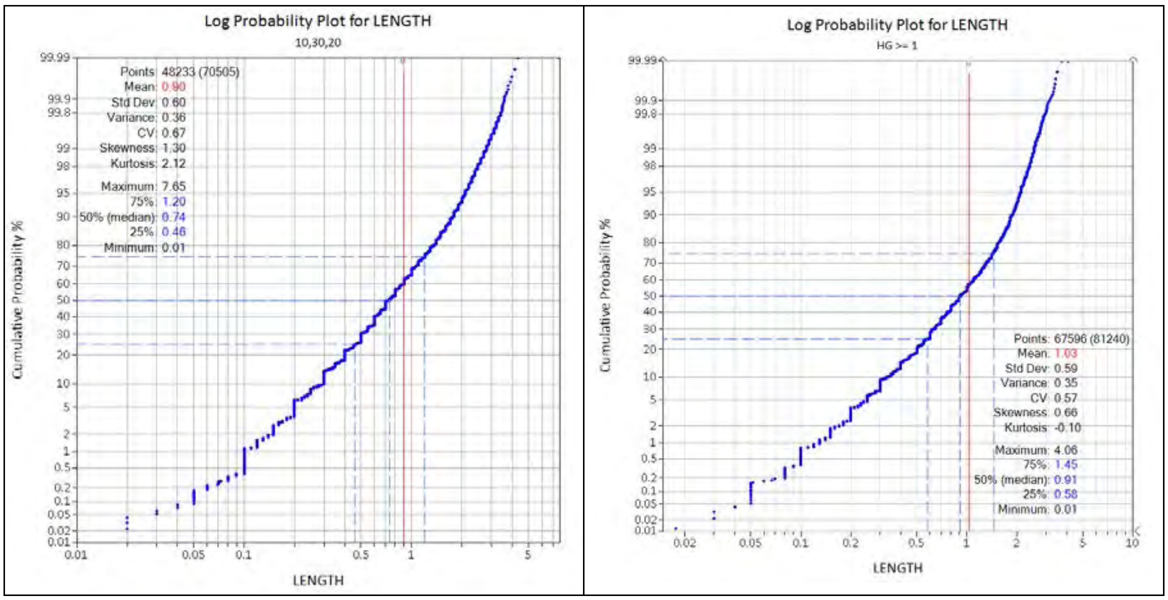
Table 14-6: Summary of Raw versus Capped Samples at Carla and Las Verticales

Vein	Domain	Field	Count	Minimum Au (g/t)	Maximum Au (g/t)	Mean Au (g/t)	Standard Deviation	Coefficient of Variation	% Difference
CA	Carla	Raw	115	0	290.22	6.55	27.54	4.20	-25.30%
		Capped	115	0	100.00	4.90	11.49	2.35	
LV	Las Verticales	Raw	135	0	56.00	4.30	8.04	1.87	-11.10%
		Capped	135	0	25.00	3.82	5.78	1.51	

Source: SRK, 2019

14.3.2 Compositing

SRK analyzed the mean length of the underground channel and drillhole samples in order to determine appropriate composite lengths. At Providencia, Sandra K, Las Verticales and Carla the mean length of the sample data approximates to (or is less than) 0.8 to 1.0 m, suggesting that a composite length of greater than 1.0 m is appropriate. Figure 14-11 provides an example of the length analysis undertaken for drillhole samples at Providencia and El Silencio, which indicate that while the mean is low, a significant portion of the database has sample lengths in excess of 1.0 m (typically >40% of the database), and therefore composite lengths in the order of 2.0 or 3.0 m would be deemed more appropriate.



Source: SRK, 2019

Figure 14-11: Log Probability Plots of Sample Lengths within Providencia and El Silencio Veins

SRK tested the sensitivity in the mean grades to changes in composite length, plus the sensitivity of tools within Datamine™ (MODE) that attempt to ensure all vein samples are incorporated into the composite file. The results indicate that using the Datamine™ (MODE = 1) utility enables more of the narrow vein samples to be incorporated into the composites while limiting any potential bias.

The results of the study for vein samples indicated that the selected 3.0 m composite length (or vein width), using a minimum sample length of 0.20 m, and Datamine's^{TM} MODE = 1 function provides a reasonable reconciliation to the raw data mean grade and total length. SRK therefore elected to use the option to utilise all sampling within the flagged veins (MODE=1).

At Carla and Las Verticales, there was no updated Mineral Resource estimate, and the selected composite length at the time (2013) was a 1.0 m composite, using a minimum of 0.25 m.

14.4 Density

Density measurements were taken at Segovia from both drill core and hand samples from the underground workings. In the case of both, density was assessed via the standard immersion method, measuring the mass of the sample in air and then water, and taking the difference between the two. SRK notes that this method is considered reasonable. The method used to define the density for the geological model was discussed in Section 11.3.3, which indicated that a default block density of 2.7 g/cm^3 is appropriate for the Project.

SRK notes that local fluctuations maybe expected due to varying amounts of sulfides. Overall SRK considers the density to be reasonable for this style of deposit and is supported to a degree by Production data and weightometers at the plant.

14.5 Variogram Analysis and Modeling

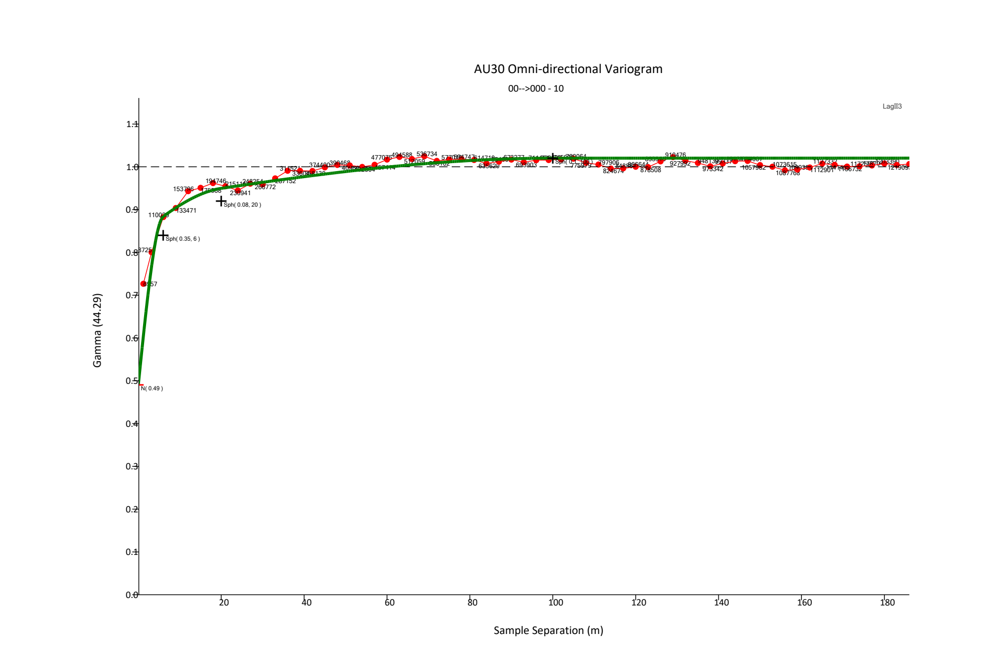
Variography is the study of the spatial variability of an attribute, in this case gold (Au) grade. ISATIS Software (Isatis) was used for geostatistical analysis for the Project previously. SRK completed a detailed Variography study during the 2013 Mineral Resource estimate, which, given the relative increase in the database, is still considered valid. SRK cross checked the models using Snowden Supervisor during the 2017 estimate.

In order to define variograms of sufficient clarity, the data was calculated using a Pairwise Relative Variogram.

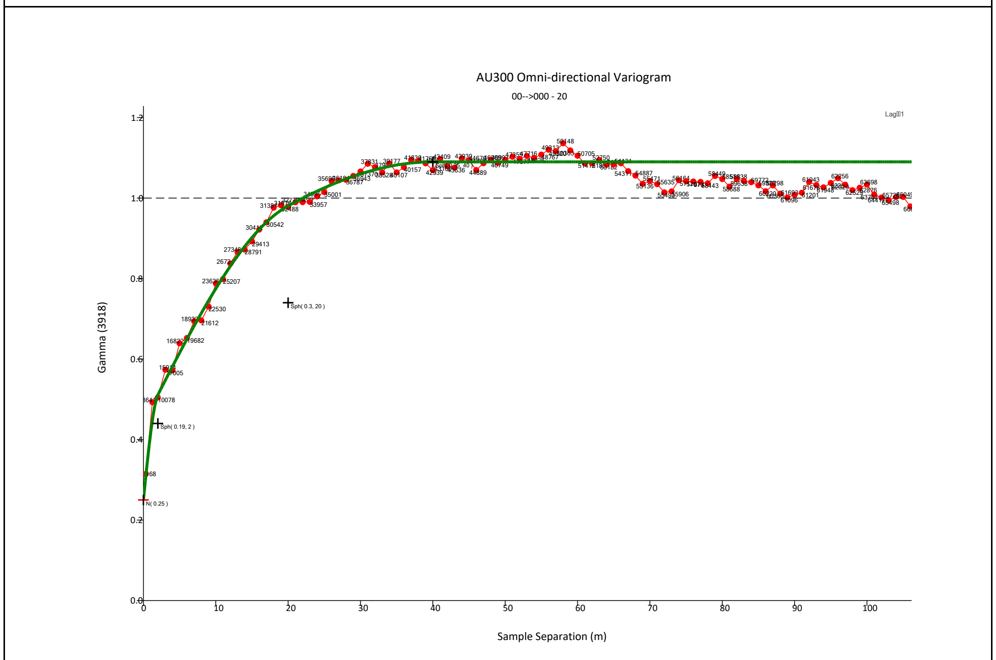
In completing the analysis, the following was considered:

- Azimuth and dip of each zone was determined;
- The down-hole variogram was calculated and modeled to characterize the nugget effect;
- Experimental Pairwise Relative semi-variograms, were calculated to determine directional variograms for the along strike, cross strike and down-dip directions;
- Directional variograms were modeled using the nugget and sill defined in the down-hole variography, and the ranges for the along strike, cross strike and down-dip directions; and
- All variances (where relevant) were re-scaled for each mineralized lens to match the total variance for that zone.

An example of the variograms modeled for the Providencia low-grade and high-grade domains (10 and 20) is shown in Figure 14-12 to Figure 14-14.



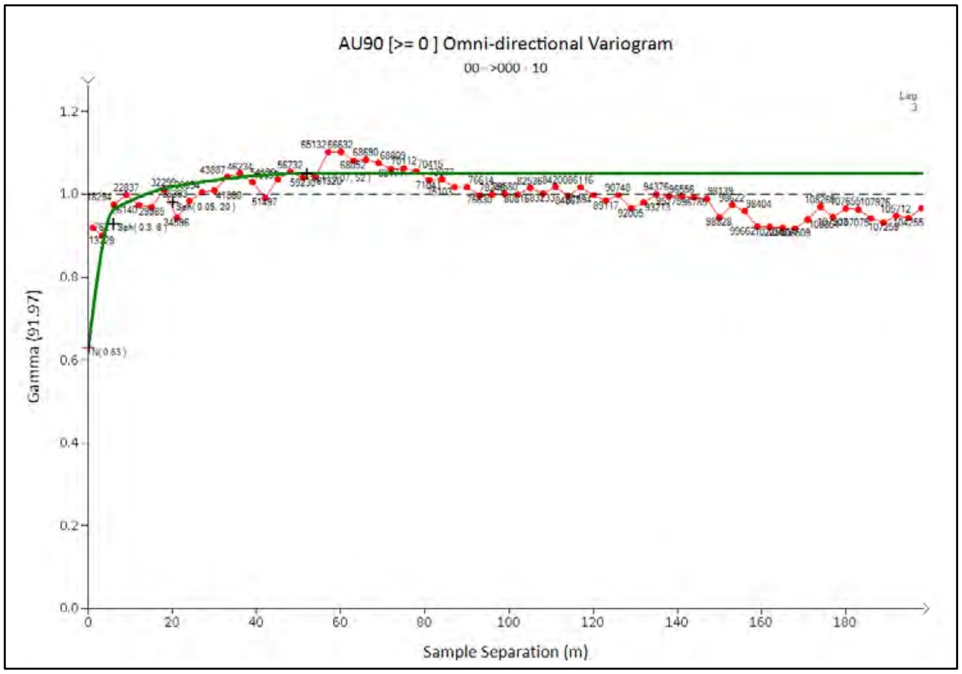
Domain 10



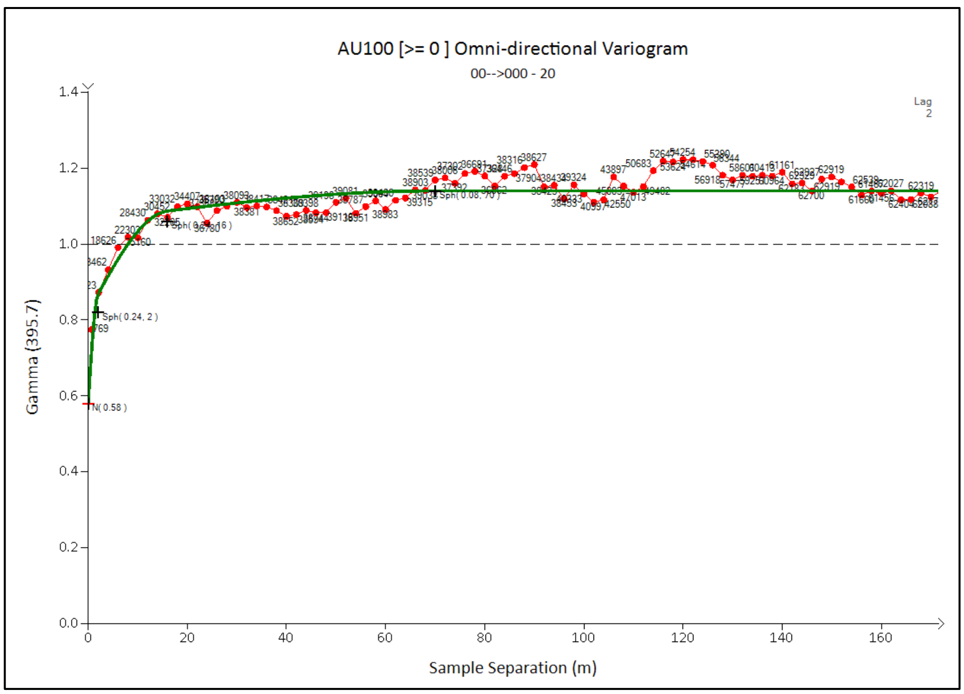
Domain 20

Source: SRK, 2019

Figure 14-12: Summary of Modeled Semi-variogram Parameters for the Providencia for Gold – Domains 10 and 20

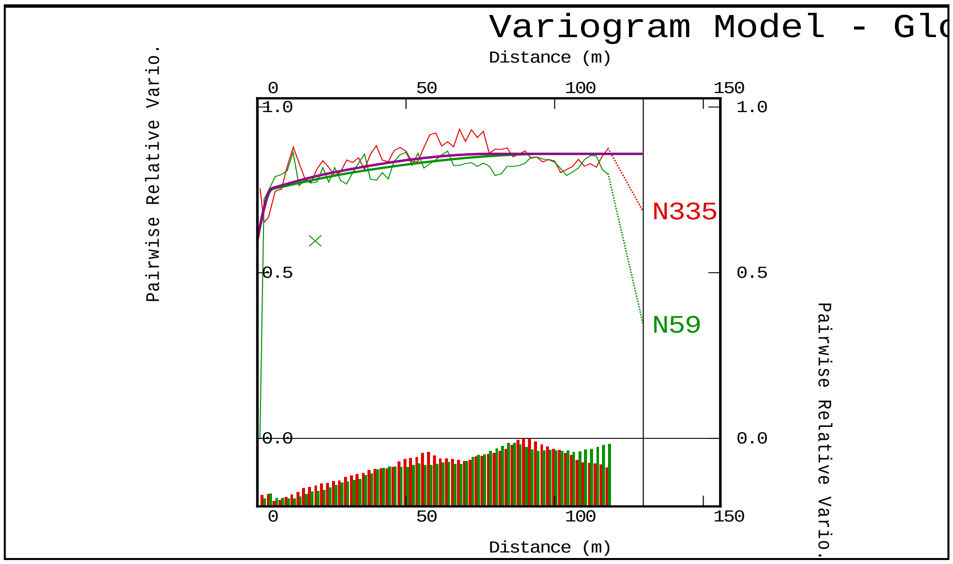


Domain 10

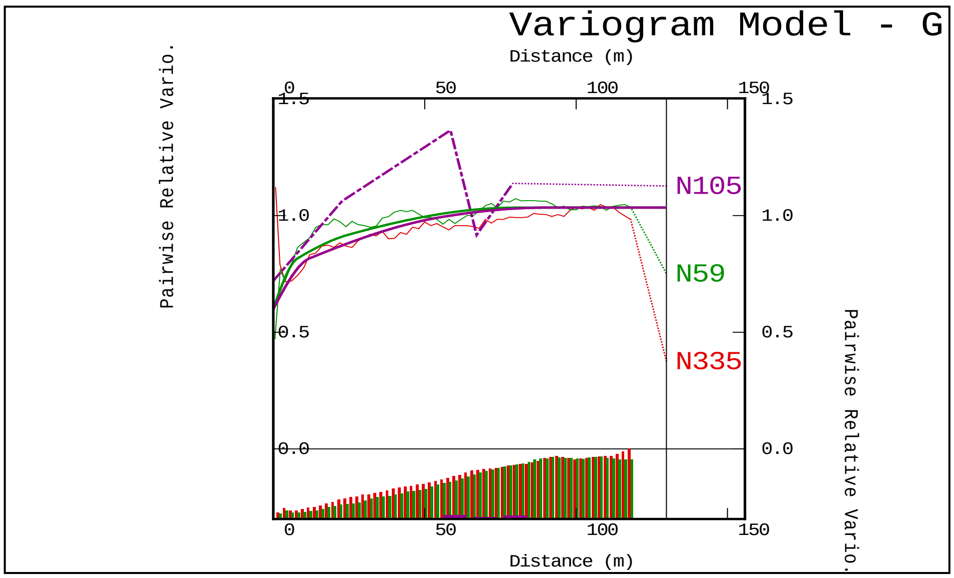


Domain 20

Figure 14-13: Summary of Modeled Semi-variogram Parameters for the Sandra K for Gold – Domains 10 and 20



Domain 10



Domain 20

Figure 14-14: Summary of Modeled Semi-variogram Parameters for the El Silencio for Gold – Domains 10 and 20

The final variogram parameters for the Project are displayed in Table 14-7.

Table 14-7: Final Variogram Parameters

Variogram Parameter	Domains	Rotation Z	Rotation Y	Rotation X	Co	C1	A1 – Along Strike (m)	A1 – Down Dip (m)	A1 – Across Strike (m)	C2	A2 – Along Strike (m)	A2 – Down Dip (m)	A2 – Across Strike (m)	C3	A3 – Along Strike (m)	A3 – Down Dip (m)	A3 – Across Strike (m)
Providencia	LG	10	30	-150	49.3%	37.5%	`	`	`	5.9%	20	20	20	7.2%	100	100	100
Providencia	HG	10	30	-150	22.9%	17.4%	2	2	2	27.5%	20	20	20	32.1%	40	40	40
El Silencio	LG	105	27	-43	69.9%	16.5%	5	5	5	1.4%	25	35	25	12.2%	80	100	80
El Silencio	HG	105	27	-43	58.0%	14.7%	12	8	12	6.9%	55	25	55	20.4%	90	80	90
Sandra K	LG	60	25	-15	60.0%	28.6%	6	6	6	4.8%	20	20	20	6.7%	52	52	52
Sandra K	HG	60	25	-15	50.9%	21.0%	2	2	2	21.0%	16	16	16	7.0%	70	70	70
Carla	all	80	45	0	30.0%	14.0%	5	5	5	56.0%	130	70	30				
Las Verticales	all	0	0	0	23.1%	36.8%	30	30	30	40.1%	120	120	120				

Source: SRK, 2019

14.6 Block Model

SRK produced block models using Datamine™ Studio RM Software (Datamine™). The procedure involved construction of wireframe models for the fault networks, veins, definition of resource domains (high-grade sub-domains), data conditioning (compositing and capping) for statistical analysis, geostatistical analysis, variography, block modeling and grade interpolation followed by validation. Grade estimation was based on block dimensions of 5 m x 5 m x 5 m, for the updated models. The block size reflects that the majority of the estimates is supported via underground channel sampling and spacing ranging from 2 to 5 m. These details are summarized in Table 14-8.

Vein thickness in the block model was based on defining an initial single block across the width of the vein during the block coding routines. Using this methodology sub-blocks 1 m x 1 m are filled within each vein, with accurate boundaries selected.

Table 14-8: Details of Block Model Dimensions for the Project Geological Model

Model	Dimension	Origin (UTM)	Block Size	Number of Blocks	Min Sub-blocking (m)
Providencia	X	930000	5	500	1.00
	Y	1272000	5	380	1.00
	Z	0	full width	1	full width
Sandra K	X	931800	5	330	1.00
	Y	1274600	5	360	1.00
	Z	-100	full width	1	full width
El Silencio	X	930000	5	500	1.00
	Y	1273500	5	600	1.00
	Z	-300	full width	1	full width
Carla 2013	X	930650	25	78	1.00
	Y	1267400	25	64	1.00
	Z	-50	25	36	0.25
Las Verticales 2013	X	928500	10	275	0.50
	Y	1271700	20	175	1.00
	Z	0	20	45	1.00

Source: SRK, 2018

Using the wireframes created and described in Section 14.2, several codes were written in the block model to describe each of the major geological properties of the rock types. Table 14-9 summarizes geological fields created within the block model and the codes used.

Table 14-9: Summary of Block Model Fields (used for flagging various geological properties)

Field Name	Description
SVOL	Search Volume reference (range from 1 to 3)
NSUM	Number of samples used to estimate the block
AUCAP	Kriged gold value
RESCAT	Classification
GROUP	Mineralized structures grouped by domain
KZONE	Vein domain coding, individual to each mineralized structure
HG	Kriging zone for estimation
DENSITY	Density of the rock
DEPL	Flag to denote depleted areas of model
PILLAR	Remaining vein material inside the current limits of depletion
MINE	Flag to denote depleted areas of the model, excluding the pillars
LICENCE	Flag to denote areas of the model outside of the License Boundary
THK	Vertical thickness estimate using wireframe data
COG	Flag to highlight blocks above the cut-off grade
AUM1	Accumulated gold grade over a 1 m mining width

Source: SRK, 2019

14.7 Estimation Methodology

SRK used the capped and composited data within the individual mineralized domains to interpolate grades for Au into the block models. The individual mineralization domains listed above in Section 14.2 were used as hard boundaries, with the samples within each domain being used to only estimate blocks within the same.

A three-pass nested search was utilized for each area, with dimensions of the search ellipsoid increasing in each pass. Search ranges for the ellipsoids are generally based on the variogram ranges. The initial shorter-range estimation pass is designed to estimate blocks that may be considered as higher confidence resources, and to focus estimates influenced by the channel sampling. To achieve this SRK used relatively short ranges and higher minimum number of composites to ensure only blocks where channel sampling occur are used within the short range. The search ellipsoid was oriented parallel to the strike and dip of the mineralization and had a flattened shape to approximate the tabular nature of mineralization.

14.7.1 Sensitivity Analysis

The estimations were refined over an iterative process completed during 2017 of evaluating the results, validating them, and modifying parameters to obtain a model that accurately represents the mineralization and is statistically valid when compared to the input data supporting the estimation. SRK has used the same scenarios as completed in the March 2017 block models.

Grade estimation was performed in Datamine™ using ID2 and OK, based on optimum parameters determined through a Quantitative Kriging Neighborhood Analysis (QKNA) exercise. The exercise was based on varying kriging parameters during a number of different scenarios. To complete the sensitivity analysis for example at Providencia SRK completed the following scenarios:

- Scenario 1: Search range 25 m x 35 m x 12.5 m, minimum 6 maximum 15 composites, estimation methodology (ID2), estimation at sub-block level;
- Scenario 2: Search range 25 m x 35 m x 12.5 m, minimum 6 maximum 15 composites, estimation methodology (ID2) estimation at parent block level;

- Scenario 3: Search range 75 m x 100 m x 50 m, minimum 15 maximum 20 composites, estimation methodology (ID2) estimation at parent block level;
- Scenario 4: Search range 40 m x 50 m x 25 m, minimum 3 maximum 10 composites, estimation methodology (ID2) estimation at parent block level;
- Scenario 5: Search range 25 m x 50 m x 25 m, minimum 3 maximum 10 composites, estimation methodology (ID2) estimation at parent block level;
- Scenario 6: Search range 25 m x 50 m x 25 m, minimum 3 maximum 10 composites, estimation methodology (OK) estimation at parent block level; and
- Scenario 7: Search range 25 m x 35 m x 12.5 m, minimum 6 maximum 15 composites, estimation methodology (OK) estimation at parent block level.

SRK completed visual and basic statistical tests and elected to use the kriged estimates using the shorter range (Scenario 7) as being most representative of the underlying data.

14.7.2 Final Parameters

Ordinary Kriging (OK) was used for the grade interpolation for the Project and all major domain boundaries were treated as hard boundaries during the estimation process. A summary of the final parameters is shown in Table 14-10.

Restrictive searches via use of variable capping at Providencia and a short first pass at Carla were utilized to prevent very high gold grade samples in areas of lower drilling density from over influencing the surrounding block estimates, and thus honoring the geological interpretation (for highly variable gold grade distribution) favored by SRK and the Company.

Table 14-10: Summary of Final Kriging Parameters for the Segovia Project

Vein	Domain	SDIST1	SDIST2	SDIST3	SANGLE1	SANGLE2	SANGLE3	SAXIS1	SAXIS2	SAXIS3	MINNUM1	MAXNUM1
PV	10 - LG	25	35	12.5	10	30	-150	3	1	3	6	15
PV	20 - HG	25	35	12.5	10	30	-150	3	1	3	6	15
PV	30 – 120 - Other	25	50	25.0	10	30	-150	3	1	3	6	15
ES	VEM 10 - LG	25	50	25	105	27	-43	3	1	3	6	20
ES	VEM 20 - HG	25	50	25	105	27	-43	3	1	3	6	20
ES	30 - NAL	25	50	25	105	27	-43	3	1	3	6	20
ES	40 - VEP	35	50	25	105	27	-43	3	1	3	6	15
ES	50 - ESI	35	50	25	105	27	-43	3	1	3	6	15
ES	60 - LAN	35	50	25	105	27	-43	3	1	3	6	15
ES	70 - UNK	35	50	25	105	27	-43	3	1	3	6	15
ES	80 - SAL	35	50	25	105	27	-43	3	1	3	6	15
ES	90 - SNO	35	50	25	105	27	-43	3	1	3	6	15
ES	100 - SNO	35	50	25	105	27	-43	3	1	3	6	15
ES	110 - SNO	35	50	25	105	27	-43	3	1	3	6	15
SK	10 TECHNO - LG1	25	55	25	60	25	-15	3	1	2	3	15
SK	15 TECHNO - LG2	25	55	25	60	25	-15	3	1	2	3	15
SK	20 - TECHO HG	25	55	25	60	25	-15	3	1	2	3	15
SK	30 - PISO	25	50	25	60	25	-15	3	1	2	3	10
SK	31 - 34 OTHER	40	50	25	60	25	-15	3	1	2	2	10
SK	40 - CHUMECA	25	50	25	0	35	0	3	1	3	6	15
CA	Carla (1)	100	35	60	80	45	0	3	1	3	4	12
CA	Carla (2)	100	100	100	80	45	0	3	1	3	1	4
LV	Las Verticales	400	400	400	0	0	0	3	1	3	4	8

Vein	Domain	SVOLFAC2	MINNUM2	MAXNUM2	SVOLFAC3	MINNUM3	MAXNUM3	METHOD	CAP FIELD
PV	10 - LG	2	2	12	3	1	8	OK	AU60
PV	20 - HG	2	2	12	3	1	8	OK	AU300, AU200
PV	30	2	2	12	3	1	8	OK	AU60
PV	40	2	2	12	3	1	8	OK	AU120,AU60
PV	50,70,80,110	2	2	12	3	1	8	OK	AU15
PV	60, 120	2	2	12	3	1	8	OK	AU60,AU30
PV	90	2	2	12	3	1	8	OK	AU300, AU120
PV	100	2	2	12	3	1	8	OK	AU90, AU60
ES	VEM 10 - LG	2	4	16	3	1	8	OK	AU30
ES	VEM 20 - HG	2	4	16	3	1	8	OK	AU120
ES	30 - NAL	2	4	16	3	1	8	OK	AU90
ES	40 - VEP	2	2	12	3	1	8	OK	AU90
ES	50 - ESI	2	2	12	3	1	8	OK	AU15
ES	60 - LAN	2	2	12	3	1	8	OK	AU60
ES	70 - UNK	2	2	12	3	1	8	OK	AU60
ES	80 - SAL	2	2	12	3	1	8	OK	AU15
ES	90 - SNO	2	2	12	3	1	8	OK	AU30
ES	100 - SNO	2	2	12	3	1	8	OK	AU15
ES	110 - SNO	2	2	12	3	1	8	OK	AU15
ES	120	2	2	12	3	1	8	OK	AU30
ES	130	2	2	12	3	1	8	OK	AU200
ES	140	2	2	12	3	1	8	OK	AU200

Vein	Domain	SVOLFAC2	MINNUM2	MAXNUM2	SVOLFAC3	MINNUM3	MAXNUM3	METHOD	CAP FIELD
SK	10 TECHNO - LG1	1.5	4	30	3	2	25	OK	AU60
SK	15 TECHNO - LG2	1.5	4	30	3	2	25	OK	AU30
SK	20 - TECHO HG	1.5	4	30	3	2	25	OK	AU120
SK	30 - PISO	2	2	10	3	1	8	OK	AU90
SK	31 – 34 OTHER	2	2	10	3	1	8	OK	AU90
SK	40 - CHUMECA	2	6	15	3	1	8	OK	AU60
CA	Carla (1)	2	4	10	2.6	2	20	OK	AUCAP
CA	Carla (2)	2	1	4	2.6	1	4	OK	AUCAP
LV	Las Verticales	1	3	12	1.5	2	10	OK	AUCAP

Source: SRK, 2019

(1) The restrictive search at Carla (confined to a single block where high-grade is located) uses a high-grade cap of 100 g/t Au, with a lower cap at 50 g/t Au applied to the estimates outside of the restrictive search. Capping limits were defined during outlier analysis from review of log histogram and probability plots.

(2) A secondary search is applied at Carla to fill blocks that do not satisfy the criteria set in the initial search. The secondary search interpolates gold grades in to the low confidence blocks in the data sparse down-dip area of the Carla vein, to give an indication of grade distribution for exploration planning.

14.8 Model Validation

SRK undertook a thorough validation of the resultant interpolated model in order to: confirm the estimation parameters, check that the model represents the input data on both local and global scales, and check that the estimate is not biased. SRK undertook this using a number of different validation techniques:

- Inspection of block grades in plan and section and comparison with drillhole grades;
- Comparative Statistical study versus composite data and alternative estimation methods; and
- Sectional interpretation of the mean block and sample grades (swath plots).

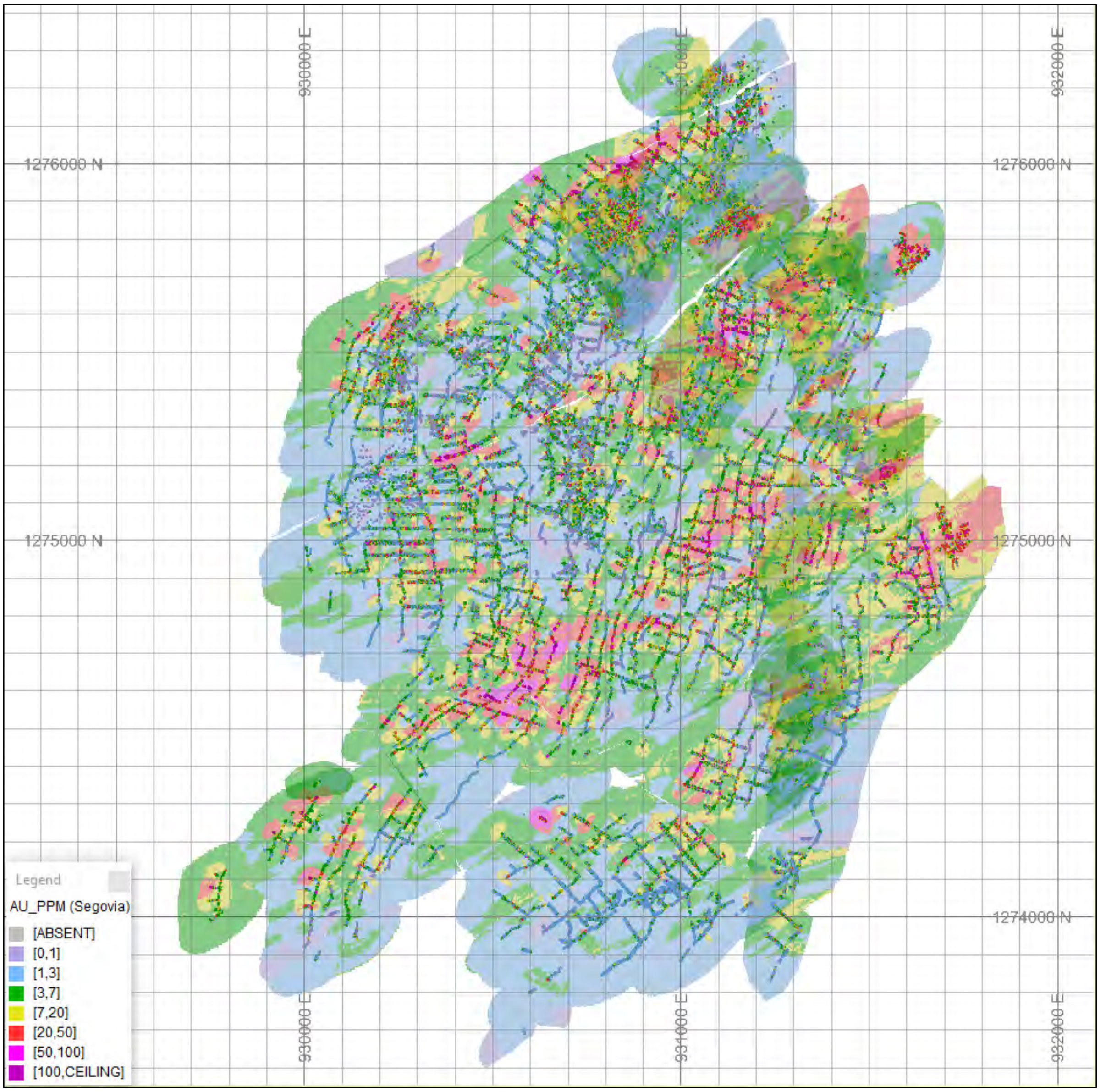
14.8.1 Visual Comparison

Visual validation provides a comparison of the interpolated block model on a local scale. A thorough visual inspection was undertaken in 3D, comparing the sample grades with the block grades, which demonstrates in general good comparison between local block estimates and nearby samples, without excessive smoothing in the block model. Figure 14-15 through Figure 14-19 show examples of the visual validation checks and highlights the overall block grades corresponding with composite sample grades of each mine.

SRK notes in a limited number of cases, within areas of low sample density and highly variable gold grade, local grade discrepancies occur between composite and block grades (as a result of smoothing). In these areas SRK verified the resulting grade distributions with the Company geological staff and made amendments where appropriate. In areas of greatest variability SRK considered grade continuity as a factor during the classification process.

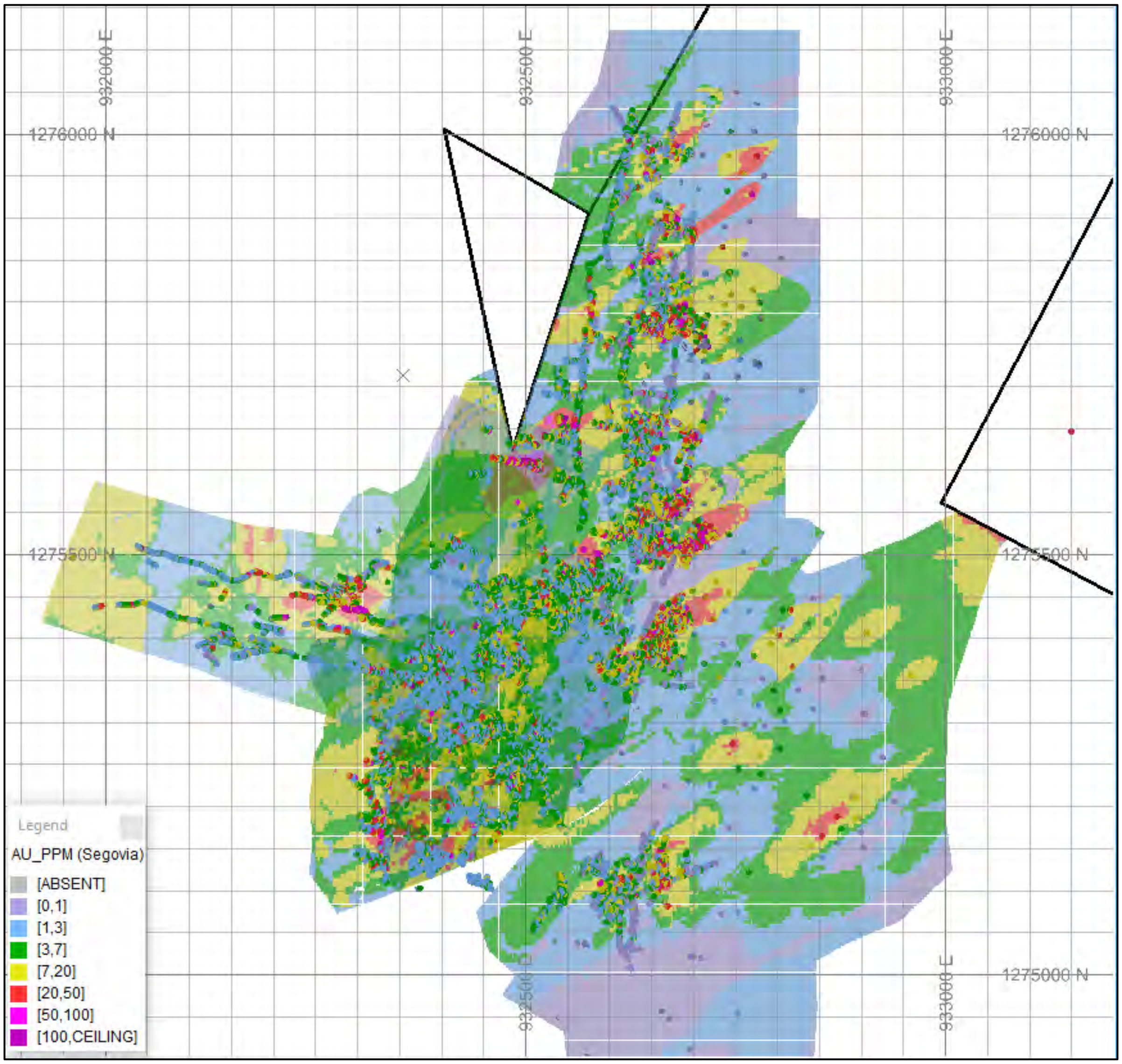
Source: SRK, 2019

Figure 14-15: Examples of Visual Validation of Grade Distribution Composites Versus Block Model – Providencia



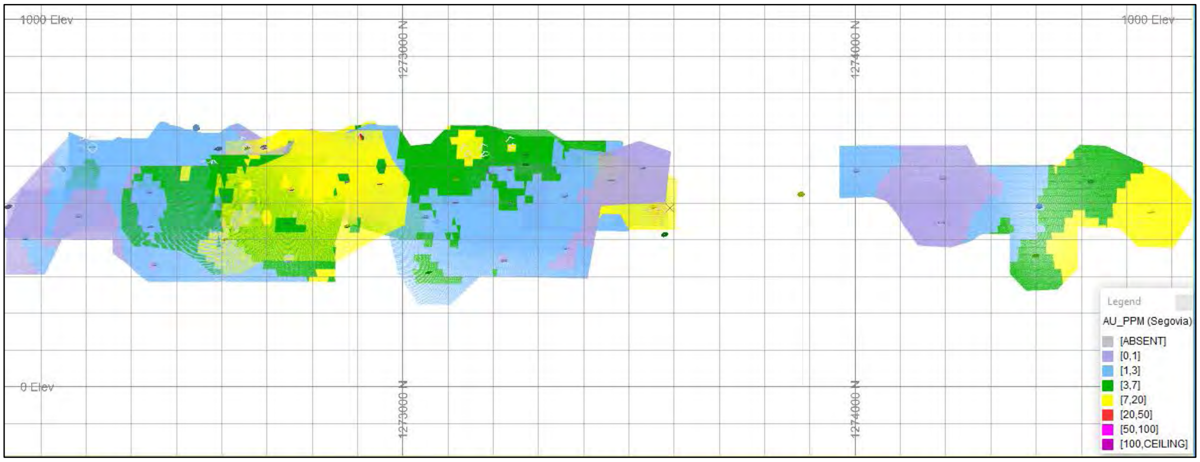
Source: SRK, 2019

Figure 14-16: Examples of Visual Validation of Grade Distribution Composites Versus Block Model - El Silencio



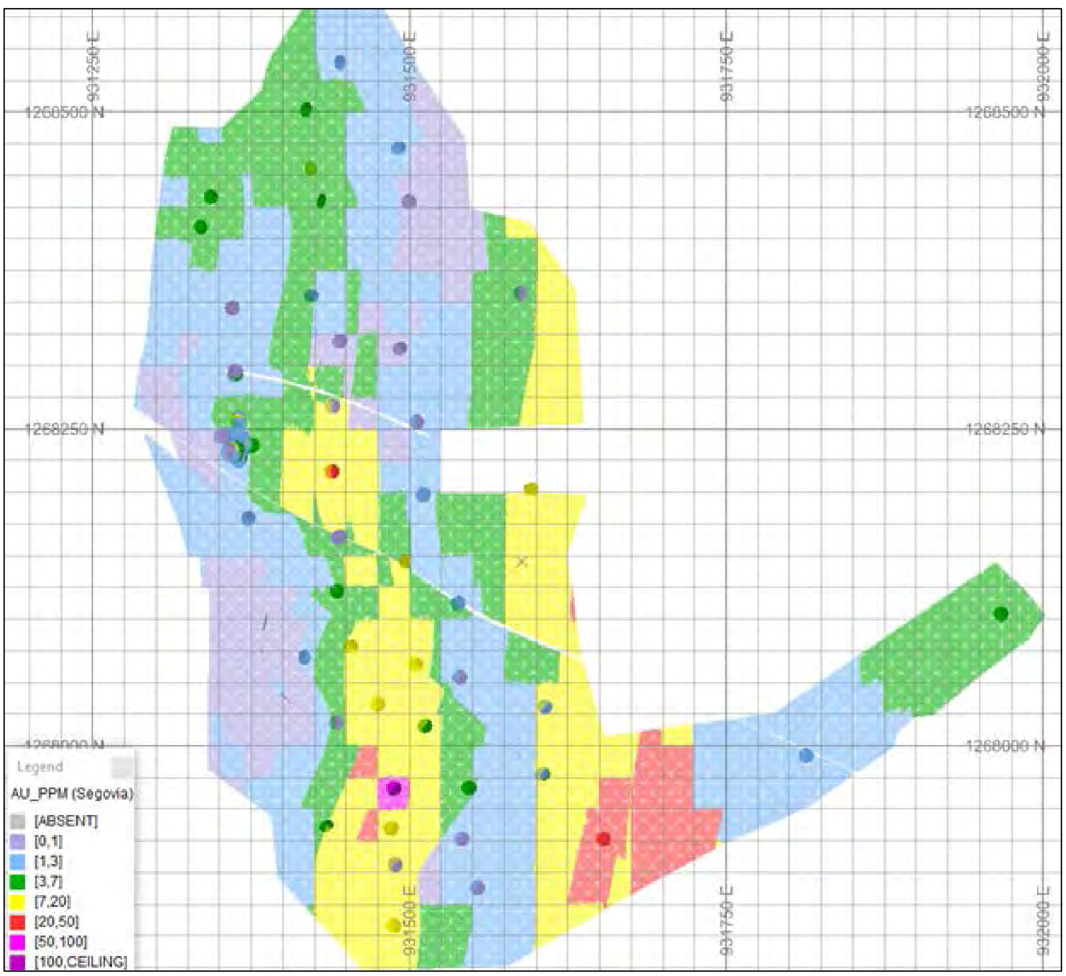
Source: SRK, 2019

Figure 14-17: Examples of Visual Validation of Grade Distribution Composites Versus Block Model - Sandra K



Source: SRK, 2019

Figure 14-18: Examples of Visual Validation of Grade Distribution Composites Versus Block Model - Las Verticales



Source: SRK, 2019

Figure 14-19: Examples of Visual Validation of Grade Distribution Composites Versus Block Model – Carla

14.8.2 Comparative Statistics

SRK reviewed a comparison of the statistics of the composites to the estimation to assess the potential for any bias in the estimation as well as the degree of smoothing in the estimate. A series of statistical comparisons were conducted including reviews of the histograms for each metal, mean analysis between the blocks and composites, and the relationship between the estimation passes and the amount of data used for each. This was done for all three models estimated with the focus on the main structures. Where differences were noted SRK completed further detailed analysis in combination with the swath analysis discussed later in Section 0.

Summary tables of the main veins is shown in Table 14-11. The results indicate that in general the SRK estimates report slightly lower grades in the veins than the composites and slightly higher grades within the high-grade shoots. For reference SRK has also completed a quick declustering exercise to note if there are any improvements. In the lower grade domains, the correlation is improved between the composites and the estimates, but in the higher-grade domains the differences typically increase.

At Providencia, the difference between the composite and estimates for the vein is in the order of - 14.5 % (lower in the model), compared to +8.4 % in the high-grade domain, when compared to the raw composites. SRK noted higher differences when compared to a moving window declustered average therefore completed a secondary check by completing a nearest neighbor estimate for all domains the results of the nearest neighbor (NN) reported a difference of +2.1 % and +2.0 %, for the low-grade and high-grade Providencia vein estimates (HG10 and HG20) respectively. The global difference for all domains between the OK and NN returned averages grades of 11.4 g/t and 11.1 g/t respectively using a 0 g/t Au cut-off grade. SRK considers this validation to perform a reasonable correlation of grades.

SRK completed visual validation to identify the key differences between the estimates using swath plots. On investigation SRK has attributed a portion of this to the influence of higher grades at depth where the data density is lower, or in areas of previously high-grade material which has already been mined. SRK considers the visual validation in these areas is reasonable and reflects the underlying data, but SRK recommend follow-up sampling in these areas, but has classified these areas as low confidence in the current estimates.

The comparison at El Silencio reports similar trends but the differences are slightly higher than reported at Providencia. The low-grade domain (HG10) estimated -3.6% lower in terms of the average grades. The higher-grade areas have reported higher grades compared to the composites in the order of +10.9 %. Typically, the higher-grade areas have been mined to date at El Silencio upon visual review which mitigates the risk of over-estimation to some extent, but SRK recommends continual work on understanding the nature of the high-grade domains at El Silencio should continue, with additional sampling completed as required. Given the differences noted at El Silencio the use of high confidence Measured mineral resources has not been used.

At Sandra K, the reconciliation between the composite mean and the block estimates are reasonable within HG10 and HG20 (Veta Techo), which form the majority of the main mining areas. The results in HG15 show lower grades in the block model than the composites (14.5%), which is a result of lower drilling density in low grade areas in the southern portion of the mine. The difference can be explained as a result of the clustering of the data and larger areas of low-grade material which have been sampled at a relatively wide drill spacing. It is SRK's opinion that the weighted average for the block model is significantly reduced by the eastern fault block. This was confirmed via the swath analysis and visual confirmation Figure 14-20(a). While SRK notes that differences exist between the composite and the block estimates. The lower grades noted in the Chumeca block model are impacted by the inclusion of the lower grade northern block which has been included in the 2018 model process Figure 14-20(b). SRK is of the opinion these have been explained by further validation and that the current estimates are reasonable, within the main areas of interest, but that some potential for yet undefined higher-grade shoots may exist in areas of wider drill spacing.

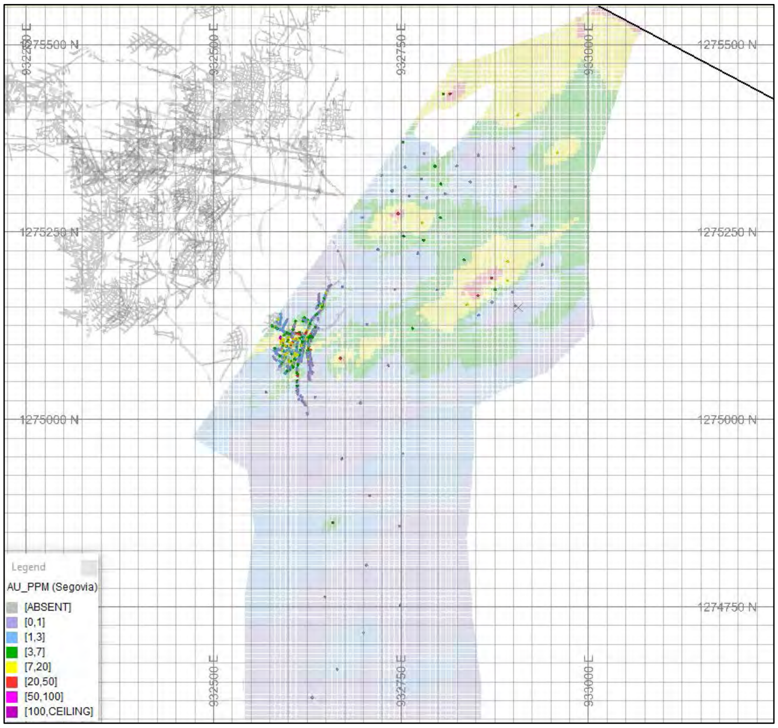
Table 14-11: Summary of Validation Statistics Composites Versus OK Estimates

Domain		Statistic	Mean Sample Data Au (g/t)	Declustered Sample Data Au (g/t)	BlockData1 (Tonnage Weighted) Au (g/t)	BlockData1 vs. Sample % Diff	BlockData1 vs Declustered % Diff
PV	10	Mean	4.94	4.94	4.22	-14.46	-14.47
		Std Dev	9.65	9.64	3.71		
		Variance	93.02	93.02	13.78		
		CV	1.95	1.95	0.88		
	20	Mean	42.50	31.63	46.07	8.40	45.64
		Std Dev	62.39	50.55	35.32		
		Variance	3,892	2,555.53	1,247.39		
		CV	1.47	1.60	0.77		
	30	Mean	3.49	3.49	3.77	8.14	8.16
		Std Dev	5.31	5.31	2.52		
		Variance	28.23	28.23	6.35		
		CV	1.52	1.52	0.67		
	40	Mean	20.75	20.75	19.42	-6.41	-6.41
		Std Dev	31.28	31.28	15.78		
		Variance	978	978.37	248.99		
		CV	1.51	1.51	0.81		
	60	Mean	4.52	4.59	2.67	-40.91	-41.88
		Std Dev	7.97	8.43	2.78		
		Variance	63.5	71.05	7.74		
		CV	1.76	1.83	1.04		
	70	Mean	4.52	4.16	3.85	-14.70	-7.42
		Std Dev	7.97	3.78	1.54		
		Variance	63.52	14.28	2.39		
		CV	1.76	0.91	0.40		
	80	Mean	5.53	5.53	5.35	-3.20	-3.19
		Std Dev	4.81	4.81	2.80		
		Variance	23.17	23.17	7.84		
		CV	0.87	0.87	0.52		
	90	Mean	86.13	86.13	73.43	-14.75	-14.75
		Std Dev	112.58	112.58	63.31		
		Variance	12,673	12,673	4,008.56		
		CV	1.31	1.31	0.86		
	100	Mean	18.59	15.60	16.21	-12.78	3.91
		Std Dev	23.09	22.88	10.18		
		Variance	533.08	523.50	103.65		
		CV	1.24	1.47	0.63		
	110	Mean	2.99	2.99	3.34	11.85	11.84
		Std Dev	3.31	3.31	0.81		
		Variance	10.93	10.93	0.66		
		CV	1.11	1.11	0.24		
	120	Mean	17.20	17.19	18.45	7.29	7.30
		Std Dev	17.81	17.81	9.56		
		Variance	317.13	317.13	91.35		
		CV	1.04	1.04	0.52		

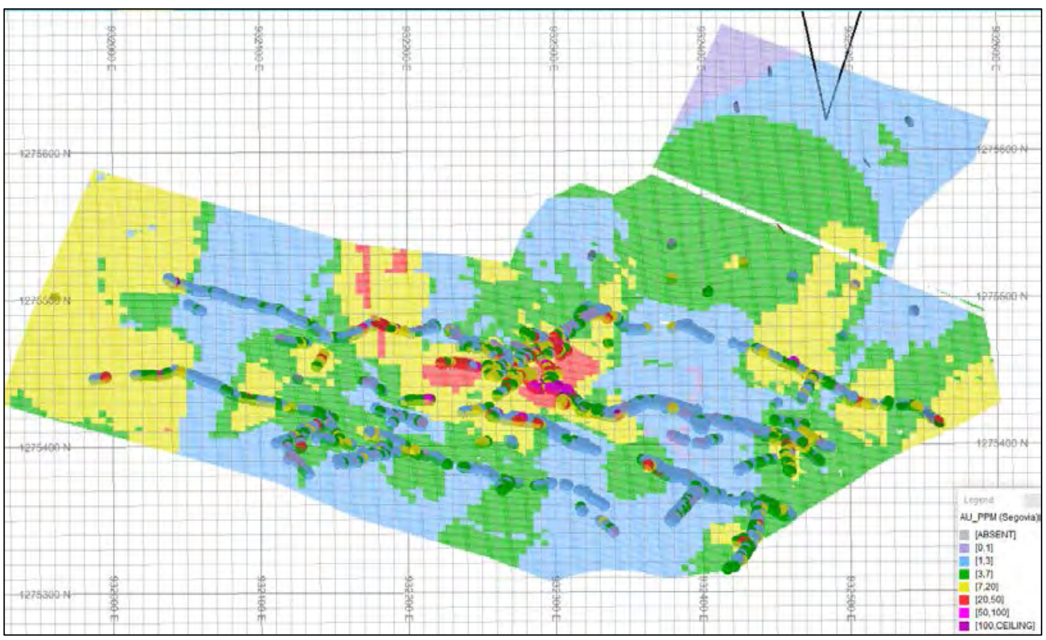
Domain		Statistic	Mean Sample Data Au (g/t)	Declustered Sample Data Au (g/t)	BlockData1 (Tonnage Weighted) Au (g/t)	BlockData1 vs. Sample % Diff	BlockData1 vs. Declustered % Diff
ES	10	Mean	3.10		2.98	-3.64	
		Std Dev	4.60		1.73		
		Variance	21.14		3.00		
		CV	1.49		0.58		
	20	Mean	19.88		22.06	10.97	
		Std Dev	29.31		14.92		
		Variance	859.21		222.69		
		CV	1.48		0.68		
	30	Mean	9.96		9.34	-6.19	
		Std Dev	18.88		9.08		
		Variance	356.62		82.45		
		CV	1.90		0.97		
	40	Mean	13.17	13.17	12.00	-8.86	-8.87
		Std Dev	21.37	21.37	8.89		
		Variance	456.57	456.57	79.07		
		CV	1.62	1.62	0.74		
	60	Mean	7.99	7.79	5.31	-33.53	-31.87
		Std Dev	13.16	13.18	5.42		
		Variance	173.15	173.81	29.39		
		CV	1.65	1.69	1.02		
	70	Mean	10.98		12.35	12.48	
		Std Dev	16.14		8.28		
		Variance	260.50		68.49		
		CV	1.47		0.67		
	80	Mean	5.93		6.04	1.94	
		Std Dev	3.21		0.50		
		Variance	10.28		0.25		
		CV	0.54		0.08		
	90	Mean	4.84	5.09	5.17	-37.19	-14.75
		Std Dev	7.36	2.16	-70.61		
		Variance	54.16	4.68	-91.37		
		CV	1.52	0.43	-72.06		
	110	Mean	5.32	5.32	4.22	-20.58	-20.58
		Std Dev	5.56	5.56	2.63		
		Variance	30.88	30.88	6.89		
		CV	1.05	1.05	0.62		
	130	Mean	10.76		9.63	-10.53	
		Std Dev	22.39		8.92		
		Variance	501.40		79.58		
		CV	2.08		0.93		
	140	Mean	15.08	13.18	10.61	-29.65	-19.52
		Std Dev	23.91	19.46	8.00		
		Variance	571.89	378.75	63.99		
		CV	1.59	1.48	0.75		

Domain		Statistic	Mean Sample Data Au (g/t)	Declustered Sample Data Au (g/t)	BlockData1 (Tonnage Weighted) Au (g/t)	BlockData1 vs. Sample % Diff	BlockData1 vs. Declustered % Diff
SK	10	Mean	4.30	3.81	3.59	-16.50	-5.79
		Std Dev	7.99	7.36			
		Variance	63.88	54.16			
		CV	1.86	1.93			
	15	Mean	6.76	4.72	4.03	-40.40	-14.53
		Std Dev	11.84	8.44			
		Variance	140.29	71.25			
		CV	1.75	1.79			
	20	Mean	15.75	13.48	14.46	-8.21	7.28
		Std Dev	23.15	21.32			
		Variance	535.84	454.56			
		CV	1.47	1.58			
	33	Mean	15.71	13.47	11.85	-24.57	-12.03
		Std Dev	24.30	22.74			
		Variance	590.69	516.99			
		CV	1.55	1.69			
	40	Mean	7.08	5.84	5.23	-26.17	-10.47
		Std Dev	12.27	10.46			
		Variance	150.67	109.48			
		CV	1.73	1.79			

Source: SRK, 2019



(a) HG15



(b) HG40

Source: SRK, 2018

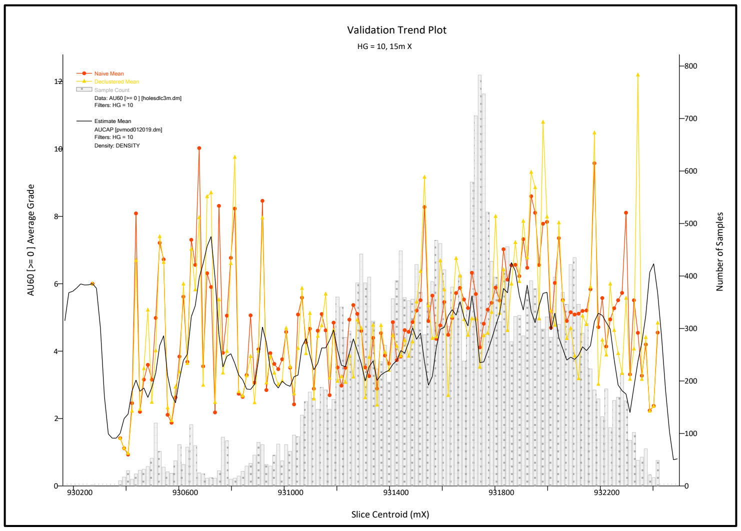
Figure 14-20: Examples of Areas with Low Drilling Density in Low Grade Areas at Sandra K

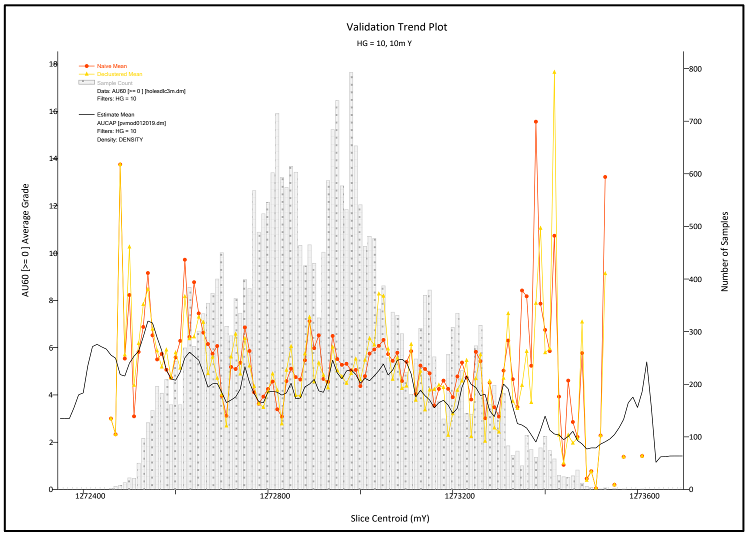
14.8.3 Swath Plots

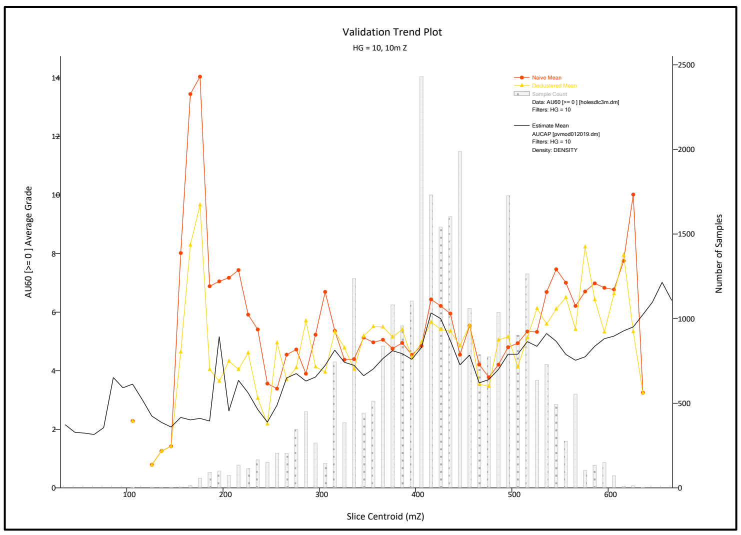
A more local comparison between the blocks and the composites is made using swath plots. The comparisons show both the varying means of the block and composites (declustered) along swaths or slices through the model, as well as the amount of data supporting the estimate in each swath. The swath plots show that there are no significant local biases in the estimation.

The areas of highest variability between the composites and estimates at Providencia (**Error! Reference source not found.**), occur between 931600 E and 932200 E, which relates to the areas surrounding the high-grade shoots. The current model assumed hard contacts, but it is possible that there is a degree of soft boundaries between the higher and lower grade mineralization which is not truly reflected in the current estimate. SRK recommends that Gran Colombia monitor this during mining and local scale mining to determine if there is a requirement for changes in the next Mineral Resource estimate methodology. To achieve this, SRK recommends that the mine has systems in place to generate routine updated grade control models using the latest sampling information.

A review of the high-grade domain shows a strong correlation between the underlying samples and the block estimates (Figure 14-22). SRK has presented the key swath plots of the main mineralized domains in Figure 14-21 to Figure 14-26.

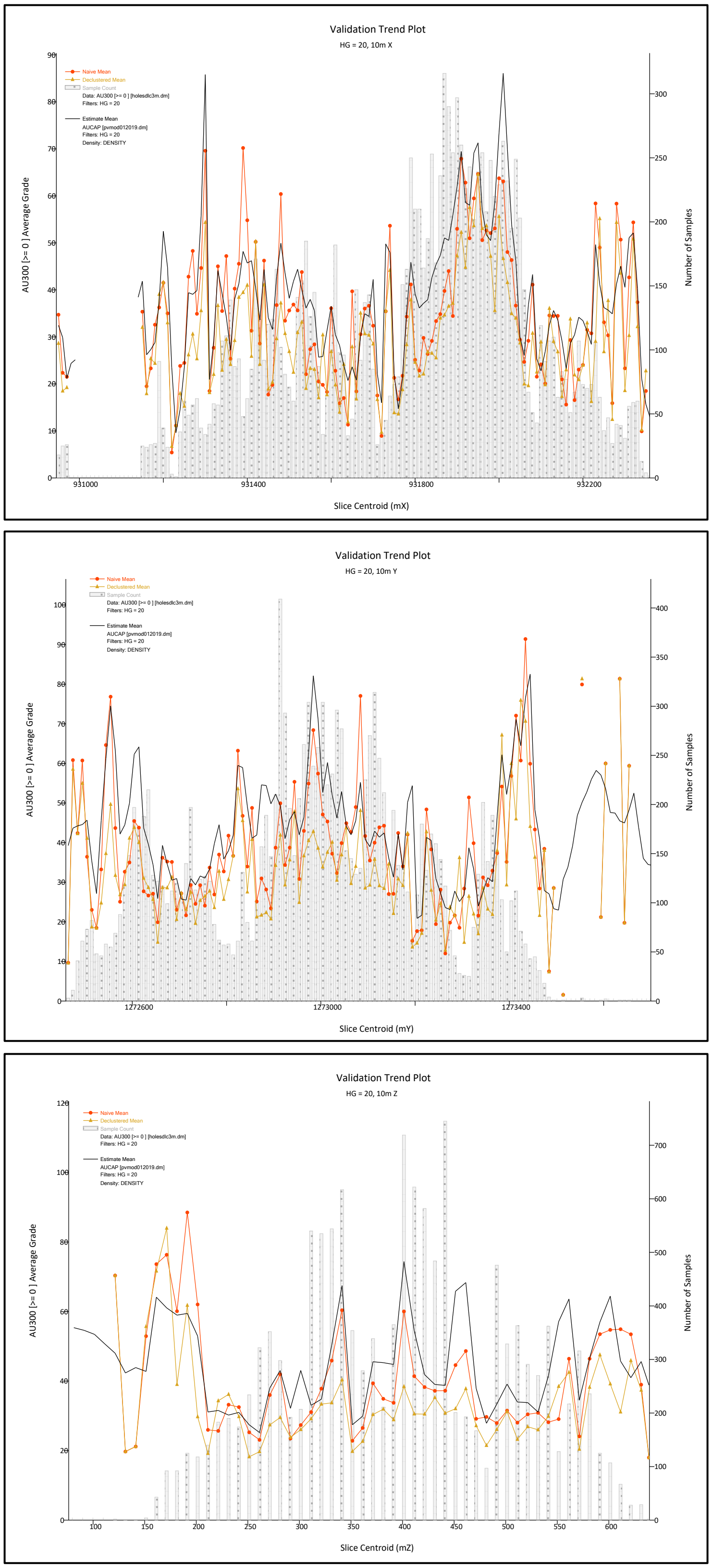






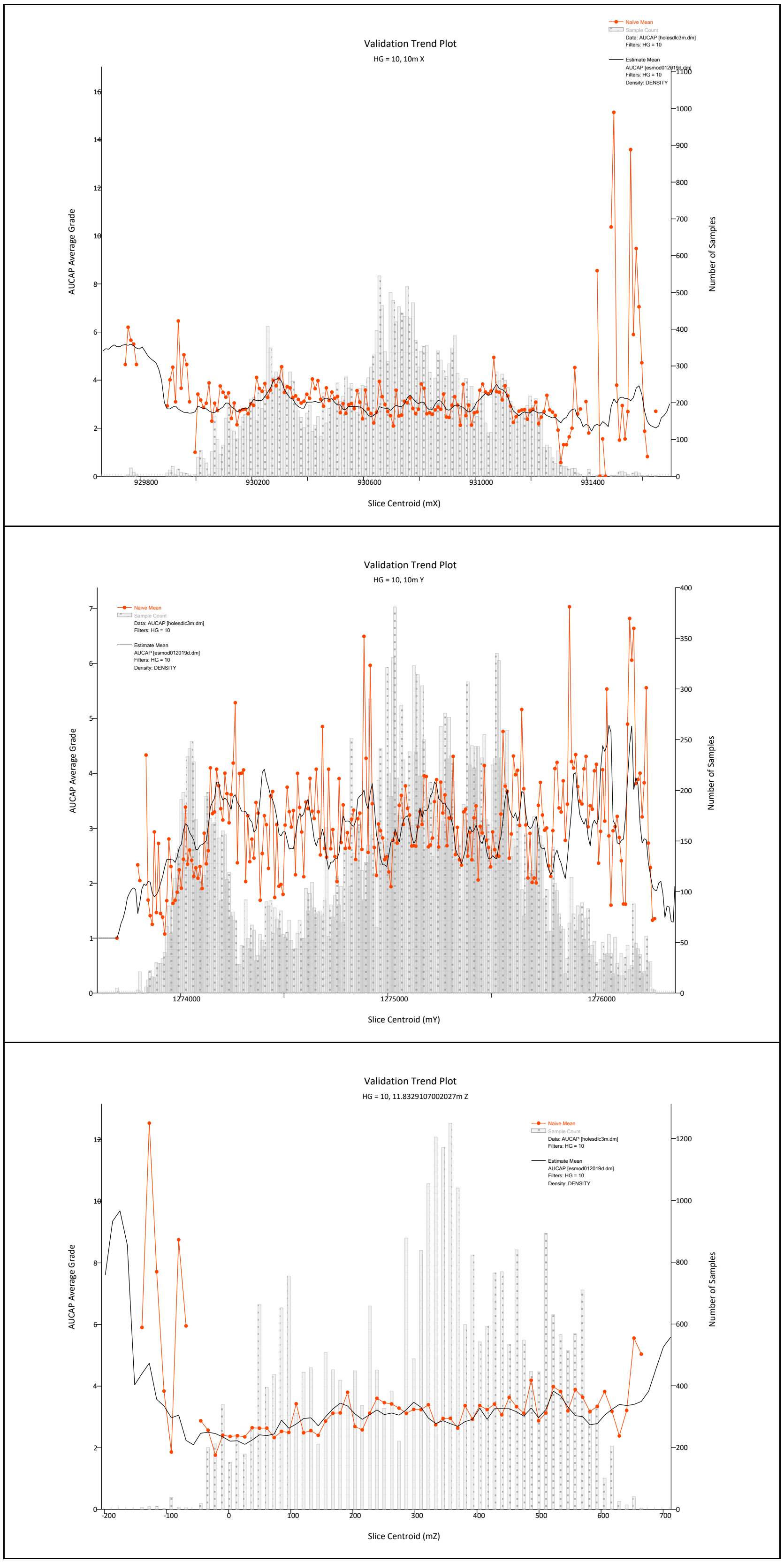
SRK, 2019

Figure 14-21: Swath Analysis at Providencia HG=10



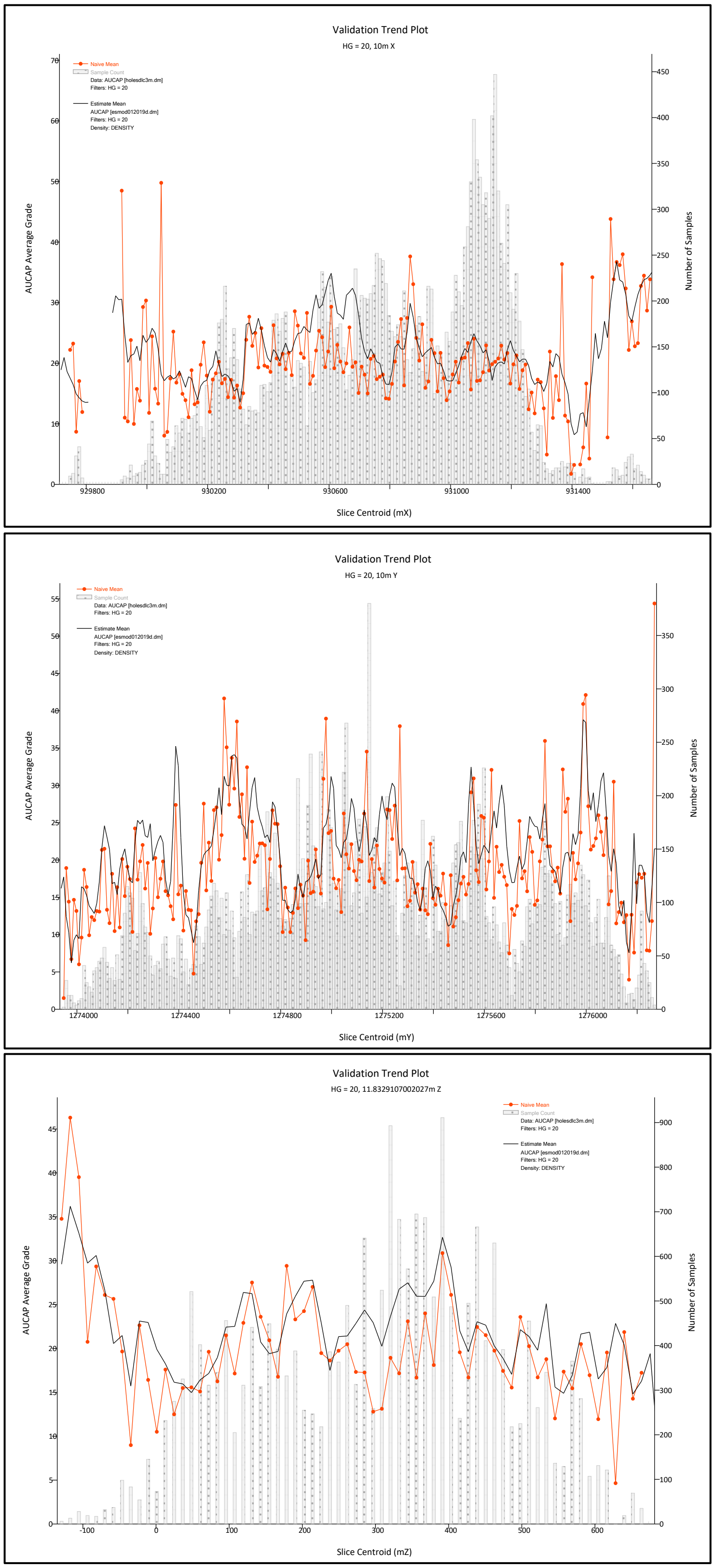
SRK, 2019

Figure 14-22: Swath Analysis at Providencia HG=20



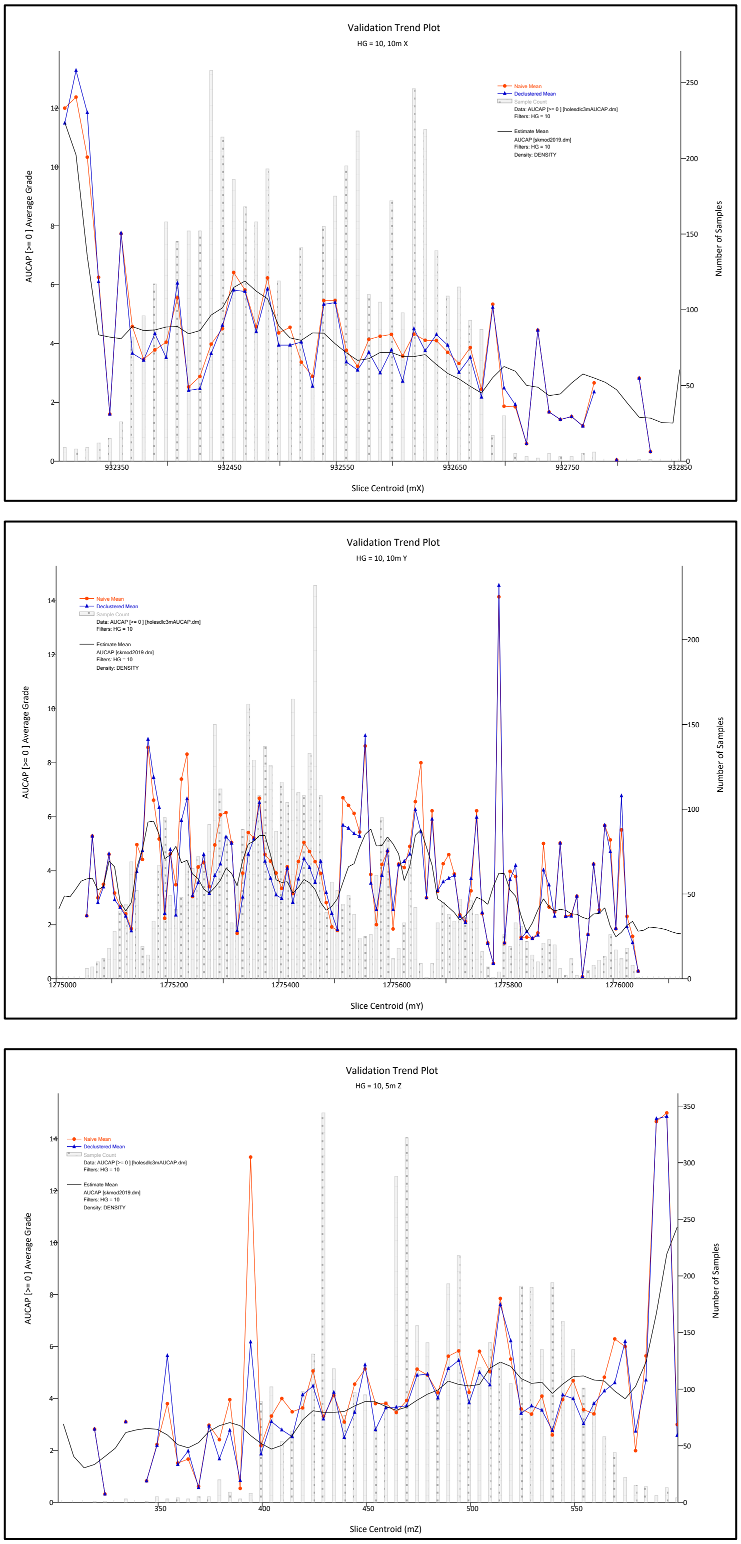
Source: SRK, 2019

Figure 14-23: Example of Swath Analysis at El Silencio HG=10



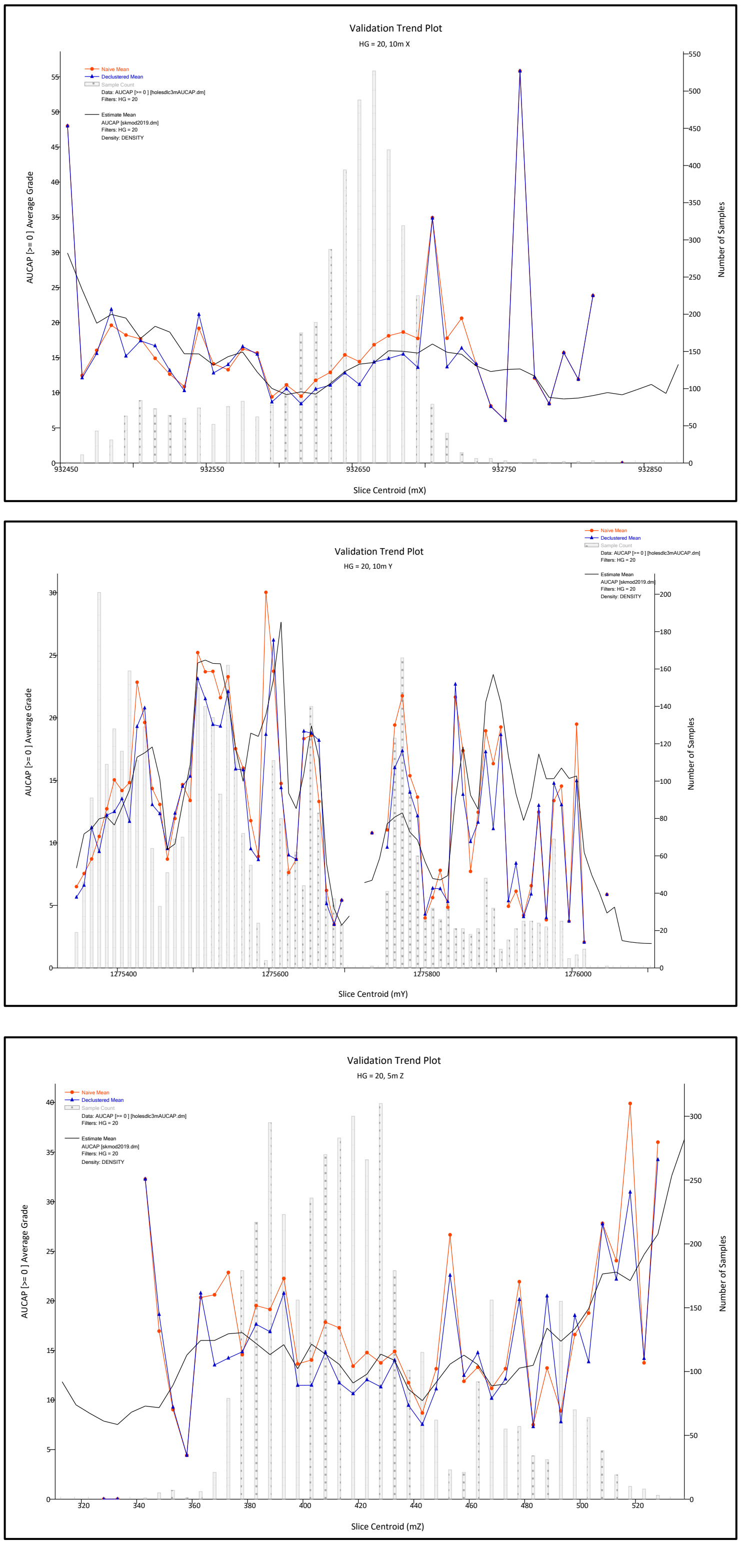
Source: SRK, 2019

Figure 14-24: Example of Swath Analysis at El Silencio HG=20



SRK, 2019

Figure 14-25: Example of SWATH Analysis Completed at Sandra K (HG=10)



SRK, 2019

Figure 14-26: Example of SWATH Analysis Completed at Sandra K (HG=20)

14.9 Resource Classification

Block model quantities and grade estimates for the Project were classified according to the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014).

Mineral Resource classification is typically a subjective concept. Industry best practices suggest that classification should consider the confidence in the geological continuity of the mineralized structures, the quality and quantity of exploration data supporting the estimates, and the geostatistical confidence in the tonnage and grade estimates. Appropriate classification criteria should aim to integrate both concepts to delineate regular areas at similar resource classification.

Data quality, drillhole spacing and the interpreted continuity of grades controlled by the veins and high-grade shoots allowed SRK to classify portions of the veins in the Measured, Indicated and Inferred Mineral Resources categories.

SRK's classification system remains similar to that used in the 2017 Mineral Resource model with some adjustments based on increased knowledge of the deposit from on-going mine planning support.

Measured: Measured Resources are limited to the Providencia vein on the basis of insufficient confidence in the geological and grade continuity and 3D geometry of the mineralized structures at the other deposits. The Measured Mineral Resources have only been defined within areas of dense sampling, within a 15 to 30 m halo (related to the second variogram structure) of close spaced underground channel sampling. In the 2013 Mineral Resource Statement, the halo was continued around all of the channel sampling, but given potential for differences within the depletion, SRK downgraded the Mineral Resources in the upper portions of the mine on the eastern edges back to Indicated. There, SRK only applied Measured within the areas of mining developed by the Gran Colombia, or the last level of mining in the west, where confidence in the accuracy of the depletion remains high.

Indicated: For the 2018 Mineral Resource estimate, SRK delineated Indicated Mineral Resources at Providencia, Sandra K and Carla using the same process as the 2013 Mineral Resource estimate. Indicated Mineral Resources were reported at the following approximate data spacing, as function of the confidence in the grade estimates and modeled variogram ranges:

- At Providencia, 55 x 100 m (XY) from the nearest drillhole;
- At Sandra K, 50 x 50 m (XY) from the nearest drillhole; and
- At Carla, within a 25 to 50 m (XY) halo from the nearest drillhole.

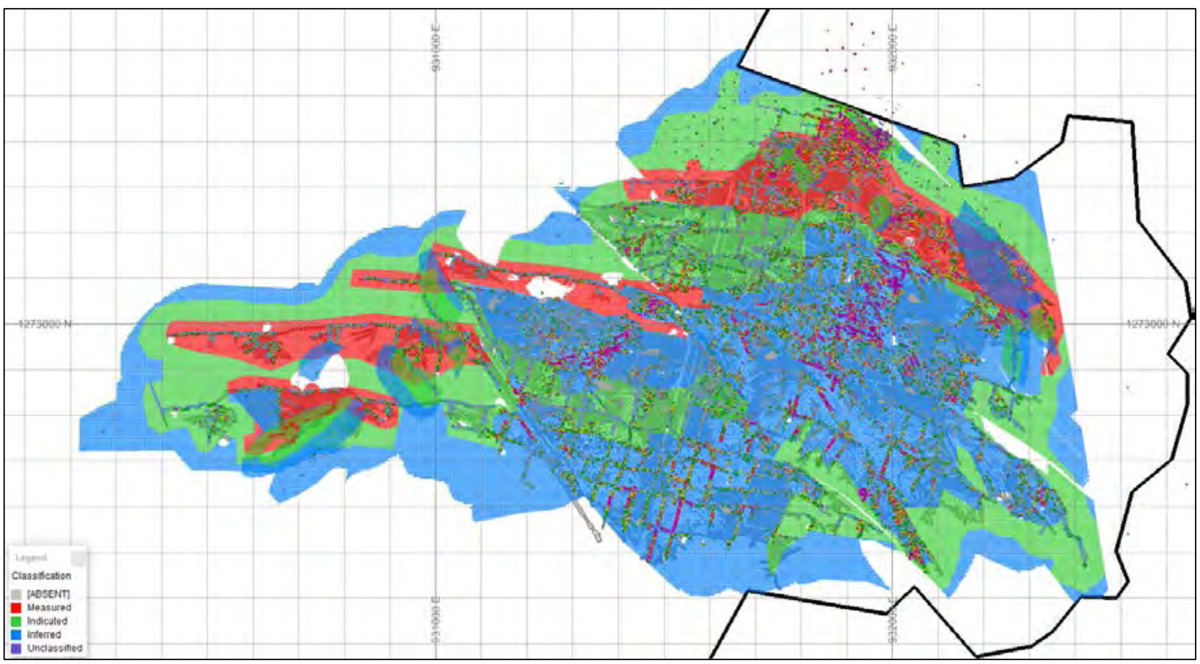
The main change in the classification occurs at El Silencio; where previously all material was classified as Inferred due to a lack of verification sampling or confidence in the depletion/pillar outlines. SRK limited the Indicated Mineral Resources to the lower portion of the mine (previously flooded), where the depletion limits are considered more accurate due to a lack of mining activity over prolonged periods of time by Contractor mining.

Inferred: In general, Inferred Mineral Resources were limited to within areas of reasonable grade estimate quality and sufficient geological confidence, and are extended no further than 100 m from peripheral drilling on the basis of modeled variogram ranges.

The classified Mineral Resource is sub-divided into material within the remaining pillars and the long-term resource material (LTR) outside of the previously mined areas, with the classification for the pillars considered separately, given the uncertainty of the extent of pillar mining currently being undertaken by Company-organized cooperative miners. The following guidelines apply to SRK's pillar classification:

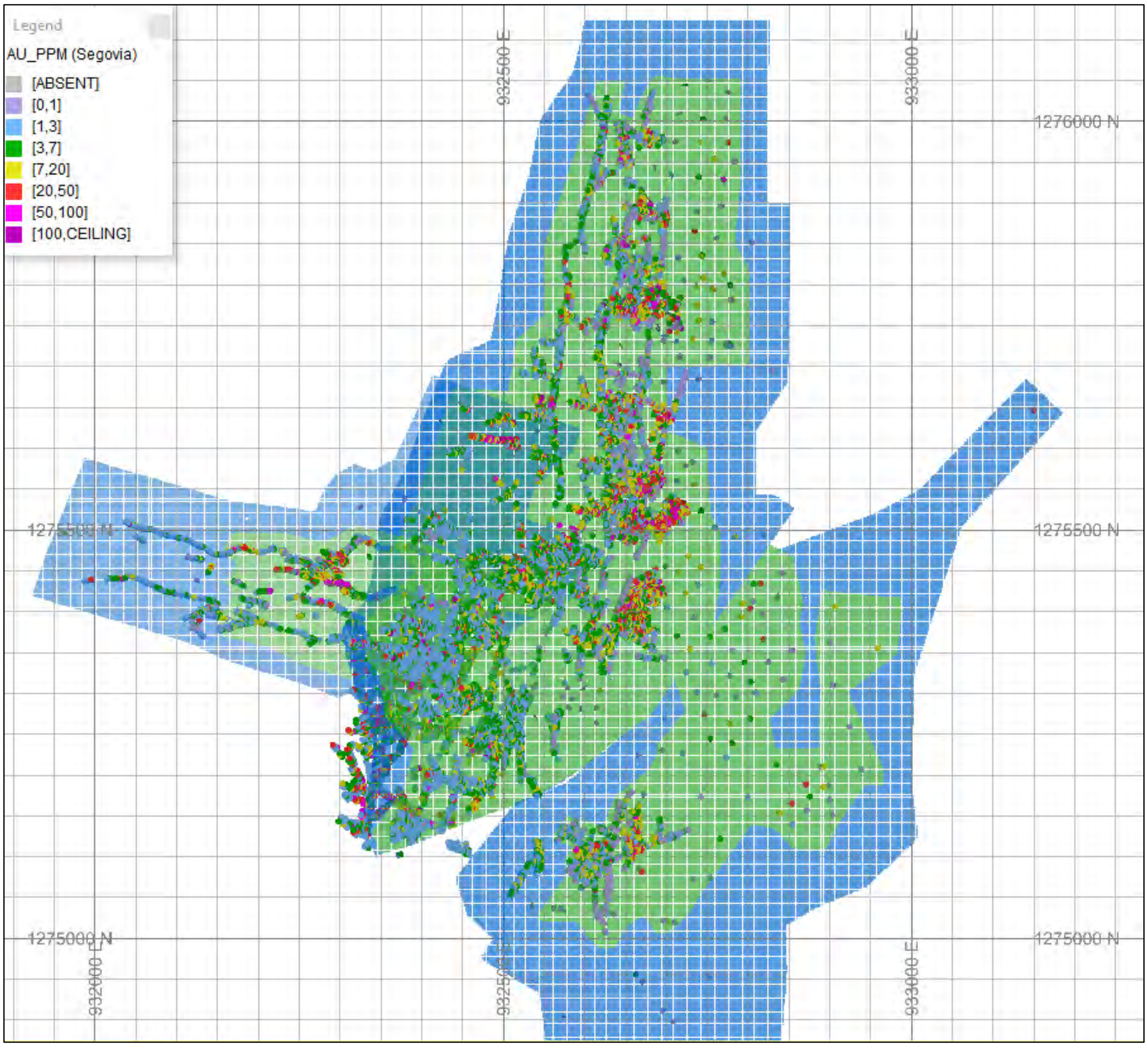
- Indicated Pillar Mineral Resources were limited to areas where a sufficient level of verification channel sampling has been completed by Gran Colombia, and there is a relatively high confidence in the accuracy of the pillar surveys. For Providencia, these areas largely represent the pillars where the contractor miners have had limited access. At Sandra K, while the accuracy in the pillars remain relatively unknown, SRK notes that within the economic portions of the model the depletion surveys indicate that certain areas (north of 1275350) have undergone only limited mining activity with the current mining development, and thus SRK considers these areas within the pillar resource to be in the Indicated category. At El Silencio, the Indicated portion of the Mineral Resource were limited to below an elevation of 320 m or Level 29, below which the mine was previously flooded and therefore the confidence in the depletion outlines is higher.

A summary of the classification within the main veins for the three main mines at Segovia, estimated in 2017, are shown in Figure 14-27 to Figure 14-29.



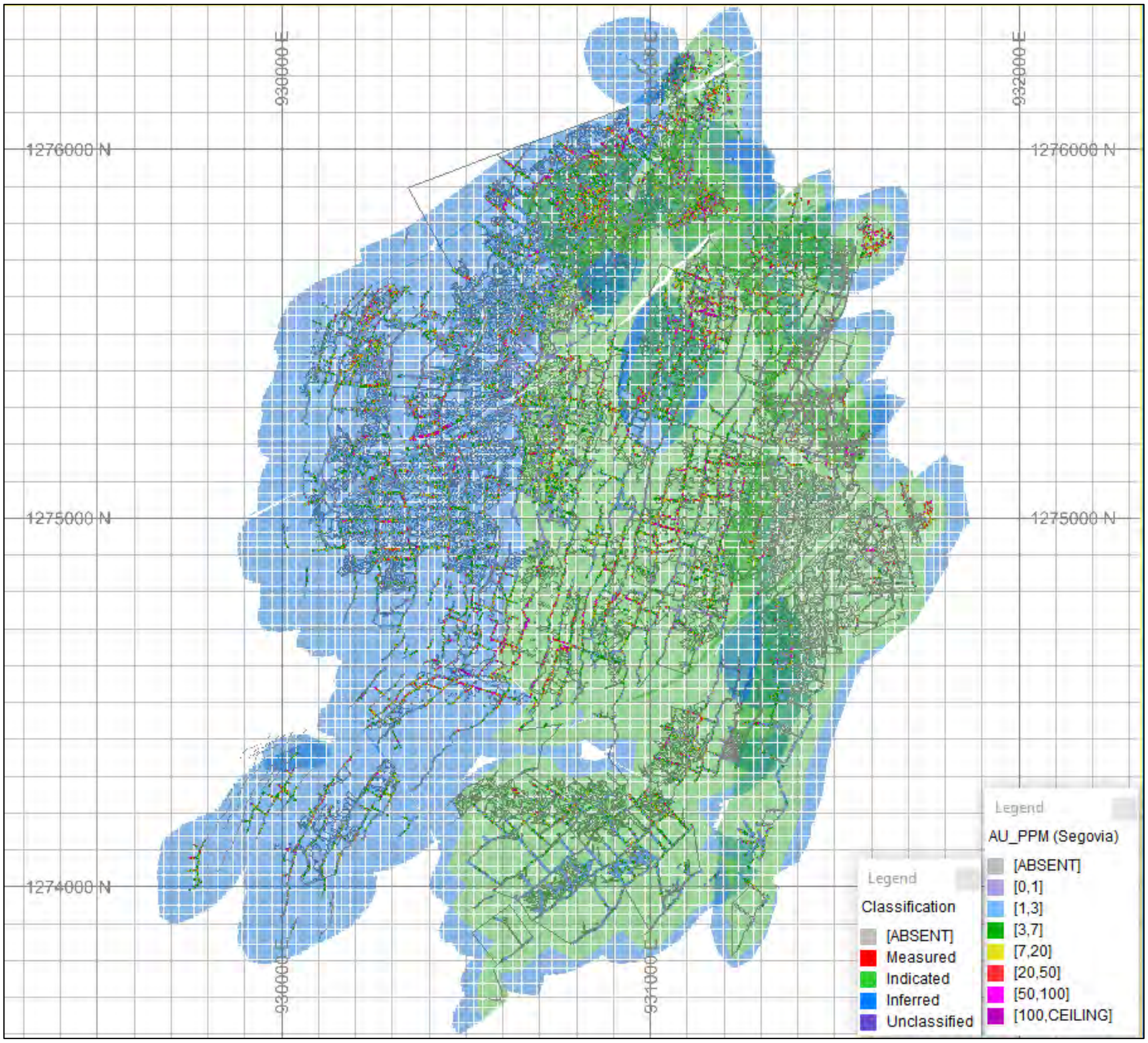
Source: SRK, 2019

Figure 14-27: Plan View Showing Classification Systems - Providencia



Source: SRK, 2019

Figure 14-28: Plan View Showing Classification Systems - Sandra K



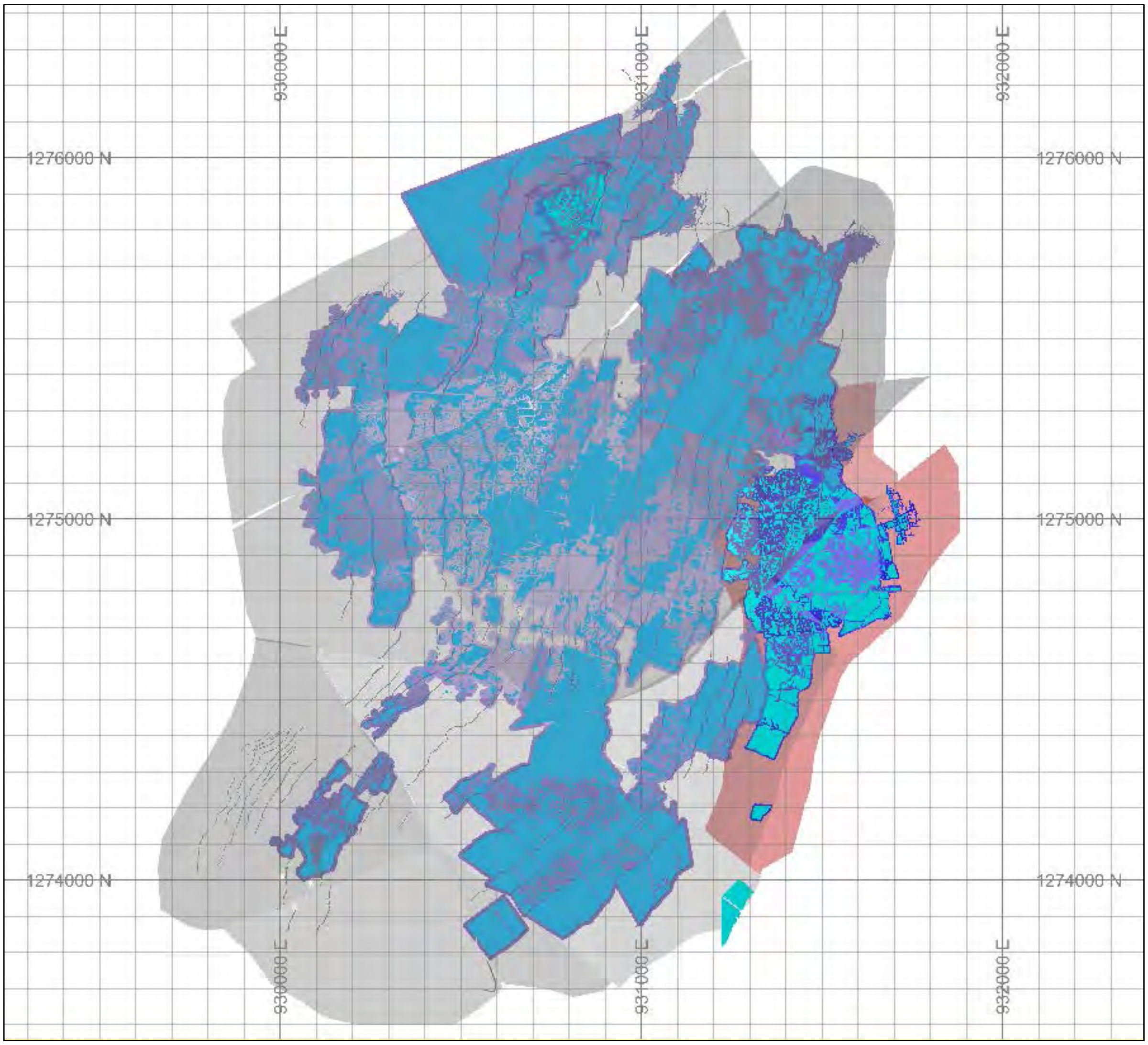
Source: SRK, 2019

Figure 14-29: Plan View Showing Classification Systems - El Silencio

14.10 Mining Depletion

Providencia, El Silencio and Sandra K have been actively mined over a significant time period. The production areas have not been surveyed using modern survey methods such as 3D cavity monitoring systems (CMS). The as-built mined areas provided to SRK include multiple AutoCAD and PDF files which show a combination of survey points for stoped areas, polylines for the various cuts of the stopes, and wireframes which roughly delineate development and production areas. SRK was not provided with detailed mined volumes that could be used to flag blocks as mined in the block model.

In order to provide a reasonable assessment of the mined areas in the allotted time frame for this study, SRK used the detailed outlines provided within the historical AutoCAD drawings provided for each mine to generate a 5 m distance buffer from the mined areas and generate volumes that could be used in flagging the blocks as mined. In areas where historical pillars exist which represent potential mining targets by secondary contractors (as currently is the case at each mine), SRK has reassigned the pillars and coded the model accordingly (Figure 14-30).



Source: SRK, 2019

Figure 14-30: Example of Depletion Limits (El Silencio), with Depletion Shown in Blue and Remaining Pillars in Purple

Once SRK completed the two sets of polylines for each vein the depletion was assigned via projecting the polylines through the block models and coding blocks directly as follows:

- DEPL: Blocks lying with the edge of development wireframe limits; and
- PILLAR: Blocks lying within the defined pillars.

The final depletion code was therefore assigned by a logical expression for blocks where DEPL=1 and PILLAR=0. Each model was then visually validated to ensure accuracy of the assignment of codes. SRK is satisfied that the level of accuracy is reasonable for the definition of the current Mineral Resource. SRK cautions that in areas of the historical mines the accuracy of the Pillars survey in the

AutoCAD™ files may be questioned due to on-going mining by the various contractors, and therefore SRK has assigned the classification accordingly in areas of potential inaccuracy.

14.11 Mineral Resource Statement

CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) defines a Mineral Resource as:

"(A) concentration or occurrence of diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge".

The "reasonable prospects for eventual economic extraction" requirement generally implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate CoG taking into account extraction scenarios and processing recoveries. In order to meet this requirement, SRK considers that portions of the Providencia, Sandra K, El Silencio and Carla veins to be amenable for underground mining.

To determine the potential for economic extraction SRK has used the following key assumptions for the costing, and a metallurgical recovery of 90.5% Au, has been assumed based on the current performance of the operating plant.

SRK has defined the proportions of Mineral Resource to have potential for economic extraction for the Mineral Resource based on a single CoG. An investigation into CoGs was completed by SRK as part of the previous (2017) Preliminary Economic Assessment. Based on the US$1,400/oz gold price and an average mining cost SRK has limited the Resource based on a CoG of 3.0 g/t Au over a (minimum mining) width of 1.0 m. Based on on-going assistance with mine planning SRK considers this cut-off to remain appropriate.

Each of the mining areas have been sub-divided into pillar areas as previously defined, which represent the areas within the current mining development, and LTR, which lies along strike or down dip of the current mining development. The Mineral Resource statement for the Project is shown in Table 14-12.

Table 14-12: SRK Mineral Resource Statement for the Segovia and Carla Projects for Zandor Dated December 31, 2018 – SRK Consulting (U.S.), Inc.

Project	Deposit	Type	Measured			Indicated			Measured and Indicated			Inferred		
			Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)
Segovia	Providencia	LTR	110	16.7	59	299	16.6	159	409	16.6	218	192	10.1	63
		Pillars	108	23.5	81	107	15.8	54	215	19.7	136	380	19.9	244
	Sandra K	LTR				329	9.8	103	329	9.8	103	321	7.1	73
		Pillars				105	11.5	39	105	11.5	39	0	6.7	0
	El Silencio	LTR				853	11.1	304	853	11.1	304	1,276	9.1	374
		Pillars				1,444	10.3	480	1,444	10.3	480	442	12.3	174
	Las Verticales	LTR										771	7.1	176
	Subtotal Segovia Project	LTR	110	16.7	59	1,480	11.9	566	1,590	12.2	625	2,561	8.3	686
		Pillars	108	23.5	81	1,655	10.8	573	1,763	11.5	654	823	15.8	418
Carla	Subtotal Carla Project	LTR				154	9.7	48	154	9.7	48	178	9.3	53

Source: SRK, 2019

The Mineral Resources are reported at an in situ cut-off grade of 3.0 g/t Au over a 1.0 m mining width, which has been derived using a gold price of US$1,400/oz, and suitable benchmarked technical and economic parameters for underground mining and conventional gold mineralized material processing. Each of the mining areas have been sub-divided into Pillar areas ("Pillars"), which represent the areas within the current mining development, and LTR, which lies along strike or down dip of the current mining development. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimate. All composites have been capped where appropriate.

14.12 Mineral Resource Sensitivity

14.12.1 Grade Tonnage Sensitivity

The results of grade sensitivity analysis completed per vein are tabulated in Table 14-13 through Table 14-17.

This is to show the continuity of the grade estimates at various cut-off increments in each of the vein sub areas and the sensitivity of the Mineral Resource to changes in CoG. The tonnages and grades in these figures and tables should not however be interpreted as Mineral Resources.

The reader is cautioned that the figures in this Table should not be misconstrued with the Mineral Resource Statement. The figures are only presented to show the sensitivity of the block model estimates to the selection of CoG. All figures are rounded to reflect the relative accuracy of the estimates. The PEA is preliminary in nature in that it includes Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the PEA will be realized. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Table 14-13: Block Model Quantities and Grade Estimates, Providencia Deposit at Various Cut-off Grades

Grade - Tonnage Table, Providencia LTR							Grade - Tonnage Table, Providencia Pillar						
Cut-off Grade	Measured and Indicated			Inferred			Cut-off Grade	Measured and Indicated			Inferred		
	Quantity	Gold		Quantity	Gold			Quantity	Gold		Quantity	Gold	
Au (g/t)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)	Au (g/t)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)
1.0	191	12.3	75	217	9.2	64	1.0	200	14.8	95	426	18.0	247
2.0	178	13.1	75	210	9.5	64	2.0	197	15.1	96	411	18.6	246
2.5	174	13.4	75	201	9.8	63	2.5	194	15.4	96	398	19.2	245
3.0	169	13.9	76	192	10.1	63	3.0	189	16.0	97	380	19.9	244
3.5	161	14.7	76	175	10.8	61	3.5	183	16.6	98	359	20.9	242
4.0	154	15.5	76	164	11.3	60	4.0	176	17.5	99	339	22.0	239
4.5	144	16.4	76	153	11.8	58	4.5	170	18.3	100	319	23.0	236
5.0	138	17.3	77	145	12.2	57	5.0	165	18.9	101	301	24.1	234
5.5	130	18.4	77	131	12.9	55	5.5	160	19.7	101	283	25.3	231
6.0	124	19.4	78	116	13.9	52	6.0	155	20.5	102	267	26.5	228
7.0	113	21.6	78	91	15.9	47	7.0	144	22.3	103	237	29.1	221
8.0	102	24.2	79	79	17.1	44	8.0	135	24.3	105	213	31.5	216

Source: SRK, 2019

Table 14-14: Block Model Quantities and Grade Estimates, Sandra K Deposit at Various Cut-off Grades

Grade - Tonnage Table, Sandra K LTR							Grade - Tonnage Table, Sandra K Pillar						
Cut-off	Indicated			Inferred			Cut-off	Indicated			Inferred		
Grade	Quantity	Gold		Quantity	Gold		Grade	Quantity	Gold		Quantity	Gold	
Au (g/t)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)	Au (g/t)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)
1.0	289	9.4	87.4	297	7.6	73	1.0	117	10.4	39.0	2	8.4	1
1.5	274	9.8	86.7	297	7.6	73	1.5	115	10.5	38.9	2	8.4	1
2.0	262	10.2	85.8	286	7.8	72	2.0	112	10.7	38.7	2	9.7	1
2.5	245	10.7	84.2	274	8.1	71	2.5	109	10.9	38.5	2	10.0	1
3.0	223	11.4	82.0	256	8.4	69	3.0	104	11.4	37.9	2	10.0	1
3.5	210	11.9	80.4	240	8.7	67	3.5	96	11.9	37.0	2	10.2	1
4.0	197	12.4	78.6	226	9.0	65	4.0	90	12.5	36.1	2	10.4	1
4.5	188	12.8	77.3	198	9.6	61	4.5	83	13.1	35.0	2	10.8	1
5.0	180	13.1	76.0	178	10.1	58	5.0	76	13.9	33.9	1	11.5	0
5.5	172	13.5	74.4	168	10.3	56	5.5	69	14.6	32.6	1	12.2	0
6.0	149	14.5	69.6	142	11.0	50	6.0	60	15.9	30.8	1	13.4	0
7.0	128	15.7	64.4	106	12.2	42	7.0	53	17.1	28.9	1	14.0	0
8.0	289	9.4	87.4	297	7.6	73	8.0	117	10.4	39.0	2	8.4	1

Source: SRK, 2018

Table 14-15: Block Model Quantities and Grade Estimates, El Silencio Deposit at Various Cut-off Grades

Grade - Tonnage Table, El Silencio LTR							Grade - Tonnage Table, El Silencio Pillar						
Cut-off	Measured and Indicated			Inferred			Cut-off	Measured and Indicated			Inferred		
Grade	Quantity	Gold		Quantity	Gold		Grade	Quantity	Gold		Quantity	Gold	
Au (g/t)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)	Au (g/t)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)
1.0	972	10.0	313	1657	7.6	403	1.0	1794	8.8	506	525	10.7	181
2.0	948	10.2	311	1609	7.7	401	2.0	1701	9.2	501	520	10.8	180
2.5	896	10.7	308	1414	8.5	387	2.5	1587	9.6	492	482	11.5	178
3.0	853	11.1	304	1276	9.1	374	3.0	1444	10.3	480	442	12.3	174
3.5	793	11.7	297	1112	10.0	357	3.5	1281	11.2	463	394	13.3	169
4.0	717	12.5	288	954	11.0	338	4.0	1123	12.3	444	352	14.5	164
4.5	650	13.4	279	838	12.0	323	4.5	1003	13.2	427	317	15.6	159
5.0	594	14.2	271	748	12.8	309	5.0	904	14.2	412	286	16.8	155
6.0	553	14.8	264	628	14.3	289	6.0	826	15.0	399	262	17.9	150
7.0	515	15.5	257	540	15.7	272	7.0	767	15.7	388	240	19.0	147
8.0	457	16.6	244	421	18.3	248	8.0	678	17.0	370	212	20.6	141

Source: SRK, 2019

Table 14-16: Block Model Quantities and Grade Estimates, Las Verticales Deposit at Various Cut-off Grades

Grade - Tonnage Table, Las Verticales 31 July 2013						
Cut-off Grade	Measured and Indicated			Inferred		
	Quantity	Gold		Quantity	Gold	
AUM1 (g/t Au over 1 m)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)
1.0	-	-	-	1,700	5	275
1.5	-	-	-	1,344	5.7	248
2.0	-	-	-	1,137	6.2	226
2.5	-	-	-	962	6.6	203
3.0	-	-	-	771	7.1	176
3.5	-	-	-	656	7.4	156
4.0	-	-	-	554	7.6	135
4.5	-	-	-	473	7.8	119
5.0	-	-	-	406	8	105

Source: SRK, 2019

Table 14-17: Block Model Quantities and Grade Estimates, Carla Deposit at Various Cut-off Grades

Grade - Tonnage Table, Carla 31 July 2013						
Cut-off Grade	Measured and Indicated			Inferred		
	Quantity	Gold		Quantity	Gold	
AUM1 (g/t Au over 1 m)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)
1.0	253	6.6	54	297	6.7	64
1.5	229	7.2	53	266	7.3	62
2.0	197	8	51	235	7.9	60
2.5	171	8.9	49	207	8.6	57
3.0	154	9.7	48	178	9.3	53
3.5	146	10.1	47	152	10.1	50
4.0	130	10.9	45	136	10.8	47
4.5	123	11.2	44	121	11.4	44
5.0	113	11.7	43	107	12.1	42

Source: SRK, 2019

14.12.2 Comparisons to Previous Estimate

In comparison to the previous (December 31, 2017) Mineral Resource estimate for the Segovia Project at a CoG of 3.0 g/t Au over a width of 1.0 m, a summary of the key changes is shown in Table 14-18. The most notable changes include:

Measured and Indicated Comparison

- Reconciliation shows minor increase in M&I at Providencia +24 Koz (this is marked by a reduction in the LTR but an increase in the Pillar areas, as mining commences more Mineral Resource have been reclassified as Pillar material within the active mining areas;
- Reconciliation shows minor increase in M&I at El Silencio +17 Koz (this is mainly due to an increase in the tonnage with limited changes in the mean grades for the LTR and Pillar defined material);
- Minor Increases at Sandra K (+17 Koz), result of change in new drilling an improved definition of high-grade material in the northern fault block; and

- Minor increase noted on comparison of year to year accounting for depletion, if depletion is accounted for the increases in the M&I are in the order of +93 Koz, +111 Koz and +26 Koz at Providencia, El Silencio and Sandra K respectively)

Inferred Comparison

- Increase in Providencia Inferred +11 Koz, which SRK attributes to better definition of some of the minor structures, and a result of drilling to the west of the high-grade domain at depth;
- Largest Increases in the Inferred Mineral Resource occurred at El Silencio, primarily due to removal of additional drilling down-dip of high-grade shoots (+50 Koz). After accounting for depletion there was however an increase in the Inferred Mineral Resources of +67 Koz; and
- Decrease in the Inferred Mineral Resource at Sandra K -13 Koz, which is a function of upgrading of the previous Inferred Mineral Resources to Indicated.

Table 14-18: Mineral Resource Comparison to Previous Estimates Roll Forward Numbers for Three Mines

	Project	Deposit	Type	Measured			Indicated			Measured and Indicated			Inferred		
				Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)	Tonnes (kt)	Grade (g/t)	Au Metal (koz)
December 31st 2018	Segovia	Providencia	LTR	110	16.7	59	299	16.6	159	409	16.6	218	192	10.1	63
			Pillars	108	23.5	81	107	15.8	54	215	19.7	136	380	19.9	244
		Sandra K	LTR				329	9.8	103	329	9.8	103	321	7.1	73
			Pillars				105	11.5	39	105	11.5	39	0	6.7	0
		El Silencio	LTR				853	11.1	304	853	11.1	304	1,276	9.1	374
			Pillars				1,444	10.3	480	1,444	10.3	480	442	12.3	174
		Las Verticales	LTR										771	7.1	176
		Subtotal Segovia Project	**LTR**	**110**	**16.7**	**59**	**1,480**	**11.9**	**566**	**1,590**	**12.2**	**625**	**2,561**	**8.3**	**686**
			Pillars	**108**	**23.5**	**81**	**1,655**	**10.8**	**573**	**1,763**	**11.5**	**654**	**823**	**15.8**	**418**
	Carla	**Subtotal Carla Project**	**LTR**				**154**	**9.7**	**48**	**154**	**9.7**	**48**	**178**	**9.3**	**53**
	Project	**Deposit**	**Type**	**Measured**			**Indicated**			**Measured and Indicated**			**Inferred**		
December 31st 2017	Segovia	Providencia	LTR	122	24.2	95	327	14	147	449	16.8	242	179	9.4	54
			Pillars	91	17.3	51	110	10.4	37	202	13.5	88	378	19.8	241
		Sandra K	LTR				288	9.3	86	288	9.3	86	313	8.4	85
			Pillars				111	10.8	39	111	10.8	39	2	9.6	1
		El Silencio	LTR				782	11	276	782	11.0	276	1,203	8.8	339
			Pillars				1,416	10.3	468	1,416	10.3	468	396	12.5	159
		Las Verticales	LTR										771	7.1	176
		Subtotal Segovia Project	**LTR**	**122**	**24.2**	**95**	**1,397**	**11.3**	**509**	**1,519**	**12.4**	**604**	**2,466**	**8.2**	**654**
			Pillars	**91**	**17.4**	**51**	**1,637**	**10.3**	**544**	**1,729**	**10.7**	**595**	**776**	**16.1**	**401**
	Carla	**Subtotal Carla Project**	**LTR**				**154**	**9.7**	**48**	**154**	**9.7**	**48**	**178**	**9.3**	**53**
	Project	**Deposit**	**Type**	**Measured**			**Indicated**			**Measured and Indicated**			**Inferred**		
Reconciliation	Segovia	Providencia	LTR	-12	-7.5	-36	-28	2.6	12	-40	-0.2	-24	13	0.7	9
			Pillars	17	6.2	30	-3	5.4	17	13	6.2	48	2	0.1	3
		Sandra K	LTR	0	0.0	0	41	0.5	17	41	0.5	17	8	-1.3	-12
			Pillars	0	0.0	0	-6	0.7	0	-6	0.7	0	-2	-2.9	-1
		El Silencio	LTR	0	0.0	0	71	0.1	28	71	0.1	28	73	0.3	35
			Pillars	0	0.0	0	28	0.0	12	28	0.0	12	46	-0.2	15
		Las Verticales	LTR	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0
		Subtotal Segovia Project	**LTR**	**-12**	**-7.5**	**-36**	**83**	**0.6**	**57**	**71**	**-0.1**	**21**	**95**	**0.1**	**32**
			Pillars	**17**	**6.0**	**30**	**18**	**0.4**	**29**	**34**	**0.8**	**59**	**47**	**-0.3**	**17**
	Carla	**Subtotal Carla Project**	**LTR**	**0**	**0.0**	**0**	**0**	**0.0**	**0**	**0**	**0.0**	**0**	**0**	**0.0**	**0**

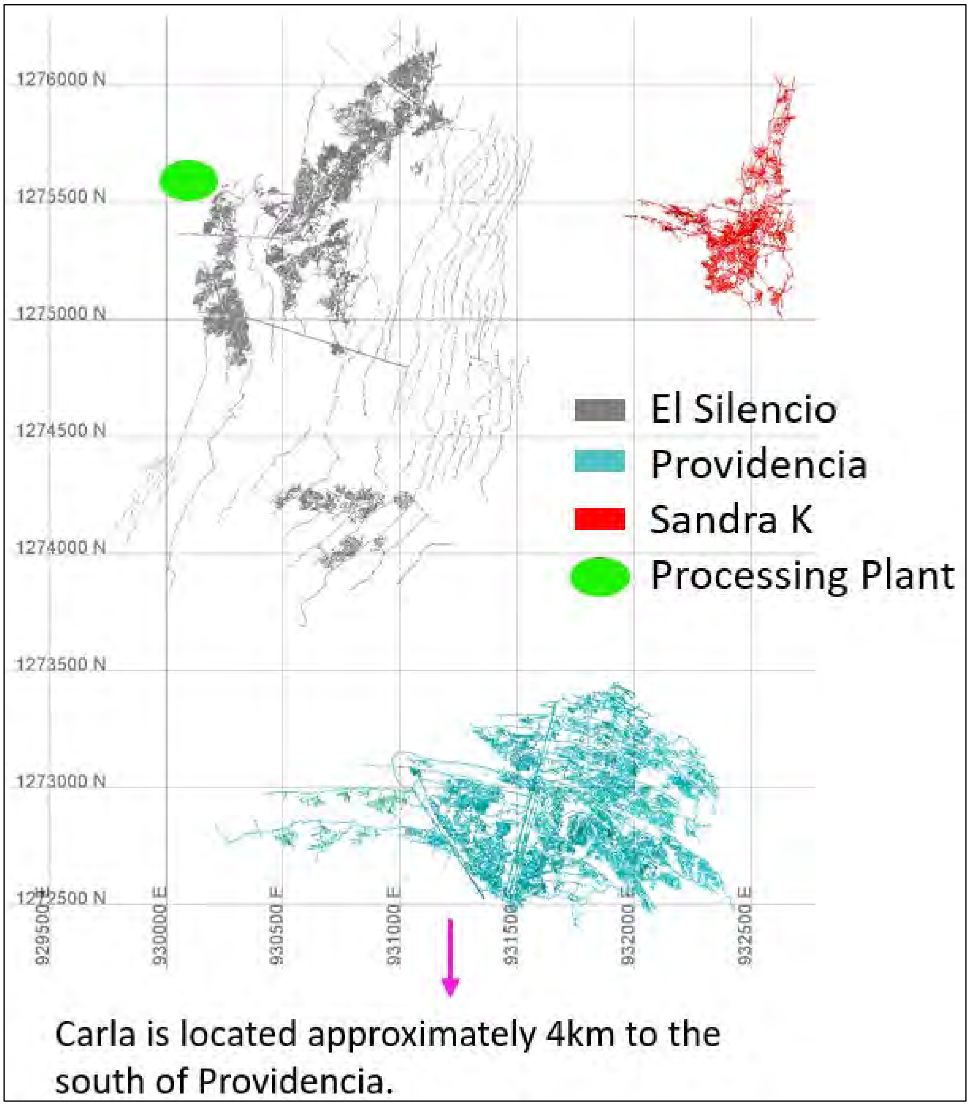
Source: SRK, 2019

14.13 Relevant Factors

Although additional studies are recommended to further develop tailings and water management strategies, SRK considers there to be no other environmental, permitting, legal, title, social, taxation, marketing or other factors that could affect the Mineral Resource Statement.

15 Mineral Reserve Estimate

Mineral reserves stated here for the Segovia operations include four distinct areas named Providencia, El Silencio, Sandra K, and Carla as shown in Figure 15-1. There are other mines in the vicinity, owned by Gran Colombia, however there are no indicated resources stated outside of these four areas at this time. There are also other mines in the vicinity owned by others.



Source: SRK, 2019

Figure 15-1: Segovia Reserve Areas

The general dip of the orebodies in all four areas is 30° to 40°. The veins are narrow and range from several cm to over 1 m. Providencia, El Silencio, and Sandra K are actively being mined. Carla has been mined historically however is currently not operating.

15.1 Conversion Assumptions, Parameters and Methods

Measured and Indicated Mineral Resources were converted to Proven and Probable Mineral Reserves by applying the appropriate modifying factors, as described herein, to potential mining block shapes created during the mine design process. Inferred material is treated as waste with zero grade.

15.1.1 Dilution

The stated reserves include dilution to a minimum mining width and additional expected dilution due to overbreak. Parameters used vary by area and mining method, as shown in Table 15-1, and are based on what site personnel state they currently experience underground.

Table 15-1: Dilution Assumptions

Mining Area	Mining Method	Minimum Mining Width (m)	Overbreak Dilution
Providencia	Room and Pillar	1.5	0.3 m
	Cut and Fill (1)	-	Factor of 2.6
El Silencio	Room and Pillar	1.5	0.2 m
Carla	Room and Pillar	1.5	0.2 m
Sandra K	Room and Pillar	1.5	0.3 m

(1) Minimum mining width varies by mining method. Dilution factor, based on 2018 reconciliation information, accounts for variable vein widths.
Source: SRK, 2019

15.1.2 Recovery

Mining extraction ratios/recovery factors are applied to the mine design by area and by mining method as shown in Table 15-2.

Table 15-2: Mining Extraction/Recovery assumptions

Mining Area	Mining Method	Extraction/Recovery of Designed Areas (%) (1)
Providencia	Room and Pillar	85
	Cut and Fill	95
El Silencio	Room and Pillar	60-70
Carla	Room and Pillar	85
Sandra K	Room and Pillar	85

(1) In small mining areas adjacent to existing mining, extraction ratios are decreased to ensure a full 2 m x 2 m pillar stays in situ. El Silencio extractions are lower largely due to survey unknowns.
Source: SRK, 2019

The extraction ratios/recovery factors consider:

- Maximum geotechnical extraction which includes existing openings underground;
- Timber packs and cement pillars are used where necessary to achieve the stated extraction ratios;
- Material loss to mucking along the sides; and
- Additional loss factor due to rockfalls, misdirected loads, and other geotechnical reasons.

15.1.3 Additional Allowance Factors

Development extensions in the PFS design are generally apiques and use of ramps is limited. No additional allowance factors are used at this time.

15.2 Reserve Estimate

Mineral Reserves were classified using the 2014 CIM Definition standards. Indicated Mineral Resources were converted to Probable Mineral Reserves by applying the appropriate modifying factors, as described herein, to potential mining shapes created during the mine design process.

The underground mine design process resulted in underground mining reserves of 1.9 Mt (diluted) with an average grade of 11.02 g/t Au. The Mineral Reserve statement, as of December 31, 2018, for the Gran Colombia Segovia is presented in Table 15-3.

Table 15-3: Gran Colombia Segovia Mineral Reserves estimate as of December 31, 2018

Segovia Mineral Reserves		**Cut-off (1):**	**3.25 - 4.31 g/t**	
Category	**Area**	**Tonnes**	**Au Grade (g/t)**	**Oz (in situ)**
Proven	Providencia	79,031	11.72	29,783
	Carla	-	-	-
	Sandra K	-	-	-
	El Silencio	-	-	-
Subtotal Proven		**79,031**	**11.72**	**29,783**
Probable	Providencia	319,315	18.50	189,897
	Carla	104,007	10.06	33,646
	Sandra K	170,840	9.82	53,914
	El Silencio	1,268,008	9.34	380,685
Subtotal Probable		**1,862,171**	**10.99**	**658,143**
Total	**Proven + Probable**	**1,941,202**	**11.02**	**687,926**

Source: SRK

(1) Ore reserves are reported using a gold cut-off grade (CoG) ranging from 3.25 to 4.31 g/t depending on mining area and mining method. The CoG calculation assume a $1,275/oz Au price, 90.5% metallurgical recovery, $6/oz smelting and refining charges, $25/t G&A, $24/t Processing cost, and mining costs ranging from $71 to 110/t. Note that costs/prices used here may be somewhat different than those in the final economic model. This is due to the need to make assumptions early on for mine planning prior to finalizing other items and using long term forecasts for the life of mine plan.

- Mining dilution is applied to a minimum mining height and to estimate overbreak (values differ by area/mining method) using a zero grade.
- Reserves are inclusive of Mineral Resources. All figures are rounded to reflect the relative accuracy of the estimates. Totals may not sum due to rounding.
- Mineral Reserves have been stated on the basis of a mine design, mine plan, and cash-flow model.
- The underground Mineral Reserves are effective as of December 31, 2018.
- There are potential survey unknowns in some of the mining areas and lower extractions have been used to account for these unknowns.
- At Sandra K, Gran Colombia personnel are able to hear others mining underground adjacent to current workings. These appear to be artisinal miners working on Gran Colombia leases. In this area there may be potential unknowns regarding what material is in situ and what has been mined. Overall this general area makes up a small proportion (<5%) of the Sandra K reserves.
- The Mineral Reserves were estimated by Fernando Rodrigues, BS Mining, MBA, MMSAQP #01405, MAusIMM #304726 of SRK, a Qualified Person.

15.3 Relevant Factors

Gran Colombia has in recent years been continually working on surveying historical workings to ensure all underground openings in their planned mining areas are well understood. This is an ongoing process and there are still areas with the various mines where uncertainties exist in the as-builts. The reserves stated here use a lower mining recovery than expected geotechnically, to provide an allowance for these types of potential unknowns.

There are approximately eight artisan mines that are located on Gran Colombia leases that are not included in the reserve estimate. Artisanal mines can provide approximately 20% of the additional plant capacity. Note that the reserve mill feed and stated economics are based on a LoM approximate average of 1,250 t/d for the PFS report.

Contractor mining supplied ore is well documented at the plant through a detailed sampling system. The owner operated mines ore is not as well documented and historically produces on a consistent basis more than the mine plan model predicts.

The mine plan is based on improved productivities that incorporate improvements in mechanization and includes the purchasing of new mining equipment and improved ventilation.

Gran Colombia has constructed a new TSF with a dry stack storage method incorporating a filter press. The new area has enough capacity for the PFS LoM.

16 Mining Methods

The Segovia operations are located in a historic mining district that has been mined for over 100 years. The majority of the mineralization has a dip of approximately 35°. The current mining methods used at the Segovia operations include room and pillar mining as well as cut and fill. Material is typically removed from the mine through use of an apique hoist system (angled hoisting system which follows the dip of the mineralization).

16.1 Current Room and Pillar Mining Method

Room and pillar mining consist of a primary and secondary phase. The primary phase mines a traditional room and pillar layout to a stated extraction ratio and the secondary phase extracts additional material from pillars. The overall extraction from both phases is as stated in section 15.1.2.

Primary Mining

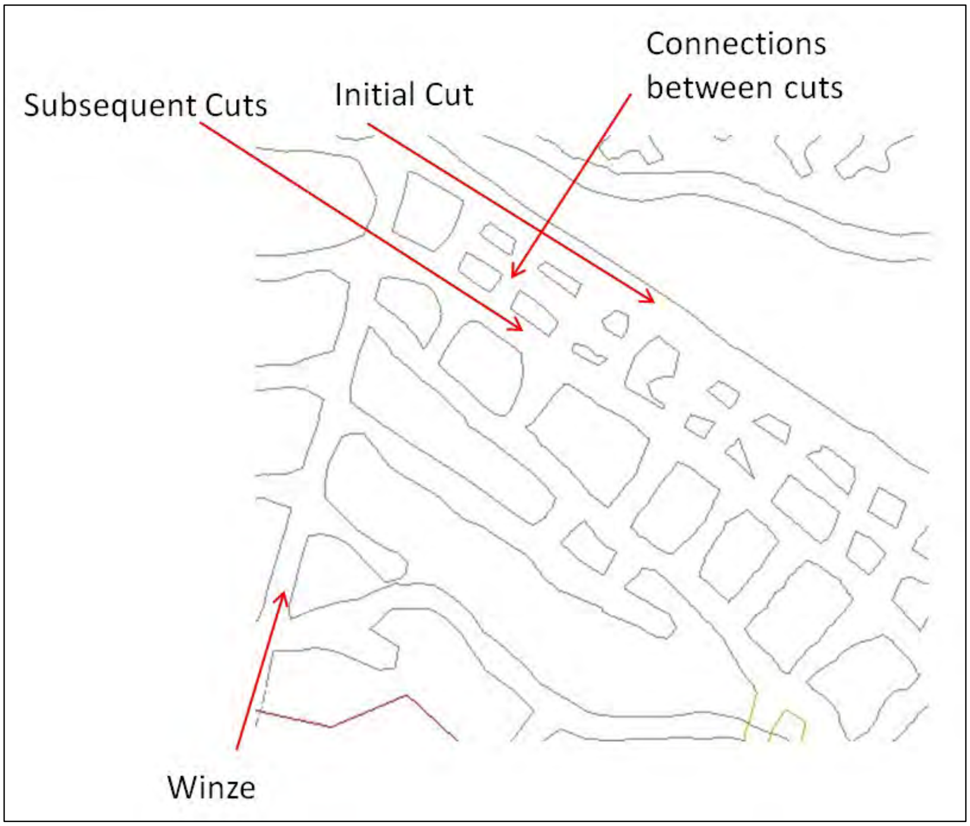
Primary mining applies a conventional room and pillar technique using manual mining methods. The panels are accessed from the overlying and underlying haulage levels as well as from down-dip development that breaks up the panels into discrete mining blocks. A loading chute from which the mined rock can be loaded into the materials handling system is constructed within the lower haulage level access. Sublevels are then developed along strike with a slight upwards gradient to make materials handling, using a slusher, simpler. Rooms between the sublevels are mined creating the room and pillar layout. The inclined sublevels from the central loading chute gives the mine a slight herring bone look as shown in Figure 16-1. The layouts follow the typical angle of mineralization (~35°).

Source: SRK, 2019

Figure 16-1: Typical Mining Block Layout at the Providencia Mine

Ramps are located within the mineralization and winzes are angled to follow the dip of the mineralized zone and are used for moving material and for access to the various levels. The subsequent cuts are developed and then connected by cross drifts as shown Figure 16-2.

If the width of mineralization is smaller than the minimum mining dimensions (1.5 m x 1.5 m), yet still economic (i.e., above cutoff grade) when diluted, then a resue methodology is used where first horizontal holes are drilled in the mineralization, blasted, and material mucked out followed by a second round of drilling in waste to expand the size of the heading. This waste material is then mucked to a previously mined area. The mining is very labor intensive and uses mostly slushers and jacklegs. Pillars are typically 4 m x 4 m and rooms are 4-6 m wide; down to 2 m x 2 m; however, pillar sized vary significantly as shown in Figure 16-2. Ground support, in most areas of the mines, is typically helical rock bolts, split sets, timber, mesh and shotcrete. Timber packs and cement pillars are used when necessary to achieve planned extraction ratios.



Source: SRK, 2019

Figure 16-2: Current Mining Layout

Sill pillars are left in situ to protect the haulage levels. Currently, the mining engineers and geologists determine the final pillar sizes during underground inspections based on their observations and personal experience. During 2018, Segovia conducted several specific window mappings and laboratory tests to better understand the pillar requirements to maximize recovery during primary mining. A portion of the current production comes from the reduction of pillars.

SRK notes that the majority of the workings (as seen from existing mining) do not follow this template and there is a high variability in the approach to mining each block. However, the vast majority of historic mining was undertaken by companies other than Gran Colombia and therefore cannot be considered representative of the Company's approach going forward. SRK recognizes that processes are being implemented to improve the operational efficiencies of the mine which is intended to deliver more standardized mining practices.

Production is achieved using 38 mm blastholes drilled using airlegs. Blastholes are usually drilled to a 2 m depth although shorter drill steels are also used. The blastholes are charged using predominately emulsion cartridges although some ammonium nitrate fuel oil (ANFO) is used. A combination of detonators (electric and Nonel) and safety fuses are used in the various mining operations. Typically, around 30 drillholes will be used per round, although the drilling pattern is adjusted to suit the geometry and ground conditions. Powder factors average around 1 kg/t. Blasting times are scheduled to coincide with shift changes.

The mined rock is mucked from the working face to the haulage level using slushers, from where it is loaded into a small rail network via a loading chute. The battery-powered locomotives haul a small number of rail cars with a capacity of around 1 m^3 to a grizzly that feeds an inclined shaft. The inclined shafts use 3 t skips to transport the material between multiple levels. As the inclined shafts follow the vein, intermediate rail levels are required to transport the payable material between shafts where the veins are offset by faulting.

Secondary Mining

Secondary mining is achieved using pillar recovery methods. Conventionally, two wooden supports (approximately 200 mm x 200 mm equivalent to 8-inch x 8-inch) are installed adjacent to the pillar prior to mining. In areas of poor ground, additional support which includes split sets and mesh, may be added. The pillar is then either completely or partially removed depending on the geotechnical conditions. Minimum mining heights are approximately 1.2 m, limited by the space required for miners to work effectively. As secondary mining is more labor intensive, dilution is kept to a minimum to reduce the amount of material that requires loading by hand.

Drill and blast techniques for pillar extraction are similar to that used for production. Manual methods, including an airleg with a chisel bit and hand-held picks, are used where the pillars are in poor condition or have begun to fail.

Payable material is hauled by hand from the work face to the haulage levels in sacks of around 40 kg. The bags are stacked in the rail cars and use the same materials handling system to the surface as for primary mining.

Where primary and secondary mining occurs in the same mine, the methods are separated into distinct production areas to limit interaction. Occasionally, secondary mining does occur within the primary mining work areas, this is strictly regulated to minimize the potential impact on stability in the immediate vicinity of recovered pillars.

The Company plans to undertake investigations into alternatives to timber supports to improve safety and maximize recovery from secondary mining as there is a lack of planning and reconciliation. The pillar extraction sequence is determined by the individual contractors and Zandor provided basic maps showing which areas pillars have been mined and which are still in place. Zandor informed SRK that plans are in place for improvements to be implemented; however, to SRK's knowledge this has not yet occurred. The mine plan includes significant secondary mining material, with assumed tonnage and grade. This adds considerable uncertainty to the achievability of the mine plan as there is no defined plan for this material and reconciliation work is not completed.

16.2 Current Cut and Fill Mining Method

Gran Colombia uses two methods of cut and fill. The primary cut and fill method uses diesel LHD's and electric / hydraulic jumbo drills with development located in waste in the hanging-wall. Access to the vein is via crosscuts and drifting along the vein. The first cut in the vein is made using a jumbo, drilling horizontally and mucked with the diesel LHD. The back is bolted using jacklegs as required with attention paid to not bolting in the mineralized material unless required. The second cut and subsequent cuts are completed as follows. The jumbo drill is used to drill up holes in the vein. The entire length of the stope is drilled as a backstope, charged and timed to allow proper breakage of the mineralized material. A remote 2 yd^3 LHD is used to muck out the mineralized material from the backstope round. The waste material in the vein is drilled with the jumbo and advanced as a normal breast down round and left in place. The LHD is used to level the floor of broken waste with jacklegs used to bolt the back as required for each round. SRK notes that currently Zandor has one Sandvik 210 jumbo drill, used for development. Other jumbos are on order and will be used as described above.

The secondary cut and fill method used by Gran Colombia is a modified resue method whereby the mineralized vein material is drilled and blasted using jackleg drills and then removed manually or with a slusher. The remaining waste rock material is then shot down to the floor and becomes the new working surface.

Both cut and fill methods used do not require backfill as the waste from the cut remains in the stope.

16.3 Cut-off Grade Calculations

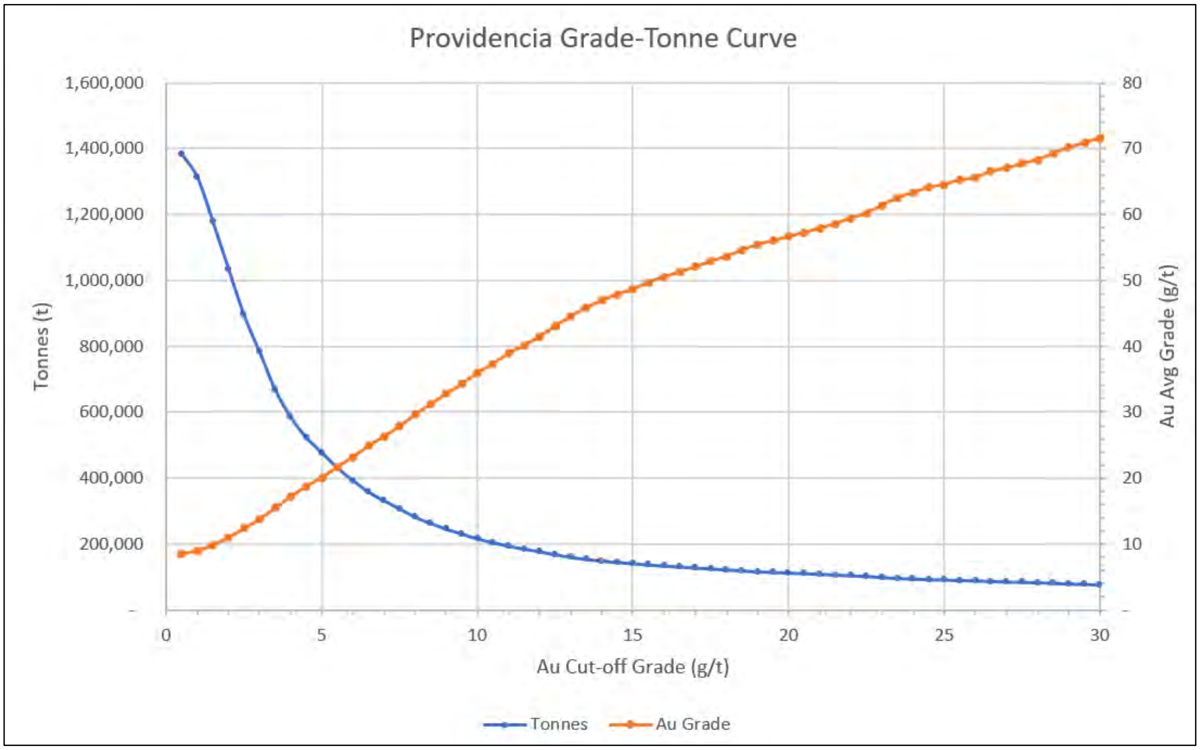
CoG's used for the reserve are based on LoM projected costs as shown in Table 16-1. The El Silencio mine has considerably higher annual production than the others and hence a lower overall mining cost.

Table 16-1: Underground Cut-off Grade Calculation

Parameter	El Silencio	Sandra K, Carla, Providencia	Unit
Mining cost [1,2]	71.00	110.00	US$/t
Process cost	24.00	24.00	US$/t
G&A	25.00	25.00	US$/t
Total Cost	120.00	159.00	US$/t
Gold price	1,275	1,275	US$/oz
Au mill Recovery	90.5%	90.5%	%
Smelting & Refining	6.00	6.00	US$/oz
CoG	3.25	4.31	g/t

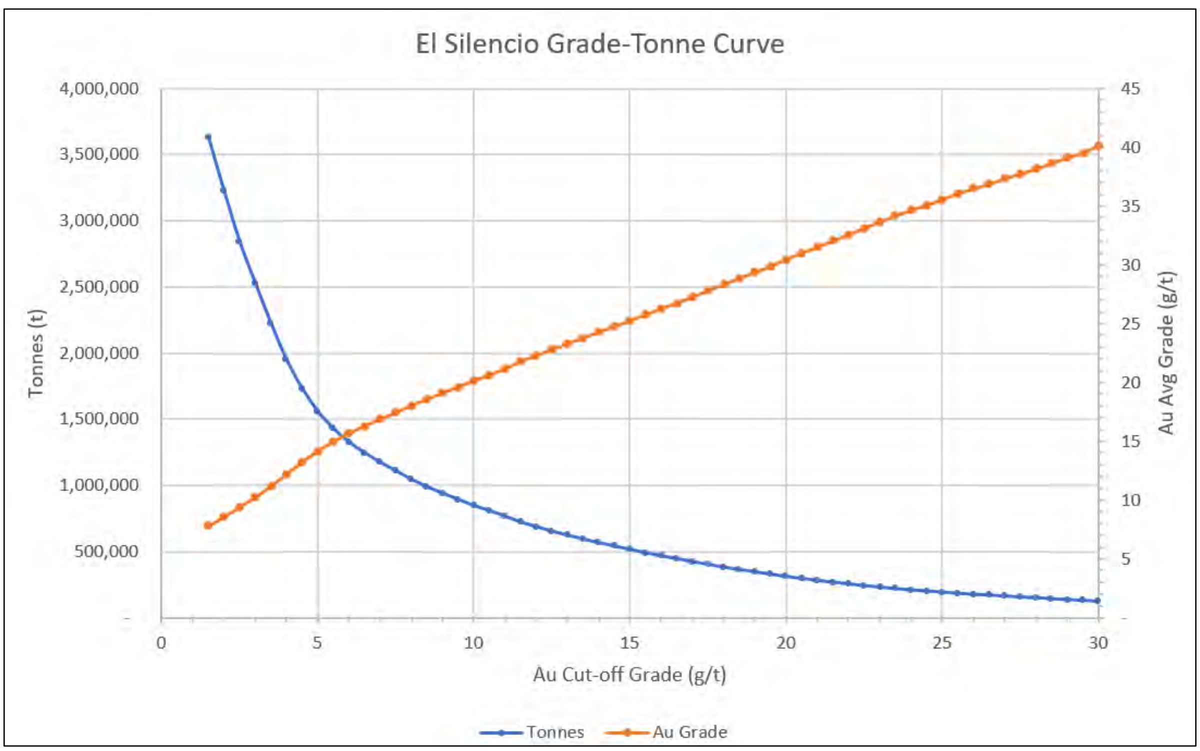
Source: SRK, Gran Colombia, 2019
(1) Note that costs/prices used here may be somewhat different than those in the final economic model. This is due to the need to make assumptions early on for mine planning prior to finalizing other items and using long term forecasts for the life of mine plan.
(2) At this time there is no breakout of mining costs for room and pillar vs. cut and fill. In the future these costs should be tracked separately to allow for using variable CoG's for design.

The basis for the PFS mine design work is the resource models described in Section 14. Grade/tonne curves showing measured and indicated material for each mine area, based on Au cut-offs, are shown in Figure 16-3 to Figure 16-6.



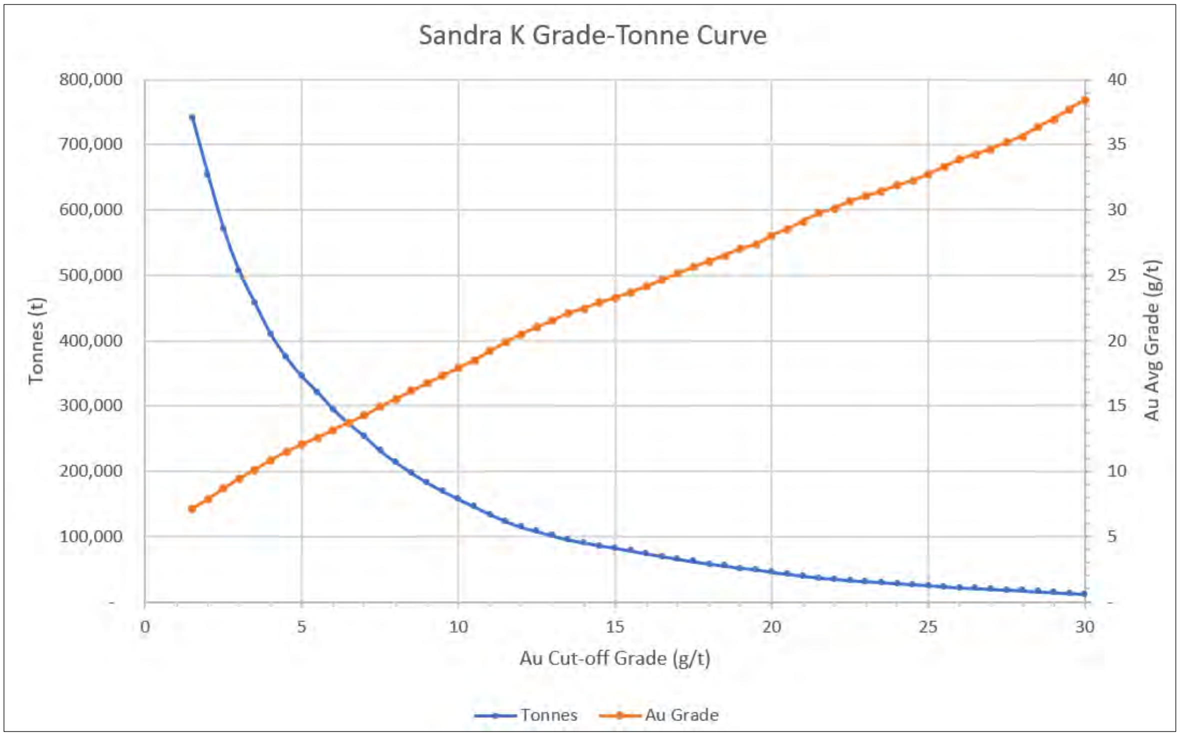
Source: SRK, 2019

Figure 16-3: Providencia Grade/Tonne Curve (Measured and Indicated Material)



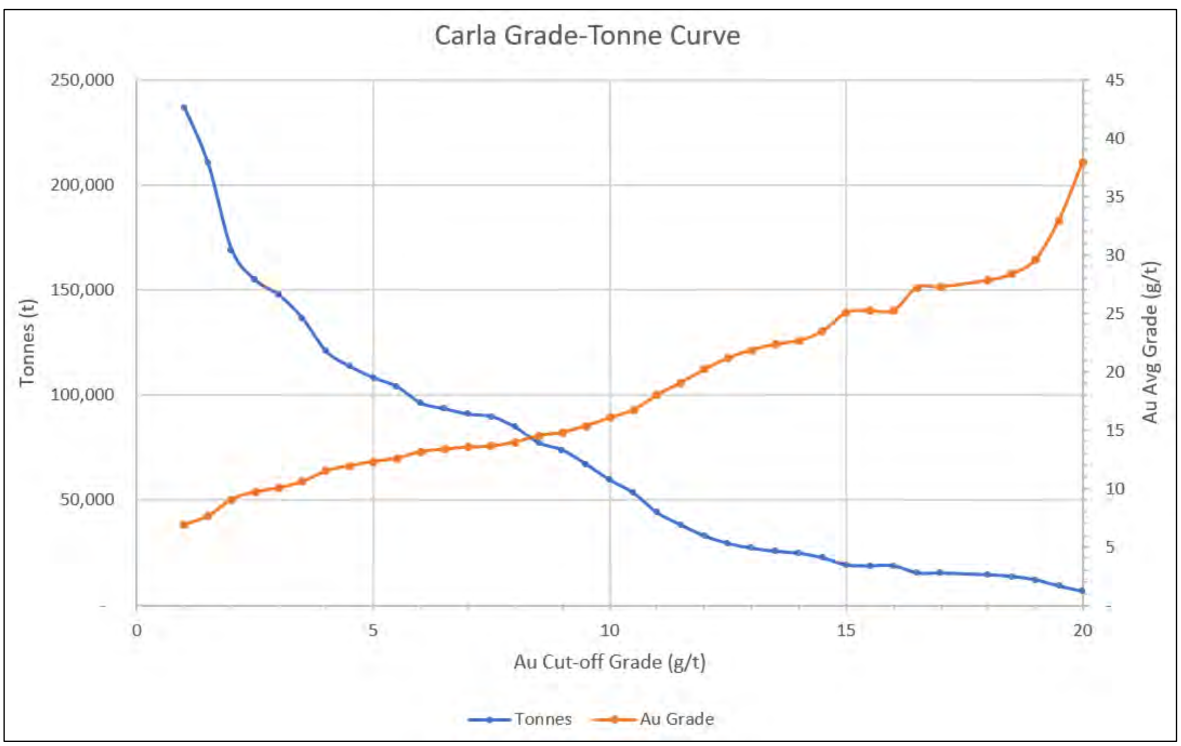
Source: SRK, 2019

Figure 16-4: El Silencio Grade/Tonne Curve (Measured and Indicated Material)



Source: SRK, 2019

Figure 16-5: Sandra K Grade/Tonne Curve (Measured and Indicated Material)



Source: SRK, 2019

Figure 16-6: Carla Grade/Tonne Curve (Measured and Indicated Material)

16.4 Geotechnical

SRK has prepared as separate geotechnical report to support PFS (SRK,2019) level mine designs based on the site investigation conducted by Segovia personnel, Geomecanica del Peru E.I.R.L (Geomecanica del Peru) and a site visit conducted by SRK's geomechanics specialist. In addition to the work conducted by Geomecanica del Peru, Segovia personnel in conjunction with SRK conducted a geotechnical block model based on exploration drillholes, which included a total of 155,245 m of geotechnical information. SRK reviewed and validated the geotechnical data collected by the Segovia exploration group and endorses the results at a PFS level. SRK has recommend that Segovia continue conducting core logging and window mapping to validate the current geotechnical model.

SRK provided a Geotechnical PFS technical report (SRK,2019) which summarizes the historical and latest geotechnical data, also provided design recommendations at PFS level.

In addition to the block model during 2018, Segovia conducted a laboratory testing program with SRK's guidance. The laboratory testing program consisted on 51 uniaxial compressive strength (UCS) tests, 99 multiaxial compressive strength (TXT) tests, 23 indirect tensile tests, and 10-point load tests (PLT).

Table 16-2 summarizes the 2018 lab testing conducted by Segovia with SRK's guidance.

Table 16-2: 2018 Laboratory Test Program

Mine	UCS	TXT	Indirect Tensile (Brazilian- BST)	PLT
Providencia	13	24	7	3
Carla	13	27	5	1
Silencio	15	24	6	3
Sandra K	10	24	5	3
Total	**51**	**99**	**23**	**10**

Source: SRK, Gran Colombia, 2018

Segovia has also implemented systematic traverse mapping with the objective to estimate the rock mass rating (RMR) using the Bieniawski,1989 system. At the time of this report Segovia has conducted a total of 193 face mapping stations, following international standards. Table 16-3 summarizes the total number of windows mapping and the lithology mapped.

Table 16-3: Window Mapping, 2019

Mine	No. of Mapping Stations 1
Providencia	192
Silencio	148
Sandra K	110
Carla	-
Total No. of Stations	**450**

(1) Source: SRK, Gran Colombia, 2019

For the PFS study, SRK reviewed and validated all geotechnical data acquired by Geomecanica del Peru Consulting (Geomecanica del Peru, 2017) and all new data collected during 2018. SRK's specific responsibilities with respect to the geotechnical study consisted of:

- Reviewing Geomecanica del Peru, 2017 geotechnical studies;
- Correlating field observations with the documented data;
- Reviewing structural geology reports and underground cell mapping;
- Reviewing the cell mapping (2018 standards);

- Reviewing of Laboratory test results;
- Confirming the design recommendations provided by Geomecanica del Peru, 2017;
- Providing a PFS Room and Pillar design parameters for new areas of the mines;
- Presenting a conceptual pillar recovery plan; and
- Identify geotechnical data gaps that must be addressed to progress the design to a Feasibility stage.

SRK believes that the data from the field geotechnical investigation is appropriate for supporting a pre-feasibility study (PFS) based on field observations and the work conducted by Gran Colombia. Efforts were tailored to focus on understanding of the mining operations, proposed designs and the geotechnical models that support the design (e.g., databases, rock mass strength, rock mass fabric, structural model).

Table 16-4 summarizes the rock mass strength parameters obtained for each geotechnical unit.

Table 16-4: Rock Mass Rating Summary

Mine	Lithology	UCS (Mpa)		Young's Modulus (Gpa)		Poisson's ratio		Density Ton/m^3		RMR89		GSI	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Providencia	Granodiorite	85	116	36	50	0.12	0.17	2.3	3.2	45	65	40	60
	Quartzite	69	95	29	40	0.06	0.08	2.3	3.1	56	61	51	56
Carla	Granodiorite	74	102	48	65	0.16	0.21	2.3	3.1	-	-	-	-
	Quartzite	51	70	35	48	0.06	0.08	2.3	3.2	70	80	65	75
El Silencio	Granodiorite	44	61	35	47	0.19	0.26	2.3	3.1	60	70	55	65
	Quartzite	35	48	41	57	0.07	0.1	2.3	3.1	60	80	55	75
Sandra - K	Granodiorite	66	90	47	65	0.18	0.25	2.3	3.1	55	65	45	60
	Quartzite	36	49	58	80	0.14	0.19	2.3	3.1	55	75	45	70

GSI: Geological strength Index
Source: SRK, 2019

SRK has provided a PFS design parameters (Table 16-5). The design parameters are suitable for a PFS study level and should not be used for final design without additional engineering analysis of room and pillar stability. The empirical tributary area methods used for assessing pillar design should be augmented with numerical analyses of mining-induced stress conditions due to the depth of the mines and the mine layouts. There are more appropriate empirical methods that should be considered for pillar design (e.g., S-Pillar program). SRK notes that the current mine design is based on extraction ratios and does not include detailed pillar design. Site personnel state that various smaller pillar sizing is used. SRK recommend using these design parameters for long term planning work and additional geotechnical study work should occur to determine if smaller pillar sizing may be appropriate.

Based on the identified mining areas, development was designed as necessary to provide access. In the room and pillar areas, development consists of a 3 m x 3 m development access to the area and a raise/access along the vein (referred to as a tambores). Tambores are developed along the grade of mineralization (~35°) and serve as a material handlings area where material is slushed to and subsequently moved out of the panel. Tambores were not designed into a mining panel, however these should be completed in detailed design prior to mining. In many cases development accesses to panels exist through current working and did not need to be specifically designed.

Table 16-5: PFS Design Parameters

Mine	Pillar Width, WP (m)	Pillar Length, LP (m)	Max Pillar Hight, HP (m)	Room Width, MP (m)
Providencia	2.5	2.5	2.5	2.5
El Silencio (*)	4.0	7.0	3.0	5.5
Sandra K	3.5	3.5	2.5	2.5
Carla	3.5	3.5	2.5	3.5

(*) Pillar dimensions do not include virgin areas
Source: SRK, 2018

SRK believes that there is a good opportunity for implementing a pillar recovery plan. Pillar recovery is among the most dangerous and complex operations in underground mining. The plan should be reviewed in more detail by a geotechnical engineer with experience in pillar recovery and ground control practice in extreme ground conditions. A detailed plan is key to reducing the risk of overall mine instability that could jeopardize future mine plans and worker safety.

The use of timber packs and cement pillars at Carla, Sandra K and Providencia help to increase the extraction ratios. However, the timbers and/or cement pillars must be well designed and follow specifications. Segovia should also implement a monitoring system to identify any excessive pillar deformation that could produce room instability. SRK recommends performing first pass mining and additional pillar recovery using timber and/or cemented pillars to give an overall extraction ratio of approximately 85%.

Providencia at depth has places where the veins are stacked. Sometimes room and pillar mining is above cut and fill, and sometimes it is vice versa. Spacing on the veins ranges from multiple meters to nearly touching. It is usual practice to mine the vein on top first and then the lower one, which might be difficult and problematic in places. In the cases where the lower veins will be mined before the top veins, SRK recommends defining active ground support (cables) to warranty the stability of the crown pillars.

Due to El Silencio’s mine depth, SRK considers that there is potential for increasing the pillar sizes in virgin areas because of the increased stresses resulting from the depth below ground. SRK recommends conducting a pillar stability assessment to determine the correct pillar dimensions.

During 2018 Gran Colombia has tailored its efforts in the implementation of the ground control management plan and incremented the databases and a 3-year geotechnical plan has been delimited by the geotechnical team and mine planning. SRK agrees with the proposed plan and recommends that Segovia conduct the following activities:

- Conduct stress measurement in all mines, starting at Providencia and Sandra K, then continue with the stress measurement at the other mines;
- Continue conducting window mapping to validate the current geotechnical model;
- Conduct mine scale 3D numerical modeling to assess the current mine stability and simulate the following 5 and 10 year mining plans. This model will provide key information to determine the best mine sequence and ground support.

16.5 Hydrogeology

The mine area is in the hydrogeological regional area of Magdalena Cauca. Most of this region is comprised of igneous and metamorphic rocks with limited groundwater storage capacity and hydraulic conductivity. The fractured rocks within the Antioquia department might host local aquifers (IDEAM, 2013).

Preliminary hydrogeological characterization developed for the environmental study in the RPP 140 district (Zandor, 2015) describes Saprolite and bedrock as the two major hydrogeological units in the mine area. The saprolite is draped on the top of the bedrock as a surficial layer and has a thickness from 5 to 45 m. It is formed by clayey material generated through intense weathering processes; consequently, it is considered as a low hydraulic conductivity unit. The bedrock is formed primarily by the Segovia Batholith and dykes, covering almost all of the mine levels. There is a high density of fractures and cracks in this unit, an assumed consequence of the long-term mine activity. Likewise, the mine developments are themselves lineal elements of very high permeability which connect different zones of this unit. Even though the bedrock concentrates most of the groundwater flow and there is no evidence of high-pressured water in the current studied fracture/fault system, the presence of deep aquifers cannot be ignored due to the lack of piezometric data.

SRK has not received new hydrogeological information since the last PFS report (SRK, 2018b). The absence of water level data and permeability tests in the hydrogeological unit make it difficult to describe the groundwater dynamics in this area of study. However, because the mines have been in operation for such a long time, it is likely that a large cone of drawdown exists around each of the mines, and the combined drawdown seems to dominate the mining district. The recharge from precipitation and surface water flows occur primarily in the bedrock unit (Zandor, 2015), draining toward the bottom of the mine due to the cone of drawdown where it is ultimately pumped out to the surface streams close to the mines. Again, the lack of hydrogeological data does not allow for a proper estimate of recharge.

16.6 Surface Water

No information related to surface water impacts to the mine was provided to SRK. The mine facilities do not appear to be impacted by excess surface water run-off. No diversion was evident around the older TSFs. The El Chocho TSF includes surface water diversions in the design, preventing run-on from the surrounding hillsides mixing with the tailings water. The mine appears to be including design elements to address exclusion of surface water from the newer mine facilities. Further discussion of surface water management is described in Section 18.

16.7 Mine Dewatering

The dewatering strategy for the mines allows passive inflow of groundwater into the underground mine. The water flows under gravity to the lower levels of the mine, where it is collected and pumped to the surface. There is no active dewatering infrastructure (wells or galleries) in place that attempts to intercept groundwater before it enters the underground mine.

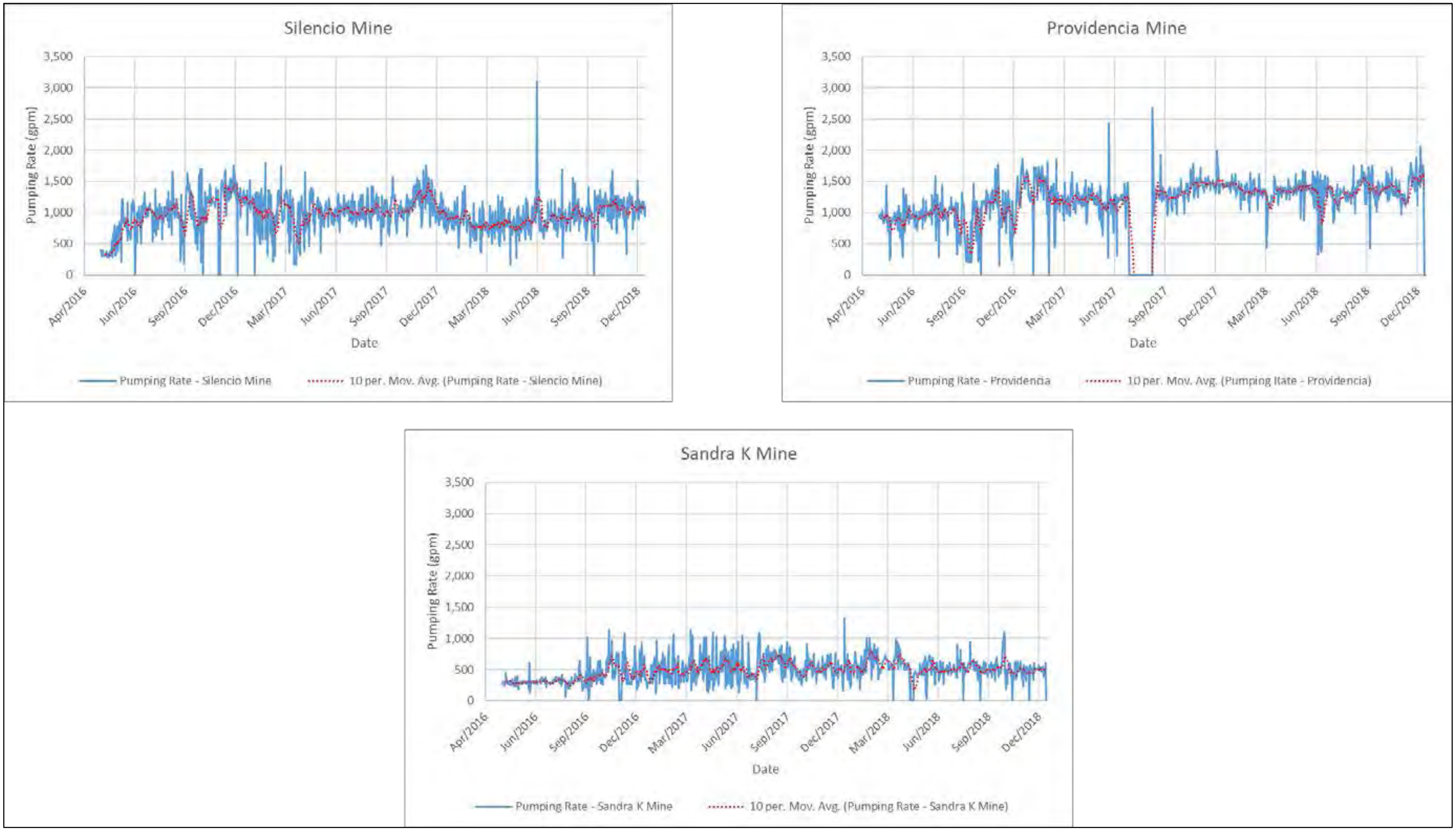
16.7.1 Water Data Sources

The underground dewatering systems for Providencia, Sandra K, and El Silencio are relatively well documented in reports produced by the Company in 2017 entitled Sistema de Bombeo Minas Zandor Proyecto Segovia Remedios. The report documents tank capacities, pump specifications, cross sectional diagrams showing levels and dewatering infrastructure, and plan-view maps. No further information has been received since 2017.

The Company has provided mine discharge data for the Providencia, Sandra K, and El Silencio mines on a daily basis from May 2016 to December 2018. The average effective pumping rate for this period are: El Silencio 978 gpm, Providencia 1,171 gpm and Sandra K 487 gpm. Figure 16-7 shows the daily dewatering records for each mine.

In February 2019, Gran Colombia Gold carried out a preliminary mine reconnaissance to identify and quantify the points of groundwater inflow into the operative mines. As results, plan view maps were generated showing the location and flow rates of the sources of water (Figure 16-9 thru Figure 16-11). Maximum flow rates were:

- 122 gpm for Providencia;
- 180 gpm for El Silencio;
- 45 gpm for Sandra K, and
- 100 for Carla mines.



Source: Gran Colombia, 2017

Figure 16-7: Measured Dewatering Rates

Records of dewatering rates for the Carla mine have not been provided.

The mine discharge data also provides mine water effluent chemistry data from Sandra K, El Silencio and Providencia in spreadsheet format. Samples have been collected and analyzed twice a year from 2011 to 2017. The typical list of analytes includes a short list of metals, pH, conductivity, temperature, oxygen demand, total suspended solids, total solids, E-coli, total hydrocarbons, and sulfate.

16.7.2 Dewatering System

The mines allow a passive inflow of groundwater, using gravity to drain the groundwater to the bottom levels where sumps are used to capture and settle the water. Water is progressively pumped to the surface using a network of water storage tanks at strategic locations. Pumping infrastructure consisting of pipes and hoses ranging from 2-inch to 12-inch diameter and several pumps that delivers the collected water to the surface. A summary description of the dewatering system in each mine is presented below:

Sandra K

The Sandra K Mine has three main levels (1, 2, and 3) and a secondary level (4) reaching an elevation of 377 mamsl at the bottom of the mine. at the bottom of the mine (December 2017). The dewatering system has one main pumping station on Level 3½, one secondary station Level 4, and one back up station on Level 1 ½. Other small pumping systems collect water from Levels 3 and 4 and shafts 6400 and 6430. Table 16-6 shows the main features of the dewatering system installed in the Sandra K Mine.

Table 16-6: Dewatering System in Sandra K

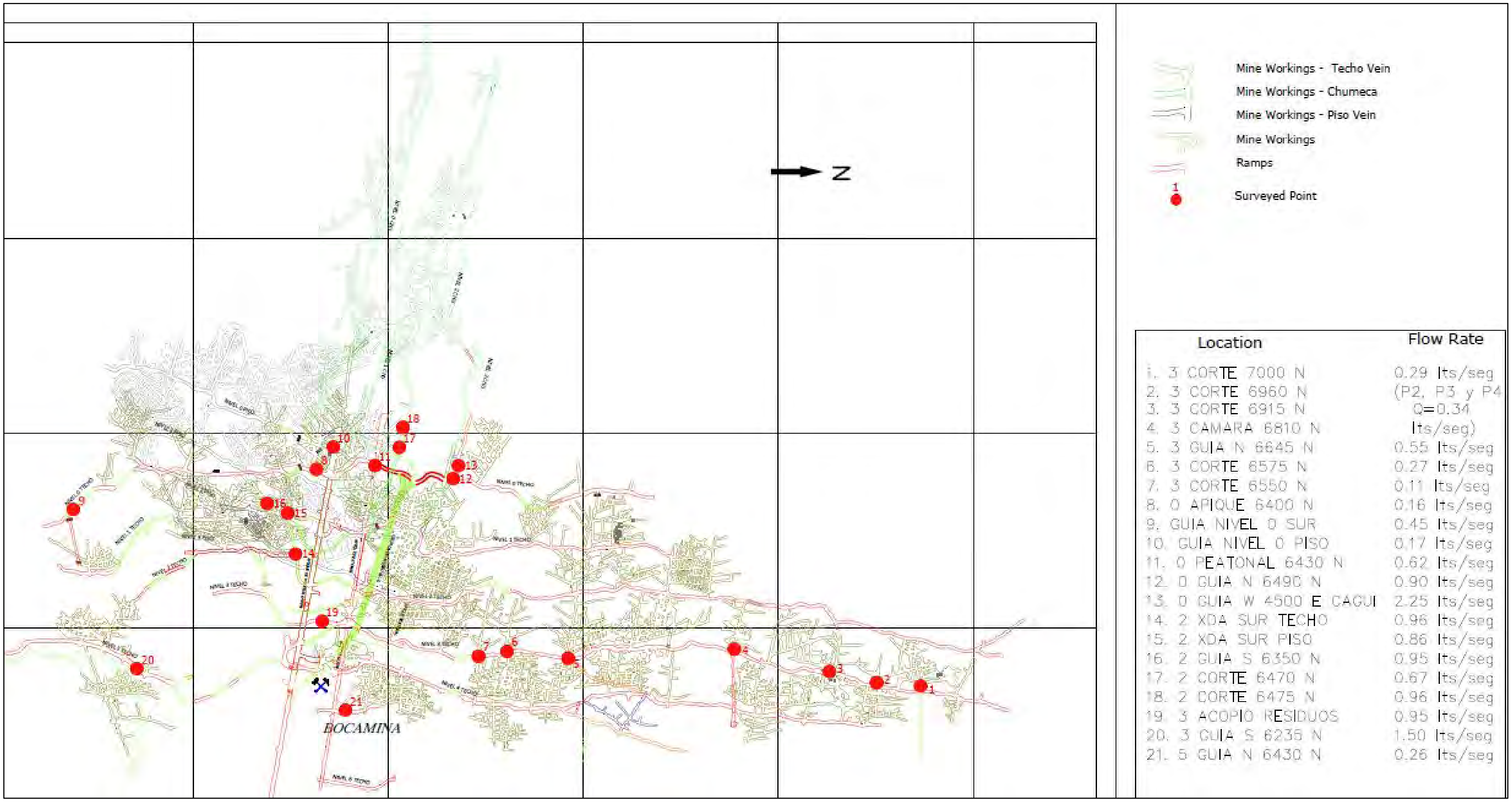
Pumping Station	Suction Point	Discharge Point	Lift Head (m)	Pump Power (hp)	Tank Capacity (m³)
Station Level 4	Level 4 Shaft 6430	Station Level 3 ½	25	25 (1)	145
Station Level 3 ½	Station Level 4 Shaft 6400 Level 3	Level 0 Station Level 1 ½	130 78	150 (1)	250
Station Level 1 ½	Station Level 3 ½ Level 1	Level 0	52	100	145

Source: Gran Colombia, 2017
(1) Back up pump is installed

In 2016 and 2017, Sandra K pumped an average of 464 gpm, keeping water levels at the bottom of the mine (340 mamsl). In 2018, the average pumping rate increased to 526 gpm. The combined total from 2016 to 2018 averaged 487 gpm. The maximum operational pumping rate was above 1,327 gpm for 10 hours (January 2018). The dewatering system has backup pumps on station Levels 3½ and 4, a backup pumping line from station Level 3 ½ to Level 1 ½, as well as an additional pump from station Level 1 ½ to the surface (Level 0).

Sumps at all pumping station levels contain sediment control settling system to clarify the water before pumping.

The hydrogeological mine reconnaissance (Gran Colombia Gold, 2019), identifies moderate groundwater inflows in Level 0 (40 gpm) and Level 2 (45 gpm) (Figure 16-8).



Location	Flow Rate
1. 3 CORTE 7000 N	0.29 lts/seg
2. 3 CORTE 6960 N	(P2, P3 y P4 Q=0.34 lts/seg)
3. 3 CORTE 6915 N	
4. 3 CAMARA 6810 N	
5. 3 GUIA N 6645 N	0.55 lts/seg
6. 3 CORTE 6575 N	0.27 lts/seg
7. 3 CORTE 6550 N	0.11 lts/seg
8. 0 APIQUE 6400 N	0.16 lts/seg
9. GUIA NIVEL 0 SUR	0.45 lts/seg
10. GUIA NIVEL 0 PISO	0.17 lts/seg
11. 0 PEATONAL 6430 N	0.62 lts/seg
12. 0 GUIA N 6490 N	0.90 lts/seg
13. 0 GUIA W 4500 E CAGUI	2.25 lts/seg
14. 2 XDA SUR TECHO	0.96 lts/seg
15. 2 XDA SUR PISO	0.86 lts/seg
16. 2 GUIA S 6350 N	0.95 lts/seg
17. 2 CORTE 6470 N	0.67 lts/seg
18. 2 CORTE 6475 N	0.96 lts/seg
19. 3 ACOPIO RESIDUOS	0.95 lts/seg
20. 3 GUIA S 6235 N	1.50 lts/seg
21. 5 GUIA N 6430 N	0.26 lts/seg

Source: Gran Colombia Gold, 2019

Figure 16-8: Hydrogeological Reconnaissance - Sandra K Mine

Providencia

The Providencia Mine has 14 underground levels, with the deepest one reaching 174 mamsl (December 2017). The dewatering system is divided between a lower block (Levels 14 to 9) and an upper block (Levels 8 to 0). The lower dewatering block has pumping stations at the bottom of the mine (level 14), levels 12 ½, and level 10, and an additional small pumping system which reports to the main systems. The mine utilizes shafts 3530 and 3660 as the major pumping pathways. The upper dewatering block has three pumping lines distributed on Levels 4 and 7, with Line 2 on Level 4 as the main Line; it uses shaft 3530 as the principal axis to evacuate the water, and. Pumping station 2A, also located on Level 4, corresponds to the back-up system for the main Line 2; both systems have independent pumping lines and pumps. Table 16-7 shows the main features of the dewatering system installed in Providencia Mine.

Table 16-7: Dewatering System in Providencia

Pumping Station	Suction Point	Discharge Point	Lift Head (m)	Pump Power (hp)	Tank Capacity (m^3)
Station Level 12	Level 13	Level 12 ½	60	100	100
Station Level 10	Level 10	Level 9 ½	60	100	100
Station Level 8	Level 8	Level 7	91	200	5,000
Station Level 7	Level 7	Level 6 ½	90	200	250
Station Level 4E	Level 4 ½	Level 4	111	150	150
Station Level 4W	Level 4	Level 3	111	200	100

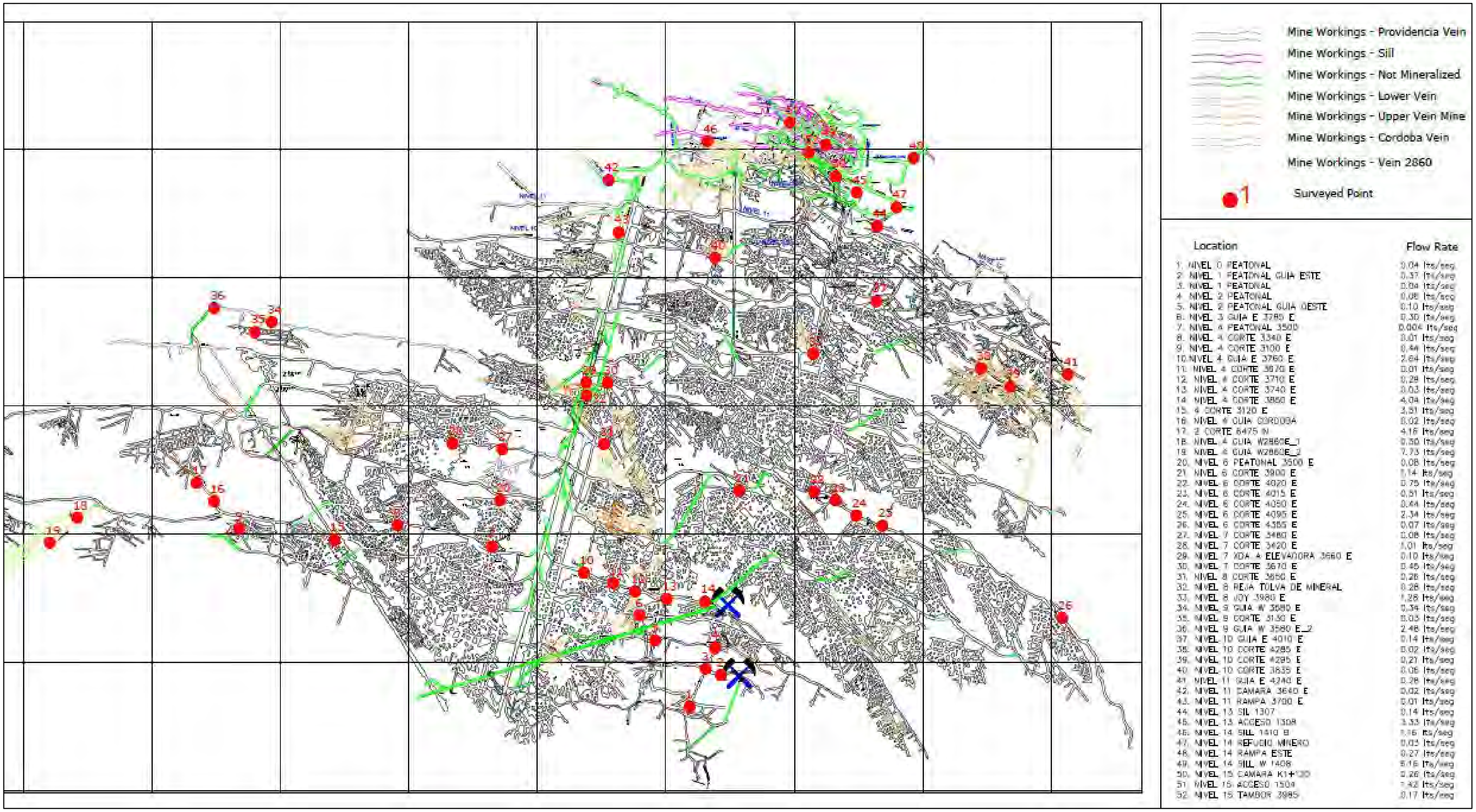
Source: Gran Colombia, 2017

All the tanks mentioned above have a regular maintenance and cleaning schedule, as well as a system to settle suspended solids.

To reduce suspended solids from the mine water, future projects under evaluation include installing a principal settlement tank on level 4, before the last pumping stage to the surface.

In 2016 and 2017, Providencia pumped an average of 1,068 gpm, keeping the water levels at the bottom of the mine (150 mamsl). In 2018, the average pumping rates increased to 1,342 gpm. The combined total from 2016 to 2018 averaged 1,171 gpm. The maximum operational pumping rate was 2,666 gpm for 16 hours (September 2017). Secondary pumps have been installed in all the pumping stations as an emergency backup system.

The hydrogeological mine reconnaissance (Gran Colombia Gold, 2019), identifies relatively high groundwater inflows at Level 6 (63 gpm), Level 4 (75 gpm), Level 2 – 6475 (77 gpm), western end of Level 4 (122 gpm) and Level 14 – Sill (97 gpm) (Figure 16-9).



Source: Gran Colombia Gold, 2019

Figure 16-9: Hydrogeological Reconnaissance - Providencia Mine

El Silencio

The El Silencio mine is the oldest and deepest in the Segovia district, with operations extending back more than 100 years, and a bottom elevation of -165 mamsl (Level 43). Artisanal mine operations occur on Levels 26 to 43, and the mechanical mining equipment is housed on level 24 north and south. The three major shafts are Shaft Zero (Level 32 to surface), Shaft Bolivia (Level 23 to surface) and Shaft 450 (Level 43 to 28); all of them are used as major pumping pathways for dewatering. Shaft Zero evacuates to the surface all the water collected from shafts 450 and Bolivia through Levels 26 and 23 respectively. The pumping system in the bottom of the mine (Level 43) uses shaft 120 to evacuate the water to the transfer location on Level 28, and then to shaft 450. The total lift head is approximately 853 m.

The dewatering system has seven major pumping tanks and two transfer stations distributed from Level 43 to Level 7. Table 16-8 shows the main features of the dewatering system installed in El Silencio mine.

Table 16-8: Dewatering System in El Silencio

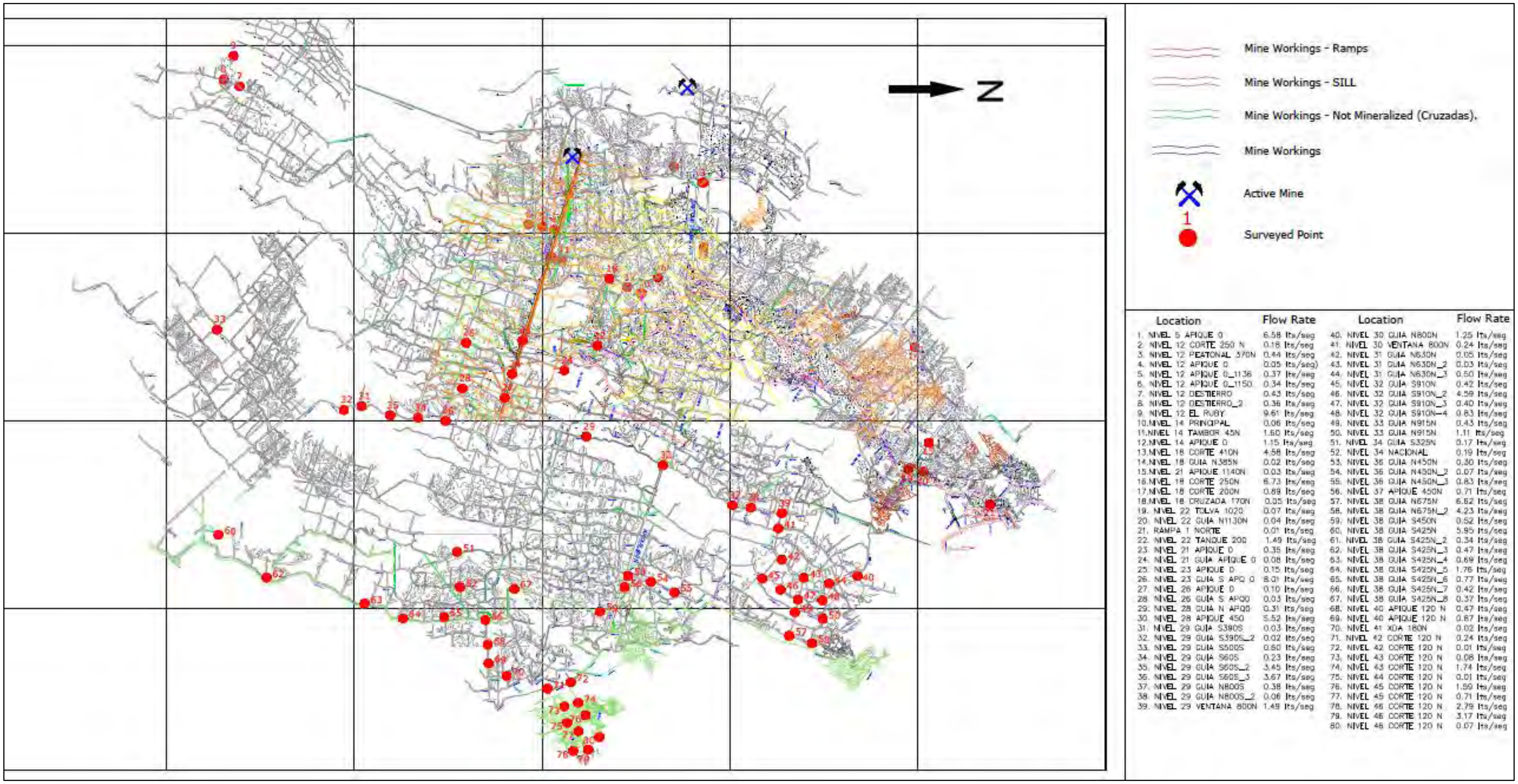
Pumping Station	Suction Point	Discharge Point	Lift Head (m)	Pump Power (hp)	Tank Capacity (m^3)
Level 43 Shaft 120	Level 43 (Shaft 120)	Level 39 (Shaft 450)	105	125	Shaft Bottom
Level 39 Shaft 450	Level 39 (Shaft 450)	Level 34 (Shaft 450)	117	200	408.24
Level 34 Shaft 450	Level 34 (Shaft 450)	Transfer level 31 (Shaft 450)	118	200	363
Level 31 Shaft 450	Transfer level 31 (Shaft 450)	Transfer level 28 (Shaft 450)	90	200	-
Level 28 Shaft 450	Transfer level 28 (Shaft 450)	Level 23 (Shaft 0)	96	200	-
Level 23 Shaft 0	Level 23 (Shaft 0)	Level 19 (Shaft 0)	85	275	1905.12
Level 19 Shaft 0	Level 19 (Shaft 0)	Level 16 (Shaft 0)	45	200 150	680
Level 16 Shaft 0	Level 16 (Shaft 0)	Level 7 (Shaft 0)	147	200 200	1905.12
Level 7 Shaft 0	Level 7 (Shaft 0)	Ground Surface	50	200 200	737.1

Source: Gran Colombia, 2017

In 2016 and 2017, El Silencio pumped an average of 1,007 gpm, keeping the water levels at the bottom of the mine (-268 mamsl). During 2018, the average pumping rate decreased to 930 gpm. The combined total from 2016 to 2018 averaged 978 gpm. The maximum operational pumping rate was above 3,106 gpm for 8 hours (June 2018). Secondary pumps have been installed in the pumping stations as an emergency backup system.

The current dewatering system fits the needs for the mine operations at Sandra K, Providencia and El Silencio mines. Future mine plans are up to 70 m deeper than the current one; this will increase the groundwater inflow into the mine as well as the lift head. The mine dewatering system will in the future need to accommodate the new development. The design should consider potential inrush flow from deep aquifers, and/or high-pressure water in fracture/fault systems. Such a design will need to be based on drilling and hydraulic testing to estimate static heads and the potential for large inrush events from faults or fracture sets.

The hydrogeological mine reconnaissance (Gran Colombia Gold, 2019), identifies high groundwater inflows in the northeastern part of Level 38 (180 gpm), Level 18 (180 gpm) and in the western end of the Levels 43, 45 and 46 (150 gpm). Lower flow rates can be found in the southern part of Level 12 (150 gpm), Level 23 (130 gpm), and Level 29 (120 gpm) (Figure 16-10).

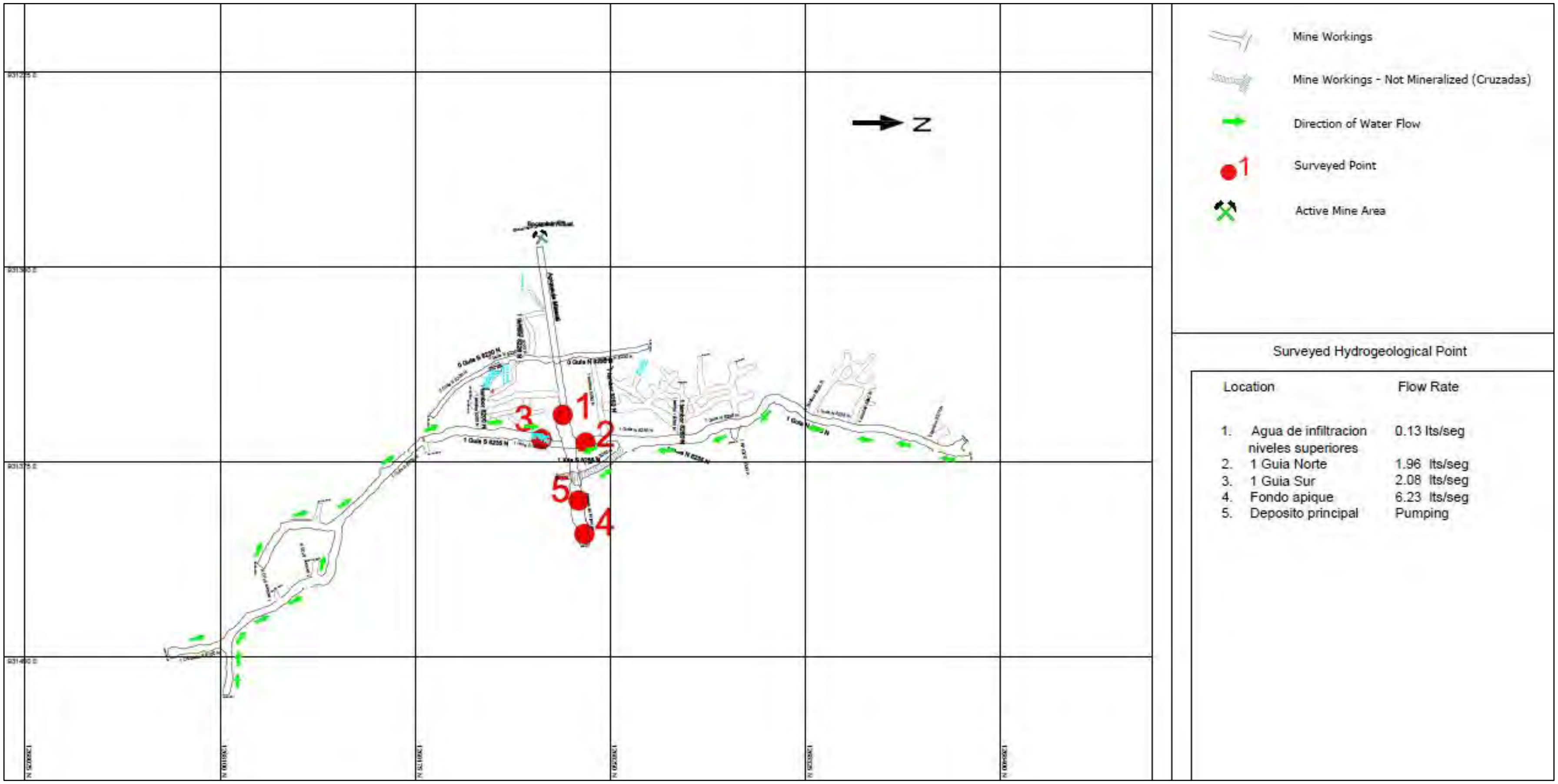


Source: Gran Colombia Gold, 2019

Figure 16-10: Hydrogeological Reconnaissance - El Silencio Mine

The Carla mine is located 4.2 km south of Providencia mine. It is a shallow mine with a projected bottom elevation 180 m below ground level. Given the mine bottom elevation (500 mamsl) and the distance from the major mines in the Segovia district, it can be considered independent from the dewatering influences at the El Silencio, Providencia, and Sandra K mines. No details of Carla's dewatering systems were available for SRK review. It is SRK's opinion that a dewatering system needs to be evaluated and presented in a similar way as those described above.

The hydrogeological mine reconnaissance (Gran Colombia Gold, 2019), identifies moderate groundwater inflows in the bottom of the shaft (100 gpm) (Figure 16-11).



Source: Gran Colombia Gold, 2019

Figure 16-11: Hydrogeological Reconnaissance – Carla Mine

16.8 Geochemical

A substantial effort is needed to bring the mine into conformity with international best practices of data collection, management, and geochemical characterization. Implementation of a comprehensive data collection and management program will form the quantitative basis for understanding the current status, forecasting future impacts, and designing concurrent and post-closure mitigation measures to minimize environmental impacts. The primary areas of risk related to geochemistry are presented in Section 20.1.3.

16.9 Identifying Minable Areas

The block models were constructed in such a way that there is a single block in the z direction through the mineralization. The block is assigned a thickness based on the geological wireframes. Due to this type of block model construction, a stope optimization type of approach was deemed unnecessary and more of a grid type model approach was used for mine planning.

To determine minable areas, the grades in the block model were diluted to include a minimum mining height and expected overbreak dilution, as discussed in Section 15.1.1. The diluted grades above cut-off, based on mining method, were then displayed on the screen and polygons were drawn around minable panel areas. This was done for each individual vein (as some veins are stacked on top of each other). Panel sizes vary considerably from small panels around existing workings to larger panels in new mining areas.

Once mining areas were identified, the geologic vein triangulations were cut to the polygons giving a 3-D shape showing the mining area (without dilution). Cut and fill area triangulations were further cut into 3 m high levels to provide specific tonnage/grade information for each cut. Tonnages and grades for each of the shapes was then reported based on the diluted tonnages and grades in the block model. As discussed in Section 15.1.2, recovery/extraction was applied to the tonnes/grade of each mining shape to determine the reserve.

There are ownership boundaries at the various areas which have been considered in the design process. Land ownership is discussed in Section 4.3.

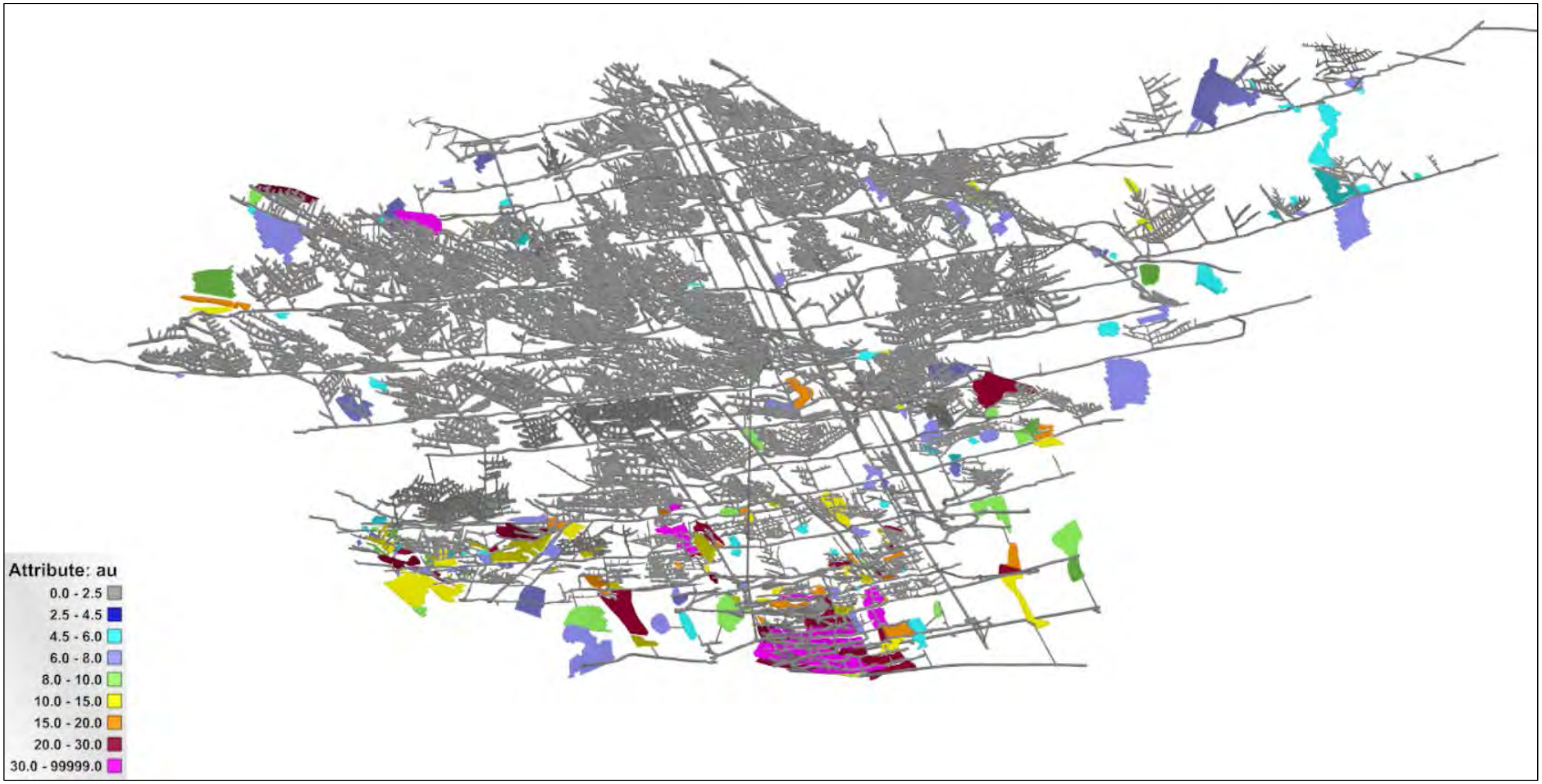
16.10 Mine Design

Based on the identified mining areas, development was designed as necessary to provide access. In the room and pillar areas, development consists of a 3 m x 3 m development access to the area and a raise/access along the vein (referred to as a tambores). Tambores are developed along the grade of mineralization (~35°) and serve as a material handlings area where material is slushed to and subsequently moved out of the panel. Tambores were not designed into a mining panel, however these should be completed in detailed design prior to mining. In many cases development accesses to panels exist through current working and did not need to be specifically designed.

In cut and fill areas, main ramps are designed either in the hanging-wall or the footwall (footwall vs hanging-wall determined based on existing underground openings) and are offset approximately 35 m from the veins. Main ramp sizes range from 3 m x 3 m to 4.5 m x 4.5 m dependent on mining area. Main ramp grades are 13 % with turning radius ranging from 11 m to 15 m. The main ramps connect to the veins via attack ramps which are all sized as 3 m x 3 m openings. Currently the ramp has been developed to the lowest cut and fill level and attack ramps have been completed to select levels.

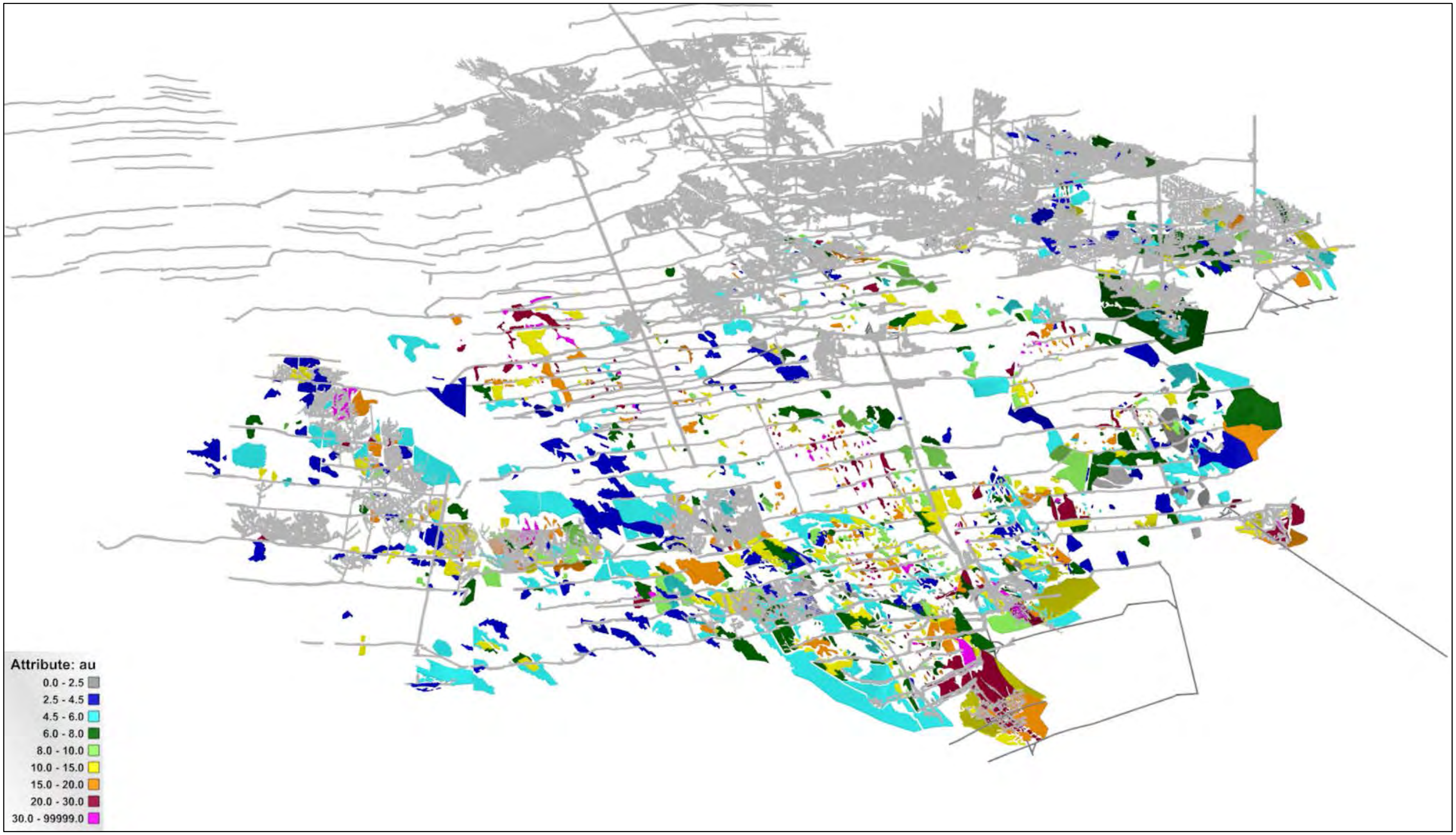
Additional infrastructure such as raises and ventilation connections were designed as necessary. Waste tonnages were calculated using a density factor of 2.7 t/m^3.

Figure 16-12 to Figure 16-15 show the completed mine design, colored by Au grade, for each mining area.



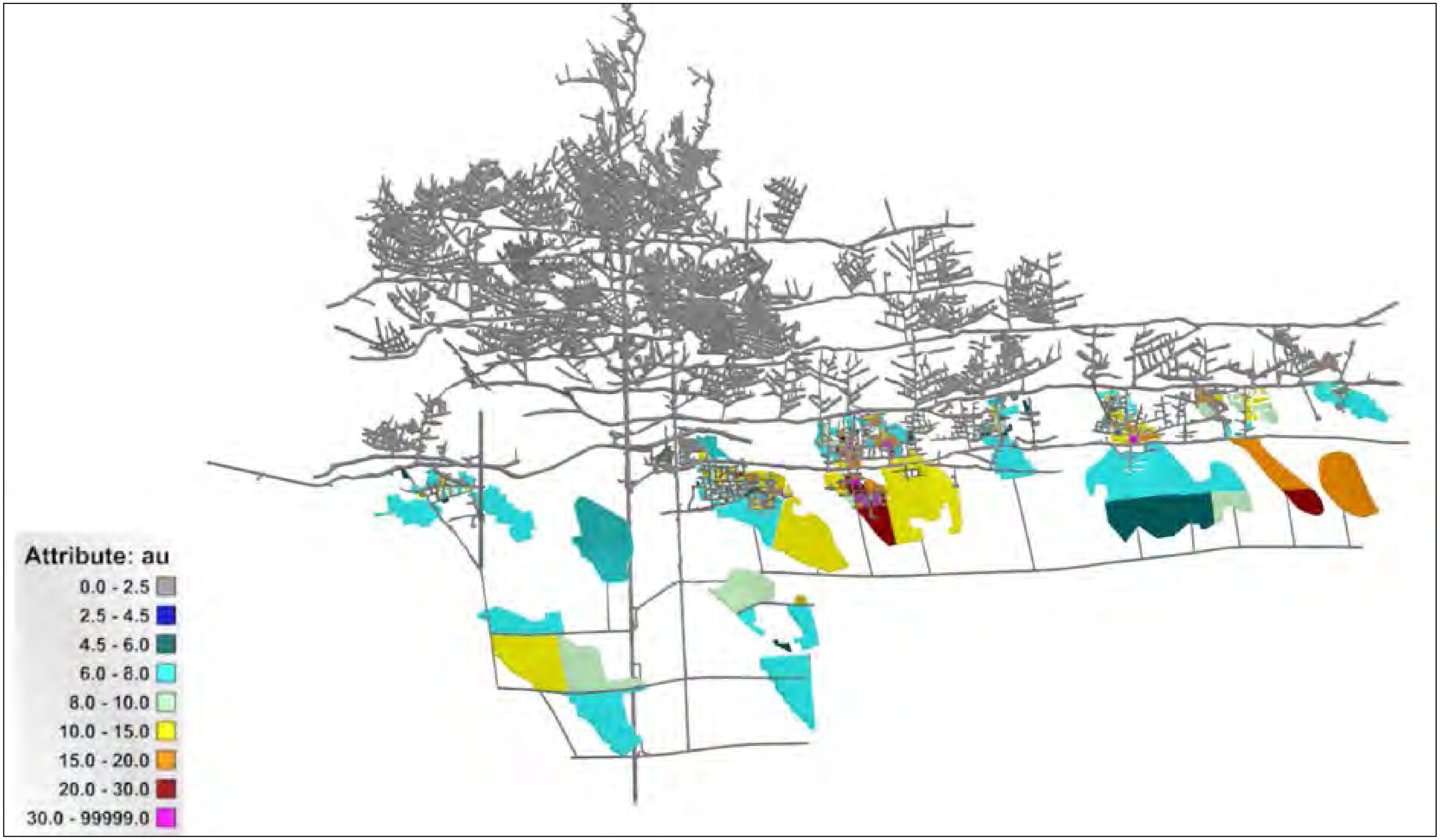
Source: SRK, 2019

Figure 16-12: Providencia Mine Design, Colored by Au Grade



Source: SRK, 2019

Figure 16-13: El Silencio Mine Design, Colored by Au Grade



Source: SRK, 2019

Figure 16-14: Sandra K Mine Design, Colored by Au Grade

Source: SRK, 2019

Figure 16-15: Carla Mine Design, Colored by Au Grade

The mine design total tonnage and Au quantities are summarized in Table 16-9. The mining areas are mined by the owner and by contractors and include mining of remnant pillars.

Table 16-9: Summarizes the Mine Design for Each Area

Area	Mining Type	Tonnes (t)	Au Grade (g/t)	Ounces Mined (oz)
Providencia	Owner Cut & Fill	70,243	30.70	69,338
	Owner Room & Pillar	245,941	12.11	95,797
	Sub - Total	**316,184**	**16.24**	**165,135**
	Masora - Contractor Remnant Pillar	82,164	20.65	54,545
	PV Ore Total	**398,348**	**17.15**	**219,680**
	Waste Development	67,854		
Carla	Owner Cut & Fill	-	-	-
	Owner Room & Pillar	104,007	10.06	33,646
	Carla Total Ore	**104,007**	**10.06**	**33,646**
	Waste Development	34,123		
Sandra K	Owner Cut & Fill	-	-	-
	Owner Room & Pillar	170,840	9.82	53,914
	Sandra K Total Ore	**170,840**	**9.82**	**53,914**
	Waste Development	47,222		
El Silencio	Navar -Contractor Room & Pillar	322,609	17.01	176,388
	Owner Room & Pillar	945,402	6.72	204,302
	El Silencio Total Ore	**1,268,011**	**9.34**	**380,690**
	Waste Development	90,162		
Total Ore		**1,941,206**	**11.02**	**687,930**
Total Waste Development		**239,361**		

Source: SRK, 2019

16.11 Productivities

Productivities are developed from the existing operations and based on productivity improvements that mine personnel think achievable given additional equipment/training. The current productivities are low if benchmarked against other projects in Mexico and South America but are improving.

General schedule parameters applicable to all underground mining activities are presented in Table 16-10.

Table 16-10: Schedule Parameters for Underground Mining

Schedule Parameters	Units	Value
Annual mining days	days/year	360
Mining days per week [1]	days/week	7
Shifts per day	shifts/day	3
Scheduled shift length	hrs/shift	8
Scheduled Deductions		
Travel to/from the underground working area from the surface	hrs/shift	1
Workplace examinations/equipment pre-shift inspections	hrs/shift	0.25
Lunch	hrs/shift	0.5
Breaks	hrs/shift	0.5
Total Scheduled Deductions	**hrs/shift**	**2.25**
Operating time (scheduled shift length less scheduled deductions)	hrs/shift	5.75
Effective time (operating time reduced to a 50-minute hour, i.e., multiplied by 83.3%)	hrs/shift	4.79

(1) 50% of mine personnel work on Sundays, extracting normal production.
Source: SRK, 2019

Table 16-11 summarizes the productivities used in the production schedule. Note that these rates are based on full months (i.e. operating every day of the month). In the past, 26 days/month were used, however Gran Colombia has been working to increase this and full working months are expected going forward. In some larger panels or where two mining faces may be available rates were increased on a case by case basis.

Table 16-11: Productivities used in the Prodcution Schedule (1,2)

Area	Activity Type	Rate
Providencia	Main Ramp (3 m x 3.5 m)	65 m/month
	Development Accesses (3 m x 3 m)	50 to 65 m/month
	Apique (4 mx2.5 m)	20-40 m/month
	Tambores (1.8 m x 1.8 m)	40 m/month
	Attack Ramps (3 m x 3 m)	168 m/month
	Room and Pillar Mining	45 t/d
	Cut and Fill Mining	35 t/d
	Masora Mining	35 t/d
El Silencio	Apique (variable sizes)	30-35 m/month
	Main Ramp (4 m x 4 m)	46-60 m/month
	Development Accesses (variable sizes)	40-60 m/month
	Room and Pillar Mining	30 t/d
Sandra K	Apique (variable sizes)	20-25 m/month
	Development Accesses (2.2 m x 2.3 m)	78 m/month
	Tambores (1.8 m x 1.8 m)	40 m/month
	Room and Pillar Mining	35 t/d
Carla	Apique (6 m x 2.5 m)	30 m/month
	Development Accesses (2.2 m x 2.3 m)	40 m/month
	Tambores (2 m x 2 m)	40 m/month
	Room and Pillar Mining	35 t/d

Source: SRK/Gran Colombia, 2019
(1) Note that dimensions used in this mine design may vary slightly from actual development (i.e., 3 m x 3 m vs 3 m x 3.2 m) These minor dimension changes can be made at the detailed mine planning stage.
(2) Rates for items such as ventilation raises/connections, apique pockets, etc. were applied on an individual basis using existing production information.

16.12 Mine Production Schedule

Production schedules were generated using iGantt scheduling software and is based on mining operations occurring 365 days/yr. The mill is expected to operation 92% of the time, or 335 days/year. A total production rate, from all mining areas, of approximately 31,000 t/m (1,050 t/d based on 335 days/yr) was targeted for 2019. Subsequent years target approximately 37,500 t/m (1,250 t/d based on 335 days/yr). Material quantities from each mine vary over time with approximate targeted averages as follows (based on 335 days/yr):

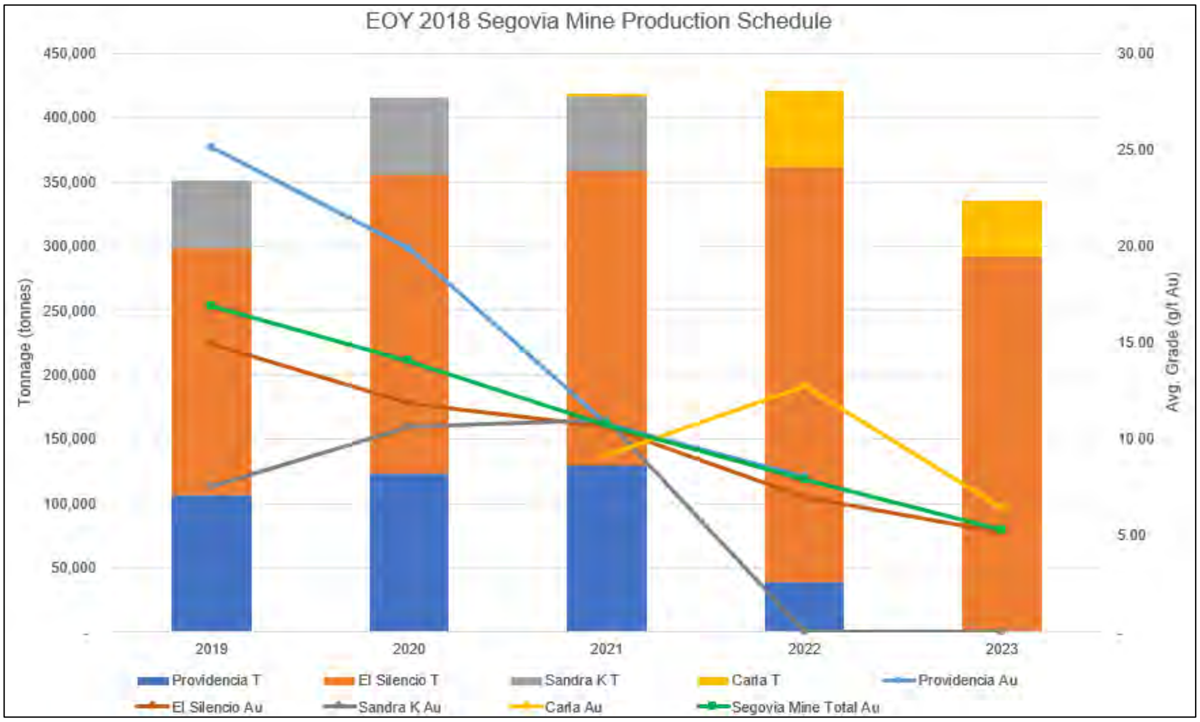
- Providencia (owner and contractor): 320-390 t/d;
- Sandra K: 160-180 t/d;
- Carla: 190 t/d; and
- El Silencio – initially 570 t/d, increasing to 960 t/d.

Table 16-12 and Figure 16-16 present the production schedules. Figure 16-17 to Figure 16-20 show the annual mining schedule for each area. Figure 16-21 shows the in situ ounces by mine. Additional detailed mine planning is recommended at El Silencio to ensure appropriate blending similar to that presented in this PFS schedule.

Table 16-12: Segovia Mine Production Summarized Schedule

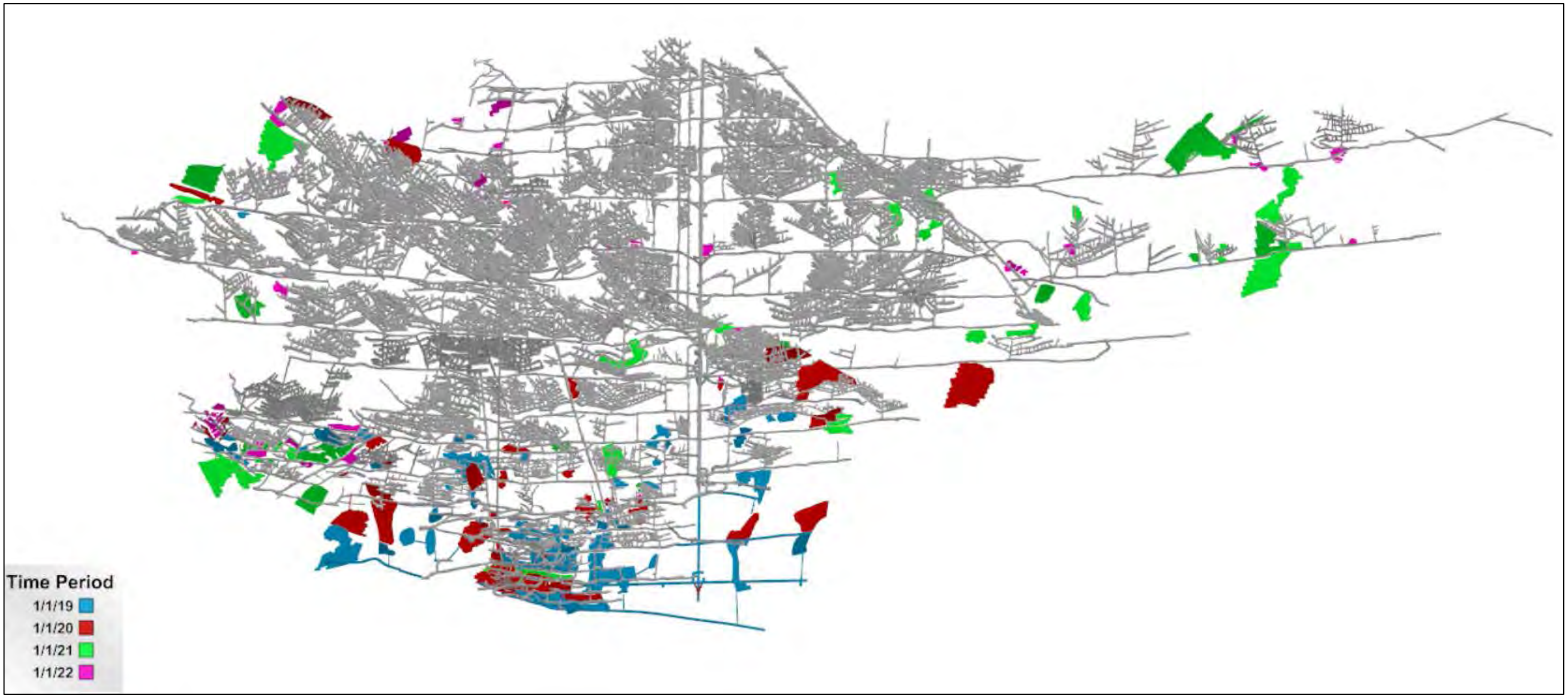
Description	Units	2019	2020	2021	2022	2023	Total
Tonnes	(t)	351,016	415,473	418,675	420,503	335,535	1,941,202
Ounces In situ	(oz)	190,904	187,768	144,768	106,949	57,537	687,926
Au Grade	(g/t)	16.92	14.06	10.75	7.91	5.33	11.02
Waste Tonnes	(t)	138,487	61,901	29,118	7,979	1,878	239,363

Source: SRK, 2019



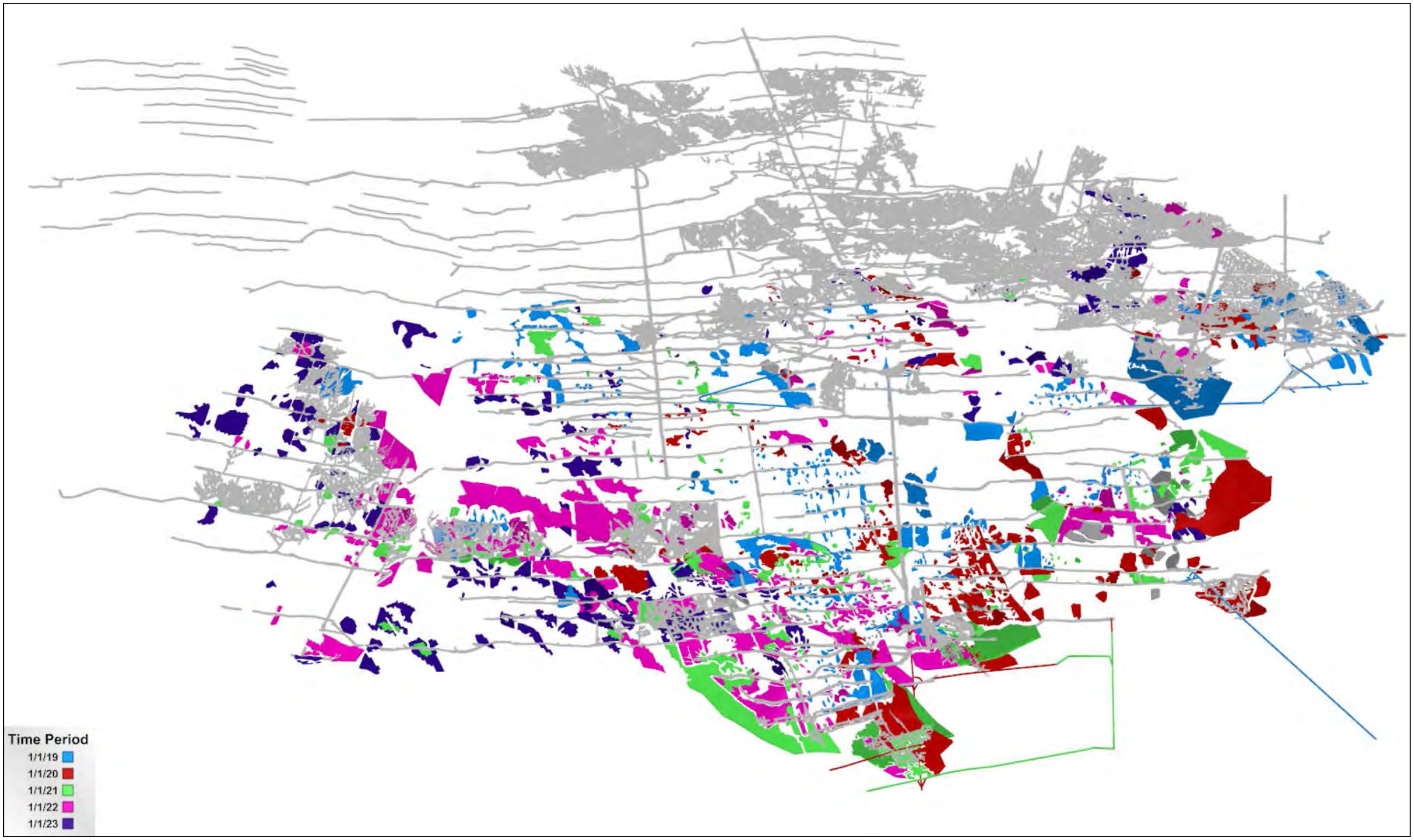
Source: SRK, 2019

Figure 16-16: Segovia Mine Production by Area



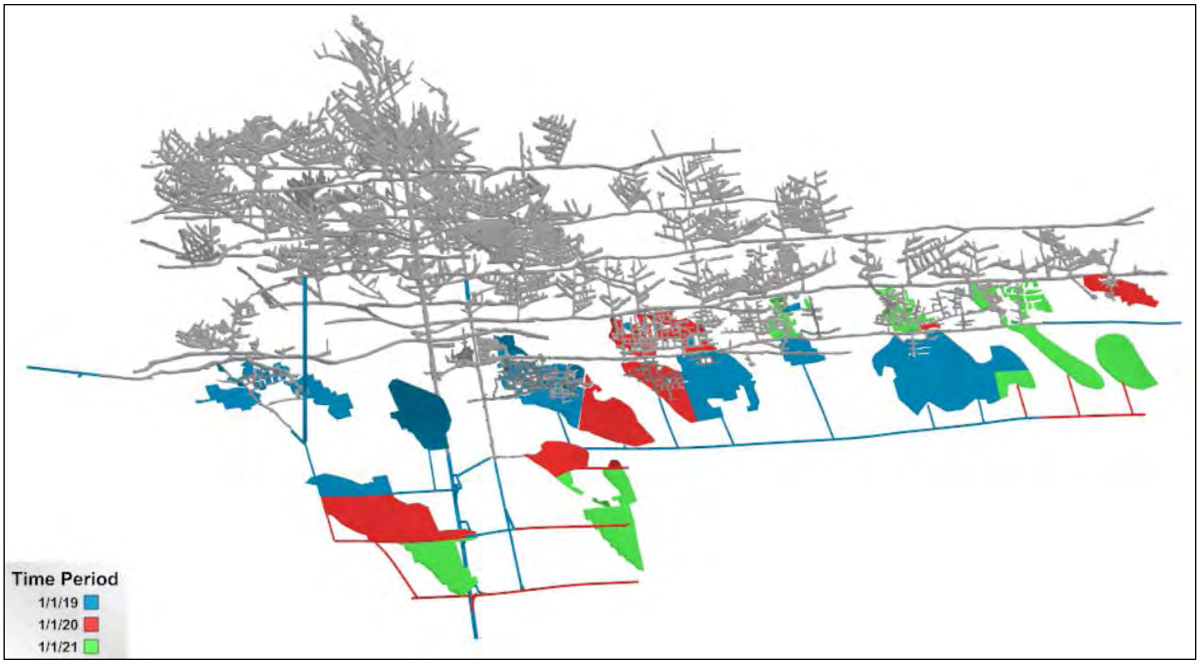
Source: SRK, 2019

Figure 16-17: Providencia Mine Production Schedule Colored by Time Period



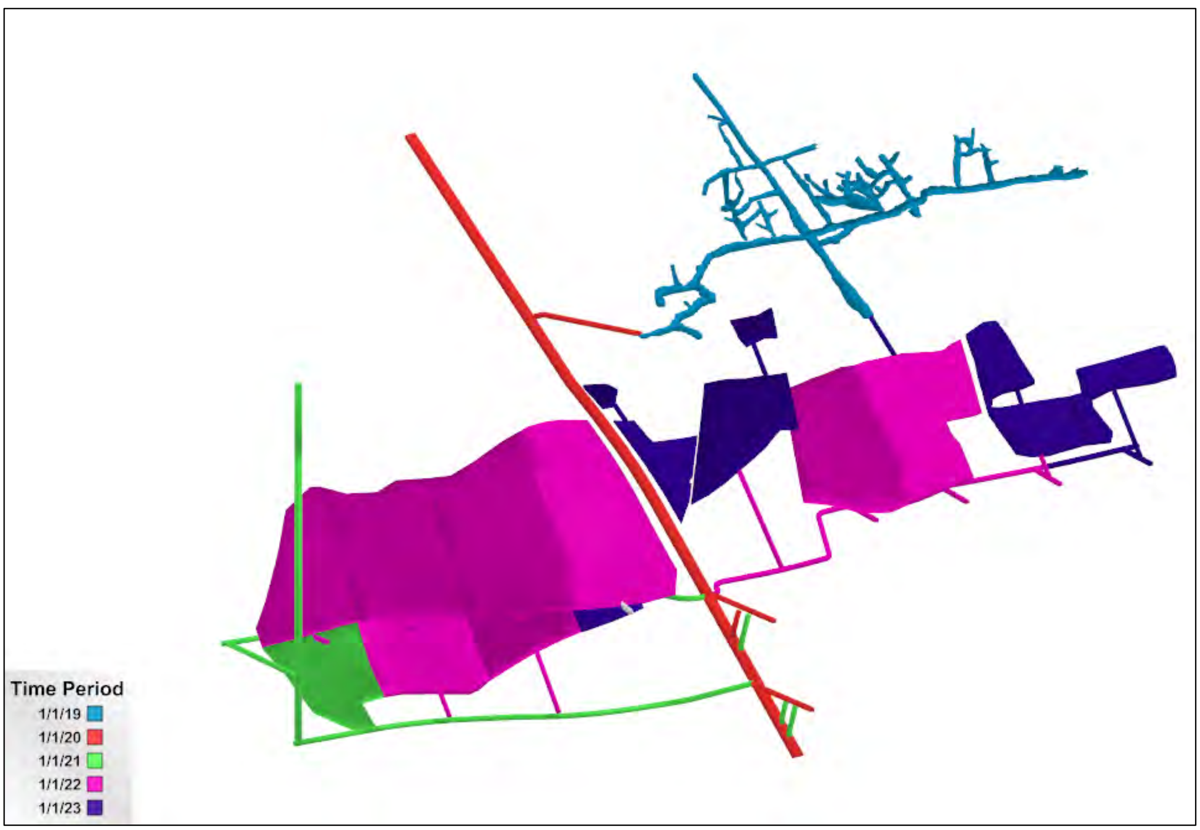
Source: SRK, 2019

Figure 16-18: El Silencio Mine Production Schedule Colored by Time Period



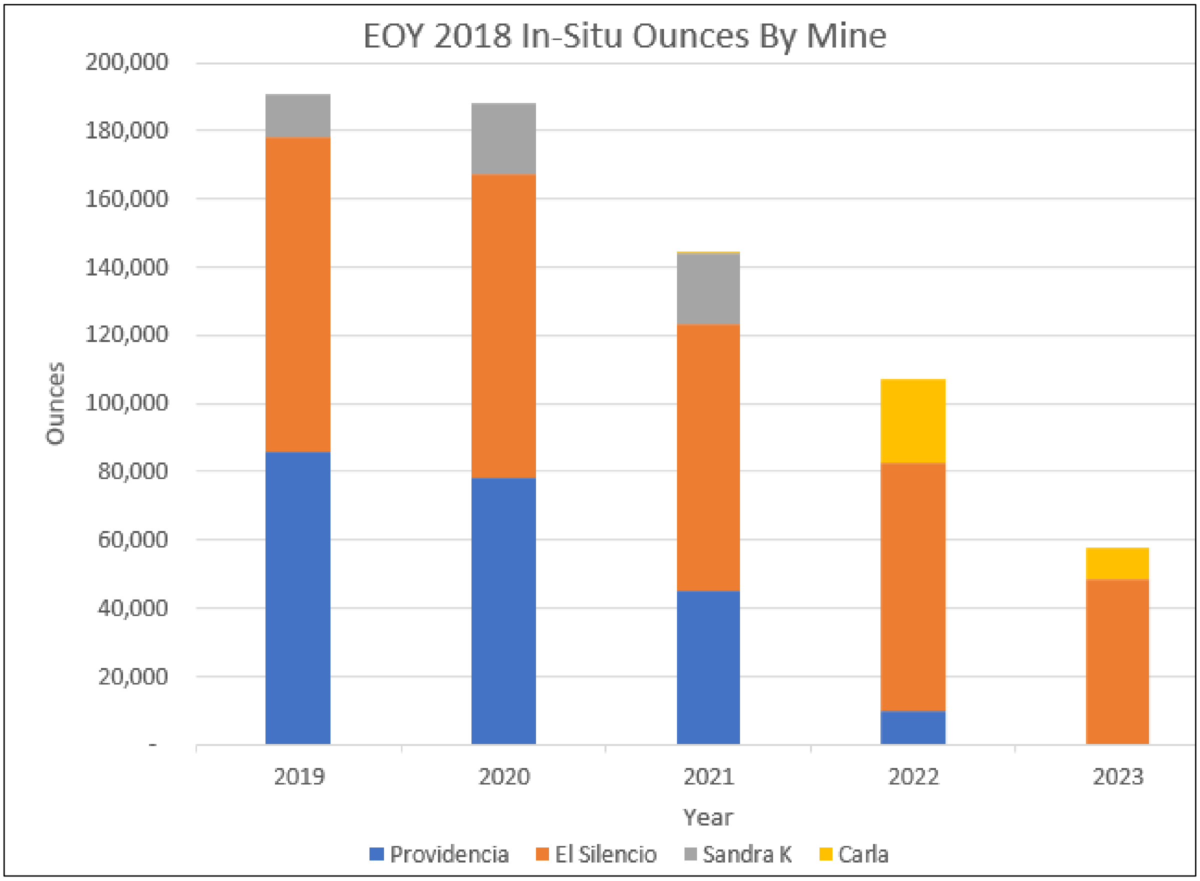
Source: SRK, 2019

Figure 16-19: Sandra K Mine Production Schedule Colored by Time Period



Source: SRK, 2019

Figure 16-20: Carla Mine Production Schedule Colored by Time Period



Source: SRK, 2019

Figure 16-21: In Situ Au Ounces by Mine

Appendix C shows tables with detailed scheduled information for each area as well as yearly mine progression for each area.

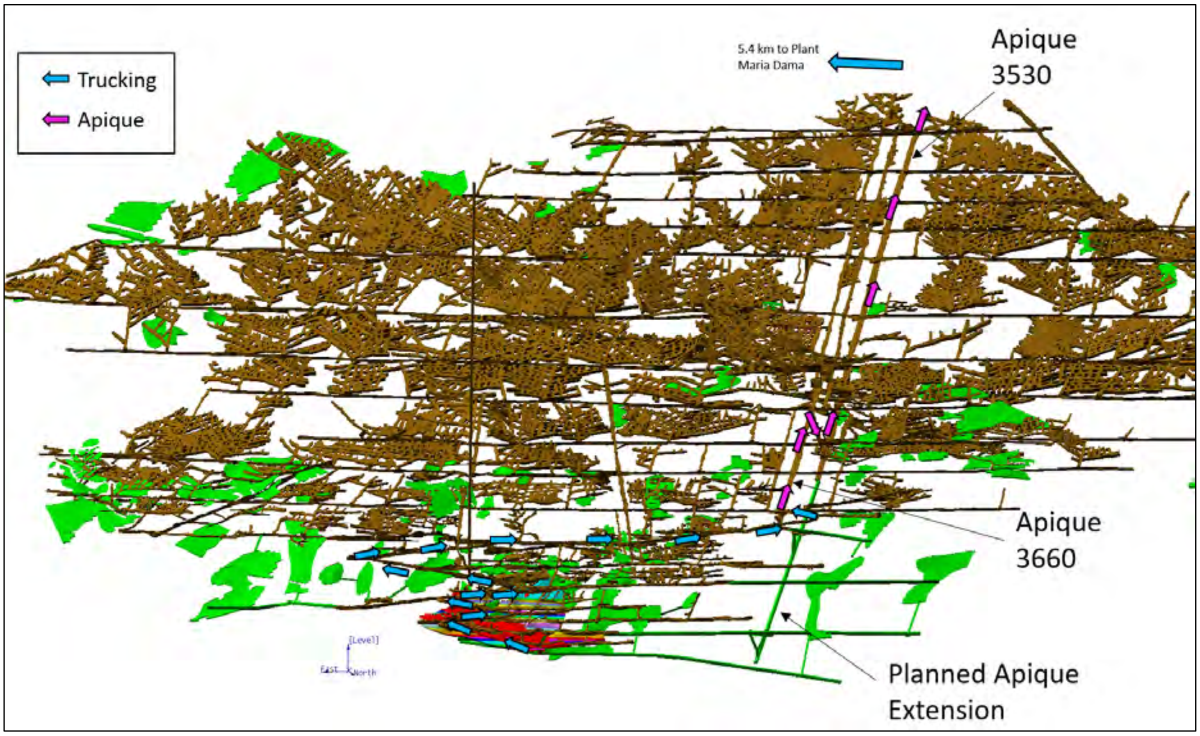
16.13 Mining Operations

16.13.1 Mine Access

SRK has reviewed the current limitations of the apique hoist systems and have the following comments:

- Providencia apique system has a capacity of 550 t/d. This system is currently being used by the owner and contract miners. The mine plan has combined ore and waste production of 350 to 450 t/d (based on year-round operations). The current apique system capacity will be sufficient to handle the proposed tonnage. Apique 3530 provides access from level 9 to the surface and has a capacity of 650 t/d. Apique 3660 has a capacity of 550 t/d and provides service from level 11 to level 8.

Figure 16-22 shows a general Providencia material flow.

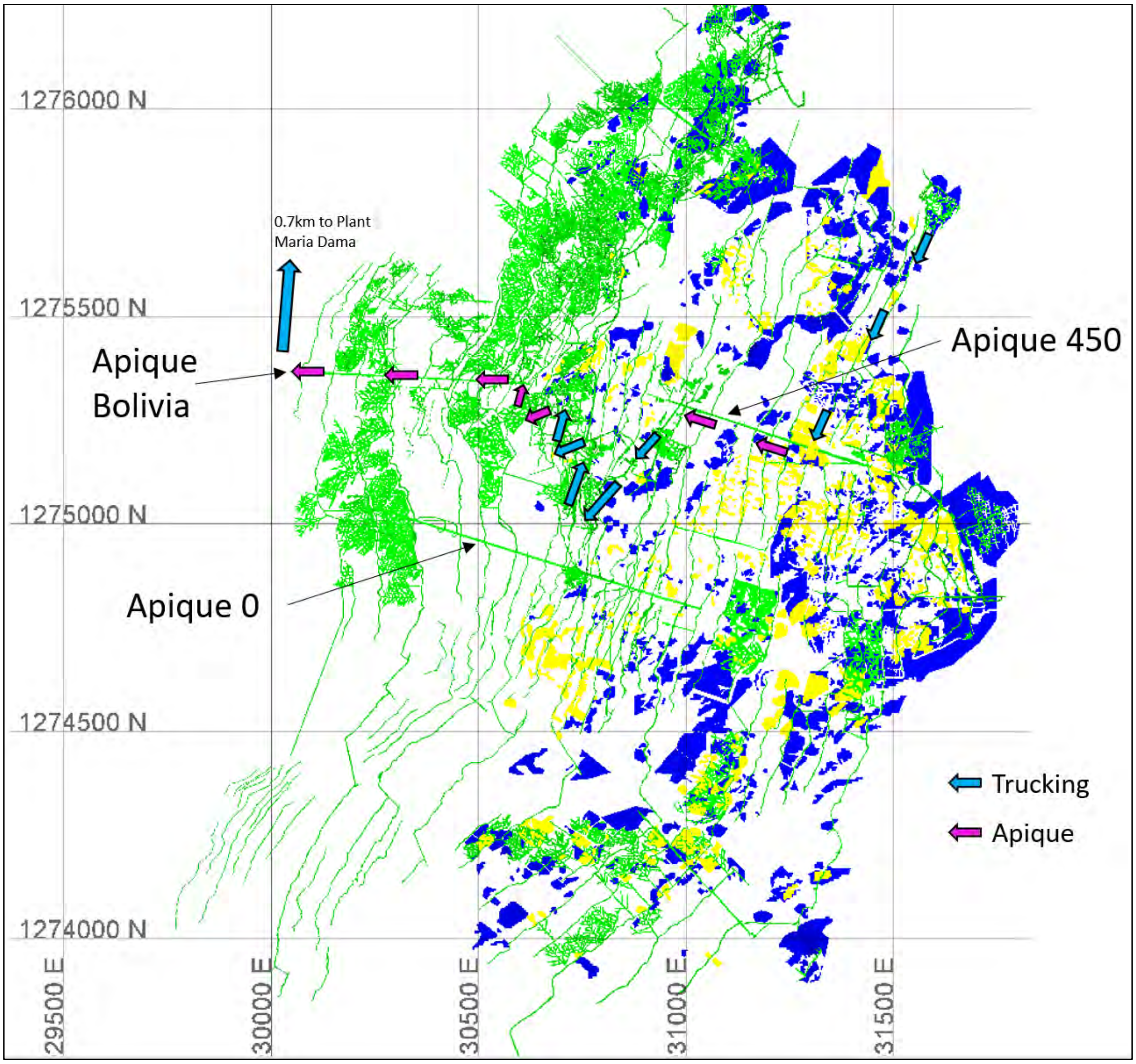


Source: SRK, 2019

Figure 16-22: Providencia Mine Ore Path to Surface (rotated view)

El Silencio Mine is accessed via several apique systems. Apique Bolivar provides access from the surface to level 18 and has a capacity of 800 t/d. It used for GCM production. Apique Cero is used primarily by the contractor Navar and provides access from the surface to level 28 and has a capacity of 480 t/d. Apique 450 provides Navar access from level 28 to the deepest portions of the mine at level 28. The 450 apique will be re-powered to provide a 600 t/d capacity in Q2 2020. There are ramps in some areas connecting various apique systems. Current projects at the mine include deepening of Apique Bolivia, completing a ramp near Apique 0, and a new apique at depth to the northeast. There is a raise to surface in the norther part of the mine which has just been completed. The mine plan has combined ore and waste production of 720 to 970 t/d (based on year-round operations).

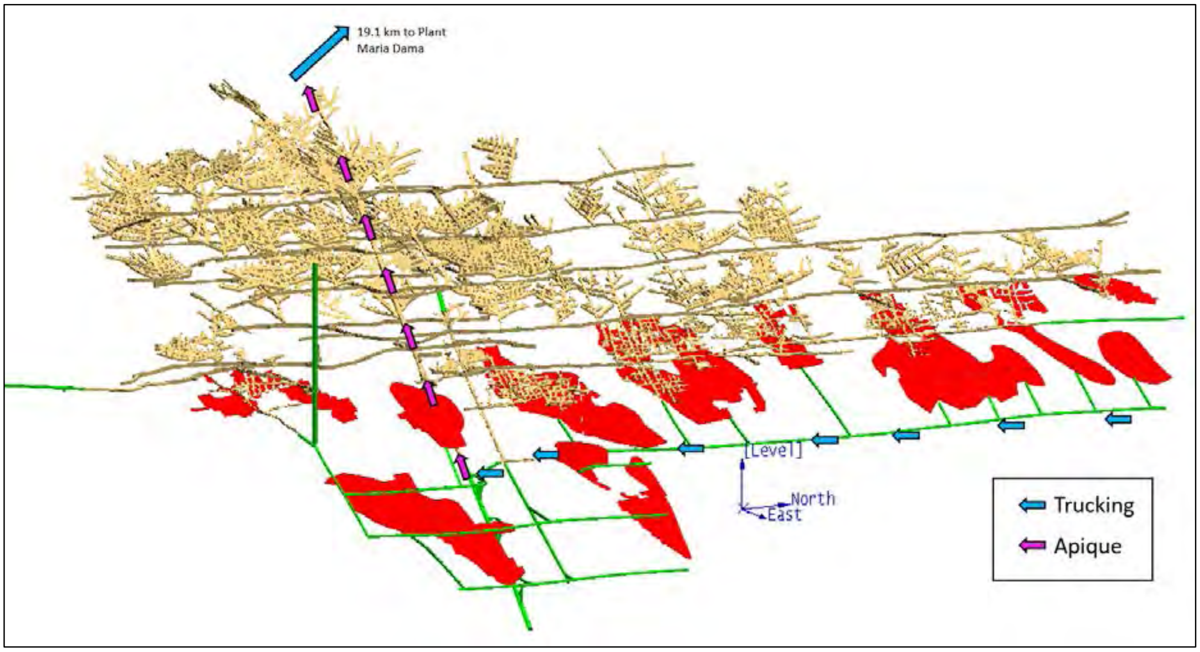
Figure 16-23 shows a general El Silencio Mine material flow.



Source: SRK, 2019

Figure 16-23: El Silencio Mine Ore Path to Surface

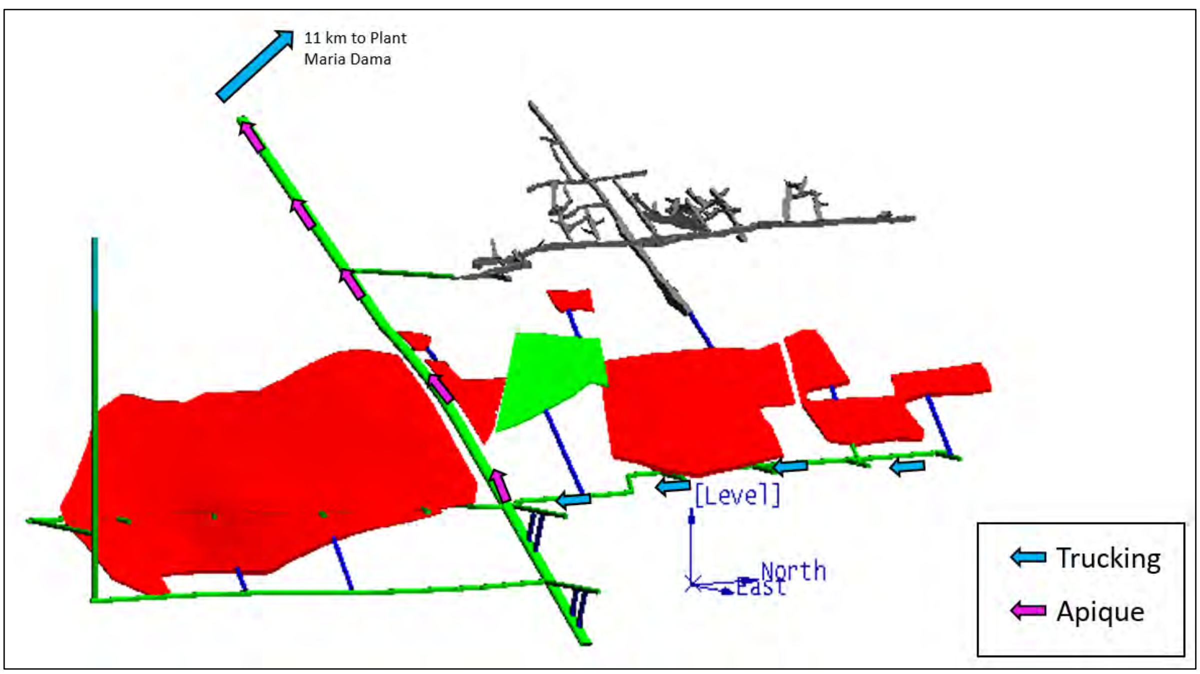
Sandra K apique system has a capacity of 500 t/d. The mine is serviced by two apiques. Apique 6400 operates at 650 t/d and provides access from the surface to level 3. Apique 3660 operates at 350 t/d and operates from level 6 to level 4. All mining at Sandra K is owner miner and contract miners are not currently mining in these areas. The mine plan has combined ore and waste production of 200 to 250 t/d (based on year-round operations). Figure 16-24 shows a general Sandra K material flow.



Source: SRK, 2019

Figure 16-24: Sandra K Mine Ore Path to Surface (rotated view)

Carla will have a new apique from surface, with a planned capacity of 600 t/d. All mining at Carla will be owner mining. The mine plan has combined ore and waste production of 40 to 200 t/d (based on year-round operations). Figure 16-25 shows a general Carla material flow.



Source: SRK, 2019

Figure 16-25: Carla Mine Ore Path to Surface (rotated view)

16.13.2 Mine Development

At Sandra K, the majority of the development is achieved using airleg drills boring 2.2 m horizontal drillholes. The faces are charged with INDUGEL Plus AP and ANFO for blasting. Broken material is loaded using a rail-mounted loader (rocker shovel) that pneumatically loads the material into adjacent rail cars. Once the material is removed, rail tracks and suitable rock support are installed, and the process repeated. The development cycle is typically completed once per shift.

At El Silencio and Providencia jumbos are used to development the main ramps. The jumbos drill 3 m rounds that are loaded with INDUGEL Plus AP and ANFO for blasting. Material is loaded with 2 to 3 cy LHD's into 7 to 10 tonne trucks that move the material to the apique systems.

Rock bolting is completed on an as needed basis with jacklegs. Additionally, rock support utilizes timbering or steel frames. Much of the development is left unsupported.

Ventilation raises are developed using airlegs drilling vertical holes from a constructed staging area. In some cases, contract alimak raises are constructed. As the raise progresses upward the blasted rock is loaded below using an overshot mucker or LHD. 1.5 m x 1.5 m raises are mined initially and then enlarged to 4 m x 4 m raises.

SRK notes that if these mining methods are used in the future, additional geotechnical work should be completed to assess the stability of working areas to ensure safe working conditions for the many personnel working underground. The extraction ratios are explained in other sections of this report.

16.13.3 Grade Control

Grade control is performed by a grade control geologist using a disk cutter to remove material from vein and surrounding rock. The sampling intervals are marked on the face using spray paint by the grade control geologist prior to sampling. All sampling is stopped along key geological contacts which are labeled as separate samples. The samples are taken from footwall to hanging-wall with sampling approximately every 2.0 m along the drift or development raise. Samples are cut onto a plastic sheet to ensure a complete sample is captured, which are then placed into a plastic sample bag. Areas where incomplete intersections exist are logged in the database such as vein in the hangingwall or footwall of the drift. These samples should be excluded from the geological modeling process as would likely result in pinching of the vein on a local scale. In areas operated by contractors a similar process is used but sampling is taken using a hammer and chisel and is considered a continuous chip sample. SRK considers the quality of these samples to be lower than using the disk cutter to ensure sample representativity.

The material placed in bags, is labeled by sample ID, location, and the location survey. The samples are shipped to a local laboratory operated by Gran Colombia (mine and contractors) and also to SGS Medellín (for exploration channels). Once analyses are received, the short-term planning geologists use polygonal methods, based on solely the mine control samples, to estimate the tonnes and grade for an area. SRK recommends the mine move to an active database and estimation process using the grade control samples to update the block models continuously as the sample information in available. This would allow for using standard estimating techniques, using grade control samples and exploration samples, to report tonnes and grade for an area. These models could then be evaluated on a local scale by polygons delineating the production panel for any given period. Currently grade control samples are only incorporated into the resource block model a few times a year, which SRK does not consider as appropriate for short term planning. The introduction of short-term models will also enable the ability to monitor the performance of the Mineral Resource model though out the year and allow management more flexibility.

16.14 Ventilation

The layout and evaluation of the existing ventilation system for the Providencia Mine, El Silencio Mine and Sandra K Mine has been described in SRK's report entitled "Review of Existing Ventilation Systems for the Providencia, El Silencio, and Sandra K Mines" (SRK, 2018), previously submitted to Gran Colombia. The expansion of the existing ventilation systems to meet the new equipment loads and mining areas is described in the following sections.

16.14.1 Basic Airflow Quantity Considerations

Several factors must be considered when determining the airflow requirements for the mine such as gas dilution, diesel particulates, heat, maintaining minimum air velocities, and meeting government regulations. These factors need to be applied to target areas to determine the actual total mine airflow requirement.

Personnel Airflow Requirement - As the operation is less than 1,500 meters above sea level (masl), Colombian regulations state that the minimum airflow per worker is at least 0.05 m^3/s. This airflow requirement is typically used in areas without diesel equipment, as the requirements for ventilating diesel equipment far exceeds this value. This requirement includes the traditional room and pillar mining areas.

Diesel Dilution - As the operation is less than 1,500 masl, Colombian regulations state that the minimum airflow for diesel equipment is 4 m^3/min per hp which relates to 0.09 m^3/s per kW of engine power to ensure gaseous and aerosol contaminants from diesel equipment are sufficiently diluted, which is a typical minimum design value for many ventilation systems. This will be used to determine the airflow in the ramps/haulage routes, and on the mining levels.

Ventilation Raises - Two types of ventilation designs are used in the development of the underground ventilation system. Raise bored raises or alimak raises, and room and pillar stope raises. The alimak raises are modeled with dimensions ranging from 2 m x 2 m for inter level access raises to 3.5 m x 3.5 m for the long El Silencio main exhaust raise to surface (the top 36.75 m of the raise is over bored with a diameter of 5 m). The room and pillar raises are developed through the vein and will only have the height of the vein, but their width may be larger. These were modeled at an equivalent area of 1.5 m x 1.5 m. Smaller surface exhaust raises were considered at 2.5 m diameter.

Horizontal Airways - Horizontal room and pillar accesses are sized at 3 m x 3 m to allow for the operation of an LHD. The cut and fill levels are designed at 3 m x 3 m to allow for the operation of an LHD with the access are designed at 4 m x 4 m to allow for the loading of the truck. The ramps are designed at 4.5 m x 4.5 m. For the room and pillar accesses where LHDs are not used the access drifts will be approximately 2.4 m x 2 m. A notch will be required in the ramp just above the level to allow for the placement and operation of the level auxiliary fan.

Air Velocities - Air velocity limitations vary according to airway type. In areas such as return airways and shafts where personnel are not expected to work, higher velocities are acceptable. Table 16-13 shows airway velocities typically used by SRK for various airway types. Air velocity limits and recommended values for travel ways are established to accommodate work and travel by personnel and equipment, optimizing dust entrainment and temperature regulation.

Table 16-13: Recommended Maximum Air Velocities for Various Airway Types

Airway Type	Air Velocity (m/s) Maximum
Travel ways (as required by Colombian regulations)	6
Primary ventilation intake and exhaust entries (no personnel)	10
Primary ventilation shaft (1)	20
Ventilation shaft with conveyance or escape	10

Source: SRK, 2018

(1) The typical value of 20 m/s is used to represent the maximum air velocity in a raise/shaft, for design purposes a value of 18 m/s is generally used to allow for flexibility in the design.

Low airflow volumes may insufficiently dilute/remove airborne dust, but high air velocities will entrain larger dust particles, resulting in a potentially hazardous environment for personnel. An air velocity between 1.5 m/s and 2.5 m/s should be maintained to minimize dust in areas affected by dust generation. Air velocities in this range represent the provision of sufficient airflow to dilute the dust, without excessive air velocity to re-entrain dust.

In general, the minimum air velocity in a heading (without diesel equipment in operation) is based on the perceptible movement of airflow which is between 0.3 m/s and 0.5 m/s. The higher value of 0.5 m/s is used to comply with Colombian regulation.

Heat - Especially in areas ventilated with minimal air velocity, the heat produced by equipment (diesel or electric) may not dissipate quickly enough and could result in high air temperatures which could pose a hazard to workers. SRK recommends that a wet bulb temperature of 28.0°C be used as the design maximum for acclimated workers in areas where personnel will be active. Colombian regulations allow for an effective temperature 28°C above which work/rest cycles are required up to a maximum of 32°C. If conditions exceed this value in an active working area, work should be stopped, and the equipment load reduced or auxiliary ventilation systems adjusted. If this is not possible (i.e., auxiliary systems are already at maximum capacity or equipment load in the area cannot be further reduced), the establishment of a work-rest regimen (regular scheduled rest breaks) for workers may be required to maintain safe working conditions for miners working in elevated temperatures. Providing workers with cool water also helps to reduce the effects of heat on workers.

16.14.2 Airflow Calculations

SRK and Gran Colombia compiled a schedule of development and production equipment that will be in operation over the LoM. Airflow volume requirements for each vehicle were established based on vehicle motor power (kW) at 0.09 m^3/s per kW and the airflow requirement for personnel was allocated at 0.05 m^3/s per person. The airflow allowance for leakage is identified through the ventilation models and is not represented by a fixed percentage. A level of conservativeness is built into the airflow calculation as it assumes that all equipment is in operation at a 100% utilization rate.

The airflow requirement for the various mining areas, based on personnel and the diesel equipment fleet, is shown in Table 16-14.

Table 16-14: Airflow Calculation for the Providencia Mine

Mine	Equipment	Personnel	Engine (hp)	Quantity	Airflow (m^3/s)	Total Airflow (m^3/s)
El Silencio	Jumbo Sandvik DD210		54	3	10.8	180.5 (382.4 kcfm)
	Muki LHBP		73.9	1	4.9	
	Volqueta (YM 470 T7)		86.5	2	11.5	
	Cargador Sandvik (LH 203)		112	1	7.5	
	Cargador (MTI LT) Diesel		55	1	3.7	
	Cargador TEREX TSR-70		74	1	4.9	
	Camion MTI Modelo TH 315		220	3	44.0	
	Cargador SANDVIK LH307		201	3	40.2	
	Utilitario John Deere Gator SUV 4x4 855D		24.6	1	1.6	
	Utilitario Toyota Landcruiser		128	1	8.5	
	Camion Bajo Perfil Modelo 474 T12		173	1	11.5	
	Scissor Lift		97	1	6.5	
	Personnel	495			24.7	
Providencia	Jumbo (DD 210)		54	2	7.2	67.6 (143.2 kcfm)
	Volqueta (YM 470 T)		86.5	5	28.8	
	Cargador (LH 203)		112	1	7.5	
	Cargador (MTI LT) DIESEL		55	1	3.7	
	Scoop MTI Modelo DT-1804 (electric)		210	3	n/a	
	Cargador (LH 203)		112	1	7.5	
	Personnel	260			13.0	
Sandra K	Jumbo (DD 210)		54	2	7.2	96.4 (204.2 kcfm)
	Camion MTI Modelo TH 315		220	4	58.7	
	Cargador Sandvik LH307		201	2	26.8	
	Personnel	75			3.75	
Carla	Jumbo (DD 210)		54	3	10.8	70.7 (149.8 kcfm)
	Camion MTI Modelo TH 315		220	2	29.3	
	Cargador Sandvik LH307		201	2	26.8	
	Personnel	75			3.7	

Source: SRK, 2019

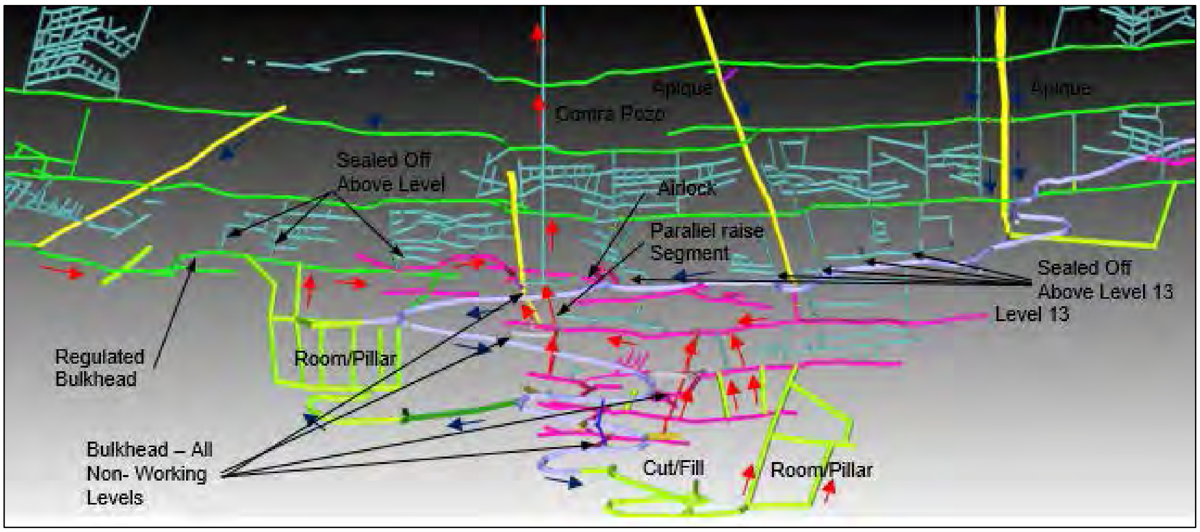
16.14.3 Ventilation System Design and Layout

In early 2018, ventilation models were developed for each of the four mines at representative worst-case layouts. The mine plans have since been revised significantly for Sandra K and Carla mines with the removal of the haulage ramps and the continued use of the apique haulage systems. The El Silencio mine has been revised to remove the haulage ramp to the lowest areas of the mine. The main ventilation differences for the updated mine plans are the amount of diesel equipment used in the mines. The overall approach to the ventilation system at each mine is identified in the following sections.

Providencia Mine

The basic ventilation circuit for the Providencia mine exists, however, the system needs to be upgraded with improved bulkheads and surface exhaust raise collar house to minimize leakage and allow the exhaust fans to operate at their full pressure. The bulkheads have started to be replaced with concrete bulkheads with steel doors. Fresh air is provided by the three surface openings and reaches the lower areas through both the apiques and the open workings. Once the air reaches the lower levels it is confined to the ramp and then is drawn through the stopes, up to Level 13, and then into the exhaust raise to surface (contra pozo). Level 13 will act as an exhaust plenum or transfer level to gather the exhaust airflow from the lower levels to move it into the contra pozo to surface. It should be noted that the single raise (converted muck pass) extending from the base of the contra pozo to Level 13 is not adequate a parallel 2.5 m x 2.5 m raise was developed between level 13 and level 15 and will be extended as new levels are developed.

The room and pillar stopes will be ventilated with fresh air supplied from the bottom and exhausted out the top; the cut/fill stopes will be ventilated from the stope access to the raises at the stope perimeter. Figure 16-26 shows the key infrastructure additions required to achieve the airflow distribution, along with the types and locations of the mining areas.

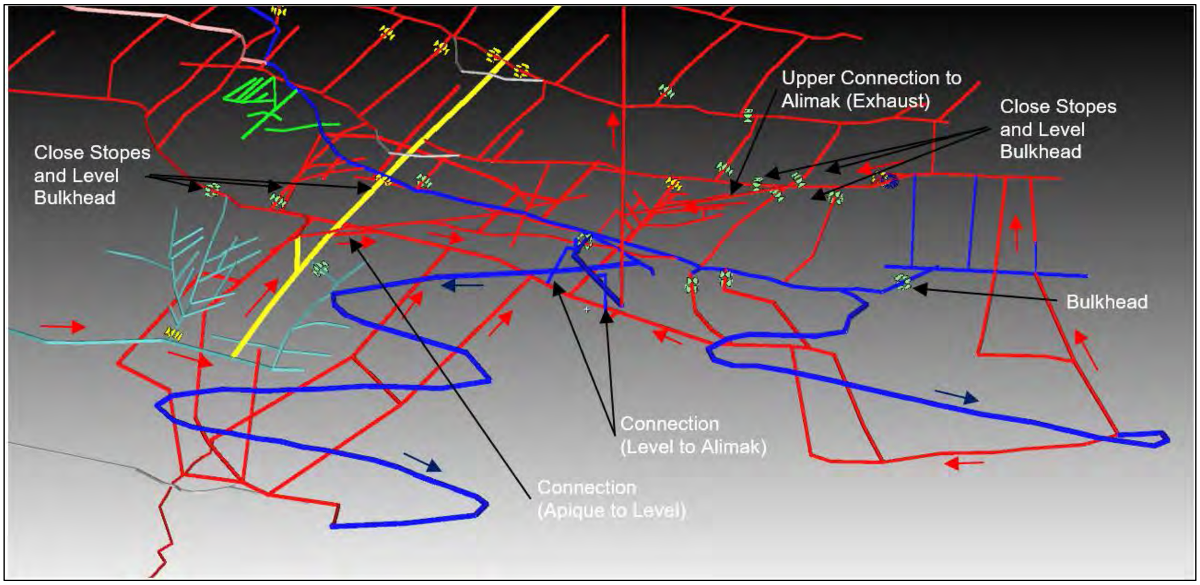


Source: SRK, 2019

Figure 16-26: Providencia Mine Infrastructure Additions

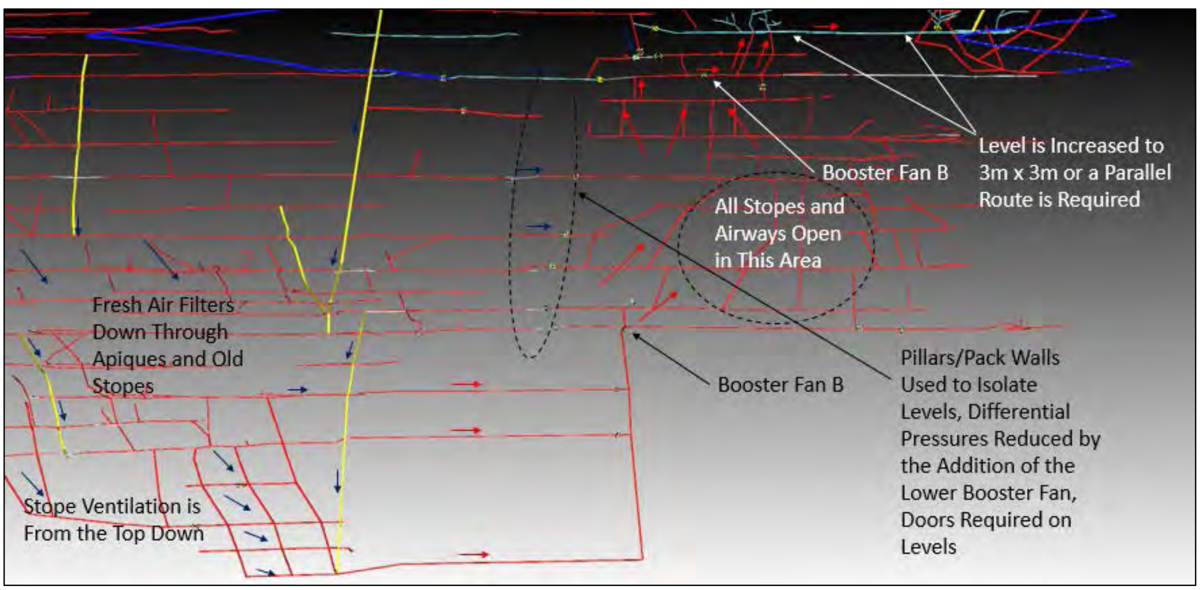
El Silencio Mine

The El Silencio mine generally has two working areas, located far away from each other, complicating the ventilation system. The El Silencio ventilation system will consist of several different air splits. One area (north) will be ventilated by drawing airflow down Apique Bolivia and parallel open stopes to the ramp system which will supply airflow to the stopes. The exhaust will be through the stope raises up to the base of the alimak, then to the surface. The other area (lower south) will be ventilated by drawing airflow down Apique 0 and lower apiques to the working areas. The stopes in this area are all room and pillar which will be ventilated with fresh air supplied from the top and exhausted through the base of the stope. The working areas will exhaust toward the north through a set of new perimeter raises. The current design has removed the access ramp and will utilize an extended Apique system for the movement of ore/materials. A booster fan (A) located on approximately Level 28 will take the exhaust air and transfer it to the north, through the previously mined out levels, to the recently developed alimak. An alternative would develop a 4 m x 3.5 m ramp between Level 25 and Level 28 to provide the exhaust route. A lower booster fan (B) will be utilized to split the differential pressure between fresh air and exhaust air to reduce leakage. Figure 16-27 and Figure 16-28 outline the proposed ventilation infrastructure layouts required to achieve the airflow distribution.



Source: SRK, 2019

Figure 16-27: El Silencio Base of Alimak Infrastructure Layout



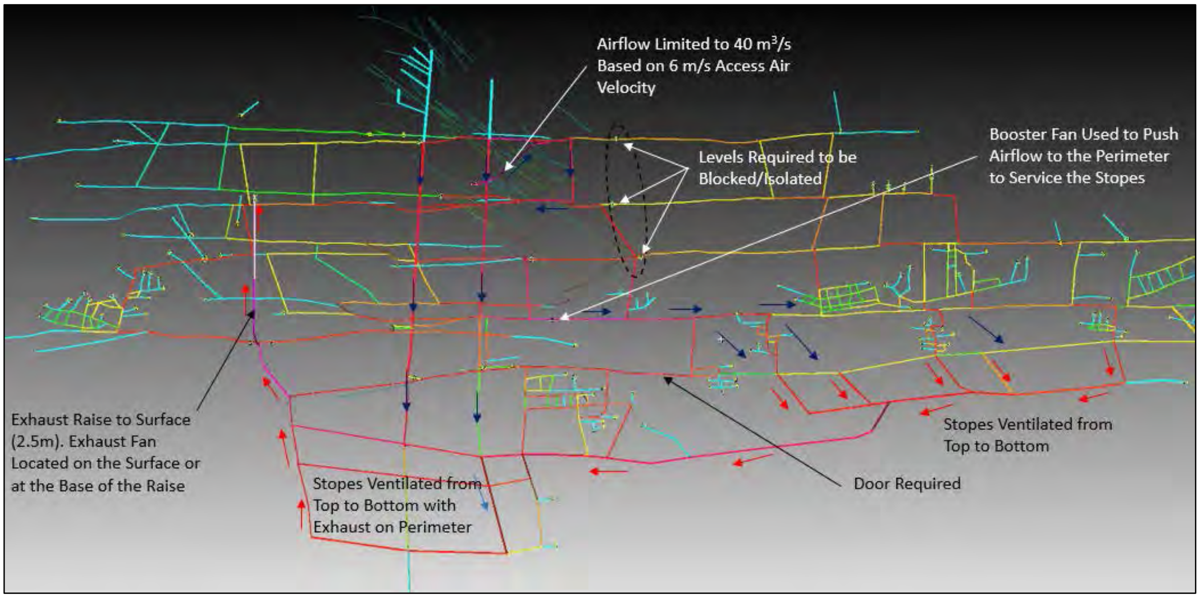
Source: SRK, 2019

Figure 16-28: El Silencio Bottom of Ramp Infrastructure Layout

Sandra K Mine

The basic ventilation routing for the Sandra K mine will have fresh air supplied through the existing portal to the apique system. The exhaust will be through a new alimak raise extending to surface.

Figure 16-29 shows the model layout and ventilation routing. A booster fan will be required to draw airflow to the perimeter away from the two apiques. The only fresh air access will be through the existing portal which will limit the total fresh air entering the mine to 40 m^3/s. This should be sufficient for the mine considering only the minimal use of diesel equipment. An additional portal accessing level 0 is planned to allow for an increase in the airflow without exceeding the 6 m/s air velocity.



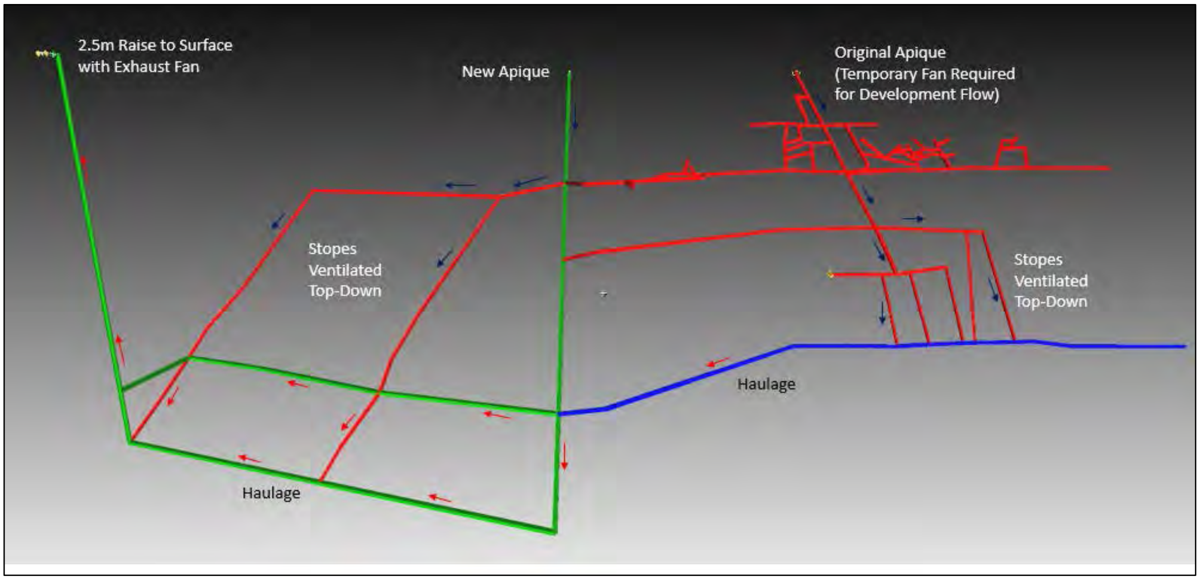
Source: SRK, 2019

Figure 16-29: Sandra K Ventilation Model Layout and Identification

Carla Mine

The Carla Mine has less extensive developed workings than the other mines, and less leakage is expected allowing the ventilation system to be developed more rapidly. Airflow will be drawn down the two apiques to the stopes, then over to the exhaust raise through the haulage levels. The exhaust fan will be mounted on the surface at the top of the exhaust raise on surface. A temporary fan installation will be required either at the top of the old apique or in the level 1 cross-cut between the new apique and old apique. The design of the final ventilation system may be modified as the mine plan is further developed, however, the general overview will remain fairly constant.

Unimpeded access will be available through both apique systems from the surface. The general layout of the ventilation system and infrastructure additions are shown in Figure 16-30. The new design utilizes a more traditional Apique system for haulage. There will likely be changes to the operating equipment load which may reduce the ventilation requirements, however, the 71 m^3/s airflow requirement will allow for multiple parallel stopes to be ventilated with a top-down approach.



Source: SRK, 2019

Figure 16-30: Carla Mine Ventilation Model Layout

16.14.4 Auxiliary Ventilation Systems

There are three types of auxiliary ventilation systems that will be used in both the development and production at the four mines. In order to standardize the systems, they will all be grouped together based on general conditions.

Ramp Development

Ramp development was assumed to require an airflow to support the simultaneous operation of both a truck and an LHD listed in Table 16-15. Providing airflow to support two pieces of equipment will provide flexibility. It was assumed that the length of the heading is 310 m with a flexible duct diameter of 1.0 m.

Table 16-15: Ramp Development Equipment

Equipment	Power (kW)	Airflow (m^3/s)	Duct Size (m)	Airflow (m^3/s)	Pressure (kPa)
Sandvik LH 307	160	10.7	1.0	24.9	3.0
Dumper TH 315	164	10.9			

Source: SRK, 2018

A total of 21.6 m^3/s must be delivered to the face of the ramp development. In order to achieve the airflow at the face, a fan pressure of approximately 3.0 kPa is required with an airflow of approximately 24.9 m^3/s (face airflow quantity plus joint leakage and 10% rip leakage).

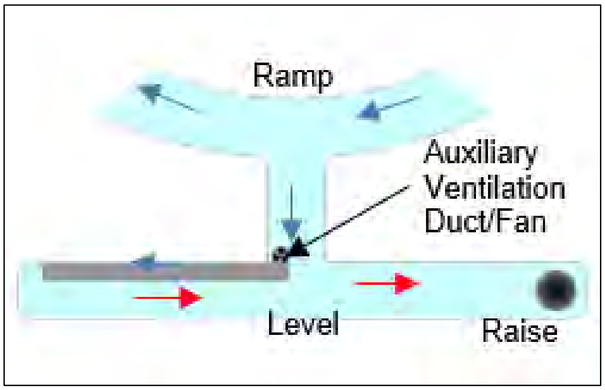
Single Heading Stope Ventilation

The single side stope ventilation was assumed to require an airflow to support the operation of an LHD listed in Table 16-16. It is assumed that the loading of the haul truck will take place in the ramp or access. Figure 16-31 shows a diagram of the system layout. It was assumed that stope would be a maximum length of 80 m with a 20 m access length with a flexible duct diameter of 0.7 m.

Table 16-16: Single Heading Stope Equipment

Equipment	Power (kW)	Airflow (m^3/s)	Duct Size (m)	Airflow (m^3/s)	Pressure (kPa)
Sandvik LH 203	71.5	6.4	0.7	8.3	1.5
Sandvik LH 307	160.0	14.4	1.0	16.1	1.4

Source: SRK, 2018
A total of 6.4 m^3/s must be delivered to the face of the production stope.



Source: SRK, 2018

Figure 16-31: Layout of Single Side Auxiliary Ventilation System

In order to achieve the airflow of 6.4 m^3/s at the face, as required for the small LHD, a fan pressure of approximately 1.5 kPa will be required with an airflow of approximately 8.3 m^3/s (face airflow quantity plus joint leakage and 25% rip leakage). In order to achieve the airflow of 14.4 m^3/s at the face, as required for the large LHD, a fan pressure of approximately 1.4 kPa will be required with an airflow of approximately 16.1 m^3/s (face airflow quantity plus joint leakage and 25% rip leakage).

Double Heading Stope Ventilation

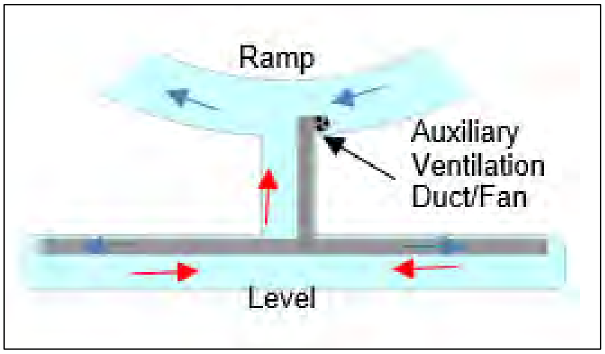
The two-sided auxiliary ventilation system will need to ventilate the equivalent of an LHD on each side of the access as listed in Table 16-17. Providing an airflow to support the operation of an LHD on each side of the level will promote flexibility. Figure 16-32 shows the layout of the auxiliary ventilation system. It was assumed that each side of the stope would be a maximum of 80 m with the length of the access at 20 m. The flexible duct diameter was set at 0.7 m.

Table 16-17: Double Heading Stope Equipment

Equipment	Power (kW)	Airflow (m^3/s)	Duct Size (m)	Airflow (m^3/s)	Pressure (kPa)
Sandvik LH 203	71.5	6.4	0.7	16.4	2.1
Sandvik LH 307	160	14.4	1.0	Use Single Heading Fan	

Source: SRK, 2018

A total of 6.4 m^3/s is required to be delivered to each face of the level for a total delivered airflow of 12.8 m^3/s. If the larger LHD is used in this area, then the airflow should only be directed to one side or the other depending upon where the LHD will be used. The system for the single side ventilation will be required.



Source: SRK, 2018

Figure 16-32: Layout of a Double Side Auxiliary Ventilation Stope System

In order to achieve the airflow at the face, a fan pressure of approximately 2.1 kPa will be required with an airflow of approximately 16.4 m^3/s (face airflow quantity plus joint leakage and 25% rip leakage). The same fan required for the ramp development heading can be used for this type of area.

16.14.5 Main Fan Summary

Based on the ventilation modeling, the operating points for the main fans are estimated. A basic summary of the main exhaust fans and booster fans is shown in Table 16-18. The fan installations are shown further identified as single, or parallel if two fans operating together can be used.

Table 16-18: Summary of Main Fan Operating Points

Area	Infrastructure	Location	Fan Requirements			Type of Installation
			Airflow (m^3/s)	Pressure (kPa)	Power (kW) (1)	
Providencia	Main Fans	Contra Pozo Exhaust (Existing on Site)	85.0	2.2	290	Parallel
El Silencio	Main Fans	Alimak Raise Surface Exhaust (Installation in Process)	180	2.0	555	Parallel
	Main Fans	Booster Fan A	75	2.4	275	Parallel E
	Main Fans	Booster Fan B	50	0.4	30	Single E
Sandra K	Main Fans	Exhaust Raise Fan	40.0	0.7	45	Parallel E(Subsurface)
	Main Fans	Level 4 Booster	25.0	0.4	15	Single (E)
Carla	Main Exhaust Fans	Exhaust Raise Fan	71.0	1.1	120	Parallel (E)

Source: SRK, 2018
(1) Power based on system efficiency of 75%

16.14.6 Component Costing Information

The fan and fan housings are often the most expensive components in the ventilation system aside from the development of the actual ventilation raises and dedicated ventilation drifts. The manufacturers contacted included: Advanced Fan (now Howden), ABC, Howden, Spendrup, Clemcorp, and Zitron. Currently the mine uses auxiliary ventilation fans from Zitron and has procured the main surface exhaust fans for the Providencia and El Silencio mines from Howden. Due to the different operating points required for the new surface exhaust fan installations, SRK recommends considering or comparing different manufacturing companies to ensure that the cost is held reasonable and the operating points can be achieved. In addition to the cost of the main surface exhaust fans there will be the cost for the connection duct from the raise collar to the fan, and the electrical substation. This has already been purchased for the Providencia mine. The underground booster fans will require a substantial bulkhead for the fan to be mounted in. A double walled concrete block bulkhead should sufficient for this type of bulkhead.

16.15 Mine Services

The primary mine services at the Segovia mines include compressed air systems, apique hoisting systems, electrical power distribution, and ventilation services. The systems are fully developed with ongoing expansion of the systems to support new development. The electrical system and compressed air equipment are discussed in Section 18. Ventilation is discussed in Section 16.4.

16.15.1 Health & Safety

Gran Colombia has a health & safety management team and their program includes the following:

- New miner training;
- Certification for equipment use;
- PPE supply and instruction on use;
- Safety refresher courses for existing miners;
- Mine rescue team;
- Site ambulance and fire equipment;
- Tag in / Tag out system for mine egress;
- Provide bottled water for miners; and
- Blasting clearance protocols.

16.15.2 Manpower

Direct Employment

The Company operates three 8-hour shifts each day, working six days per week (approximately 300 work days per year). The total direct labor for all mines is currently approximately 700 workers comprising supervisory, quality control, health and safety and other support functions within the mining and processing operations. These figures do not include contract labor, which is largely assigned to the mining activities. Gran Colombia states that the average underground miner has four to five years' experience; however, there are large numbers of workers with considerably more experience than this.

Contract Labor

Contract labor is composed of a local mine contractor who carries out the primary mining and a number of local co-operatives of miners, mostly former employees of Gran Colombia and its predecessors, with significant local experience, who carry out the secondary mining. There are three major contractors currently operating at the Company's mines:

- Providencia Mine – Masora;
- El Silencio Mine – Navar; and

- La Vega Gold – Multiple contractors (these contracts are based on mining material that has not been included in the Mineral Resource; however, these contracts have been fulfilled for the last decade). (La Vega production has not been included in the PFS due to lack of analytical data to support a resource/reserve statement).

The Masora and Navar contractors mine 20% of the LOM total tonnage in the current mine production schedule presented here.

Typically, these contracts are renewed annually for one-year terms. The total contract labor for all mines is approximately 1,500 miners. However, only the three contractors mentioned above make a significant contribution to production at this time. The remaining 28 contracts have contributed less than 15% of the contractor-supplied gold ounces in the past 12 months. The contractors are paid a percentage of the value of the recovered gold from the payable material delivered to the plant. The gold content is determined by assaying (verified independently by SGS laboratories) the RoM as it is supplied. A new assay facility is being constructed at the plant site to assist with this process.

Currently, Gran Colombia pays US$612/oz of recovered gold, which is 48% of the gold price, to the two largest contactor miners (Navar and Masora). The contractors are responsible for supplying and maintaining all required equipment.

Gran Colombia directly employs a team, currently comprised of approximately 36 employees, who coordinate and direct the operations of the contractors. This team conducts visits and audits of the various contractors operating within the Company’s mines to verify compliance with the Company’s health, safety, environmental and administrative policies, to verify that they are working in designated areas in compliance with technical specifications, and to verify compliance with the Company’s protocols for obtaining explosives permits and the appropriate use and storage of explosives within the mines.

Although, Company does provide an indicative schedule for production, listing production tonnage and grade, the key measurable for the contractors’ payments is gold content. As the contract labor is able to determine its own pillar extraction sequence, the priority is on mining only the high-grade pillars where the physical work required to meet the monthly production targets can be minimized. Gran Colombia has been working to limit contractors to certain areas of a mine to allow for tighter controls in owner mining areas.

Pillars are assayed to determine those with the highest grade; however, the association between gold and sulfides in the quartz vein means it is relatively simple to determine visually which pillars these might be. The resulting pillar extraction sequence is therefore not optimized for geotechnical reasons. The Company stated its intention on changing the current system to create a more predictable extraction sequence, however, there is uncertainty over the limitations that could result from the existing work contracts.

The current nature of the contractors’ operations reduces the planning requirements for the Company, however, it presents the following operational risks:

- Lack of control over sequencing of pillar extraction, potentially resulting in sterilization of some areas due to geotechnical reasons;
- Difficulty in reconciling production versus plan;
- Safety risks as poor sequencing may result in roof and, or pillar failure;

- Lack of clarity over accountability in the event of serious injury or death in a Company operated mine;
- Difficulty in determining Resource grade and tonnage as there is no survey of mined pillars; and
- Potential for undetected gold theft.

As noted, the Company employs a team to coordinate and direct the operations of the contractors and is in the process of implementing additional resources and procedures to reduce the risks associated apique with the contractors operating within its mines.

16.15.3 Mobile Equipment

The PFS design incorporates additional equipment to support additional development and to further mechanize production in the cut and fill mining areas. The existing diesel operated mobile equipment list, provided by Gran Colombia, is shown in Table 16-19.

Gran Colombia has a large number of track and air powered overshot muckers and jackleg style drills that are used for general production as well as air and electric slushers. Primary haulage on the levels is by battery operated locomotives that move rail cars with ore, waste, and supplies along the various levels of the mine.

Table 16-19: Mobile Equipment by Mine Area

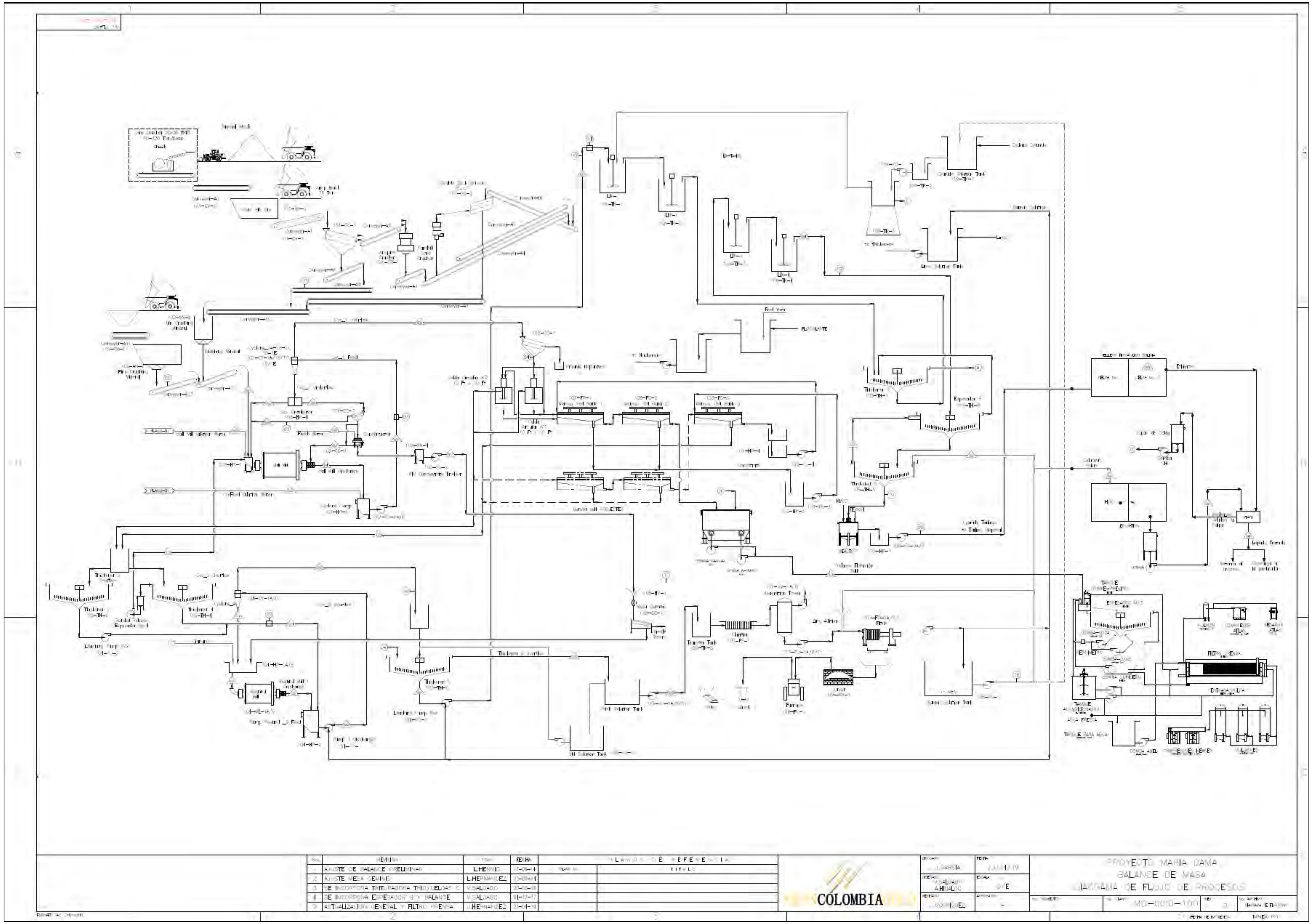
Location	Description	Engine Type	Power (HP)	Existing
El Silencio	Jumbo Sandvik DD210	F4L 912 - 54 HP @ 2300 RPM	54	1
	Muki LHBP	DEUTZ BF4L2011 - 73.9 HP at 2300 RPM	73.9	1
	Volqueta (YM 470 T7)	D914 L06 SERIE 08868175 - 86.5 HP at 2300 RPM	86.5	1
	Cargador Sandvik (LH 203)	BF6L914 SERIE 0888275 - 112 HP at 2300 RPM	112	1
	Cargador (MTI LT) Diesel	D914L04 SERIE 08875206 - 55 HP at 2300 RPM	55	1
	Cargador TEREX TSR-70	PERKINS 804D-33T - 74 HP at 2500 RPM	74	1
	Camion MTI Modelo TH 315	QUMMINS QSB6.7 – 220 HP at 2200 RPM	220	1
	Cargador SANDVIK LH307	MERCEDES BENZ OM 906 LA - 201 HP at 2300 RPM	402	1
	Utilitario Toyota Hilux	TOYOTA 2.4 DIESEL 2GD - 160 HP	160	1
	Utilitario Toyota Landcruiser	TOYOTA DIESEL – 128 HP at 3800 RPM	128	
	Motoniveladora (Bulldozer) John Deere	John Deere PowerTechTM 6068H	185	1
	Camion Bajo Perfil Modelo 474 T12	DEUTZ BF4M1013FC – 173 HP at 2300 RPM	173	1
	Jumbo (DD 210)	F4L 912	54 at 2,300 RPM	1
	Volqueta (YM 470 T)	D914 L06 SERIE 08868175	86.5 at 2,300 RPM	3
Providencia	Cargador (LH 203)	BF6L914 SERIE 0888275	112 at 2,300 RPM	1
	Cargador (MTI LT) DIESEL	D914L04 SERIE 08875206	55 at 2,300 RPM	1
	Scoop MTI	BF6M1013EC (electric)	210 at 2,300 RPM	1
	Utilitario SD30	NB485/F3L912_Xinchang 485 agua-4 Deutz F3L912 aire-3	50	1
	Minicargador BobCat	Motor Kubota / V2403_Modelo equipo S530	49	
	Cargador (LH 203)	BF6L914	112 at 2,300 RPM	1
	Scoop MTI	BF6M1013EC (electric)	210 at 2,300 RPM	2

Source: SRK, 2018

17 Recovery Methods

17.1 Processing Methods

Gran Colombia processes ore in its 1,500-metric ton per day Maria Dama process plant from the Providencia, El Silencio and Sandra K Mines. The Maria Dama process plant includes crushing, grinding, gravity concentration, gold flotation, cyanidation of the flotation concentrate, Merrill-Crowe precipitation and refining of both the Merrill-Crowe precipitate and gravity concentrate to produce a final doré. Hydrogen peroxide is used for cyanide detoxification. The process flowsheet is shown in Figure 17-1 and a list of major equipment is shown in Table 17-1. A general arrangement drawing is displayed in Figure 17-2.



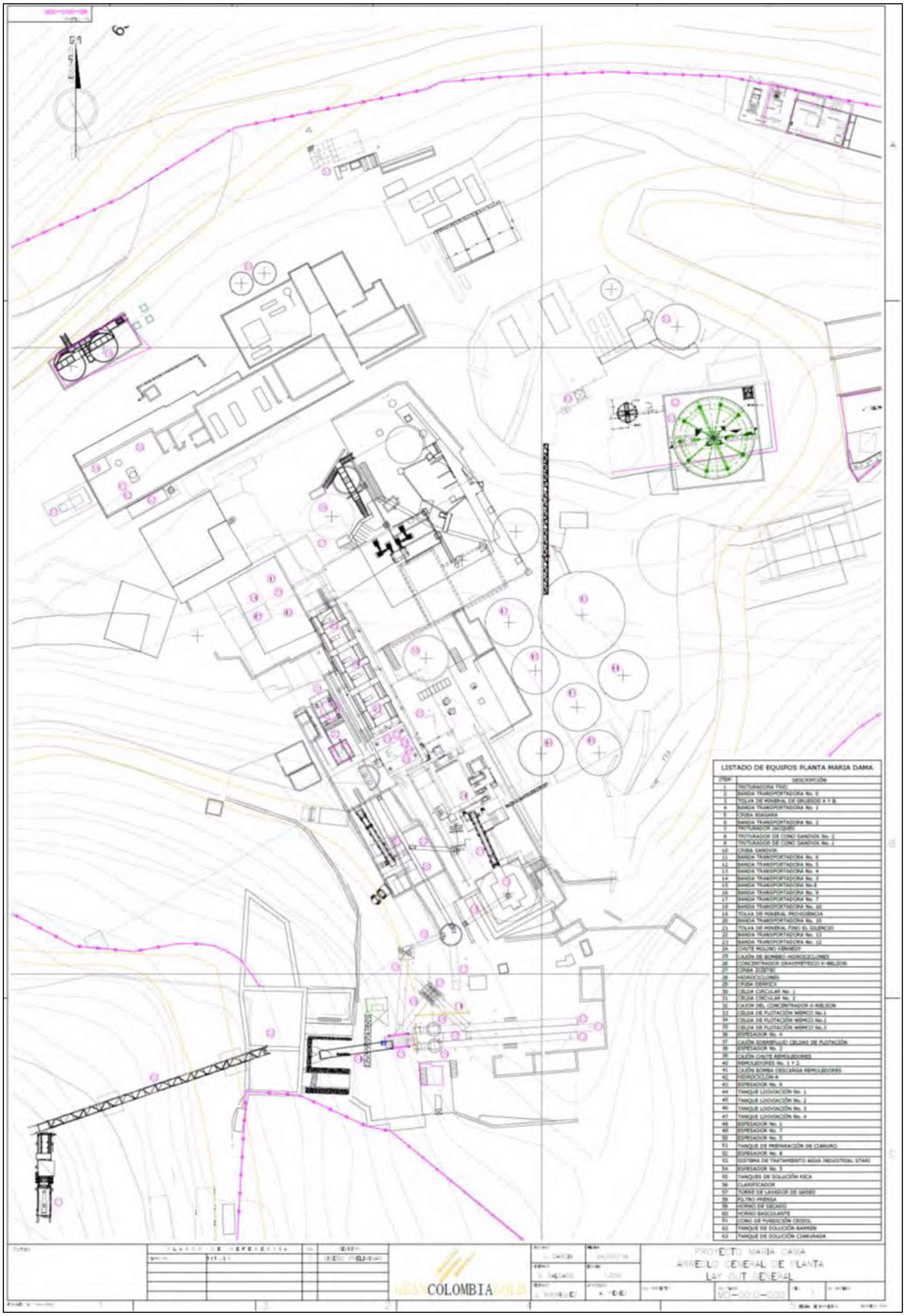
Source: Gran Colombia, 2019

Figure 17-1: Process Flowsheet

Table 17-1: Segovia Process Plant Major Equipment List

Equipment	Quantity	Size	HP	Manufacture
Crushing Circuit				
Primary Jaw Crusher	1	30" x 42"	150	Weir
Secondary Cone Crusher	1	3 ft	125	Jaques
Secondary Screen (double-deck)	1	1.8 m x 6 m	30	Sandvik
Tertiary Cone Crusher	2	CH-430	200	Sandvik
Tertiary Screen (double deck)	1	1.4 m x 4.2 m	15	Niagra
Grinding Circuit				
Ball Mill	1	15.5 ft x 23 ft	1500	KVS
Cyclone	3 operating, 2 stand-by	10 "		Cavex
Centrifugal Gravity Concentrator	1	MT1250	7.5	Knelson
Flotation Circuit				
Rougher Flotation	1	10 ft x 10 ft	30	
Rougher Flotation	1	6.6 ft x 6.6 ft	20	
Scavenger Flotation	4	30 m^3	60	WEMCO
Scavenger Cleaner Flotation	2	30 m^3	60	WEMCO
Concentrate Regrind				
Ball Mill	1	4 ft x 4 ft	25	
Ball Mill	1	4 ft x 4 ft	44	
Cyclone	1 operating, 1 stand-by	10"		Krebs
Concentrate Cyanidation				
Flotation Concentrate Thickener	1	24 ft x 10 ft	5	
Pre-leach Thickener	1	45 ft x 10 ft	5	
Leach Tanks	4	25 ft x 30 ft	40	
Counter-Current Decantation				
CCD Thickeners	2	24 ft x 10 ft	5	
CCD Thickeners	1	42 ft x 7.8 ft		
Merrill -Crowe				
Clarifier	1			
Deaeration Tower	1 operating 1 stand-by			
Precipitate Filter	1	30-inch x 30 inch x 30 plate		
Precipitate Filter	1	39-inch X 39 inch x 21 plates		
Precipitate Filter	1	36 inch x 36 inch x 30 plate		
Gold Room				
Gravity Concentrate Gemini Table	1			
Furnace	1	38" x 59"		
Detoxification				
Reaction Tank	1	17 m^3		
Detoxification Tank 1	1	100 m^3		
Detoxification Tank 2	1	50 m^3		

Source: Gran Colombia, 2019



Source: Gran Colombia

Figure 17-2: Maria Dama General Arrangement Drawing

17.1.1 Crushing Circuit

RoM ore is crushed to minus 15 millimeters in Maria Dama's crushing circuit. ROM is fed to a 20-inch by 36-inch primary jaw crusher (the 30" x 42" was replaced) where it is discharged and conveyed to a ROM ore bin. The primary crushed ore is transferred by conveyor to 1.8 m x 6 m double deck Niagara vibratory screen. The top screen has an opening of 1 ½ inches and the second screen has an opening of ¾ inch. Oversized ore is conveyed to a 3 ft secondary crusher (Jaques). The secondary crusher discharges to a conveyor that transports the crushed ore another double deck screen equipped with ½ and ⅜ inch screens. Oversize ore discharges to two Sandvik CH-430 tertiary cone crushers (one standby), which are operated in closed circuit with the vibrating screen. The final minus 15 mm crushed product is sampled with a primary cross-cut sampler and a secondary rotary sampler as it is conveyed to the fine ore bin. Gran Colombia ore samples are assayed by the on-site analytical laboratory.

Mining contactors deliver crushed ore to the Maria Dama processing plants receiving hopper. The contactor receiving hopper is segregated from Gran Colombia's ore initially. The contractor ore is sampled with both a primary cross-cut sampler and a secondary rotary sampler as it is conveyed from the receiving bin to a separate fine ore bin. Contractor ore samples are assayed by an outside commercial laboratory (SGS).

17.1.2 Grinding Circuit

Ore from both Gran Colombia's fine ore bin and the contractor's fine ore bin are conveyed to a single belt feeder that discharges into a 15.5 ft x 23 ft ball mill. The ball mill is charged with 3 inch balls and operates in closed circuit with a cluster of Cavex 250 cyclones. Overflow from the cyclones have a particle size of 65% passing 75 micrometers. Underflow from the cyclones is split with ⅔ of the flow returning to the ball mill for further size reduction and the other ⅓ going to the gravity concentration circuit. The gravity circuit consists of one Knelson XD-20 batch concentrator. Approximately 30% of the contained gold is recovered into a primary gravity concentrate, which is further upgraded in the refinery on a Gemini table. Feed to the grinding circuit is continuously weighed on a belt-scale and hand-sampled every hour. Tailings from the Gemini Table is pumped to the regrind circuit.

17.1.3 Flotation and Regrind Circuit

Cyclone overflow from the grinding circuit advances to the flotation circuit where it is first conditioned with the flotation reagents. Conditioned slurry is then subjected to one stage of rougher flotation in two 10 ft diameter x 10 ft high tank cells followed by one stage of scavenger flotation in a bank of three 30 m^3 WEMCO flotation cells to recover the contained gold values. A total rougher/scavenger flotation retention time of 30 minutes is provided. Rougher/scavenger flotation concentrate is upgraded in one stage of cleaner flotation and combined with the rougher flotation concentrate. The combined rougher/scavenger cleaner concentrate, which represents about 10 mass percent of the plant feed is thickened to about 55% solids (by weight) and reground in a 4 ft x 4 ft ball mill to approximately 90% minus 50 micrometers prior to being advanced to the cyanidation circuit. The regrind ball mill is operated in closed circuit with 10 inch Krebs cyclones.

17.1.4 Cyanidation and Counter-Current-Decantation (CCD) Circuit

Regrind cyclone overflow is fed to the flotation concentrate thickener (Thickener 6) where it is combined with pregnant solution from the CCD circuit and the solids are thickened. Thickened solids are pumped to the first of four agitated leach tanks (25 ft diameter x 30 ft height) operated in series to provide a total leach time of about 96 hours. Thickener 7 is installed between agitated Tank 2 and agitated Tank 3 to increase retention time due to the increase throughput. Each tank has a retention time of one day at the current processing rate. Cyanide concentration is adjusted to 900 parts per million (ppm) NaCN in the first leach tank and is allowed to naturally attenuate as to about 350 ppm NaCN in the last leach tank. The pH of the leach slurry is maintained at about 11.5 with lime.

Discharge from the fourth agitated leach tank flows to the CCD circuit, which consists of two 24 ft diameter thickeners and one 42 ft diameter thickener and serves to wash the pregnant leach solution (PLS) from the leach residue. Barren solution from the Merrill Crowes circuit is fed to Thickener 5 and flows counter-current to the solids flow. A fourth CCD thickener was installed and currently serves as a standby. The PLS from the first thickener overflow is ultimately advanced to the Merrill-Crowe gold recovery circuit via Thickener 6 and the thickener underflow from the third thickener is discharged to the dehydration cells.

17.1.5 Merrill-Crowe and Refining

PLS from Thickener 6 is processed in the Merrill Crowe circuit to recover gold and silver from solution. PLS is fed through a clarifier to remove any remaining fine particulate and then advanced to the Deaeration Tower to removed remove any oxygen to a level of < 1 ppm dissolved oxygen. The clarified and oxygen free PLS is combined with zinc dust to precipitate the gold and silver values. The resulting gold and silver precipitate is then recovered in three plate and frame pressure filters. The gold and silver precipitate is smelted using a flux with the following composition:

- Borax: 40%
- Sodium nitrate: 30%
- Soda ash: 15%
- Silica: 3%

Flux is blended with the gold/silver precipitate in a 0.88:1 ratio and smelted in a diesel furnace to produce a final doré product. The diesel furnace was upgrades in 2017. The gravity concentrates produced from the Gemini Table located in the refinery is also directly smelted using the flux formula:

- Borax: 40%
- Sodium nitrate: 30 %
- Soda ash: 7.5%
- Silica: 6%

Flux is blended with the concentrate in a 0.83:1 ratio. Fumes from the smelting furnace are capture in the recently installed (2017) gas extraction system. Previously there was no emissions control in the refinery area.

17.1.6 Tailings

Final tailings from the CCD circuit are pumped to two different dehydration cells Bolivia 1 Deposit and Bolivia 2 Deposit for further dewatering. The combined scavenger flotation tailing and solids from the Stari water treatment facility, are pumped to El Chocho for final deposition. Starting in early 2018, Gran Colombia reports it started adding hydrogen peroxide and iron sulfate to the cyanized tailings to detoxify it prior to discharge to the dehydration cell. A tailings slurry cyanide destruction reactor was added in June 2018. The average cyanide level of the slurry discharging to the dehydration cells in 30 ppm. After a dehydration cell is filled to capacity, it is to drain, while tailings deposition into one of the two remaining ponds commences. After the deposited tailings have been sufficiently drained, they are excavated with a backhoe and hauled to a remote “dry stack” tailing storage facility. The current tailings storage facility, El Chocho, opened in April of 2018. The Tailings Facility is 12 ha in total with only 4 ha currently being developed due to land issues.

The tailings facility has a single plate and frame filter press being installed next to the TSF designed to treat 1,500 t/d of dry solids each. The filter press is in the process of being commissioned at the time of this report. Cidelco S.A.C. has performed the design testwork and specified the filters that Gran Colombia has ordered. Once the filter plant is commissioned, the flotation tailings will be pumped from Thickener 9 to a 6 ft x 6 ft agitated conditioning tank that feeds the filter press. At Maria Dama current average daily production rate of approximately 1,200 t/d, with processing spikes up to 1,500 t/d, the filtration facility will be able to handle the full tailings load. The use of the three dehydration cells would be a backup option if one of the filters were to go down for an extended period of time. In 2020, a second identical tailings filter is planned to be added to ensure plant availability.

Water from tailing storage facility is discharged into a creek downstream. Samples are collected for cyanide analysis, however there is currently no method for preventing cyanide contamination when elevated cyanide levels occur.

17.1.7 Cyanide Detoxification and Water Treatment

Gran Colombia installed a hydrogen peroxide cyanide detoxification circuit in 2017. The cyanide detoxification is operated in a batch process on an average of twice a week. The cyanide detoxification circuit consists of two agitated detoxification cells 90 m^3 and 45 m^3 in series. Barren solution is bled into these tanks over a period of time. Once the tanks are full, a solution of 50% hydrogen peroxide is added to the cells to react with the cyanide to form the less toxic cyanate. Cyanide levels in the barren solution are reduced to <1 ppm.

Once the barren solution is processed in the cyanide circuit, the barren solution is transferred to the water treatment plant. The water treatment plant is located offsite of the processing plant. The water treatment plant consists of pretreatment (aluminum perchloride and sodium hypochlorite), oxidation, electrocoagulation, sedimentation, dissolved air flotation, filtration, ultrafiltration and reverse osmosis. The water treatment plant is designed to treat 20 L/s (1,728 m^3/d) of solution producing a clean water free of dissolve metals and cyanide. The water treatment plant was installed in 2017 and is being commissioned in early 2018. Precipitated solids as well as the reject from the filters are pumped back to the pump box that discharges to El Chocho. The permeate is either discharged to the environment or recycled back to the process as clean water.

A solution of 50% hydrogen peroxide is continuously added to the discharge of Thickener 5 to detoxify the slurry of cyanide. Cyanide levels in the tailings slurry is reduced to <1 ppm.

17.2 Production Performance

17.2.1 Historical Plant Production

Historical plant production for the period from 2002 to 2012 is summarized in Table 17-2. During this period ore tonnes processed increased from 168,220 tonnes (average 460 t/d) to 260,806 tonnes (average 715 t/d). Gold production was variable depending on ore grade and ranged from 42,692 ounces in 2002 to 79,177 ounces in 2012.

Table 17-2: Historic Production Summary

Year	Ore Tonnes	Grade Au (g/t)	Au Produced Ounces
2002	168,220	7.8	42,692
2003	144,141	9.2	37,830
2004	158,304	10.1	48,871
2005	178,528	9.6	49,677
2006	202,168	9.4	52,290
2007	218,963	5.8	38,244
2008	185,816	5.6	33,460
2009	175,230	10.9	55,126
2010	149,214	9.8	50,313
2011	173,684	6.0	69,179
2012	260,806	11.0	79,177

Source: SRK 43-101 Technical Report, 2014

17.2.2 Current Plant Production

Plant production for the period 2014 to 2018 is summarized in Table 17-3. During this period, ore tonnes processed increased from 237,740 t at an average gold grade of 10.92 g/t Au in 2014 to 368,835 t at an average gold grade of 18.12 g/t Au in 2018. Gold recovery averaged about 90% over the four-year period. Reported gold recovery is based on actual refinery gold production. It should be noted that although silver occurs in the ore, silver recovery is not monitored.

Table 17-3: Maria Dama Process Plant Production Summary

Parameter	2014	2015	2016	2017	2018
Ore Tonnes	237,740	211,049	284,896	293,395	368,825
Average TPD	651	578	780	760	1,027
Ore Grade (Au g/t)	10.64	14.32	13.77	16.91	18.12
Au Contained (oz)	81,349	97,189	126,144	159,510	214,867
Au Recovery (%)	89.2	90.4	90.1	93.1	90.1
Au Produced (oz)	74,506	92,894	126,261	148,442	193,593

Source: Gran Colombia, 2019

17.3 Process Plant Consumables

Reagent and grinding media consumption for the 2015 thru 2018 are summarized in Table 17-4. Reagent usage and consumption are typical of and in the same range as other similar process plants.

Table 17-4: Process Plant Reagent Usage

Consumable	Function	2015 (g/t ore)	2016 (g/t ore)	2017 (g/t ore)	2018 (g/t ore)
Flotation Reagents					
Copper Sulfate	mineral activator	37	27	10	20
Aerofroth 65	frother	22	33	26	19
A-131	collector	15	17	12	-
MX5160	collector	-	-	-	11
Isopropyl Xanthate	collector	-	35	33	34
Aero 404	collector	18	22	12	12
Thickening Circuit			-		
Super floc A-100	flocculant	0.14	2.4	2	2
Hengfloc	flocculant	0.59	1.9	3	3
Nalco 9901	flocculant	-	-	0.7	5.1
Cyanidation Circuit					
Sodium Cyanide	lixiviant	836	657	442	493
Lime	pH control	400	730	681	363
Merrill-Crowe					
Zinc Dust	precipitant	73	64	53	33
Cyanide Detoxification					
Hydrogen Peroxide	oxidant	-	-	28	641
Refinery					
Borax	flux	57	59	49	32
Soda Ash	flux	18	22	18	11
Sodium Nitrate	flux	49	44	37	24
Silica	flux	78	51	39	24
Lead Acetate	Flux	-	-	0.8	1.4
Grinding Balls					
3.5 "	primary	47	252	-	-
3 "	primary	1,282	1,205	1312	1551
1"	regrind	55	100	74	21
General					
Hydrochloric Acid	acid	-	-	6	4
Caustic Soda	base	-	-	6	3
Antifoam	Foam dispersant	-	-	7	6
Nitric Acid	acid	-	-	15	15
Iron Sulfate		-	-	-	11

Source: Gran Colombia, 2019

17.4 Process Plant Operating Costs

Process Plant Operating Costs for 2016 thru 2018 (January to November) are summarized in Table 17-5. During 2016 plant operating costs averaged US$29.51/t ore processed, which was equivalent to US$66.58/ Au oz produced. During 2017 the process plant operating cost averaged US$31.88/t processed and was equivalent to US$66.71/Au oz produced. During 2018 the process plant operating cost averaged US$28.88/t processed and was equivalent to US$58.29/Au oz produced. Labor, electrical power, and freight are the major cost drivers and represent over 67% of the process plant operating costs.

Table 17-5: Maria Dama Process Plant Operating Costs (2016 thru 2018)

Cost Area	2016			2017			2018 (Jan-Nov)		
	US$	US$/t	US$/Au Oz	US$	US$/t	US$/Au Oz	US$	US$/t	US$/Au Oz
Labor	1,549	5.44	12.27	2,098	8.56	17.92	1,512	4.50	9.09
Laboratory	136	0.48	1.08	0	0.00	0.00	0	0.00	0.00
Electrical Power	1,389	4.88	11.00	1,380	5.63	11.78	1,791	5.33	10.77
Reagents and Consumables	1,600	5.62	12.67	1,141	4.66	9.74	1,834	5.46	11.02
Freight	1,539	5.40	12.19	1,788	7.30	15.27	2,053	6.11	12.34
Maintenance	1,282	4.50	10.15	1,141	4.66	9.74	1,719	5.12	10.33
Other	911	3.20	7.22	207	0.84	1.77	788	2.35	4.74
Total	**8,406**	**29.51**	**66.58**	**7,812**	**31.88**	**66.71**	**9,697**	**28.88**	**58.29**

Source: Gran Colombia, 2019

17.5 Process Plant Capital Costs

Completed and planned process plant capital expenditures are summarized in Table 17-6 for 2018 and 2019. Capital expenditures for 2018 total US$2.9 million with the tailings filter press accounting for nearly three quarters of the total capital expenditure. Capital expenditures for the Maria Dama plant had an additional US$494,282 carry over from 2017 for planned projects that were not completed in 2017. Planned capital expenditures for 2019 total US$1.17 million which includes US$202,000 for laboratory equipment. Most of the identified capital expenditures are for replacement and refurbishment of existing equipment and facilities.

Table 17-6: Completed and Planned Process Plant Capital Expenditures for 2018 and 2019

Year	PROJECT	COST (COP)	COST (US)	Planned or Completed
	Maria Dama Plant			
2018	Engineering room and new offices for plant (General)	$43,500,000	$15,000	Completed
2018	Pipes surface waters (General)	$220,400,400	$76,000	In Progress
2018	Improvements in area of foundry (smelting)	$90,000,000	$31,034	In Progress
2018	New dressing and showers (general)	$7,500,000	$2,586	Planned
2018	Optimization of light circuits (electrical maintenance) 1st stage	$319,000,000	$110,000	In Progress
2018	Tailings pumps second line (Tailings)	$377,000,000	$130,000	In Progress
2018	Installation of a third regrind mill	$-	$-	Planned
2018	Regrind Area Optimization	$-	$-	Planned
2018	Replacement rich solution tank (precipitates)	$-	$-	Planned
2018	Replacement air line (compressed air)	$23,582,591	$8,132	Planned
2018	Preserving assets Pampa Verde	$72,500,000	$25,000	Completed
2018	System flocculant preparation and distribution	$2,300,000	$793	Completed
2018	Metering pumps (6) Reagent	$261,000,000	$90,000	In Progress
2018	Filter press sludge	$6,290,001,400	$2,168,966	In Progress
2018	Replacement cover crushing	$69,000,000	$23,793	Planned
2018	Flotation cell 4TH	$571,834,242	$197,184	Planned
2018	Sustainability	$190,000,000	$65,517	In Progress
2018	**Total Budget**	**8,537,618,633**	**2,944,006**	
	Maria Dama Plant Carry Over from 2017			
2018	Construction plant accesses	$139,813,104	$48,211	Completed
2018	Replacement leach agitators & repair tanks 2 and 3 (leaching)	$106,042,919	$36,567	Completed
2018	Preparation system FLOCCULANT	$101,028,077	$34,837	Completed
2018	Instrumentation maria dama 2017 (general)	$354,033,309	$122,080	In Progress
2018	Purchase and installation of vibrating screen	$108,500,000	$37,414	In Progress
2018	New cell dehydration tailings	$450,000,000	$155,172	In Progress
2018	Tailings storage 1st stage (CHOCHO)	$174,000,000	$60,000	In Progress
2018	**Total Budget**	**$1,433,417,409**	**$494,282**	
	Laboratory 2018			
2018	Precision scales	$23,200,000	$8,000	Planned
2018	Band rotary divider 12	$34,800,000	$12,000	Completed
2018	Oven cupellation	$121,800,000	$42,000	In Progress
2018	Additions to the WAREHOUSE	$8,700,000	$3,000	Planned
2018	Settler Centrifugal	$-	$-	Planned
2018	Extraction system cupellation	$14,500,000	$5,000	Planned
2018	Filters pressure	$23,200,000	$8,000	Planned
2018	Sieve Schenker	$11,600,000	$4,000	Planned
2018	distiller	$8,700,000	$3,000	Planned
2018	Analytical balance	$29,000,000	$10,000	Planned
2018	Laminator	$14,500,000	$5,000	Planned
2018	Analyzer cyanide	$220,173,800	$75,922	In Progress
2018	**Total Budget**	**510,173,800**	**175,922**	
2019	Dining and new offices for plant	$240,517,500	$82,937.07	Planned
2019	Optimization of power grid STAGE 2-2019	$330,000,000	$113,793.10	Planned
2019	Bridge crane flotation	$90,000,000	$31,034.48	Planned
2019	Computing team	$45,000,000	$15,517.24	Planned
2019	Spare backup electric plant critics	$225,000,000	$77,586.21	Planned
2019	Character in Production Equipment Plant	$300,000,000	$103,448.28	Planned
2019	Scada System Plant	$225,000,000	$77,586.21	Planned
2019	Other instruments plant	$-	$-	Planned
2019	Tomas Service Electric Plant	$150,000,000	$51,724.14	Planned
2019	Major maintenance leach tank No. 3	$225,000,000	$77,586.21	Planned

Year	PROJECT	COST (COP)	COST (US)	Planned or Completed
2019	System float reagent preparation	$90,240,000	$31,117.24	Planned
2019	Access to warehouse cyanide plant	$120,450,000	$41,534.48	Planned
2019	Fitting Knelson concentrator	$737,586,207	$254,340.07	Planned
2019	Repowering filter press 2 and 3 of hasty	$135,000,000	$46,551.72	Planned
2019	**Laboratory**			
2019	Spectrophotometer DR3900	$39,000,000	$13,448.28	
2019	Rotary Divider RRA-50c	$48,000,000	$16,551.72	Planned
2019	Jaw breaker	$75,000,000	$25,862.07	Planned
2019	PH meter	$11,100,000	$3,827.59	Planned
2019	Oxygen analyzer	$15,600,000	$5,379.31	Planned
2019	Laboratory equipment flotation	$42,000,000	$14,482.76	Planned
2019	10 kg weight set	$12,000,000	$13,448.28	Planned
2019	Balance to 32 kg	$75,000,000	$25,862.07	Planned
2019	Heated griddle	$9,000,000	$3,103.45	Planned
2019	Vacuum pump	$9,000,000	$3,103.45	Planned
2019	Digital dispensador	$192,000,000	$66,206.90	Planned
2019	Pulverizador LM2	$51,000,000	$17,586.21	Planned
2019	Precision balanze	$27,000,000	$9,310.34	Planned
2019	**Total Budget**	**3,519,493,707**	**1,222,929**	

Source: Gran Colombia, 2019
Exchange Rate US$1.00:COP$2900

An additional US$758,000 was recently approved to the capital budget to add increase the feed storage capacity in the plant to 15 days.

18 Project Infrastructure

18.1 Infrastructure and Logistic Requirements

18.1.1 Access, Airports, and Local Communities

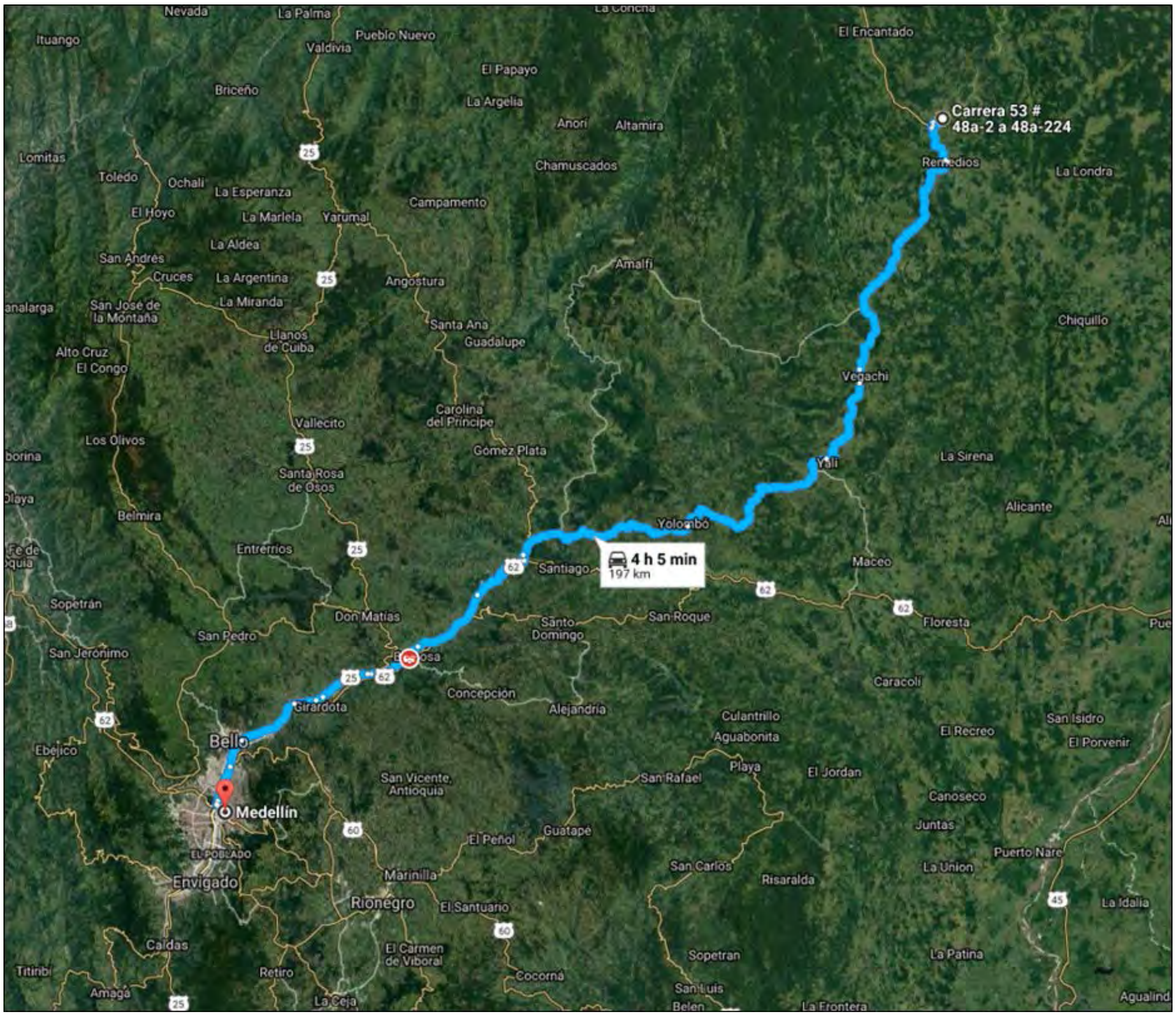
The Project is an active mining project with the majority of the infrastructure required for its ongoing operation already in place. The Project is located in north central Colombia approximately 200 km northeast of Medellín. Figure 18-1 shows the general location.

Source: SRK-Google Maps, 2017

Figure 18-1: General Location

Medellín (population approximately 2.5 million) is the capital of the Department of Antioquia. The Project is close to the communities of Remedios (population approximately 8,100), Segovia (population approximately 40,000), and the small community of La Cruzada (population approximately 2,700). The communities have supported the mining industry in the area for well over 50 years with the history of mining in the area dating back to the mid-1800s. Approximately 1,300 employees live in the area. Some employees live as members of the communities and others in company supplied housing (approximately 230 houses) in the communities. The company provides a cafeteria in the area of the company owned housing. The company also operates a main camp that includes a restaurant, pool (billiards), and training area. A contractor, Duflo operates the facilities for Gran Colombia.

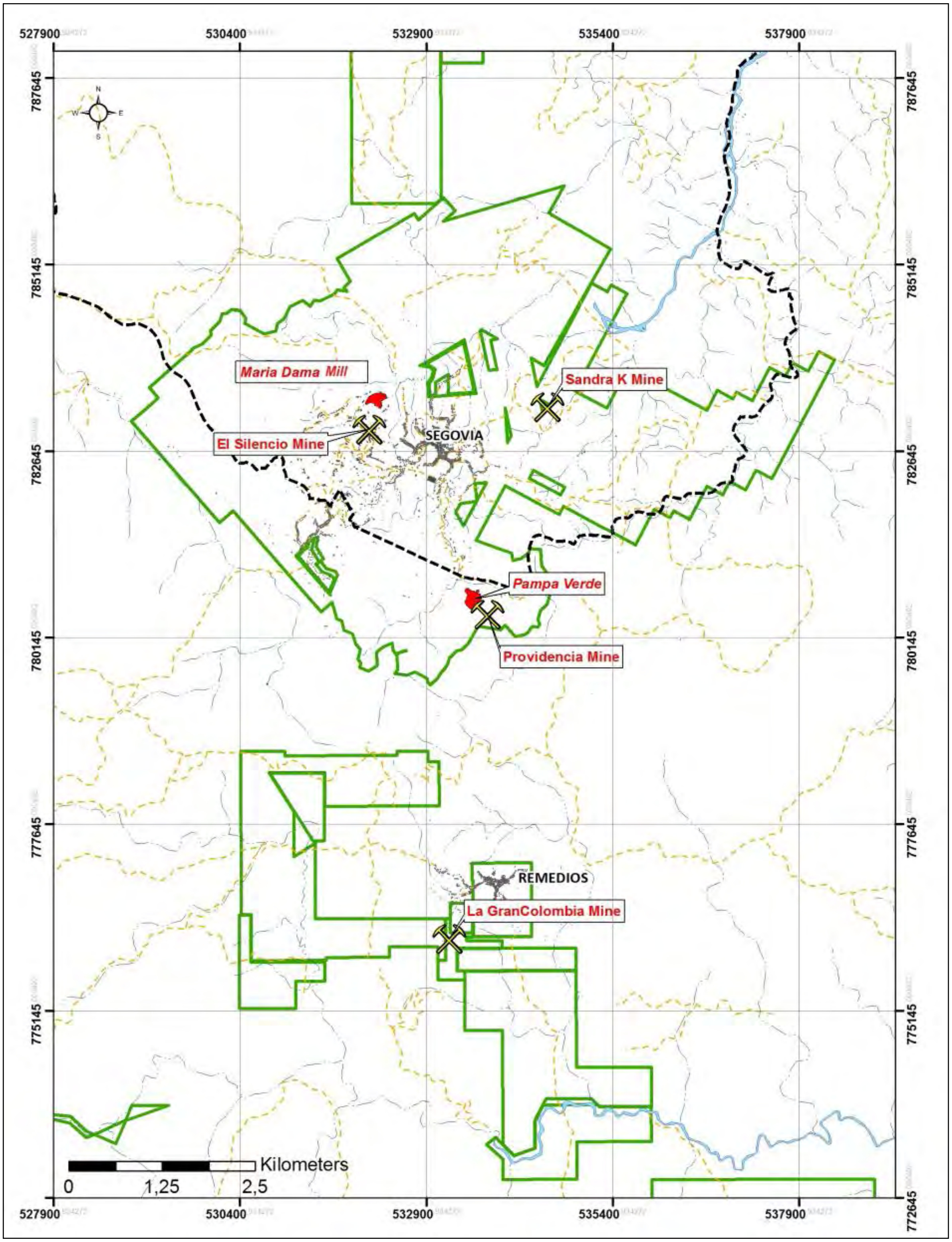
Access to the Segovia/Remedios area is four hours by paved highway from Medellín. The route can be seen in Figure 18-2. From the communities to the mine, access is by dirt road and as the mines are under the communities the distance is quite short.



Source: SRK-Google Maps, 2017

Figure 18-2: Project Access

The shops/facilities are located near the mine portals and the Maria Dama mill site. Figure 18-3 shows the proximity of the mines and mill to the communities.



Source: Gran Colombia, 2017

Figure 18-3: Site Map

Air access is by a 30-minute commercial flight from Medellín to Otú, 15 km south of Segovia, which has an asphalt-surfaced airstrip. From Otú, it is a 20-minute drive to Segovia via the towns of Remedios and La Cruzada. A major international airport is located in Medellín.

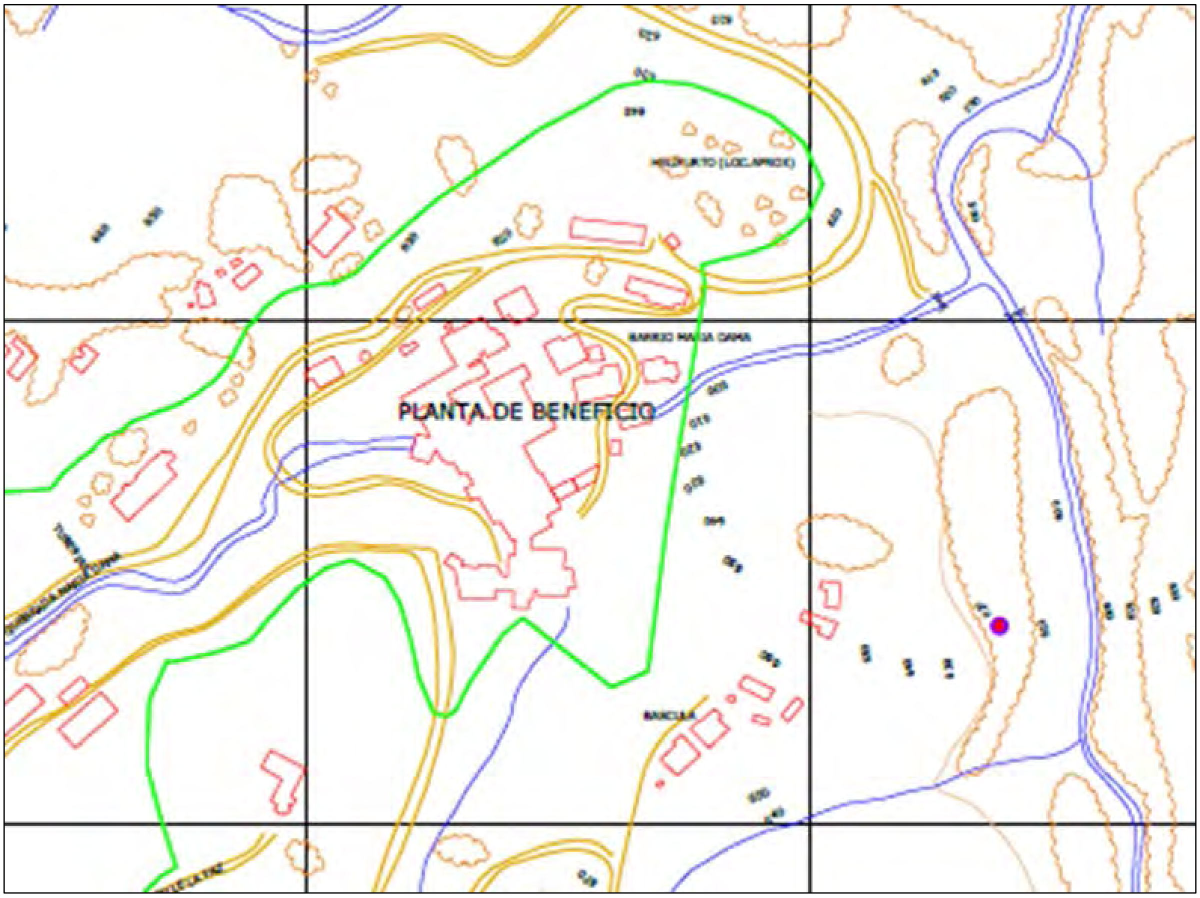
18.1.2 Facilities

The primary facilities that are associated with the Segovia site are the Maria Dama plant, the El Silencio Mine, the Providencia mine, the Sandra K mine, and the future Carla mine. The Segovia site also has a partially constructed processing facility, Pampa Verde that is not used and not planned for use in the LoM plan. Additional key facilities are the tailings storage areas at Shaft and El Chocho.

A general facilities listing is as follows:

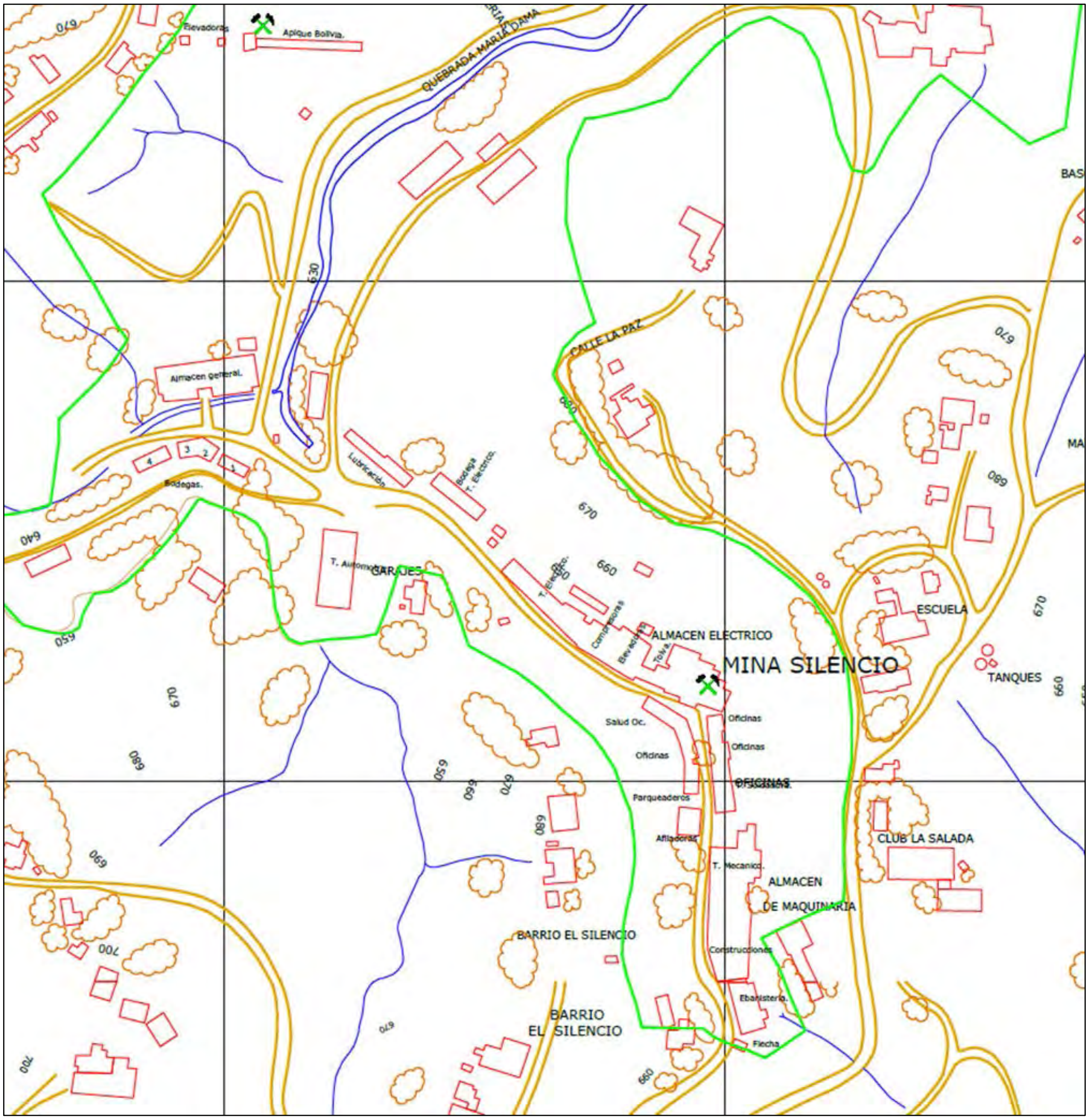
- Powder and primer magazines storage;
- Shops;
- Geology core shack and principal geology office near Bolivia apique,
- Third-party (SGS) laboratory;
- Water treatment plant;
- Warehouses;
- Compressor buildings;
- Welding shops;
- Contractor shops (where contract miners are utilized);
- Waste disposal faculties;
- Entry guard shack plus multiple guard houses on the perimeter fence line;
- Ventilation system surface fans;
- Substations and electrical distribution systems;
- Backup generators;
- Fuel and oil storage tanks;
- Water storage tanks (service water);
- Potable water treatment system;
- Waste rock storage facilities;
- Change houses;
- Mine portals and apique headframes by site;
- Maintenance and operations offices;
- Lamp rooms; and
- Tailings storage facilities (Shaft and El Chocho).

The facility layouts are shown in Figure 18-4 through Figure 18-8.



Source: Gran Colombia, 2018

Figure 18-4: Maria Dama Plant Facilities

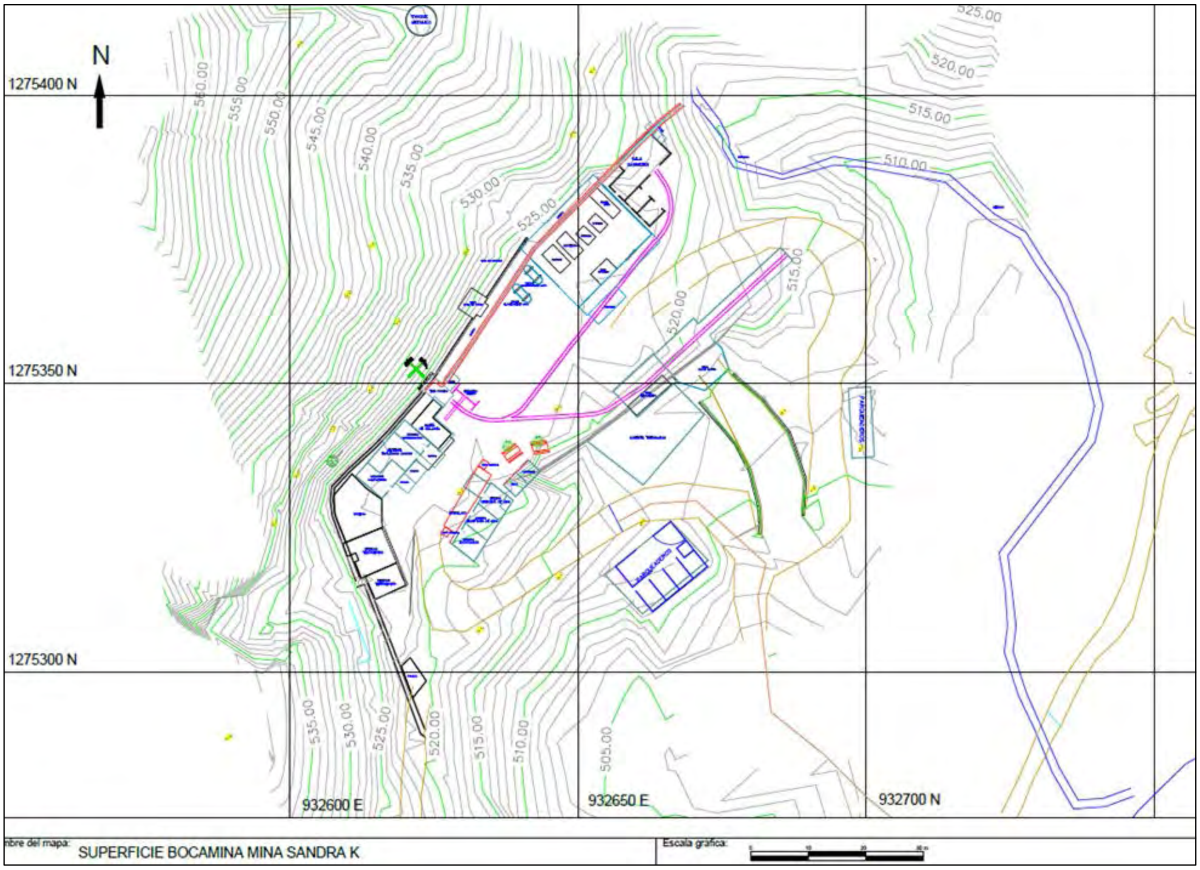


Source: Gran Colombia, 2018

Figure 18-5: El Silencio Facilities

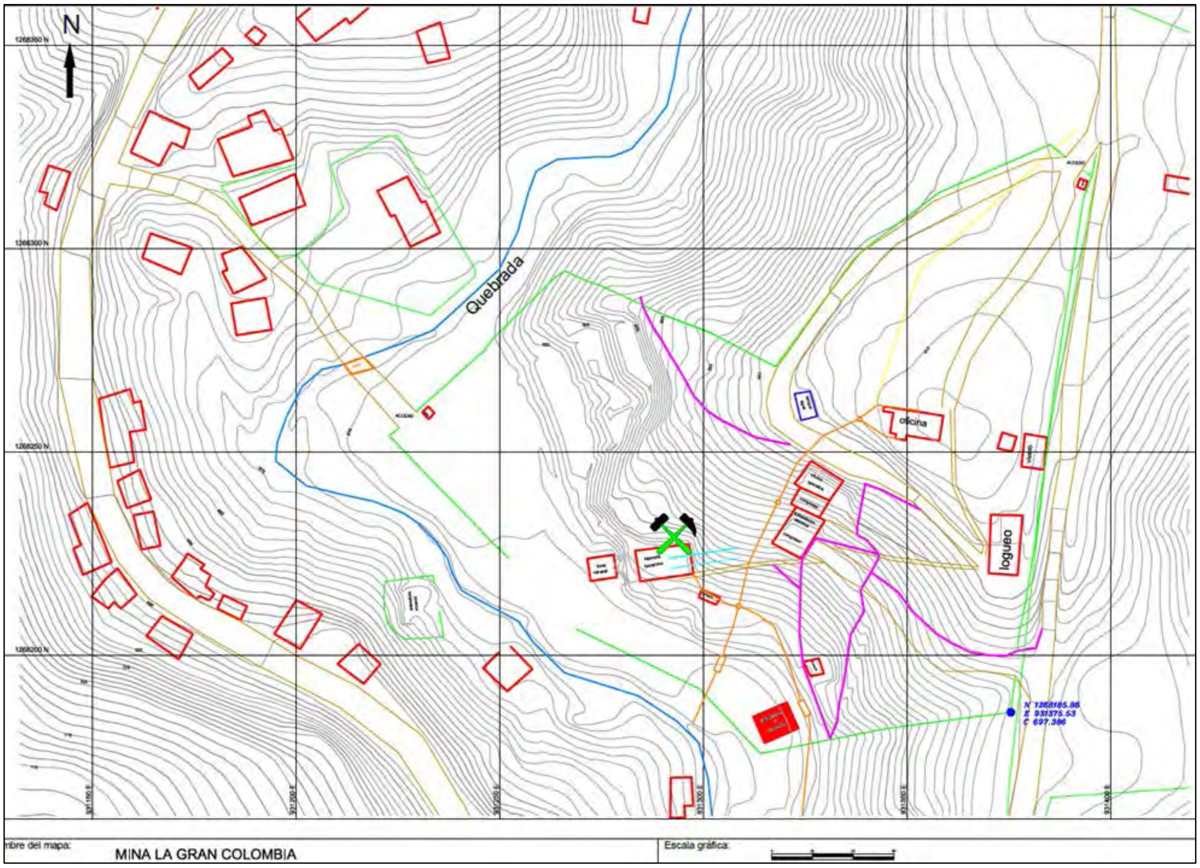
Source: Gran Colombia, 2018

Figure 18-6: Providencia Mine Facilities



Source: Gran Colombia, 2018

Figure 18-7: Sandra K Facilities



Source: Gran Colombia, 2018

Figure 18-8: Carla Facilities

18.1.3 Compressed Air Systems

A substantial compressed air system is also present at each mine site to support mining activities. A compressed air system is also present at the processing facility.

Table 18-1 provides a summary of the compressors at El Silencio and Providencia.

Table 18-1: Compressors listing for El Silencio and Providencia

Location	ID	Compressor Manufacturer	HP	CFM
El Silencio	1	Ingersoll Rand	300	1,363
	2	Ingersoll Rand	300	1,363
	3	Atlas Copco	150	987
	4	Kaeser	175	850
	5	Kaeser	250	1,052
Sandra K	1	Atlas Copco	125	545
	2	Atlas Copco	75	320
	3	Kaeser	75	345
	4	Kaeser	175	882
Providencia	1	Ingersoll Rand	250	1,249
	2	Ingersoll Rand	250	1,249
	3	Atlas Copco	125	545
	4	Atlas Copco	200	987
	5	Kaesar	175	882

Source: SRK, 2018

Figure 18-9 shows the compressor room at Sandra K and the three compressors and backup generators.

Source: SRK, 2018

Figure 18-9: Compressor room at Sandra K

18.1.4 Diesel Supply and Storage

Fuel is supplied by Terpel, who provides the contracted supply from Medellín. They supply the fuel directly to the mine and mill where the fuel is stored in tanks at each site. Diesel deliveries are typically in 30,000-liter trucks. There are two tanks that hold a total of 850-gallon tanks at both El Silencio and at Providencia. Diesel tanks are filled every 2 days at El Silencio and every 3 days at Providencia. Fuel can be obtained locally through either Terpel or Zeus filling stations.

18.1.5 Natural Gas and Propane Supply

The site uses propane for miscellaneous heating processes site wide, but primarily at the lab refining furnace. Propane is supplied by Vidagas a local company that receives propane from Medellín. Natural gas is not used at Segovia.

18.1.6 Power Supply and Distribution

Power is supplied through two sources. The first power supply is provided from the national grid through a 44 kV powerline to the company substations at the mill location and mine locations. The power is supplied by Empresas Públicas de Medellín E.S.P (EPM). EPM is a major utility that in addition to power, supplies natural gas and water. EPM supplies about 20% of Colombia's power.

The company also has contracts with a secondary supplier, Proveniente de Central Dona Teresa (PCH), that is a smaller independent producer that operates the 8.6 MW Doña Teresa hydroelectric project approximately 20 km from the Segovia site. Before November 2014, PCH was owned by Gran Colombia Gold. The facility was constructed in the 1930s by FGM, with poor performance. The poor performance of the PCH facility provided impetus for Gran Colombia to contract with EPM. The power is transmitted through a 44 kV power line to the site. PCH began delivering power in November of 2017 and continues today. PCH delivered approximately 2.3 M kWh in January 2018. The consumption was split with 53% at El Silencio, 41% at Providencia, 6% at Sandra K.

Figure 18-10 shows the one-line electrical diagram of the power system at the Segovia mine and the two separate feeds providing power to the Project. Gran Colombia plans in the future to create a fully looped system to establish full redundancy. The company has detailed records on power outages since contracting with EPM in November 2014. The power early in the production live was very unreliable but has improved over time but backup generation is still required. The reliability has been much improved in recent years with minimal down time due to electrical power loss. Even with the dual power supply system, backup generation is still required due to transmission lines from both power sources being affected by weather conditions.

The company has backup generation available to support the main lines if needed. The backup generation includes diesel plants including:

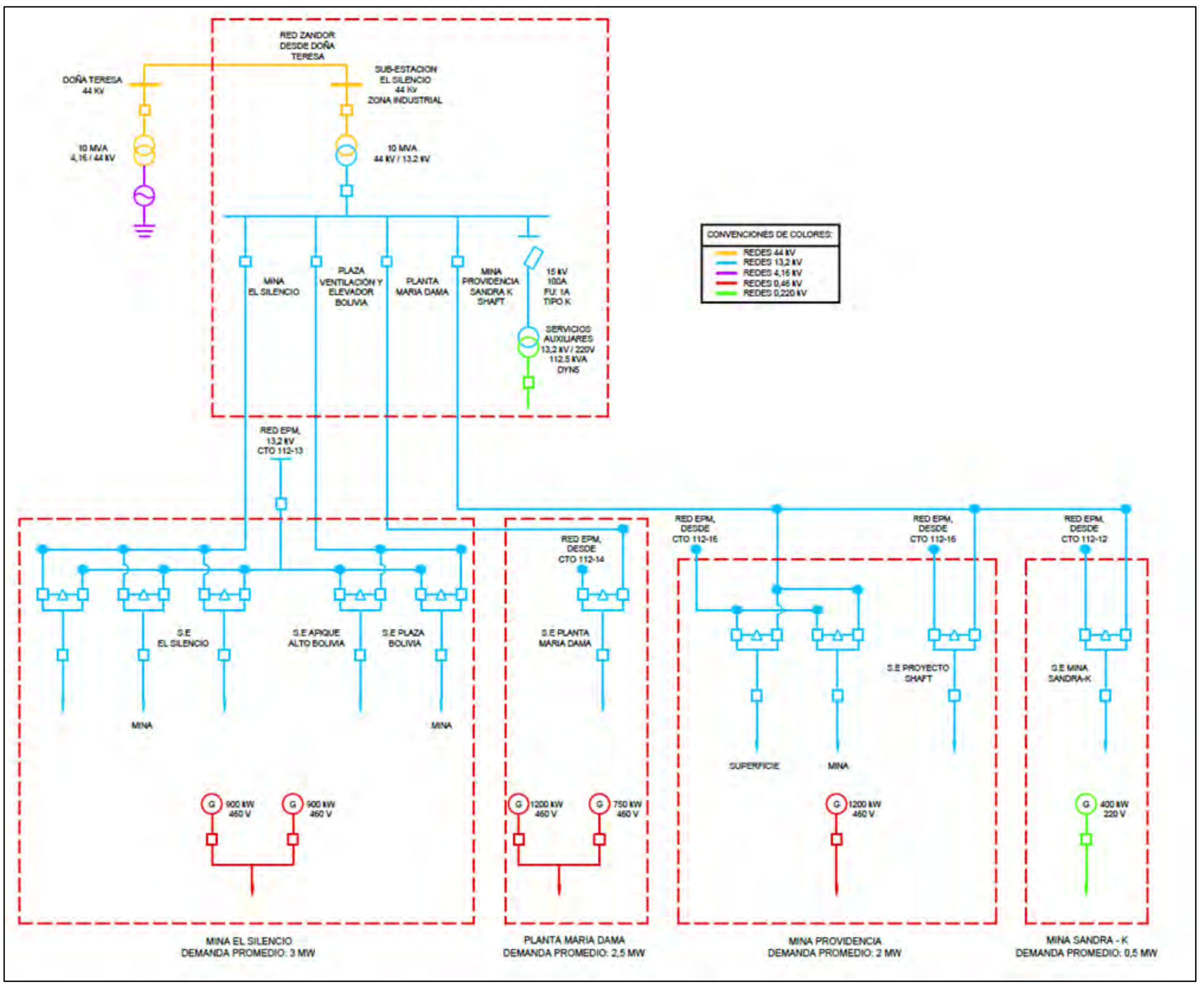
- Two 900 kW Gensets at El Silencio;
- One 1200 kW Genset and one 750 kW Genset at Maria Dama;
- One 400 kW Genset at Sandra K; and
- One 1200 kW Genset at Providencia.

The 2018 energy consumption from EPM and Proelectrica is summarized in Table 18-2. The average cost of electricity was US$ 0.173/kWhr.

Table 18-2: 2018 Energy Consumption by Location

Location	TOTAL				
	Energy (kWh)	Unit Cost (COP$/kWh)	Total Cost (M COP$)	Total Cost (US$ 000's)	Percent of Total Energy
Maria Dama	15,645,657	383.43	5,998.97	2,025.21	27.59%
Providencia	13,708,658	542.56	7,437.79	2,510.94	24.18%
El Silencio	23,557,749	577.13	13,595.91	4,589.88	41.55%
Sandra K	3,351,978	545.35	1,827.98	617.11	5.91%
Pampa Verde	40,320	561.71	22.65	7.65	0.07%
Shaft	50,463	552.70	27.89	9.42	0.09%
Acueducto	345,200	552.43	190.70	64.38	0.61%
Total	**56,700,024**	**513.26**	**29,101.88**	**9,824.59**	**100.00%**

Source: Gran Colombia (EMP & Proelectrica), 2018



Source: Gran Colombia, 2018

Figure 18-10: Segovia One-Line Electrical Schematic

A more detailed discussion on the power system follows by site.

Providence Mine

- The mine has several surface substations including a 1,500 kVA substation (in three 500 kVA transformers), Transfer equipment is currently being installed for the interconnection with the PCH and EPM systems with which they supply compressors, crushers, hoist equipment and ventilation among other loads.
- Within the mine level 6: there are two 500 kVA transformers with which feed the pumping systems on level 4 and level 7 as well as the mine loads of these levels.
- Level 8: the main substation has 750 kVA and 500 kVA transformers as this is where power is concentrated to distribute to all the medium voltage loads that supply the smaller substations at locations underground in the mine; Additionally, there is a separate transformer that feeds pumps on level 7, 8, 8 ½, 9 ore, as well as hoists on apique 3660, apique 3860 and mine loads on level 9 and 10.
- A 500 kVA Substation on level 10 feeds fans, pumps and other equipment on levels 10 and 11.
- On level 12 there is a 1,000 kVA system with two 500 kVA transformers, it currently feeds the Shaft fan, all the electro diesel equipment, pumps, fans and other electrical requirements from the ramp from this level downwards.

El Silencio Mine

- There is an 8.4 MVA substation installed that takes power from PCH. The substation has a 10 MVA transformer with 44 KV input voltages and 13.2 KV outputs which were taken to all the centers of consumption (Providencia, Sandra K, El Silencio, Maria Dama) for interconnection and use by medium voltage transfer.
- For the surface compressors there is a 2 MVA transformer, and another 1 MVA that feeds all the compressors, ore hoist, personnel and all the peripherals of the industrial area. Gran Colombia is currently feeding level 18 with a 1 MVA transformer also installed in this substation.
- Inside the mine the Navar group has a number of substations:
    - 500 kVA substations on levels 10 level 17 level 19, level 23;
    - Two 450 kVA transformers on level 28;
    - 450 kVA transformers on levels 32, 38 north and 38 south;
    - 450 kVA transformer on level 38 north and 38 south;
    - 300 kVA transformer level 28;
    - These transformers feed all the pumps, hoisting equipment, and fans along with other equipment; and
    - On the Zandor (Gran Colombia) portions of level 18-Bolivia Apique:
        - 500 kVA transformer;
        - 500 kVA transformer in the substation at level 23-1140 south; and
        - 300 kVA transformer and another 300 kVA transformer in level 23-1140 north with a 750 kVA transformer which feeds the internal lift, mechanized equipment, fans and other equipment.

Mina Sandra K

At the surface substation there are two 500 kVA transformers that feed the compressors, apique hoists, and other services required. Inside the mine on level 3 there is a substation with a 750 kVA transformer which feeds the hoist, pumps, fans, and other services required.

Note that almost all substations are powered with input voltages of 13.2 KV and an output of 460 volts. The exception is in the El Silencio mine on level 18 which is fed with 11 KV input and 460 V output transformers.

18.1.7 Security

Security at the Project is primarily provided by a contract security company, Fidelity, that provides 24-hour per day security services for all of the Gran Colombia Project sites including the administrative facilities, El Silencio Mine, Providencia, Sandra K, and Maria Dama Plant. The security service includes manned fixed guard stations at the various sites plus a roving service that travels throughout the property and local communities around the Project area. Fidelity has approximately 140 people on staff for 24-hour coverage with approximately 46 people at the sites each shift.

18.1.8 Communications

The Project has several communications systems that are utilized. Hand held two-way radios are used on the surface and underground at El Silencio, Providencia, and Sandra K where a leaky feeder system has been installed. A hardwire telephone system is in use in the mines and plant as well as the administrative areas. A fiber optic internet system is installed to support the Project needs. Video cameras are utilized in certain locations to monitor key systems and secure zones. A facial recognition system has been installed at the Maria Dama plant and is being implemented at Providencia.

18.1.9 Logistics Requirements

Supplies, equipment, and materials are trucked to the sites via the paved and dirt road. As this is a gold project there are no concentrate shipping constraints. No material logistic limitations impact the project other than the typical challenges.

18.1.10 Site Water Management

The management of wastewater in and around waste management facilities and the plant area has historically been a challenge for the Project. At present, Gran Colombia unloads the bulk tailings directly to the TSF El Chocho, and the cyanized tailings are temporarily stored in the Bolivia TSF's to assist in managing the water associated with the cyanized tailings. The liquid portions of the Boliva TSF's is pumped to the Maria Dama plant, where the liquids comingle with the barren solutions from the plant. The combined liquids are then pumped to the industrial wastewater treatment system (STARI) where they are treated and recirculated in María Dama, or if not required for makeup water, discharged maintaining the Colombian water quality standards. The fluids from the El Chocho TSF are recirculated to the María Dama plant.

The El Chocho TSF site has surface water diversions incorporated into the perimeter roadways that will allow storm water to be diverted around the facility.

18.1.11 Water Management

Operational water for the Maria Dama plant in Segovia is provided mainly from a freshwater surface storage pond known as La Tupia and supplemented during the dry season using the dewatering water from the underground mine. With the recent start of operations at El Chocho TSF, the TSF water is recycled from the TSF to the Maria Dama plant. Likewise, the waters from the Bolivia TSFs that store cyanized tailings are reincorporated into the Maria Dama plant after detoxification and treatment process in the STARI System. These systems reduce the use of fresh makeup water. All the infrastructure for surface water management has been added since mid-2017 and the new facilities under construction include surface water controls that will limit the amount of incidental runoff added to the water that must be managed by the site.

Recent effort appears to be directed toward storm water management and the prevention of contact with mine equipment and facilities. Some concrete channels and energy dissipation structures for the management of run-off are already constructed, and some others are being considered. SRK has observed that Gran Colombia is in the process of implementing improved surface water controls around the new El Chocho tailings facility.

18.1.12 Water Supply

According to the available information regarding the water supply requirements and surface water records in the area, water supply for processing and potable water does not present a significant challenge to the project. However, there is no mine water balance or records of water use and little or no site specific or detailed analysis of the water cycle has been undertaken to date.

Water for processing, estimated at approximately 100 m^3/hr has historically been provided mainly from the pond known as L Tupia, and secondarily from underground dewatering activities. The water for the Maria Dama processing plant is stored in a pond shown small reservoir, La Tupia, in Figure 18-11. The water is transported by pipe and open channel for use at the plant. Recycled water from the El Choco TSF reduces the quantity of makeup water required.

Source: SRK, 2018

Figure 18-11: Maria Dama Water Storage Pond

18.2 Tailings Management Area

This description of the filtered tailings storage facility (TSF) design was prepared by SRK for the 2019 update of the pre-feasibility study and is based on a desktop review of the following:

- El Chocho Tailings Storage Facility, Final Design Report, prepared for Gran Colombia Gold Corp, Segovia Project, Knight Piésold, July 2012;
- Presa El Chocho Para Almacenamiento de Lodos, Optimización del Volumen de Almacenamiento, Revision de Diseno Definitivo, prepared for Gran Colombia Gold Corp. Proyecto Pampa Verde, iConsult, February 2013;
- Revisión Técnica del Informe de Diseño Final – Deposito de Almacenamiento de Relaves El Chocho, Auditoría de Residuos Sólidos Industriales por Beneficio de Minerales Auríferos, prepared for Gran Colombia Gold Corp., Amec Foster Wheeler, November 2016a;
- Análisis del Sistema de Manejo Actual de Relaves – Alterativas de Corto, Mediano, y Largo Plazo, Auditoría de Residuos Sólidos Industriales por Beneficio de Minerales Auríferos, prepared for Gran Colombia Gold Corp., Amec Foster Wheeler, November 2016b;
- Preliminary design drawings provided by Gran Colombia Gold Corp for Fase IB of the El Chocho tailings storage facility prepared by Wood (dated December 2018); and
- Personal communication via telephone conversation with Daniel Servigna, Branch Manager, Mining, Wood on March 13, 2019.

The currently-proposed design of the TSF, as illustrated in preliminary design drawings prepared by Wood (dated December 2018), includes construction of a starter embankment in the valley downstream of the existing Fase 1A embankment to provide a buttress for placed and compacted filtered tailings. Tailings produced by the flotation process will be sent through a filter press to achieve a volumetric moisture content of approximately 15% to 20%. The filtered tailings will then be transported by haul trucks and a dozer will be used to spread the filtered tailings to a specified compaction and lift thickness. The outer 20-meter perimeter of each tailings lift will be compacted to a higher compaction specification than the interior tailings to achieve a higher density, thereby reducing the potential for dynamic (earthquake) liquefaction of the tailings material and improving the mass stability of the stacked tailings. The additional compaction on the outer slope will also help against erosion of the of the dry stack tailings during high-intensity precipitation events.

Current plans, as illustrated in Wood's preliminary drawing set, include construction of the following two embankments to buttress and contain filtered tailings:

1 A Geotube embankment is currently being constructed by filling Geotubes with tailings slurry currently produced by the mine. The design was prepared by Maccaferri and includes tailings-filled tubes stacked to form a buttress embankment approximately 15 m high. The Geotube embankment is designed to provide for interim containment of tailings while the Fase 1C embankment design is completed; and

2 A revised Phase 1C embankment design was prepared by Wood and rather than the previous KP-designed embankment with a low-permeability core, Wood's design proposes construction of a waste rock starter embankment (dated December 2018) design to buttress and contain dry-stacked tailings.

Foundation preparation for the TSF will include removal of trees, clearing and grubbing of vegetation, and removal of topsoil and unsuitable foundation materials. After topsoil removal is complete, unsuitable foundation materials will be removed.

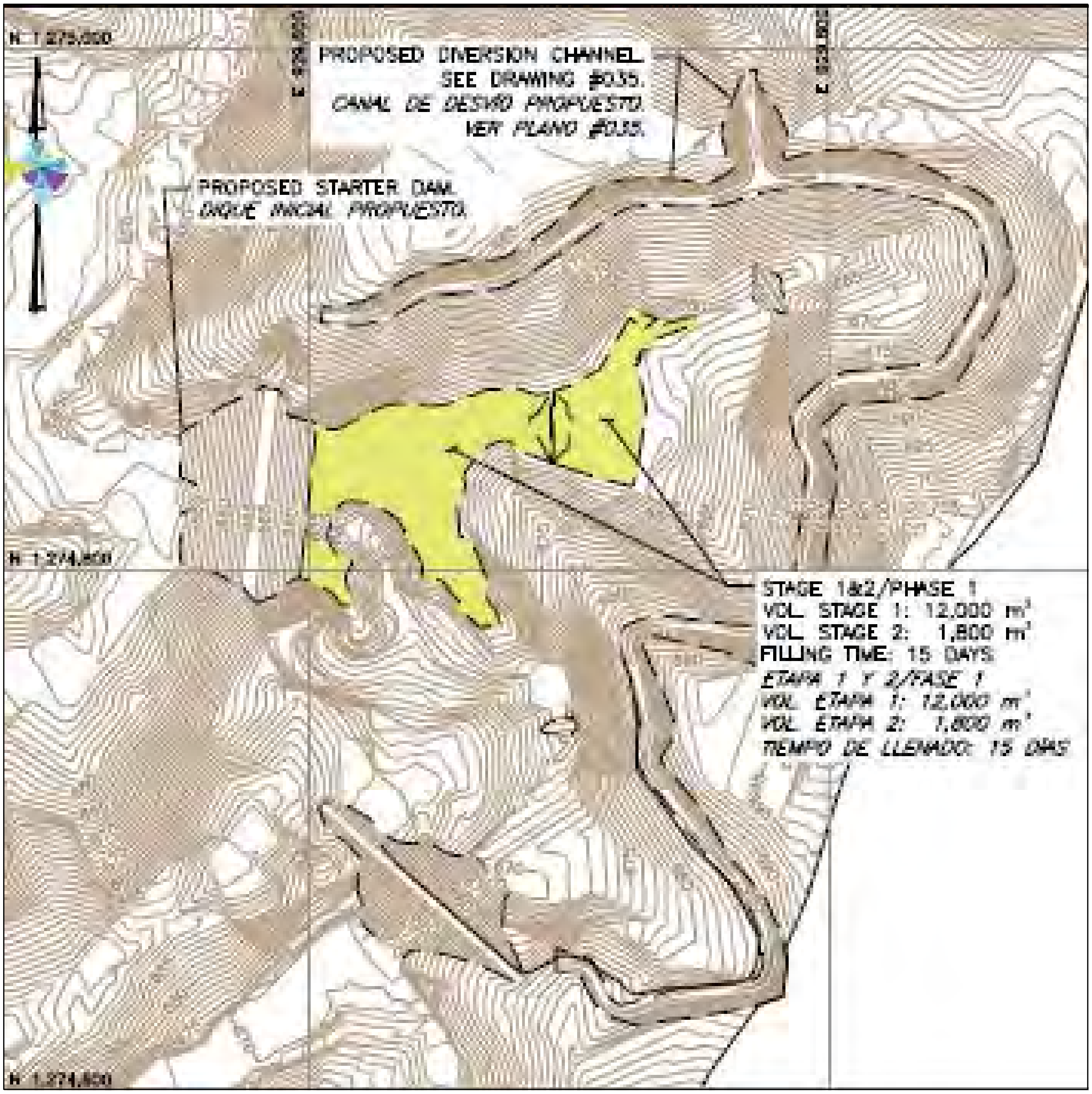
An underdrain collection system will capture shallow or perched groundwater below the tailings, thus preventing increased pore pressures at the foundation/tailings interface. The underdrain collection system will follow the natural low point of the valley and consist of a system of 24 inch diameter perforated and solid polyethylene pipes. Water from the underdrain system will be piped under the Fase 1C embankment and into the contact water collection pond.

The pre-feasibility evaluation of the design is therefore based on the following parameters and pre-feasibility-level design details:

- Tailings slurry produced at Maria Dama will be pumped to a tailings filter press located at the El Chocho tailings facility. From the filter press, the filtered tailings will be hauled by truck and placed and compacted within the tailing's storage facility footprint (Gran Colombia Gold Corp, 2018);
- Based on the proposed placement method, Gran Colombia Gold has assumed an average dry density of 1.7 tonnes per cubic meter (t/m^3) for placed and compacted tailings (Gran Colombia Gold Corp, 2018);
- Filtered tailings within 20 m of the planned ultimate outer slope of the dry stack will be placed in the dry season and compacted to 95 percent of maximum dry density at ±2 percent of optimum moisture content (per ASTM D1557). Interior tailings will be placed during the remainder of the year (wet season) and spread with a dozer to achieve a compaction of around 80 percent (Wood, 2019);
- The tailings grain size distribution classifies as a sandy silt (ML) with approximately 31% sand and 69% passing 0.075 mm (No. 200 sieve). The fines consist of 66.5% silt and 2.9% clay (Knight Piésold, 2012);
- The tailings production rate is currently around 900 t/d and may ultimately be increased to 1,500 t/d. Current plans call for operation of the El Chocho facility through December 2023, with a total estimated volume of tailings storage at 1.36 Mt (Gran Colombia Gold Corp, 2018);
- For this update to the prefeasibility study, it has been assumed that all embankments will be constructed to their full height (i.e., no raises will be required over the LoM). The embankments will be constructed with waste rock from the underground workings forming a rockfill starter embankment and Geotubes (Gran Colombia Gold Corp, 2018);
- The rock fill Fase 1C starter embankment will have a maximum crest elevation of 665 m above sea mean (amsl), 2H:1V (horizontal:vertical) sideslopes with a 6-meter-wide crest. Fase 1C starter embankment construction will require placement and compaction of approximately 17,800 m^3 of waste rock (Gran Colombia Gold Corp, 2018);
- The Geotube embankment will be approximately 15 m high with a maximum elevation of 685 amsl;
- Basin preparation will include removal and stockpiling of topsoil and removal of vegetation. In situ soils may be suitable for construction of the specified low-permeability liner within the basin interior (Knight Piésold, 2012);
- After basin preparation, an underdrain system consisting of a series of 24 inch-diameter perforated, and solid, corrugated polyethylene pipes will be installed in an excavated trench

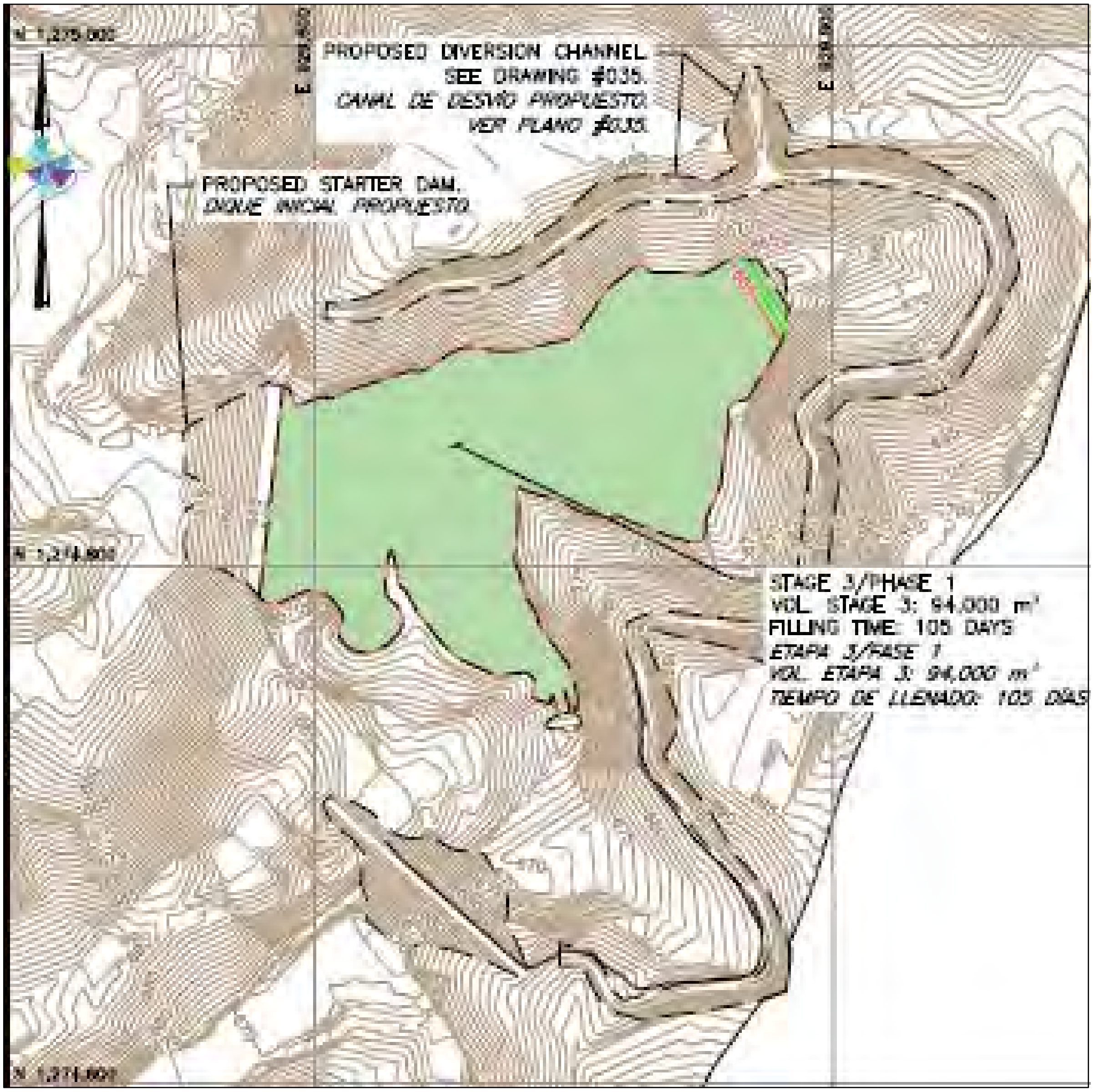
in the valley of the proposed facility footprint. The underdrain pipes will be placed on a 4 inch layer of sand and covered with 4 inch minus gravel and wrapped in geotextile;

- The TSF basin will be lined with a low-permeability compacted soil liner constructed from high-plasticity soils sourced from within the filtered TSF footprint (Knight Piésold, 2012);
- Contact water from the underdrain system will be pumped overland from the contact water collection pond to the main collection pond (Gran Colombia Gold Corp, 2018);
- Perimeter stormwater diversion channels will be excavated into the side hills just above the ultimate filtered tailings footprint to collect and control stormwater from upgradient watersheds; The perimeter stormwater channels will consist of a combination of 4 m wide, 1 m deep v-ditches and a trapezoidal channel with a base width of 1 m and a depth of 1 m;
- Temporary internal dams will be installed in the basin directly over the top of the underdrain to control stormwater in basin areas that have yet to be covered with filtered tailings (Gran Colombia Gold Corp, 2018);
- Based on the assumptions outlined above, Grad Columbia developed the following phased stacking plan shown on Figure 18-12 through Figure 18-15:
  - Stage 1 and 2 - Phase 1: Based on the stacking plan shown on Figure 18-12, tailings will be stacked to a maximum elevation of 657 mamsl to provide 13,800 m^3 of filtered tailings storage;
  - Stage 3 - Phase 1: Based on the stacking plan shown on Figure 18-13, tailings will be stacked to a maximum elevation of 665 mamsl to provide 94,000 m^3 of filtered tailings storage;
  - Stage 4 - Phase 1: Based on the stacking plan shown on Figure 18-14, tailings will be stacked to a maximum elevation of 677 mamsl to provide 273,000 m^3 of filtered tailings storage; and
  - Phase 2: Based on the stacking plan shown on Figure 18-15, tailings will be stacked to a maximum elevation of 689 mamsl to provide 430,000 m^3 of filtered tailings storage.



Source: Gran Columbia 2018 – PFS Design from Wood

Figure 18-12: Stage 1 & 2 Phase 1



Source: Gran Columbia 2018 - PFS Design from Wood

Figure 18-13: Stage 3 Phase 1

Source: Gran Columbia 2018 - PFS Design from Wood

Figure 18-14: Stage 4 Phase 1

Source: Gran Columbia 2018 - PFS Design from Wood

Figure 18-15: Phase 2

19 Market Studies and Contracts

19.1 Summary of Information

Gold markets are mature, global markets with reputable smelters and refiners located throughout the world. Demand is presently high with prices for gold showing an increase during the past year. Markets for doré are readily available. Segovia possess a gold room for the production of doré. The doré is shipped offsite for final refining.

19.2 Commodity Price Projections

Assumed prices are based on the long-term outlook for gold. This projection is below the three-year trailing averages and current spot prices and are in-line with long term view of relevant market analysts in the precious metal sector. Table 19-1 presents the price used for the cash flow modeling and reserves estimate.

Table 19-1: Segovia Price Assumptions

Description	Value	Unit
Gold	1,275	US$/oz

Source: Gran Colombia Gold, 2019

Treatment charges and net smelter return (NSR) terms are summarized in Table 19-2.

Table 19-2: Segovia Net Smelter Return Terms

Doré	Value	Units
Payable Gold	100%	
Doré Smelting & Refining Charges	6.38	US$/oz-Au

Source: Gran Colombia, 2018

The doré production is sold at the mine gate, therefore, no transportation costs are considered in this analysis.

20 Environmental Studies, Permitting and Social or Community Impact

20.1 Environmental Studies

The following is a summary of the results of environmental studies and information, as well as a discussion of any known environmental issues that could materially impact the Company's ability to extract the mineral resources or mineral reserves of the Segovia Project. It is based exclusively on information provided by Gran Colombia and was not developed independently by SRK.

20.1.1 Environmental Setting

The local topography is characterized by a low-lying plateau at 600 to 850 m altitude, incised by steep valleys. The climate is tropical with an annual average temperature of 24.9°C and average annual rainfall of approximately 2,720 mm/year, predominantly falling between April and November. The drainage pattern across Segovia is dendritic; the northeast and west of the license area drains north into the Nechi River, which is influenced by artisanal mining operations. The Ité River to the east of Segovia flows southeast and then northeast into the Magdalena River. The vegetative cover across the landscape consists of disturbed grassland (used mainly for mining and livestock rearing activities) interspersed with fragmented forest patches, mainly along drainage lines within the incised valleys. Forest patches provide important habitat for wildlife.

The operations are located within the town of Segovia, which has been a center for gold mining for more than 100 years and the environmental and social setting is strongly influenced by this. Mining, both formal and informal, is the main economic activity in both Segovia and the neighboring town of Remedios, which is approximately five kilometers from Segovia. Informal processing operations in these towns using basic technology has resulted in poor health and safety conditions and widespread water contamination from discharge of tailings and waste directly into the environment. This has led to a prevalence of mercury-related health problems in the local populations. Health issues related to population influx are also common.

20.1.2 Baseline Environmental Data

The Segovia Project predates the regulatory requirements to prepare an environmental impact assessment as part of the overall permitting process. Instead, the operations were authorized through the approval of an Environmental Management Plan ("*Plan de Manejo Ambiental*") (PMA). The first PMA approval was in 2004 and renewed in 2008.

In 2012, a PMA update was provided, and included baseline study information and site investigations related to: geology, geomorphology, soils, hydrology, hydrogeology, climate/meteorology, air quality, noise geotechnical, landscape, flora (vegetation), birds, mammals, herpetofauna, fish, and macro-invertebrates. The 2012 PMA also included considered information on the socio-economic situation in the area and potential impacts from legal and illegal mining. This 2012 PMA update, however, was not formally approved by Corantioquia.

Additional baseline information developed in 2012, 2013, 2014, was consolidated into a single document and resubmitted to Corantioquia in 2015. In 2016, this information was supplemented with additional detail on the small mining operations, detailing the conditions of the abiotic, biotic and socioeconomic environments. It was also requested that the information on solid waste, mine drains and beneficiation plant conditions (including tailings management), and clarifications on contingency planning and mine closure planning, be expanded and submitted to the agency. This information was provided to Corantioquia in August 2017 for analysis. Corantioquia subsequently visited the operations in October 2018 and prepared a technical report on the findings and acceptance of the information provided to them to date. The PMA was formally accepted by Corantioquia through the issuance of Resolution 160ZF-RES1902-967 on February 22, 2019, with a renewal period of five years. The resolution is not yet final, as Gran Colombia has not yet completed their review and acceptance of the terms and conditions set forth in it.

20.1.3 Geochemistry

Limited data exist to fully understand the current and future ARD/ML potential. A substantial data collection effort needs to be designed and implemented for tailings, waste rock, and ore from the mine workings. The primary areas of risk related to geochemistry are discussed in detail in the following sections. In February 2018, Gran Colombia provided additional information in the form of a report from SGS Services (Peru) on 20 mineral samples from the project. The objective of this study was to measure the potential for the generation of acid drainage using static of Acid Base Accounting (ABA) and Net Acid Generation (NAG) testing. The materials included rock samples from the El Silencio, Providence, Sandra K, and Segovia mines, as well as samples of tailings samples from each of the disposal areas (SGS del Perú SAC, October 2018). While five out of the 15 rock samples exhibited acid-generating properties (mostly from the El Silencio Mine), only one of the five composite tailings samples (Cyanized tails -Rh Scale; GCGS- CN) was shown to be potentially acid generating. Note: the results for the tailings sample from the Shaft disposal area was indeterminate. According to Gan Colombia, a kinetic test is being planned for 2019 in the SGS laboratory in Lima, as well as a local test in Segovia.

Tailings Geochemistry and Management

The limited testing program to date suggests that the bulk of the tailings are non-acid generating. However, due to the lack of robustness in the testing program, there remains a risk of environmental contamination from the years of tailings deposition that has occurred already, requiring more data collection and analysis. The sulfidic nature of the orebody combined with a host rock of limited neutralizing capacity represent a risk that tailings have the potential for ARD/ML. The company notes that there are other mines in the region that are not prone to generation of acid drainage. The tailings should be subjected to a comprehensive geochemical characterization program, which in conjunction with a water balance will allow quantification and forecasting of geochemical loadings to the environment in the near term and after closure. Until more detailed and representative data are collected on the acid generating potential of the tailings, the conservative assumption would be to assume acid generating tailings with appropriate management.

Containment of tailings contact water will be important if testing indicates that the tailings have ARD/ML potential. Components of chemical loading that must be estimated include loading to surface water due to TSF run-off and loading to groundwater from seepage at the base of the TSF. In the studies conducted for the El Chocho TSF area, ICONSULT calculated an infiltration rate of 4.36×10^{-6} $L/s/m^2$, which is considered to be quite low. Although estimates of infiltration are low, an estimate of seepage quality is recommended in the event infiltration exceeds estimates.

Future metallurgical testing should include environmental geochemistry, to provide data that will assist in forecasting tailings solids and supernatant chemistry. The leached residue contains a significant amount of lead mineral which is considered environmentally hazardous. The lead containing minerals are separated by flotation. The partitioning of lead and other potentially toxic elements in the process stream and tailings must be well characterized so their fate is understood and managed as needed.

Final tailings from the CCD circuit are a combination of scavenger flotation tailing and solids from the Stari water treatment facility, which are pumped to one of three different settling ponds/dehydration cells (Bascula Deposit, Bolivia 1 Deposit, and/or Bolivia 2 Deposit). Starting in early 2018, Gran Colombia reports that it started adding hydrogen peroxide (H_2O_2) and iron sulfate ($FeSO_4$) to the cyanized tailings in order to detoxify them prior to discharge to the Bolivia cell. According to the Company, a tailings slurry cyanide destruction reactor was added in June 2018. The average cyanide level of the slurry discharging to the cells is approximately 30 ppm. After the deposited tailings have been sufficiently dewatered, they are excavated using a backhoe and hauled to a remote "dry stack" tailing storage facility. The current tailings storage facility, El Chocho, opened in April of 2018. This facility is 12 ha in total area, with only 4 ha currently being developed due to land ownership/access issues.

In the near future, the Company intends to dewater the tailings using a plate and frame filter press designed to handle 1,500 t/d of dry solids each. The filter press has not yet been commissioned at the time of this report (though the Company has reported that the press is 65% complete). Cidelco S.A.C. has performed the design testwork and specified the filters that Gran Colombia has ordered. At Maria Dama, current average daily production rate of approximately 1,200 t/d, with processing spikes up to 1,500 t/d. The proposed filtration facility should be able to handle the full tailings load. The passive dewatering ponds would remain as backup to the active filtration system in the event of extended system downtime. A second tailings filter is planned to be added in 2020.

Per Gran Colombia, water from the tailing storage facility is collected and treated for cyanide.

Waste Rock

Current and future waste rock represent a risk as a potential source of ARD/ML. To provide geochemical data for current and future waste rock, a comprehensive geochemical characterization program for waste rock on the project should be made a priority. The mineralized system is sulfidic, containing dominantly pyrite with lesser chalcopyrite and pyrrhotite. There are reports of calcite associated with the mineralization, but no acid-base accounting or other quantification was provided. The host rock is granodiorite, which likely has low neutralizing capacity to offset acid generated by sulfides. While several samples of rock were included in the 2018 geochemical testing program, 15 samples do not represent a robust characterization program, especially across four different mines; a more comprehensive geochemical characterization program for waste rock will be needed for FS level.

The current mining method that consists of blasting waste rock first and spreading it on the floor of the workings could be providing a source of geochemical loading, depending on how contact water is managed. This method should be re-evaluated if the waste rock generated in this manner is identified in the water balance as a source of contact water.

SRK (2014) reported that a geochemical characterization program would be planned after approval of the Environmental Management Plan (which has not yet been approved by the regulatory authorities).

When this occurs, SRK recommends a systematic review of the program for conformance with the regulatory framework and best practices.

Mine Water

A water balance is needed to understand the quantities and management requirements for contact water. Areas of risk include mine water (e.g., dewatering effluent) and contact water associated with tailings and waste rock dumps.

Water re-use and recycling are recommended to the extent possible. While groundwater inflow to the mines may not be a critical issue, an understanding of the hydrogeological setting will be important to establish the baseline environmental setting and possible impacts with respect to the overall project. This includes current mine water quality (which provides a preliminary indication of future mine water quality).

The geochemical and hydrogeological / hydrological impacts should be evaluated at closure when dewatering ceases and water levels rebound. An important component to forecast will be the possibility of mine water discharging to surface water or groundwater and potentially impacting users. Reports indicate that dewatering effluent carries elevated natural concentrations of metals. The water quality of dewatering effluent must be well characterized to understand possible treatment criteria before use or discharge. A forecast of closure water quality is needed.

Closure Water Treatment

Closure scenarios may involve water treatment. Thus, detailed geochemical characterization is needed to fully understand the potential for mining wastes to generate poor quality contact water that might persist into closure. SRK (2014) observed that the largest uncertainty regarding closure cost is associated with the potential need for long-term treatment of water from the mine workings following closure. A requirement for long-term, post-closure water treatment could add significant cost to the current closure estimates provided by Gran Colombia.

Water Management

Untreated mine effluents have historically contributed to contamination of local surface water courses. Gran Colombia has reportedly made improvements in water management since mid-2017, but a detailed assessment is needed to evaluate the risk of operations contaminating surrounding surface watercourses. Surface water run-off could represent a significant water management challenge considering the difficulties in distinguishing between the impacts from the artisanal mining activities and those of the project.

A detailed evaluation is needed on groundwater hydrogeology and surface water to establish the level of risk associated with groundwater and assist in forecasts of post-closure mine water discharge and possible treatment criteria. Gran Colombia is planning such a program to be initiated in 2019:

- A series of wells/piezometers will be installed along the mining front. Each well will extend 100 m near the bottom of the mine, or in areas where expansion is planned. The wells will be completed and equipped with continuous recorders to measure hydraulic head; and
- Six deep wells will be drilled beyond the immediate mining works to a depth of approximately 700 m. Three of these new wells would be used to characterize groundwater gradients.

Information from these wells will be used to develop a numerical groundwater model.

Operational water for the Maria Dama plant at Segovia is provided through a combination of underground mine dewatering water and a freshwater surface storage pond. In addition, Gran Colombia has been treating and using the underdrain water from the tailings dewatering cells in the process plant since mid-2017. The industrial wastewater treatment system includes pre-treatment, advanced oxidation, electrocoagulation, high rate sedimentation, dissolved air flotation, filtration, ultrafiltration and reverse osmosis processes.

Infrastructure for management of surface water has been added since mid-2017 and the newer facilities include surface water controls that will limit the amount of incidental run-off added to the water that must be managed by the site. The mine reports no non-stormwater discharges from the site since July of 2017, though this could not be independently verified. SRK understands that capital projects have been proposed for water treatment.

Recent effort appears to be directed toward stormwater management and the prevention of contact with mine equipment and facilities. Some concrete channels and energy dissipation structures for the management of run-off are already constructed, and some others are being considered. SRK has observed that Gran Colombia is in the process of implementing improved surface water controls around the new El Chocho tailings facility. In addition, a filter press system at the El Chocho complex (as of February 2019 at 65% completion) will aid in the overall water management at the site.

Off-site Impacts

Informal, unregulated processing operations in the neighboring communities using basic technology has resulted in poor health and safety conditions and widespread water contamination from discharge of tailings and waste directly into the environment. This has led to a prevalence of mercury-related health problems in the local populations.

The most significant issue identified by the assessment included in the 2012 PMA was contamination of surface water from discharge of dewatering effluent without treatment from the operating mines. Parameters in excess of the Colombian ambient quality standards include metals such as cadmium, lead, zinc and iron and microbiological parameters including coliforms. This water is now being collected and treated for reuse in the beneficiation process.

Potential closure costs associated with the need for long term treatment of water from the post-closure mine workings are unknown and represent a risk.

A comprehensive baseline surface and groundwater sampling program will be important to establish the baseline condition and try to quantify the contributions from artisanal or pre-mining conditions, especially with respect to mercury from artisanal mining.

Monitoring

Laboratory reports for water chemistry and TCLP leach test analyses were included in the data package but linking them to specific sites is difficult. General comments can be made that the effluent has elevated metals/metalloids including arsenic, cadmium, lead, mercury, and zinc.

A comprehensive detailed monitoring program needs to be implemented over a broad geographic area including, at a minimum, above and below gradient from mine facilities (most importantly the TSF), surface water sites around the project, and anywhere else that background contamination and impacts are potential issues that must be segregated from mine impacts.

20.2 Mine Waste Management

20.2.1 Waste Rock

Very little waste rock is generated by the underground operations at Segovia. What little waste rock is generated is used on the surface for the construction and maintenance of roads and the embankments of the various tailings disposal facilities.

20.2.2 Tailings

As discussed in Section 20.1.3 above, the Maria Dama plant at Segovia is fed with ore which is milled and processed using treated underground dewatering water and fresh make-up water from ponds on the surface. Detoxified tailings (using H_2O_2 and $FeSO_4$) are currently delivered to settling ponds (impoundments), where they are allowed to drain and dewater. Excess treated water will continue to be discharged in accordance with standards established in resolution 631 of 2015. Once sufficiently dewatered to allow mechanical handling, the tailings are excavated and transported via truck to the currently operational TSF.

Future tailings will be delivered by pipeline to a filter press located in the El Chocho TSF that is currently under construction and commissioning. The tailings will be stored in the TSF by loader and truck in a dry stack configuration.

Monitoring of the residual tailings to determine whether or not they are classifiable as ‘hazardous’ is accomplished through Corrosive, Reactive, Explosive, Toxic, Inflammable, Pathogen [biological] (CRETIP) analyses. Laboratory data sheets provided by Gran Colombia support the current non-hazardous classification.

20.2.3 Site Monitoring

Various mitigation and monitoring programs are discussed in the approved PMA (see below). As noted above, monitoring of the residual tailings to determine whether or not they are classifiable as ‘hazardous’ is accomplished through CRETIP analyses. Data provided by Gran Colombia supports the current non-hazardous classification, though the limited geochemical characterization performed to date suggests that they could be potentially acid generating in the long term.

20.3 Project Permitting Requirements

20.3.1 General Mining Authority

Since 1940, the Ministry of Mines and Energy (MME), formerly the Mines and Petroleum Ministry, has been the main mining authority with the legal capacity to regulate mining activities in accordance with the laws issued by the Colombian Congress. The MME can delegate its mining related powers to other national and departmental authorities. Mining regulations in Colombia follow the principle that (except for limited exceptions) all mineral deposits are the property of the state and, therefore, may only be exploited with the permission of the relevant mining authority, which may include the MME, the National Agency for Mining or the regional governments designated by law.

In 2001, the Congress issued Law 685 (the Mining Code). This law established that the rights to explore and exploit mining reserves would only be granted through a single mining concession agreement (the 2001 Concession Agreement). This new form of contracting did not affect the pre-existing mining titles (licenses, aportes and concessions) which continue to be in force until their terms lapse. The 2001 Concession Agreement includes the exploration, construction, exploitation and mine closure phases and are granted for periods of up to 30 years. This term may be extended upon request by the title holder for an additional 30-year term. According to the Mining Code, the initial term was divided into three different phases:

- **Exploration** – During the first three years of the concession agreement, the title holder will have to perform the technical exploration of the concession area. This term may be extended for two additional years upon request;
- **Construction** – Once the exploration term lapses, the title holder may begin the construction of the necessary infrastructure to perform exploitation and related activities. This phase has an initial three-year term which may be extended for one additional year; and
- **Exploitation** – During the remainder of the initial term minus the two previous phases, the title holder will be entitled to perform exploitation activities.

20.3.2 Environmental Authority

In 1993, Law 99 created the Environmental Ministry and then in 2011 the Decree 3570 modified its objectives and structure and changed the name to Environment and Sustainable Development Ministry. The Ministry is responsible for the management of the environment and renewable natural resources and regulates the environmental order of the territory. Also, the Ministry defines policies and regulations related to rehabilitation, conservation, protection, order, management, use, sustainable use of natural resources. The same Law article 33 created the Regional Environmental Authority (*Corporaciones Regionales Autónomas*, CAR) with the responsibility to manage the environment and renewable natural resources.

In 2011, Decree 3533 created the National Authority of Environmental Licenses (*Autoridad Nacional de Licencias Ambientales*, ANLA). ANLA is responsible that all project, works or activities subject to licensing, permit or environmental procedures comply with the environmental regulations and contribute to the sustainable development of the Country. ANLA will approve or reject licenses, permits or environmental procedures according to the law and regulations, and will enforce compliance with the licenses, permits and environmental procedures.

Before the licensing process of mining projects, the competence of either ANLA or CAR is given by the annual volume of material to be exploited. For projects exploiting more than 2 Mt/y, the responsibility will be with ANLA. Both ANLA and CAR can enforce project compliance with the terms of their licenses or permits. Up to now, based on the annual production and transport of materials in RPP 140, the environmental authority that controls Gran Colombia is CAR (Corantioquia).

20.3.3 Environmental Regulations and Impact Assessment

Colombian laws have distinguished between the environmental requirements for exploration activities, and those that have to be fulfilled for construction and exploitation works. During the exploration phase, the concession holder is not required to obtain an environmental license. However, the concession holder requires environmental permits which will be obtained from the Regional Environmental Authority. The concession holder will have to comply with the mining and environmental guidelines issued by the MME and the Environmental Ministry.

In order to begin and perform construction and exploitation operations, the concession holder must obtain an environmental license or the approval of an existing Environmental Management Plan (EMP) either from ANLA if the project exploits more than 2 Mt/y or from CAR if the mineral exploitation is less than 2 Mt/y.

The approval process begins with the request of ToR to prepare an EIS or update an existing EMP. The approval of the EIS and EMP by the environmental authority includes all environmental permits, authorizations and concessions for the use, exploitation or affectation, or all of the above, of natural resources necessary for the development and operation of the project, work or activity. Additionally, other permits and requirements (non-environmental) are required in order to begin construction and operation of the project. Projects that started operations before December 1993 and already had the applicable permits must still apply an EMP and apply for minor environmental permits.

Non-governmental organizations (NGO) and the local communities have the opportunity to participate in the environmental administrative procedures leading up to the issuance of an environmental license. The environmental process will include participation of, and information to, all communities in the project area including indigenous communities and Afro-descendant communities.

20.3.4 Water Quality and Water Rights

The Colombian regulations that principally govern water quality, including discharge permitting and requirements, are Decree 2811 of 1974, Decree 1541 of 1978, Decree 1594 of 1984, Decree 3930 of 2010, and Resolution 631 of 2015 that establishes the enforceable maximum permissible limits for discharges to surface water. The Regional Environmental Authority (Corantioquia) enforces compliance with these regulations.

Water rights for mining activities are granted by means of a water concession which is granted by the Regional Environmental Authority and which is independent to the mining concession or to land ownership. The water rights related to mining activities are included in the environmental licenses or in the approved Environmental Management Plan and are normally granted for five years. The terms and conditions under which a water concession is granted may depend amongst others on the amount of water available in the specific region, the possible environmental impact of the concession, water demand, the ecological flow and the different users that the water source services. The water concession is accompanied with a discharge permit.

20.3.5 Air Quality

Decree 948 of 1995, Resolution 650 of 2010 and Resolution 2154 of 2010 provides the main regulations on protection and control of air quality. These regulations set forth the general principles and regulations for the atmospheric protection, prevention mechanisms, control and attention of pollution episodes from fixed, mobile or diffused sources. These regulations also provide emission levels or standards. Among the emission sources regulated are: controlled open burnings, discharge of fumes, gases, vapors, dust or particles through stacks or chimneys; fugitive emissions or dispersion of contaminants by open pit mining exploitation activities; solid, liquid and gas waste incineration; operation of boilers or incinerators by commercial or industrial establishments, etc.

Also, Resolution 627 of 2006 regulates noise emissions in terms of ambient noise. The parameters regulated are: SO_2, NO_2, CO, TSP, PM_{10}, O_3, and noise. The Regional Environmental Authority enforces compliance with these regulations.

20.3.6 Fauna and Flora Protection

The main regulations for the protection of fauna and flora are contained in the Natural Resources Code and the Agreement about Biological Diversity entered into in Rio de Janeiro on June 5, 1992, within the framework of the Rio Convention. Also, forest management and use is regulated by Decree 1791 of 1996 and the compensation for biodiversity loss is regulated by Resolution 15717 of 2012. In addition, there are other important regulations on the matter such as the Cartagena Protocol on Biotechnology Security of the Agreement about Biological Diversity entered into in Montreal on January 29, 2000, and the Convention on International Trade of Threatened Wild Fauna and Flora Species (CITES). Endangered species are protected by environmental and criminal law.

In order to perform biodiversity studies, a permit for scientific investigation must first be obtained from the Regional Environmental Authority.

20.3.7 Protection of Cultural Heritage or Archaeology

Cultural and natural heritage protection in Colombia is stated in the political constitution and developed through several international treaties and laws of the state. There are strict legal provisions, such as Law 397 of 1997 and Decree 763 of 2009, whereby the heritage is safeguarded and protected. For example, if a citizen finds an archeological specimen, he or she must inform the Ministry of Culture of the discovery within 24 hours; otherwise he or she could be sanctioned by the competent authority.

20.3.8 Segovia Concession and Permit Status

The Segovia Project operates under three (3) different mining titles. The first, over-arching title is the private property R14011 (more commonly referred to as RPP 140), which gives the Company ownership of the surface ground and underground mineralized deposits. This title, covering 2,781 ha, existed before the enactment of Law 685, and continues to be valid under the terms and the applicable legislation at the time the title was granted. RPP 140 is, therefore, exempt from posting an Environmental Mining Insurance Policy and obtaining an Environmental License (discussed above). From an environmental perspective, developments within RPP 140 are permitted through the posting of an Environmental Management Plan ("*Plan de Manejo Ambiental*" or PMA) and secondary permits for water abstraction, forest use, air emissions, discharges, and construction within river courses and drainages. The Regional environmental authority responsible for issuing permits for the Segovia Project is Corantioquia (Autonomous Regional Corporation of Antioquia or *Corporación Autónoma Regional de Antioquia*).

Concession title 6045, which was the consolidation of Concession contracts 6000, 5995, 7367, and 6045 due to proximity and reporting requirements, is valid and in effect until 2036. This title covers 567.2386 ha in area of Remedios. Gran Colombia is currently attempting to combine Concession Contract 6038 (710.2053 ha) and Concession Contract 6046 (226.24 ha) in Segovia. As of February 2019, this has not occurred. Both remain independently valid until 2035. Finally, Concession Contract 6048 (291.37 ha) is co-owned with Nugget S.A.S and is valid until 2035.

An Exploration License (3855), in the jurisdiction of the municipality of Remedios, was issued under decree 2655 of 1988, and covers 9.73 ha. The Company is currently attempting to convert this license to a concession, which would be good for 30 years. As of February 2019, there has been no resolution on this request by Corantioquia. A second Exploration License (1358) is also located in Remedios and covers 106.95 ha. Over in Segovia, the Company maintains a third Exploration License (3854) covering 26.81 ha. All exploration licenses appear to be in good standing. Licenses 3854, 3855 and 1358 are also pending conversion to a concession contract.

The original PMA for the Segovia Project was submitted to Corantioquia by the previous owners, FGM in 2004 (2004 PMA). When Zandor acquired the assets of FGM, it commissioned an updated PMA that was submitted in June 2012 (2012 PMA). In 2013 and 2014, the operation was updated again and in 2015, Corantioquia requested a summary of all the information into a single document. After its revision by the authority in September 2016, supplemental information was requested by Corantioquia. This information delivered on August 1, 2017. In October 2018, Corantioquia inspected the site and issued a preliminary finding with a favorable opinion (according to Gran Colombia), along with a draft Resolution 160ZF-RES1902-967 of February 22, 2019, thereby approving and extending the PMA for five more years. The draft resolution is currently under review by the Company, and not yet completely finalized. Based on a review of the permit register for Segovia and information from Zandor/Gran Colombia, the necessary secondary permits for water abstraction, forest use, air emissions, discharges and river course construction for the operating mines (El Silencio, Sandra K, and Providencia) appear to be in place or are addressed by the 2012 PMA update. Environmental permits for the Pampa Verde processing plant were obtained in October 2013, though limited activity has occurred at this location.

The permits for the El Chocho TSF have been obtained: Channel Occupation Permit (Resolution 130ZF-1501-6959 File ZF8-12-4-736), Forestry Permit (Resolution 130ZF-1310-6201 File ZF5-12 -14-736), and the Discharge Permit (Resolution 130ZF-1311-6218 File ZF7-12-9-736). The Discharge Permit was renewed in December 2017 for an additional five (5) years. Phase 1 has received authorization for forest harvesting, which was granted by Corantioquia through Resolution No. 160ZF-RES1811-6282 of November 15, 2018. The Channel Occupation Permit has not had any modifications and remain in effect until 2025. According to the company, the El Chocho site has been secured in its entirety and is under administrative protection from continued artisanal mining.

A tailings filtration process, to be installed in the El Chocho TSF area, is planned as an alternative to the Shaft TSF to enable the Company to dry-stack tailings on surface in the multiple phase locations in El Chocho. This area has a saprolitic base layer which will mitigate seepage and drainage channels and bunds will be constructed to contain the stacked tailings on top of geofabric. As of February 2019, the construction of the filtration system was reported to be 65% complete.

SRK understands the following aspects based on information supplied by the Company with regards to the dry-stacking of tailings:

- The current land use of the location currently being assessed is mining;
- Zandor/Gran Colombia holds the surface rights for the location and therefore no land acquisition process is required; and
- According to the Company, there are no permitting requirements to change the tailings disposal method to dry stack, and that all of the necessary permits are in place for the current operations (i.e., there have been no changes in the operations in the past two years that have required permit modifications or amendments).

Corantioquia has issued invoices for environmental charges to the former owner of the Segovia operation, FGM, associated with the direct discharge of tailings from the Maria Dama beneficiation plant to a nearby stream. SRK understands no environmental liabilities have been transferred to the Company from the actions that occurred prior to Zandor's ownership in August 2010. The Company is potentially responsible for the payment of charges for the discharge of tailings after August 2010. According to Gran Colombia, the Company has not received any invoices from Corantioquia for environmental damages in the past several years.

20.3.9 Performance and Reclamation Bonding

The termination of a mining concession can happen for several reasons: resignation, mutual agreement, and expiration of the term, the concession holder's death, free revocation and reversion. In all cases, the concession holder is obliged to comply or guarantee the environmental obligations payable at the time the termination becomes effective.

The 2001 Mining Code requires the concession holder to obtain an Insurance Policy to guarantee compliance with mining and environmental obligations which must be approved by the relevant authority, annually renewed, and remain in effect during the life of the project and for three years from the date of termination of the concession contract. The value to be insured will be calculated as follows:

- During the exploration phase of the project, the insured value under the policy must be 5% of the value of the planned annual exploration expenditures;
- During the construction phase, the insured value under the policy must be 5% of the planned investment for assembly and construction; and
- During the exploitation phase, the insured value under the policy must be 10% of the value resulting from the estimated annual production multiplied by the pithead price established annually by the Government.

According to the Law, the concession holder is liable for environmental remediation and other liabilities based on actions and or omissions occurring after the date of the concession contract, even if the actions or omissions are by an authorized third-party operator on the concession. The owner is not responsible for environmental liabilities which occurred before the concession contract, from historical activities, or from those which result from non-regulated mining activity, as has occurred on and around Segovia Project site.

As noted above, given the tenure of Mining Concession RPP 140, the Environmental Insurance Policy is not required by the Segovia Operation.

20.4 Environmental and Social Management

The Segovia Project has a Health, Safety and Environmental Quality (HSEQ) system designed to comply with ISO 9001, ISO 14000 and OHSAS 18000. The system includes a HSEQ policy, integration of the plan-do-check-act cycle and comprehensive risk matrices defining the health, safety and environmental risks with actions required to mitigate these risks.

At present, environmental and social issues are managed in accordance with the approved 2008 PMA (to be superseded by the pending approval of the final resolution of the 2016 PMA still being evaluated by Corantioquia). Bi-annual reports are submitted to Corantioquia to demonstrate compliance with the PMA. The Company has also reportedly implemented plans for solid and hazardous waste management, domestic waste water management, noise monitoring and establishment of a plant nursery for revegetation activities. Within RPP 140 limits, Zandor has been developing reforesting activities in about 8 ha (5 ha around Pampa Verde and 3 in Finca Pocune). Outside of RPP 140 limits, in Hacienda Curuná, a plantation of 3 additional ha has been established. These activities are planned to continue for the following years. SRK has not reviewed these plans. The Company also intends to develop social initiatives to improve health and well-being of local communities surrounding the operation, promote leadership and entrepreneurship for women and develop partnerships with small-scale miners.

No specific baseline studies were completed prior to ownership of Segovia by Gran Colombia in August 2010. The development of the 2012 PMA update included the collection of site-specific environmental and social data to characterize current conditions including climate, surface water flow and quality (two sampling periods), air quality, noise and land use. Secondary data were interpreted for soil, biodiversity and social components. A revised impact assessment was prepared and management measures are organized into a suite of 24 management plans, comprising 10 program groups. When approved, the measures in these plans will become legally binding. The estimated cost of implementation of the measures in the 2012 PMA is approximately US$3 million, with an annual operating cost of US$0.5 million.

20.4.1 Stakeholder Engagement

The Company has conducted a stakeholder analysis for the Segovia Operations, identifying the individual stakeholder groups and their potential influence on the project. The analysis has not yet been converted into a formal stakeholder engagement plan, but the company has set stakeholder engagement objectives and goals to develop communications plans with government, community, media and small miners. A set of workshops were held in Segovia and Remedios in 2012 to discuss engagement objectives with stakeholders. SRK is unaware of any further engagement programs past this date.

The Company has a complaints and petitions handling procedure to record grievances both at the company offices and two community offices, located in Segovia and Remedios. The grievance recording, and response procedures follow international good practice.

20.4.2 Artisanal and Small-Scale Mining Operations

Colombia’s mining sector is characterized by widespread informality. A recent census revealed that 72 per cent of all mining operations in Colombia are classed as ‘artisanal and small-scale mining’ (ASM), and 63 per cent are ‘informal’, lacking a legal mining concession or title. Large-scale mining (LSM) only accounts for one per cent of operations. Over 340,000 Colombians depend directly on ASM and medium-scale mining (MSM) for their income. This informality deprives the state of important financial resources, while the current poor conditions (environmental, social, health and safety, labor, technical and trading) prevent the sector from delivering on important social objectives, such as generating formal employment and improving the quality of life in mining communities (Echavarria, 2014).

The situation at Segovia is much the same, with ASM alongside the formal concession operation. As an added complication, however, there are illegal armed groups in the area (i.e., Revolutionary Armed Forces of Colombia or FARC, and National Liberation Army or ELN) as well as armed criminal groups (i.e., "*bandas criminales*" or BACRIM) who are all tied to the ASM and MSM operations in the area. Note: FARC signed an historic peace deal with the Colombian government in November 2016, and the official disarmament of the rebel army was completed in August 2017; however, a small number of illegal FARC “Dissidents” still remain a threat. Despite the continued presence of these organizations in certain rural areas, security forces have established relative territorial control in Antioquia, mitigating the effect of these groups on populated areas. It is, however, still difficult to differentiate between legitimate ASM and MSM that have not been legalized or formalized and those controlled by illegal organizations.

In 2013, a decree (933) was enacted to address the legal void for almost 4000 requests for formalization from Law 1382 of 2010, which was promulgated, in part, with the objective of combating illegal mining, while recognizing the traditional nature of informal ASM. This decree redefined traditional mining as a form of informal mining. It set out formalization procedures for ASM in LSM mining concessions and titles, notably including procedures for concession-owners to cede areas to ASM and included tax incentives. For the first time, it also provided options for areas returned to the state to be reserved for ASM formalization. In addition, Mercury Law No. 1658 of 2013, introduced incentives for the formalization of ASM such as: granting of soft credits and financing programs to facilitate access to resources; and created a sub-contract intended to formalize illegal mining activities with the registered license-holder. Under Article 11 of Law 1658, concession owners can sign subcontracts with ASM operating in their concessions without the liability associated with normal operating contracts. These subcontracts will legally allow these ASM to operate in an agreed upon area with no oversight by the concession owner. Instead these ASM will be under the control of the Colombian mining and environmental authorities.

Gran Colombia is currently offering business contracts to groups of ASM, requiring them to form companies or cooperatives that comply with local employment, environmental, and health & safety laws, follow Gran Colombia's rules and procedures according to the company's approved operating plan, and deliver the mill feed to Gran Colombia's plant for environmentally safe and more efficient processing. The company pays these ASM the U.S. dollar fee for mill feed at a gold recovery rate that is higher than what the miners could achieve if they processed the mill feed themselves.

20.5 Mine Closure and Reclamation

Chapter XX, Article 209 of Law 685 of 2001 requires that the concession holder, upon termination of the agreement, shall undertake the necessary environmental measures for the proper closure and abandonment of the operation. To ensure that these activities are carried out, the Environmental Insurance Policy shall remain in effect for three years from the date of termination of the contract. Little else regarding the specifics of mine closure is provided in the Law. Decree 2820 of 2010 specifically indicates that the concession holder must submit a plan for dismantling and abandonment of the project.

Gran Colombia (Zandor Capital S.A.) submitted a plan for closure and abandonment of the RPP 140 mining operations (*2017 Plan de Cierre y Abandono*) on August 1, 2017 in response to specific requirements set forth in Article 1 of the Administrative Act 160ZF - 1610 - 9107, issued by Corantioquia on October 5, 2016. The 2017 closure plan is still conceptual and will require more specificity in the future as the life-of-mine approaches. The following is a general discussion consistent with the closure planning.

The facilities will be progressively closed over the duration of the mine site operations. Progressive closure will reduce the costs of reclamation since closure will be integrated with the production operations. In addition, progressive closure will result in the development of expertise on the most appropriate reclamation methods. Progressive closure will be undertaken, however without posing impediments to day-to-day operations of the site. Final closure of the mine site will be undertaken following completion of all mining operations, once treatment of site waters is no longer required, and indications that further mining of the Segovia Mine is not warranted.

Final closure of the facility will occur in two stages. The first stage will entail the following activities, if not undertaken during progressive closure phases:

- All fuel, chemicals, waste hydrocarbon products, and any potentially hazardous materials will be removed from this site; and
- Water treatment will cease once runoff water no longer requires treatment.

During the second stage of the final closure, all equipment, machinery, and storage tanks will be removed for reuse or recycle. Where such uses are not practical, any remaining such materials will be disposed of at a suitable storage site. All structures will be removed and/or be demolished. Structures that are suitable for reuse or recycling will be salvaged. Structures not suitable for use will be demolished and disposed. The Tailing Management Areas (TMAs) and other water/tailings management ponds will be closed, and all disturbed areas will be reclaimed, with the exception of roads needed for post-closure monitoring access.

After the major closure activities are complete, a monitoring program may be implemented, including the site water quality monitoring and dam inspections.

The conceptual closure plan is intended to ensure the “return to nature” of the mine site. At the conclusion of the closure process, no buildings or supporting infrastructure or facilities would remain at the site. The areas will be fully replaced by a sustainable environment comprised of productive and diverse lake and pond ecosystems. Spoil piles, stockpiles, borrow areas, etc. would be vegetated with general sustainable grass as well as emerging forest (primarily early stages in forest succession are expected to dominate the period immediately following closure). The site will be monitored for success of the closure plan. A few routes will be left for access to points of interest for the monitoring program. These routes will be closed after successful reclamation.

20.5.1 Closure Costs

Basic closure actions are contained within the PMA and conceptual closure plan, as outlined above, and focus primarily on the concurrent closure of the tailings disposal facilities as they reach their life-of-mine capacities. More detailed, site-wide closure actions and costs have not yet been defined, as these will be developed closer to the end of operations. SRK is not aware of on-going financial provisioning for closure. An estimate of general unit closure costs associated with concurrent reclamation of the inactive and closed tailings disposal facilities was provided in the older August 2015 *Plan de Cierre y Abandono* included in the PMA using the following:

- Transport of organic matter (growth media) = $15,000 pesos/m^3 (US$5.32/m^3);
- Revegetation (grasses and herbaceous plants) = $3,000,000 pesos/ha (US$1,065/ha);
- Reforestation (tree planting) = $10,000,000 pesos/ha (US$3,548/ha); and
- Maintenance and monitoring (year 2) = $2,000,000 pesos/ha (US$710/ha).

While SRK recognizes that a formal closure plan is not legally required at this stage of the operation, the development of such a plan with more detail than has previously been provided, would support the calculation of a more accurate closure cost and would help identify the potential closure risks that Gran Colombia may need to manage in the coming years. Based on SRK’s experience of similar projects in similar environments, SRK considers the cost to close the Segovia operations could be in the order of ±US$15 million. This estimate is based on very limited information, particularly regarding hydrogeological and geochemical conditions, and further studies would be required to accurately understand the financial liabilities of closure. In February 2019, Gran Colombia provided SRK a reported Asset Retirement Obligation (ARO) for December 2018 of US$6.5 million; however, no basis for this estimate was provided. A requirement for long-term post-closure water treatment would significantly increase both of these estimates.

21 Capital and Operating Costs

SRK visited the Medellín office in February 2019 and conducted a number of teleconferences to review both capital and operating, related to the production supported by the reserves disclosed here, which give a project mine life from 2019 to 2023.

Capital and operating costs are based on a specific budget prepared by Gran Colombia for each year of production. The mine currently operates through owner mining and contractor mining operations. The plant feed is supported by these mining operations within Segovia's mineral tiles and also material sourced from neighboring mineral titles. The costs and revenue associated with processing third-party material from neighboring areas were removed from the estimate, as these are not supported by the reserves disclosed in this report.

This section presents the assumptions used in the preparation of the capital and operating cost estimates and its results.

21.1 Capital Cost Estimates

The Segovia Project is a currently operating underground mine, the estimate of capital includes only sustaining capital to maintain the equipment and all supporting infrastructure necessary to continue operations until the end of the projected production schedule. The estimate of capital is divided into the following main areas:

- Development;
- Exploration
- Providencia;
- El Silencio;
- Sandra K;
- Carla;
- Mine Planning;
- Maria Dama Plant;
- Assay Laboratory;
- Maintenance;
- Civil Works;
- Logistics;
- Environmental;
- Health and Safety;
- Security;
- I.T.;
- Administration;
- Finance;
- Human Resources; and
- Carry Over from 2018.

The capital cost estimates developed for this study include the costs associated with the engineering, procurement, acquisition, construction and commissioning. The cost estimate is based on budgetary estimates prepared by Segovia and reviewed by SRK. All estimates are prepared from first principles based on site specific recent actuals. The budget and estimates indicate that the project requires sustaining capital of US$131.8 million throughout the LoM based on the current production schedule/reserves. Table 21-1 summarizes the sustaining capital estimate.

Table 21-1: Segovia Sustaining Capital Cost Estimate Summary

Description	LoM Sustaining (US$000's)
Development	26,256
Exploration	16,331
Providencia	8,824
El Silencio	25,650
Sandra K	10,410
Carla	11,259
Mine Planning	677
Maria Dama Plant	4,357
Assay Lab	202
Maintenance	5,806
Civil	28
Logistics	73
Environment	12,006
Health and Safety	2,187
Security	625
IT	1,472
Administration	3,179
Finance	4
HR	196
Carry Over (2018 Projects)	2,277
Total Capital	**131,820**

Source: Gran Colombia/SRK, 2019

21.1.1 Basis for the Capital Cost Estimates

The cost associated with mining area access development was based on the reserves production schedule that included meters of development. The development is categorized by the types shown in Table 21-2 and their associated unit costs.

Table 21-2: Development Unit Costs

Description	US$/m
Providencia	
Apique (4 x 2.5)	3,383
Attack Ramp (3 x 3)	1,852
Conrapozo vent (2.5 x 2.5)	1,800
Development Drift	1,852
Pocket (2.7m diameter)	1,740
Tambores (1.8 x 1.8)	900
Ramp (3 x 3.5)	2,153
Sandra K	
Apique	3,307
Development Drift (2.2 x 2.3)	809
Pocket	1,740
Vent Raise (3.5 x 3.5)	6,000
Tambores (1.8 x 1.8)	900
Carla	
Apique (6 x 2.5)	5,880
Development Drift meters (2.2 x 2.3)	1,063
Pocket (2.7 diameter)	1,740
Vent Raise (2.5 x 2.5)	6,000
Tambores (2 x 2)	900
El Silencio	
Access	2,141
Camara	2,141
CPZ	4,060
ENS	1,039
Pocket	1,740
Ramp	2,141
Sills drift	2,141
Apique	2,618

Source: Gran Colombia, 2019

The unit costs used to estimate the development costs are based on historic costs for Providencia, Sandra K and El Silencio, and based on projected estimates for Carla.

The production schedule development meters by area is summarized in Table 21-3 to Table 21-6.

Table 21-3: Providencia Annual Development Meters

Description	LoM (m)	2019 (m)	2020 (m)	2021 (m)
Apique (4 x 2.5)	394	385	9	0
Attack Ramp (3 x 3)	604	272	253	80
Conrapozo vent (2.5 x 2.5)	57	57	0	0
Development Drift	1,164	1,105	58	0
Pocket (2.7 m diameter)	77	33	44	0
Tambores (1.8 x 1.8)	332	306	26	0
Ramp (3 x 3.5)	259	259	0	0
Total	**2,888**	**2,419**	**390**	**80**

Source: Gran Colombia, 2019

Table 21-4: Sandra K Annual Development Meters

Description	LoM (m)	2019 (m)	2020 (m)	2021 (m)
Apique	561	555	6	0
Development Drift (2.2 x 2.3)	1,841	700	1,138	2
Pocket	82	54	28	0
Vent Raise (3.5 x 3.5)	167	167	0	0
Tambores (1.8 x 1.8)	455	123	305	26
Total	**3,105**	**1,599**	**1,478**	**28**

Source: Gran Colombia, 2019

Table 21-5: Carla Annual Development Meters

Description	LoM (m)	2019 (m)	2020 (m)	2021 (m)	2022 (m)	2023 (m)
Apique (6 x 2.5)	377	0	355	21	0	0
Development Drift meters (2.2 x 2.3)	1,225	0	117	595	435	78
Pocket (2.7 diameter)	67	0	8	59	0	0
Vent Raise (2.5 x 2.5)	173	0	0	173	0	0
Tambores (2 x 2)	218	0	0	0	119	99
Total	**2,058**	**0**	**480**	**847**	**554**	**177**

Source: Gran Colombia/, 2019

Table 21-6: El Silencio Annual Development Meters

Description	LoM (m)	2019 (m)	2020 (m)	2021 (m)	2022 (m)
Access	471	162	159	150	0
Camara	143	143	0	0	0
CPZ	472	215	0	139	118
ENS	332	332	0	0	0
Pocket	214	65	105	44	0
Ramp	641	641	0	0	0
Sills drift	1,131	0	349	782	0
Apique	1,164	319	726	119	0
Total	**4,568**	**1,877**	**1,339**	**1,234**	**118**

Source: Gran Colombia/SRK, 2019

The schedule of development meters was combined with the presented unit costs and the resulting development capital cost estimate is presented in Table 21-7.

Table 21-7: Development Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Providencia	5,702	4,849	706	148	0	0
Sandra K	4,900	3,610	1,265	25	0	0
Carla	4,864	0	2,227	1,895	570	172
El Silencio	10,789	4,191	3,171	2,948	479	0
Total	**26,256**	**12,650**	**7,369**	**5,016**	**1,049**	**172**

Source: Gran Colombia/SRK, 2019

In support of the mining activities some additional exploration will be required. A budget for each year of production was prepared by Gran Colombia and reviewed by SRK. The capital cost related to exploration is presented in Table 21-8.

Table 21-8: Exploration Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
General Exploration	4,281	1,161	1,200	1,200	480	240
Field Mapping and Sampling	68	68	0	0	0	0
Exploration Drilling at Cogote (Lm30)	585	90	150	150	150	45
Infill Drilling on Providencia Deep	772	772	0	0	0	0
Exploration Drilling on El Silencio Deep	2,113	2,113	0	0	0	0
Infill/Exploration Drilling at Sandra K	802	802	0	0	0	0
Other Exploration Drilling	7,066	0	2,625	2,625	1,050	766
Exploration Drilling Sampling	190	0	58	58	58	17
PFS Update	454	454	0	0	0	0
Total	**16,331**	**5,460**	**4,033**	**4,033**	**1,738**	**1,068**

Source: Gran Colombia, 2019

The costs directly associated with each mining area, including Providencia, Sandra K, Carla and El Silencio are budgetary estimates to cover the necessary equipment and infrastructure in each mining area. A yearly budget was prepared by Gran Colombia and reviewed by SRK. The capital cost related to each mining area is presented in Table 21-9 to Table 21-12.

Table 21-9: Providencia Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Mining Equipment	464	252	212	0	0	0
Support Equipment	43	23	20	0	0	0
Electric/Diesel Equipment	302	164	138	0	0	0
Maintenance Software and Tools	7	7	0	0	0	0
Compressed Air	289	157	132	0	0	0
Construction of Explosives Shed	15	15	0	0	0	0
Civil Works	71	39	32	0	0	0
Mine Infrastructure	178	97	81	0	0	0
Minor Ventilation	334	182	153	0	0	0
Project to Extend Mine Depth	2,275	2,275	0	0	0	0
Hoist 3520 Overhaul	162	162	0	0	0	0
Connect Apique 3530 to Ramp System	500	0	500	0	0	0
Electrical Infrastructure	594	371	223	0	0	0
Equipment Overhaul	328	205	123	0	0	0
Improvement of Water Pumping Systems	327	178	149	0	0	0
Hydraulic Backfill	980	580	400	0	0	0
Drilling Platforms	517	281	236	0	0	0
Unspecified Sustaining Capital	1,440	0	0	960	324	156
Total	**8,824**	**4,986**	**2,398**	**960**	**324**	**156**

Source: Gran Colombia, 2019

Table 21-10: El Silencio Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Mining Equipment	525	276	249	0	0	0
Support Equipment	43	23	20	0	0	0
Electric/Diesel Equipment	258	58	200	0	0	0
Compressed Air	41	21	20	0	0	0
Mining Areas Adequation	131	81	50	0	0	0
Minor Ventilation	486	286	200	0	0	0
Electric Infrastructure	678	328	350	0	0	0
Equipment Overhaul	280	130	150	0	0	0
Main Ventilation	1,084	684	400	0	0	0
Substation Level 25	316	156	160	0	0	0
Silencio Profundo Project	3,795	2,795	1,000	0	0	0
Ventilation Silencio Profundo	1,564	1,064	500	0	0	0
Pumping Improvements	638	488	150	0	0	0
Drilling Platforms	624	324	300	0	0	0
Unspecified Sustaining Capital	15,185	0	0	7,836	6,540	809
Total	**25,650**	**6,717**	**3,749**	**7,836**	**6,540**	**809**

Source: Gran Colombia, 2019

Table 21-11: Sandra K Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)
Mining Equipment	657	357	300	0
Support Equipment	37	17	20	0
Electric/Diesel Equipment	2,200	0	2,200	0
Compressed Air	159	79	80	0
Hopper Construction	218	128	90	0
Mining Areas Adequation	84	54	30	0
Minor Ventilation	353	203	150	0
Electric Infrastructure	556	306	250	0
Substation Overhaul - Level 3	209	109	100	0
Leaky Feeder Coms	63	63	0	0
Personnel Elevator - 6430 Services	1,250	650	600	0
Hoist Overhaul - 6400	51	21	30	0
Main Ventilation - Raise Climber	1,370	870	500	0
Pumping Improvements	408	208	200	0
Drilling Platforms	288	138	150	0
Unspecified Sustaining Capital	2,508	0	0	2,508
Total	**10,410**	**3,202**	**4,700**	**2,508**

Source: Gran Colombia, 2019

Table 21-12: Carla Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Mining Equipment	500	0	500	0	0	0
Compressed Air	100	0	100	0	0	0
Minor Ventilation	500	0	500			
Mining Areas Adequation	50	0	50	0	0	0
Electric Infrastructure	20	0	20	0	0	0
Main Ventilation – Raise Climber	700	0	700	0	0	0
Unspecified Sustaining Capital	9,389	0	0	3,204	5,592	593
Total	**11,259**	**0**	**1,870**	**3,204**	**5,592**	**593**

Source: Gran Colombia, 2019

The mine planning activities that support the mining operations will require some future investment. A budget for each year of production was prepared by Gran Colombia and reviewed by SRK. The capital cost related to mine planning is presented in Table 21-13.

Table 21-13: Mine Planning Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Planning and Engineering	161	101	60	0	0	0
Mining Software	96	60	36	0	0	0
Geomechanical Engineering	48	30	18	0	0	0
Unspecified Sustaining Capital	372	0	0	156	144	72
Total	**677**	**191**	**115**	**156**	**144**	**72**

Source: Gran Colombia, 2019

The Maria Dama Plant capital is a budgetary estimate from Segovia. This information was reviewed and used by SRK as the sustaining capital related to the mineral processing plant. The capital cost related to the Maria Dama Plant is presented in Table 21-14.

Table 21-14: Maria Dama Plant Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Crushing System and New Offices	205	80	0	0	125	0
Hopper and Apron Feeder Adequation	400	0	300	0	0	100
Electrical Network Overhaul	110	110	0	0	0	0
Flotation Bridge	30	30	0	0	0	0
Comms and Computer Equipment	20	15	0	0	0	5
Other Electrical Infrastructure	125	125	0	0	0	0
Production Equipment	100	100	0	0	0	0
Scada System	75	75	0	0	0	0
Leaching Tank Overhaul	75	75	0	0	0	0
Flotation Reagents System	105	30	0	75	0	0
Cyanide Storage	40	40	0	0	0	0
Knelson Concentrator Assembly/Installation	646	246	0	400	0	0
Filter Presses Overhaul	45	45	0	0	0	0
Thickener Acquisition	830	0	400	430	0	0
Technical Studies	545	0	225	160	160	0
Maintenance	311	0	20	105	186	0
Motor Relocation	105	0	38	38	29	0
Improvements to Sampling System	70	0	70	0	0	0
Fresh Water Reservoir Adequation	440	0	0	300	105	35
Compressed Air System Improvement	80	0	0	0	0	80
Unspecified Sustaining Capital	0	0	0	0	0	0
Total	**4,357**	**971**	**1,053**	**1,508**	**605**	**220**

Source: Gran Colombia, 2019

In support of the mineral processing operation there are also capital costs associated with an Assay Laboratory. This cost was also included in the budget estimate from Gran Colombia. SRK reviewed and used this estimate as the capital related to the assay laboratory sustaining capital. The capital cost related to the Assay Laboratory is presented in Table 21-15.

Table 21-15: Assay Laboratory Capital Costs

Description	LoM (US$000's)	2019 (US$000's)
Spectrometer DR3900	13	13
Rotating Tray System	16	16
Jaw Crusher	25	25
PH Meter	4	4
Oxygen Meter	5	5
Bench Flotation Equipment	14	14
Lab Scale	32	32
Vacuum Pump	3	3
Digital Dispenser	64	64
LIMS Software	0	0
Pulverizer	17	17
Precision Scale	9	9
Dust Removal System	0	0
Total	**202**	**202**

Source: Gran Colombia, 2019

All other costs are budgetary estimates based on historic site-specific figures and were calculated as yearly provisions to cover the following:

- Equipment and infrastructure maintenance;
- Civil works;
- Logistics;
- Environment;
- Health & safety;
- Site security;
- IT;
- Site administration;
- Finance;
- Human resources; and
- 2018 carry over.

In the specific case of the environmental capital costs, it should be noted that the El Chocho Tailings Storage Facility capital costs were included in this area. The El Chocho costs include both the remaining construction costs and the sustaining cost to build additional capacity to hold the tailings generated by the reserves production schedule.

Table 21-16 to Table 21-25 present the capital costs estimates for each of the above area.

Table 21-16: Maintenance Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Taller Overhaul/Installation	2,120	404	1,186	530	0	0
Plant Warehouse (Reagents)	5	5	0	0	0	0
Bridges and Hoists Overhaul/Installation	457	102	90	90	90	85
Tools	1,192	300	490	165	145	92
Mill Engine Encasement	8	8	0	0	0	0
Scada System	46	46	0	0	0	0
Equipment Shop	20	20	0	0	0	0
Normalization of Commercial Border (EPM)	420	420	0	0	0	0
Electrical Installation	572	146	266	80	50	30
Mine Automation	742	0	337	260	100	45
Plant Automation	120	0	60	40	20	0
Equipment Overhaul	105	0	35	35	35	0
Total	**5,806**	**1,450**	**2,464**	**1,200**	**440**	**252**

Source: Gran Colombia, 2019

Table 21-17: Civil Works Capital Costs

Description	LoM (US$000's)	2019 (US$000's)
Tools	12	12
Software Licenses	13	13
Compactor	3	3
Total	**28**	**28**

Source: Gran Colombia, 2019

Table 21-18: Logistics and Safety Capital Costs

Description	LoM (US$000's)	2019 (US$000's)
Dispatch System	39	39
Road Maintenance	34	34
Total	**73**	**73**

Source: Gran Colombia, 2019

Table 21-19: Environment Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Productive Assets	60	60	0	0	0	0
Draining Systems	1,617	167	350	300	500	300
Acid Drainage Control	380	50	330	0	0	0
Industrial/Mine Effluent Treatment	907	7	100	400	200	200
Potable Water System	750	50	100	0	400	200
Computers	0	0	0	0	0	0
El Chocho Project	1,887	1,887	0	0	0	0
El Chocho Phase II	1,145	145	1,000	0	0	0
TSF Expansion Study	800	0	0	0	300	500
Tailings Filter Press	0	0	0	0	0	0
El Chocho/TSF Instrumentation	180	180	0	0	0	0
Waste Management	970	0	270	300	200	200
Civil Works	450	0	250	0	100	100
Monitoring Systems	730	0	230	500	0	0
Hydrogeologic Study	150	0	150	0	0	0
Environmental Impact Assessment (Expansion)	780	0	580	0	200	0
Environmental Impact Assessment (Mineral Titles)	950	0	500	150	150	150
Design and Construction Shaft Treatment	100	0	100	0	0	0
Laboratory	150	0		0	150	0
Total	**12,006**	**2,546**	**3,960**	**1,650**	**2,200**	**1,650**

Source: Gran Colombia, 2019

Table 21-20: Health and Safety Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Air Quality Monitoring System	124	124	0	0	0	0
Infirmary	133	100	0	17	17	0
Warehouse	33	0	0	33	0	0
Fire Control Systems	802	75	182	165	165	215
Alarm System	41	41	0	0	0	0
Monitoring System	297	47	93	47	47	63
Mine Rescue Room	700	0	700	0	0	0
Total	**2,131**	**387**	**975**	**262**	**228**	**278**

Source: Gran Colombia, 2019

Table 21-21: Security Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Surveillance System	2	2	0	0	0	0
Security Posts Construction	128	128	0	0	0	0
Motorcycles	14	14	0	0	0	0
Unspecified Sustaining Capital	480	0	120	120	120	120
Total	**625**	**145**	**120**	**120**	**120**	**120**

Source: Gran Colombia, 2019

Table 21-22: I.T. Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Printers	87	11	18	16	18	24
Mine Computer Systems	186	24	42	36	48	36
SQL Server	30	30	0	0	0	0
Fiber Infrastructure	49	29	20	0	0	0
Sharepoint Implementation	32	12	20	0	0	0
Plant Automation	100	30	30	0	0	40
Plant Leaky Feeder Implementation	31	31	0	0	0	0
Network	134	17	21	36	20	40
Network Access Control	57	17	40	0	0	0
Conferencing System	15	0	15	0	0	0
SGSI Implementation	81	0	16	25	20	20
Mine Connectivity	152	0	36	76	40	0
Service Desk Software	5	0	5	0	0	0
Biometric System	10	0	10	0	0	0
Firewall	40	0	0	40	0	0
Switches	60	0	0	30	30	0
Data Security	112	0	0	52	60	0
Unspecified Sustaining Capital	292	25	64	63	90	50
Total	**1,472**	**225**	**337**	**374**	**326**	**210**

Source: Gran Colombia, 2019

Table 21-23: Administration Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Camp and Office Supplies	310	70	70	50	50	70
Camp Remodeling	1,245	300	300	250	250	145
Plant Hoist Overhaul	207	207	0	0	0	0
Exploration Center Supplies	500	500	0	0	0	0
Warehouse Overhaul	623	53	50	210	260	50
Plant Warehouse Overhaul	67	47	20	0	0	0
Sandra K Warehouse Overhaul	20	0	0	0	20	0
Fuel Tanks Monitoring System	87	87	0	0	0	0
Operational Assets	40	40	0	0	0	0
Providencia Warehouse Overhaul	80	0	20	40	0	20
Total	**3,179**	**1,304**	**460**	**550**	**580**	**285**

Source: Gran Colombia, 2019

Table 21-24: Human Resources Capital Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Training Room Equipment	26	3	5	6	6	7
Gym	66	34	6	7	9	10
Mine Equipment Simulator	104	0	25	26	26	27
Total	**196**	**37**	**36**	**38**	**41**	**44**

Source: Gran Colombia, 2019

Table 21-25: 2018 Carry Over Capital Costs

Description	LoM (US$000's)	2019 (US$000's)
Providencia Carry Over	228	228
El Silencio Carry Over	354	354
Sandra K Carry Over	103	103
Plant Carry Over	989	989
Maintenance Carry Over	77	77
Environment Carry Over	358	358
Security Carry Over	103	103
Administration Carry Over	65	65
Total	**2,277**	**2,277**

Source: Gran Colombia, 2019

The total yearly capital costs are summarized in Table 21-26.

Table 21-26: Total Yearly Capital Costs

Description	LoM (US$000's)	2019 ($000's)	2020 ($000's)	2021 ($000's)	2022 ($000's)	2023 ($000's)
Development	26,256	12,650	7,369	5,016	1,049	172
Exploration	16,331	5,460	4,033	4,033	1,738	1,068
Providencia	8,824	4,986	2,398	960	324	156
El Silencio	25,650	6,717	3,749	7,836	6,540	809
Sandra K	10,410	3,202	4,700	2,508	0	0
Carla	11,259	0	1,870	3,204	5,592	593
Mine Planning	677	191	115	156	144	72
Maria Dama Plant	4,357	971	1,053	1,508	605	220
Assay Lab	202	202	0	0	0	0
Maintenance	5,806	1,450	2,464	1,200	440	252
Civil	28	28	0	0	0	0
Logistics	73	73	0	0	0	0
Environment	12,006	2,546	3,960	1,650	2,200	1,650
Health and Safety	2,187	387	975	318	228	278
Security	625	145	120	120	120	120
IT	1,472	225	337	374	326	210
Administration	3,179	1,304	460	550	580	285
Finance	4	4	0	0	0	0
HR	196	37	36	38	41	44
Carry Over (2018 Projects)	2,277	2,277	0	0	0	0
Total	**131,820**	**42,855**	**33,638**	**29,470**	**19,927**	**5,929**

Source: Gran Colombia/SRK, 2018

Contingencies and closure costs were not considered in the capital cost estimate.

21.2 Operating Cost Estimates

SRK and Segovia prepared the estimate of operating costs for the reserves production schedule. These costs were subdivided into the following categories:

- Mining operating expenditure;
- Processing operating expenditure; and
- Site G&A operating expenditure.

The resulting LoM cost estimate is presented in Table 21-27.

Table 21-27: Segovia Operating Costs Summary

Description	LoM (US$000's)	LoM (US$/t-Ore)	LoM (US$/oz-Au)
Mining	299,661	154.37	481.32
Process	49,878	25.69	80.12
G&A	51,483	26.52	82.69
Total Operating	**401,023**	**206.58**	**644.13**

Source: Gran Colombia, 2019

21.2.1 Basis for the Operating Cost Estimate

The operating cost is based on budgetary estimates from Gran Colombia, reviewed by SRK, and were modeled as entirely variable costs.

The prepared estimates that compose the operating costs consist of domestic and international services, equipment, labor, etc. Where required, the following were included:

- Value added tax;
- Freight; and
- Duty.

The mill operates 329 days per year under a daily schedule of two shifts of 12 hours.

The operating cost estimates are based on the quantities associated with the production schedule, including the following:

- Production Waste;
- Run of Mine; and
- Contract Miner.

All operating costs include supervision staff, operations labor, maintenance labor, consumables, electricity, fuels, lubricants, maintenance parts and any other operating expenditure identified by contributing engineers.

Site-specific budget estimates were used to estimate the LoM operating costs for Providencia, Sandra K, El Silencio and Carla. The mine production is also supported by contract miner operations, which operate in areas of Providencia (Masora) and El Silencio (Navar). These are paid for as cost per recovered (Mine and Plant Recovery) gold ounces, which LoM average is estimated at US$612/recovered Au-oz. Note that LoM/yearly variable operating costs vary due to this.

Table 21-28 to Table 21-29 show the variable budget estimates for each mining area.

Table 21-28: Segovia Mining Costs

Description	LoM (US/t-ore)	2019 (US$/t-ore)	2020 (US$/t-ore)	2021 (US$/t-ore)	2022 (US$/t-ore)	2023 (US$/t-ore)
Providencia	114.33	129.96	118.07	100.06	100.00	0.00
Sandra K	127.33	136.89	123.62	122.43	0.00	0.00
Carla	107.37	0.00	0.00	141.57	111.62	100.00
El Silencio	108.61	137.28	112.60	111.43	100.00	104.77

Source: Gran Colombia, 2019

Table 21-29: Segovia Processing and G&A Costs

Description	LoM (US/t-ore)	2019 (US$/t-ore)	2020 (US$/t-ore)	2021 (US$/t-ore)	2022 (US$/t-ore)	2023 (US$/t-ore)
Process	24.22	24.20	23.79	22.81	23.83	26.99
Lab	1.48	1.79	1.50	1.50	1.50	1.08
Mine site Administration	13.55	15.28	12.26	12.36	12.61	16.00
Security	10.99	13.16	11.15	11.00	9.22	10.73
Other	1.98	3.75	2.49	1.83	1.10	0.79

Source: Gran Colombia, 2019

The unit costs presented above is used in combination with the reserves production schedule to estimate the operating costs. The resulting operating costs are presented in Table 21-30.

Table 21-30: Segovia Operating Costs

Description	LoM (US$000's)	2019 (US$000's)	2020 (US$000's)	2021 (US$000's)	2022 (US$000's)	2023 (US$000's)
Providencia	36,148	11,908	11,624	9,650	2,966	0
Sandra K	21,753	7,255	7,371	7,127	0	0
Carla	11,168	0	0	268	6,610	4,290
El Silencio	102,685	12,967	15,357	14,715	28,987	30,659
Masora	30,213	7,612	11,661	8,990	1,950	0
Navar	97,695	41,149	27,151	22,015	7,380	0
Process	47,007	8,495	9,885	9,550	10,022	9,055
Lab	2,871	628	623	628	631	362
Administration	26,302	5,364	5,092	5,177	5,300	5,369
Security	21,337	4,620	4,634	4,605	3,878	3,600
Other	3,845	1,316	1,035	767	461	266

Source: Gran Colombia, 2019

22 Economic Analysis

The financial results presented here are based on monthly inputs from the production schedule prepared by Gran Colombia and reviewed by SRK. All financial data is first quarter 2019 and currency is in U.S. dollars (US$), unless otherwise stated.

22.1 External Factors

Segovia currently has a long-term supply agreement for the sale of its products. The costs and discounts associated with the sales of the products are based on this existing contract. This study was prepared under the assumption that the project will sell doré containing gold.

Table 22-1 presents the prices used in the cashflow model, which were also used for reserves calculations. SRK did not include silver in this analysis, even though silver production has regularly and consistently been reported as a small by-product in gold produced in the Maria Dama plant, which has been operating for decades. There are no silver assays and this metal is not included in the resources nor the reserves.

Table 22-1: Segovia Price Assumptions

Description	Value	Unit
Gold	1,275	US$/oz

Source: Gran Colombia, 2018

Treatment charges and net smelter return (NSR) terms are summarized in Table 22-2.

Table 22-2: Segovia Net Smelter Return Terms

Description	Value	Units
Doré		
Payable Gold	100%	
Doré Smelting & Refining Charges	6.38	US$/oz-Au

Source: Gran Colombia, 2018

The doré production is sold at the mine gate, therefore, no transportation costs are considered in this analysis.

22.2 Principal Assumptions and Input Parameters

Common prices for consumables, labor, fuel, lubricants and explosives were used by all engineering disciplines to derive capital and operating costs. Included in the labor costs are shift differentials, vacation rotations, all taxes and the payroll burdens. All currency is in U.S. dollars (US$) unless otherwise stated.

No pre-production has been considered, as this a currently operating mine. Mine production is based on an average assumed LoM mine material movement of 1,539 t/d (329 days/yr basis). The mine schedule does not include stockpiling as all blending of run of mine (RoM) is done in the mine.

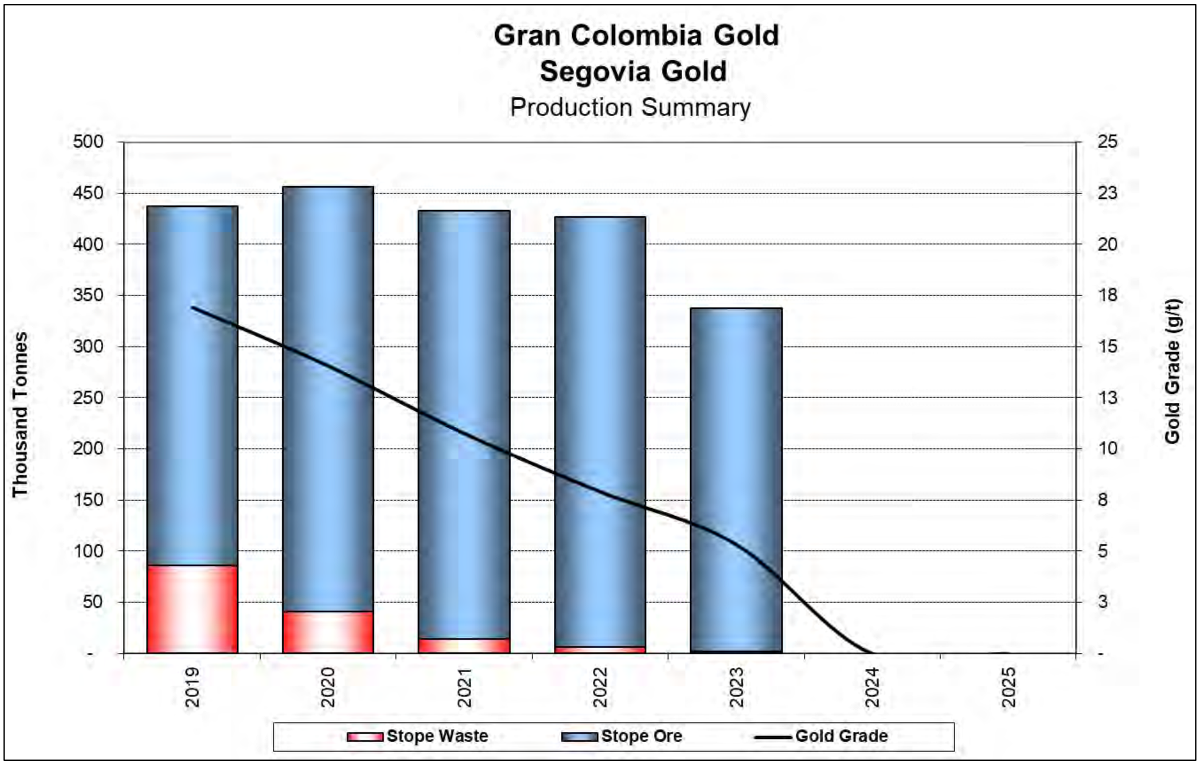
Table 22-3 presents the yearly LoM mine production assumptions by area.

Table 22-3: Segovia Yearly Mine Production Assumptions

Description	Total	2019	2020	2021	2022	2023
Providencia						
Own Production Ore (t)	316,184	91,629	98,455	96,439	29,661	-
Masora Ore (t)	82,164	14,953	24,498	33,717	8,996	-
Ore Tons (t)	398,348	106,582	122,953	130,156	38,657	-
Head Grade (g/t)	17.15	25.11	19.85	10.79	8.06	-
Contained Gold (oz)	219,684	86,051	78,473	45,148	10,012	-
Sandra K						
Ore Tons (t)	170,840	53,000	59,628	58,212	-	-
Head Grade (g/t)	9.82	7.56	10.66	11.00	-	-
Contained Gold (oz)	53,915	12,884	20,442	20,588	-	-
Carla						
Ore Tons (t)	104,007	-	-	1,893	59,219	42,895
Head Grade (g/t)	10.06	-	-	9.21	12.74	6.40
Contained Gold (oz)	33,648	-	-	561	24,257	8,831
El Silencio						
Own Production Ore (t)	945,402	94,456	136,383	132,052	289,871	292,640
Navar Ore (t)	322,609	96,981	96,508	96,364	32,756	-
Ore Tons (t)	1,268,011	191,437	232,891	228,416	322,627	292,640
Head Grade (g/t)	9.34	14.94	11.87	10.69	7.01	5.18
Contained Gold (oz)	380,691	91,974	88,853	78,473	72,682	48,708
Total						
Ore Tons (t)	**1,941,206**	**351,019**	**415,472**	**418,677**	**420,503**	**335,535**
Head Grade (g/t)	**11.02**	**16.92**	**14.06**	**10.75**	**7.91**	**5.33**
Contained Gold (oz)	**687,937**	**190,909**	**187,768**	**144,770**	**106,952**	**57,538**

Source: Gran Colombia/SRK, 2019

Figure 22-1 shows that the yearly production profile of the project. RoM ore production varies from 992 t/d to 1,421 t/d, with a higher waste extraction in the first two years and a declining gold head grade over the life of the mine.



Source: SRK, 2019

Figure 22-1: Segovia Mine Production Profile

The average mill feed is 1,396 t/d (based on 329 days per year) over the LoM. The current process feed rate is approximately 1,000 t/d. The processing circuit is designed to recover doré containing gold. Table 22-4 presents the projected LoM combined plant production.

Table 22-4: Segovia LoM Mill Production Assumptions

Description	Value	Units
RoM Ore Milled	1,941	kt
Avg. Daily Capacity	1,396	t per day
Doré		
Gold Content	622.6	koz
Recovery		
Gold	90.5%	
Doré Yield	622.6	koz

Source: SRK, 2019

All figures presented are based on the production derived from the reserves disclosed in this report. The mine currently has a third-party ore tolling program that is not supported by the reserves, and hence these quantities were not included in the production schedule. SRK is also aware that the mineral processing recovers silver in the doré product, but as silver was not include in the resources/reserves, it is not included in the economics.

22.3 Taxes, Royalties and Other Interests

The analysis of the Segovia Project includes an effective corporate income tax rate of 33% in 2019, 32% in 2020, 31% in 2021 and 30% from 2022 thereafter, resulting in a LoM average rate of 31.8% for income taxes on taxable income. VAT is included in the capital costs estimate and a part of it can be directly deducted from the corporate income tax, around US$4.9 million of VAT credits were deducted from the income tax, bringing the effective LoM income tax rate to an average of 30%.

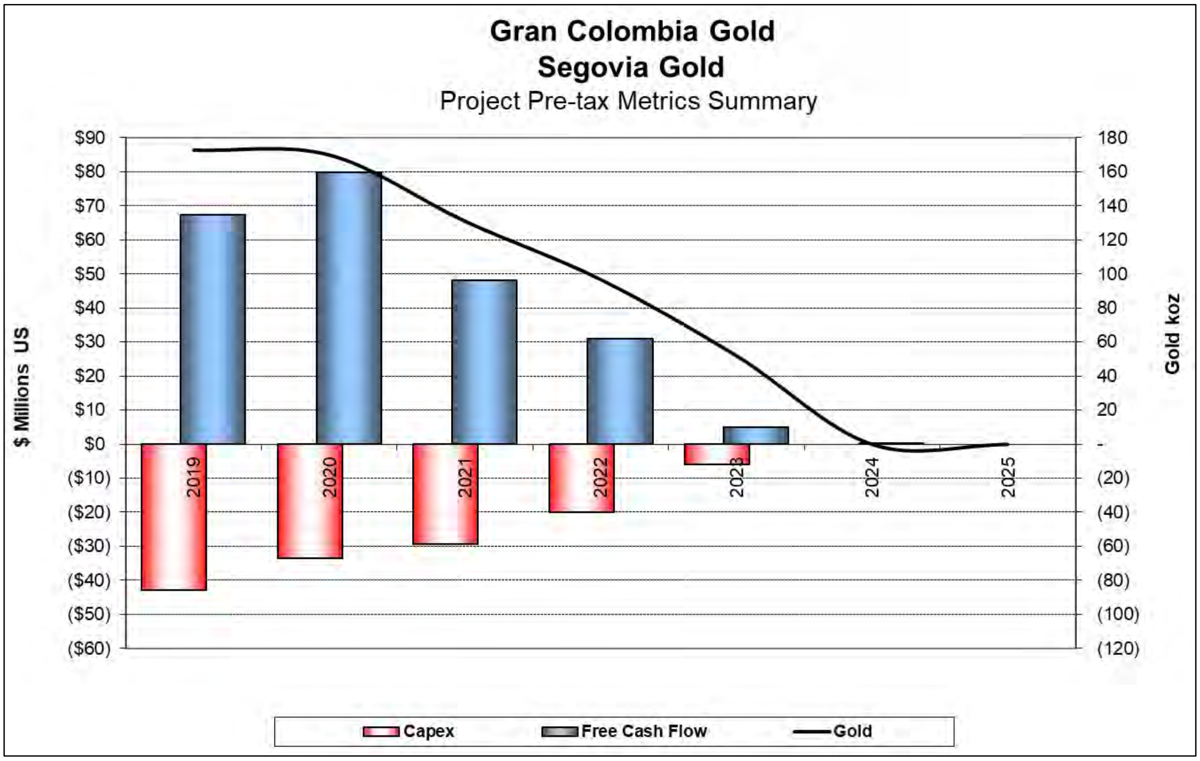
A depreciation schedule was calculated by SRK assuming an eight-and-a-half-year straight-line depreciation.

Taxable income is discounted by future and installed asset depreciation. The Project currently holds US$28.4 million of undepreciated assets that are projected to be completely depreciated by December 2022. Approximately 0.2% of the revenue were considered as non-deducible costs and removed from the depreciation schedule.

Royalties are also deducted from taxable income. The Project includes payment of a governmental royalty on both gold and silver sales. The royalty due is calculated as 80% of 4.4% of gross metal sales, not including the costs of transportation and metal refining.

22.4 Results

The valuation results of the Segovia Project indicate that the Project has an after-tax Net Present Value (NPV) of approximately US$135.9 million, based on a 5% discount rate. The operation is projected to have no negative cash flow periods. Revenue generation is similar in years 2019 and 2020, it is slightly higher in 2020 due to lower capital requirements, as both years have similar gold grades. The following years see a steady decrease of revenue generation, what is related to the lower gold grades in the later years. The annual free cash flow profile of the Project is presented in Figure 22-2. The full annual TEM is located in Appendix E.



Source: SRK, 2018

Figure 22-2: Segovia After-Tax Free Cash Flow, Capital and Metal Production

Indicative economic results are presented in Table 22-5. The Project is a gold operation, with gold representing 100% of the total projected revenue. The underground mining cost is the heaviest burden on the operation, followed by the sustaining capital as a distant second.

Table 22-5: Segovia Indicative Economic Results

Description	Value	Unit Cost
Market Prices		
Gold (US$/oz)	1,275	US$/oz-Au
Estimate of Cash Flow (all values in $000's)		
Concentrate Net Return		
Gold Sales	$793,794	$1,275.00
Total Revenue	**$793,794**	**$1,275.00**
Smelting and Refining Charges	($3,969)	($6.38)
Net Smelter Return	$789,825	
Royalties	($27,942)	($44.88)
Net Revenue	$761,883	
Operating Costs		
Underground Mining	($299,661)	($481.32)
Process	($49,878)	($80.12)
G&A	($51,483)	($82.69)
Total Operating	**($401,023)**	**($644.13)**
Operating Margin (EBITDA)	$360,861	
Initial Capital	$0	
LoM Sustaining Capital	($131,820)	
Working Capital	$2,303	
Income Tax	($83,457)	
After Tax Free Cash Flow	$147,887	
NPV @: 5%	$135,918	

Source: SRK, 2019

Table 22-6 shows annual production and revenue forecasts for the life of the project. All production forecasts, material grades, plant recoveries and other productivity measures were developed by SRK and Gran Colombia.

Table 22-6: Segovia LoM Annual Production and Revenues

Period	RoM (kt)	Plant Feed (kt)	Doré (koz)	Free Cash Flow (US$000's)	Discounted Cash Flow (US$000's)
2019	351.02	351.02	172.77	40,517	39,356
2020	415.47	415.47	169.93	51,824	48,265
2021	418.68	418.68	131.02	30,727	27,314
2022	420.50	420.50	96.79	21,065	17,853
2023	335.54	335.54	52.07	4,055	3,366
2024	0.00	0.00	0.00	(301)	(236)
Total	**1,941**	**1,941**	**623**	**147,887**	**135,918**

Source: SRK, 2019

The estimated cash cost, including direct and indirect production cost, is US$650/Au-oz, while All-in Sustaining Costs (AISC), including sustaining capital, is US$907/Au-oz Table 22-7 presents the make-up of the Segovia cash costs.

Table 22-7: Segovia Cash Costs *

Cash Costs	US$000's
Direct Cash Cost	
Mining Cost	$299,661
Process Cost	$49,878
Site G&A Cost	$51,483
Smelting & Refining Charges	$3,969
Direct Cash Costs	$404,992
$/t-ore	$208.63
$/ Au-oz	$650.50
Indirect Cash Cost	
Royalties	$27,942
Indirect Cash Costs	$27,942
$/t-ore	$14.39
$/ Au-oz	$44.88
Total Direct + Indirect Cash Cost	**$432,933**
$/t-ore	$223.02
$/ Au-oz	$695.38
Sustaining Capital Cash Cost (US$/ Au-oz)	$211.73
All-In Sustaining Cash Costs (US$/ Au-oz)	$907.11

Source: SRK, 2019

* SRK's standard Cash Cost reporting methodology for NI 43-101 reports includes smelting/refining costs; whereas Gran Colombia's basis of reporting treats these costs as a reduction of realized gold price (the refinery discounts the selling price by a factor to cover these charges) and excludes them from its reported "total cash cost per ounce".

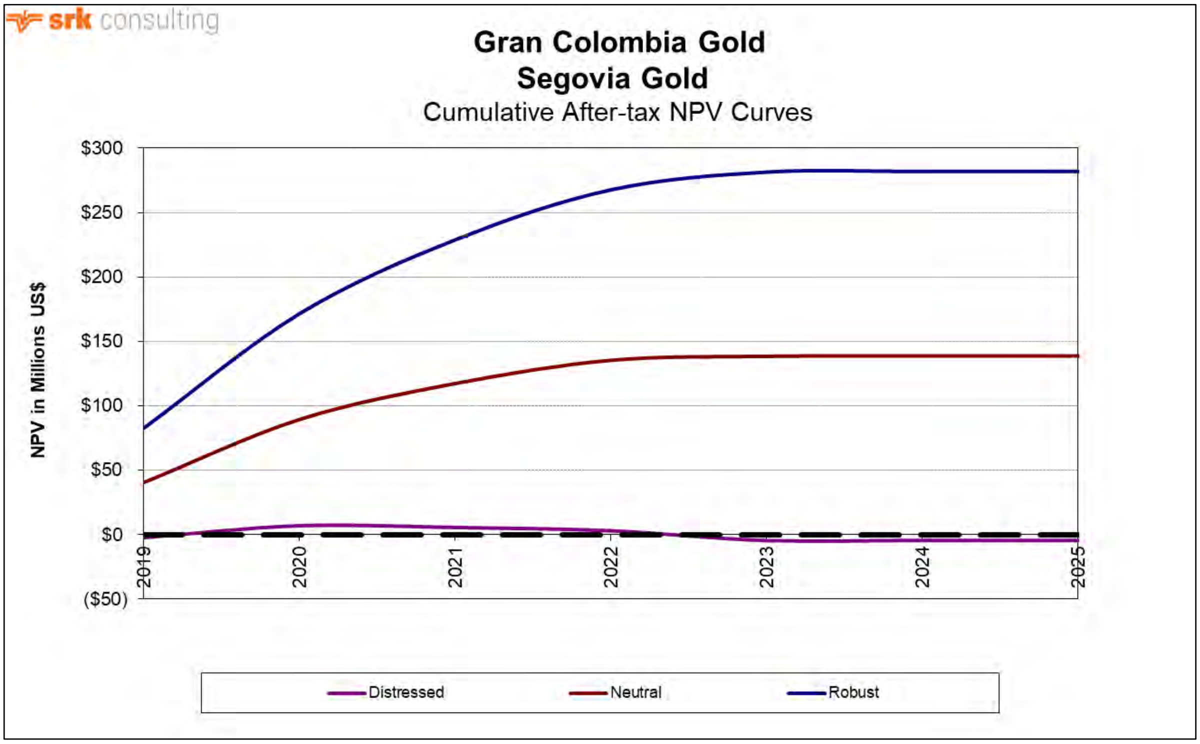
22.5 Sensitivity Analysis

Sensitivity to discount rates and different metal price scenarios were conducted.

The following metal price scenarios were considered:

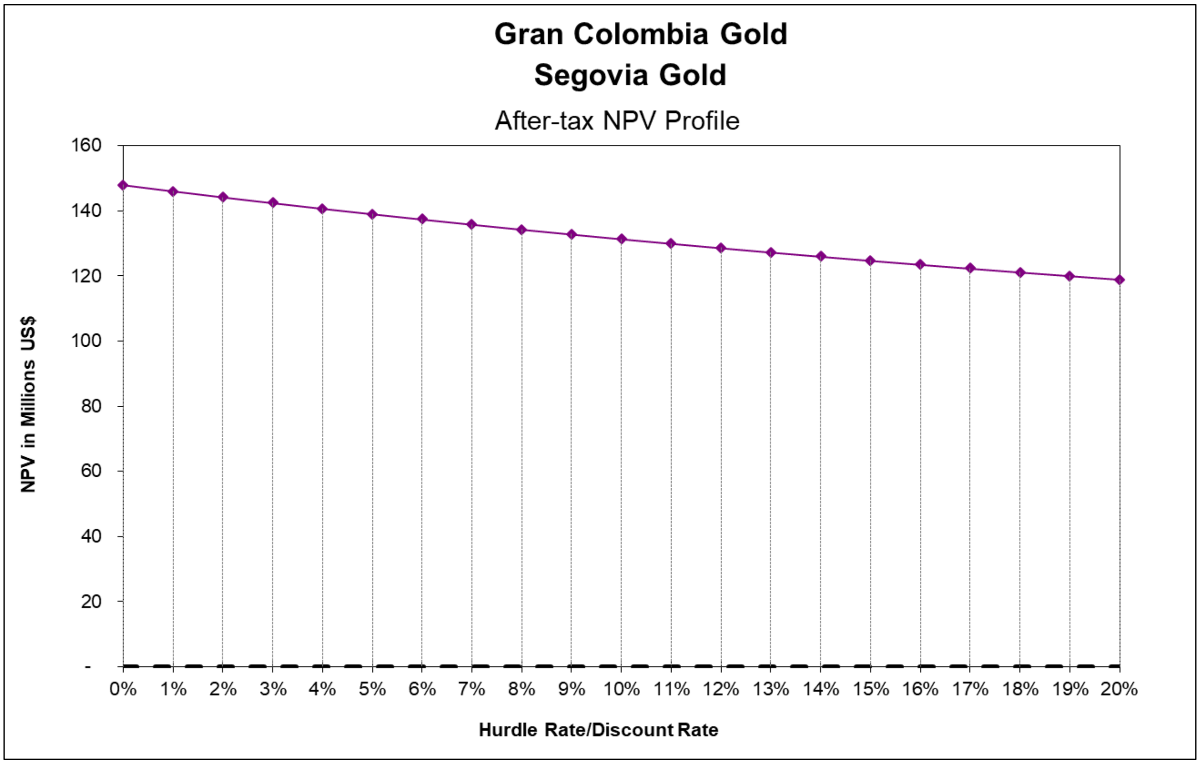
- Distressed metal prices are 20% lower than neutral prices (US$1,020/oz Au);
- Neutral metal prices as presented in this section (US$1,275/oz Au); and
- Robust metal prices are 20% higher than neutral prices (US$1,530/oz Au).

The results are presented in Figure 22-3 and Figure 22-4.



Source: SRK, 2019

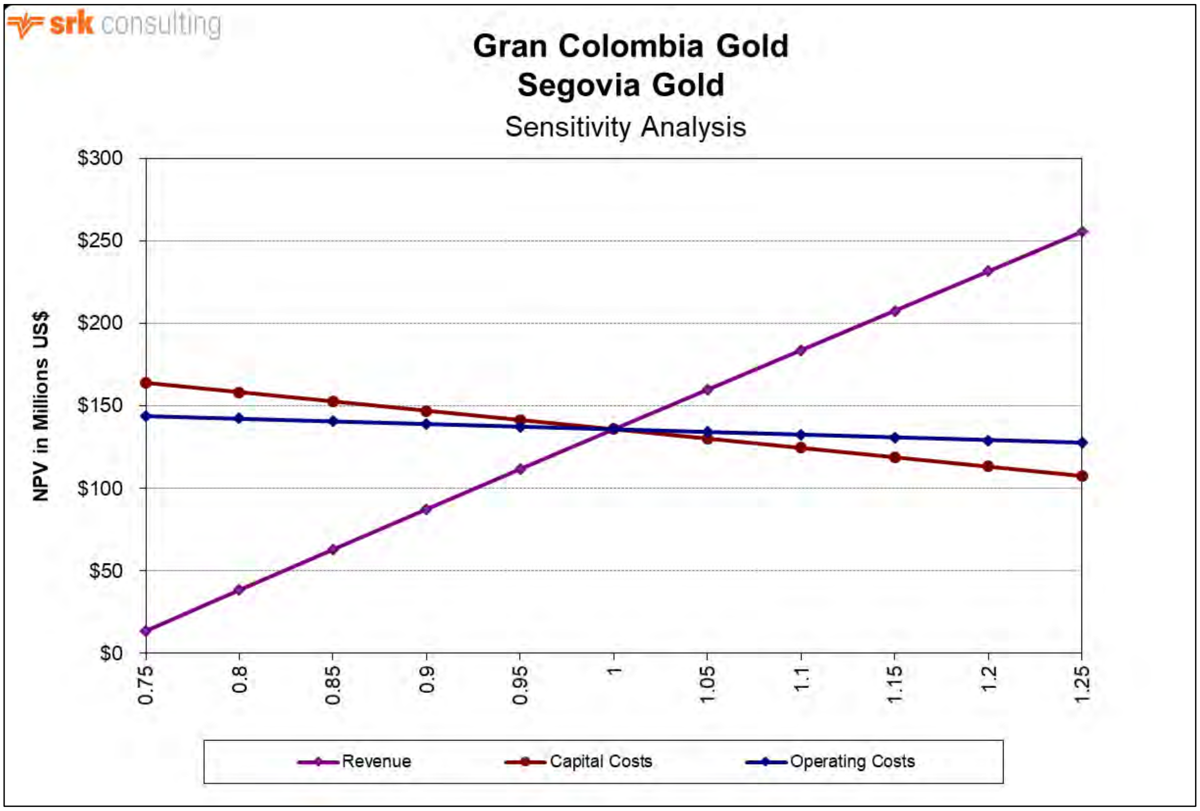
Figure 22-3: Segovia Cumulative NPV Curves



Source: SRK, 2019

Figure 22-4: Segovia NPV Sensitivity to Hurdle Rate

A sensitivity analysis on variation of Project costs, both capital and operating, and metal prices indicated that the cash generation is most sensitive to reduction in metal prices, or possibly loss on metal recovery, and secondly to an increase in capital cost. Figure 22-5 shows net present value sensitivity.



Source: SRK, 2019

Figure 22-5: Segovia NPV Sensitivity (US$000's)

23 Adjacent Properties

There are no properties adjacent to the Project with NI 43-101 compliant Mineral Resources. There are however other properties adjacent to the Project currently being mined by others.

24 Other Relevant Data and Information

In addition to the PFS mine plan described in this report, there are a few items to note which would have an effect on the mining operations and economics presented herein. These items include:

- **Mining in additional areas, currently classified as inferred** - There is inferred material at all 4 mining areas discussed in this PFS. This material is located near existing/planned infrastructure which require minimal development to mine. If this inferred material is further drilled and converts to reserves, particularly in the Providencia and El Silencio areas, then mining can continue longer in the existing mining areas. This would allow for displacing development capital to later years (i.e., ramp not necessary as quickly). Also, if some of the inferred material is higher grade, it can displace lower grade material and increase the ounces produced. Historically, Gran Colombia has been mining this additional inferred material as they are able to access it.
- **Additional material, mined by others, going to the Maria Dama process facility** – Some additional plant capacity is available at times and is used to process third-party material. Table 24-1 shows the tonnages and grades of the additional material processed since 2015. This material is not included in the economics shown in this report.

  Table 24-1: Additional Material at the Maria Dama Process Facility (2015 to 2018)

Processed at Maria Dama Plant				
	2015	**2016**	**2017**	**2018**
Tons (t)	65,277	82,168	84,058	67,897
Grade (g/t)	5.42	4.73	4.61	5.74
Recovery (%)	90.40%	90.00%	90.40%	89.46%
Recovered Au oz (oz)	10,295	11,262	11,254	11,219

  Source: Gran Colombia, 2018

  Gran Colombia has a history of mining/converting inferred material and receiving third-party material at the process facility.
- **Recovered Silver** – There is a history of recovering silver at the process facility. Currently silver is not included in the resource nor the reserve. Table 24-2 shows the recent silver recovery by year. Overall this gives approximately 1% to 2% additional revenue.

Table 24-2: Gran Colombia Historical Gold and Silver Production 2007 to 2018

Year	Au Production (ozs)	Ag Production (ozs)	Ag as % of Au
2007	38,244	45,821	119.80%
2008	33,460	44,426	132.80%
2009	55,216	41,868	75.80%
2010	50,313	51,780	102.90%
2011	69,176	64,633	93.40%
2012	79,178	88,856	112.20%
2013	80,226	113,734	141.80%
2014	74,506	91,109	122.30%
2015 (1)	92,539	82,910	89.60%
2016 (1)	126,022	111,053	88.10%
2017 (1)	148,594	121,843	82.00%
2018	193,050	160,955	83.37%
Total	**1,040,524**	**1,018,988**	**97.93%**

Source: Gran Colombia ,2019
Adjusted to exclude Au and Ag sourced from third-party not processed at Maria Dama

- **Delaying the re-starting the Carla Mine until later in the Project life** - In the PFS development at Carla begins in 2020 to allow development/mining of reserves to end at the same times as other mining areas. Gran Colombia may delay mining at Carla until later in the Segovia Project life, and mine in other existing areas where material is currently classified as inferred. This has the effect of delaying capital expenditures from 2020 to later years as well as potentially increasing grades in 2020 to 2023 (as the Carla material is lower grade and would potentially be replaced by higher grade material from Providencia or El Silencio and third-party contract material).
- **Increasing process facility capacity** - Gran Colombia processes ore in its Maria Dama process plant which is being expanded to 1,500-metric ton per day capacity in the first half of 2019. A potential further process facility expansion to 2,000 t/d is being contemplated, if proven to be necessary, for some time beyond 2019, however this is not included in this report/economics. It is envisioned the additional mill feed would come from either an increase in Gran Colombia production as a result of further exploration or from third-party miners in its title. The estimated time to upgrade the facility is approximately 1 year, at a cost of approximately US$5 to US$6 million. This capital estimate is not included in this report/economics at this time.
- **Las Verticales** - The Las Verticales area is located adjacent to Providencia and requires little development to access. The area would need additional drilling and could be a source of additional material close to existing infrastructure. Las Verticales has not been included in the PFS reserve analysis, but is an inferred resource included in the resource summary in the PFS. This area is currently being mined near surface by third party miners and this material has been sent to the Maria Dama plant for the last 10 years.

25 Interpretation and Conclusions

25.1 Geology and Resources

The 2018 continual exploration and underground exploration at El Silencio and Providencia has identified and increased the mineralization at depth. Additional areas of higher grades have also been identified within the northern portions of the El Silencio mine (Veta Manto). Infill drilling at Providencia has been focused at depth which confirmed previously defined high-grade mineralization, and targeting extensions across faulting present at depth, these new shoots are more discrete than the main shoot.

SRK notes that the there is a difference in the sampling protocols between the mine and exploration teams for obtaining channel samples, and that the use of a diamond saw provides improved control on the size of the available samples. In areas with higher portions of historical data where previous mining exists, SRK accounted for these data during the classification process. SRK reviewed this revised procedure and considers it consistent with best practice, and, SRK recommends an audit in the future of the revised protocols to ensure any potential bias is identified and mitigated.

SRK completed a validation exercise on the electronic database provided, where potentially erroneous data exists in the database, the data has been flagged for further verification by Gran Colombia and excluded from the estimation. SRK reviewed QA/QC information for 2018 collected by both the exploration and mine teams and deemed the assay database to be in line with industry best practice and therefore deemed it acceptable for the determination of Mineral Resource Estimates.

Infill drilling along with the on-going validation work of the historical database, and surveying of the underground mine workings has resulted in a slight increase in the Mineral Resources at Segovia, but most notably has also replaced the equivalent in depleted ounces. It is SRK’s opinion that while further improvements can still be made to the geological database (namely elevations), the confidence in the location of the vein spatial disposition has improved significantly compared to the previous Mineral Resource estimate, which was largely interpreted at El Silencio. The continual validation of the historical database at El Silencio has increased the confidence in the geological model and identified in areas the mining has been completed on new structures off the main vein (Veta Manto). Additional drilling will be required to test for continuations to the main structures in these areas, but also highlights the potential for the mine to generate addition feed material with improvements in the exploration/infill drilling programs.

Overall, SRK considers the exploration data accumulated by the Company to be generally reliable and suitable for the purpose of this Mineral Resource estimation. SRK undertook a laboratory audit of the new mine sample preparation and fire assay facilities and found the laboratory to be clean, organized and to have the correct equipment and procedures in place to ensure quality is maintained.

During the generation of the Mineral Resource estimate, SRK identified a number of key issues, which include:

- The lack of a historic QA/QC program, which has only been supported by a recent resampling, and a modern QA/QC program for a limited number of holes. This will be required in order to achieve Measured resources at El Silencio. A routine channel sampling exercise of the existing veins in exposed levels will increase the confidence in the vein location and grades. The areas of lower confidence are typically limited to the pillars in the higher levels of the mine.

- All boundaries between high and low-grade domains have been treated as hard boundaries, and further work on a local scale via underground mapping and closed spaced channel sampling will be required to better understand the transition between the two domains, once completed SRK would recommend revisiting the geostatistical parameters to further optimize the grade estimates.
- SRK has defined the current Mineral Resource based on a CoG of 3.0 g/t Au over a (minimum mining) width of 1.0 m. Mining costs are known to be variable across the different mines and some fluctuations maybe expected when considered during mine planning.
- Indicated Mineral Resources in pillars have been limited to areas where a sufficient level of verification channel sampling has been completed by Gran Colombia, and a relatively high confidence in the accuracy of the pillar surveys is achieved. At El Silencio, the Indicated portion of the Mineral Resource have been limited to below an elevation of 320 m or below Level 29 which was previously flooded and therefore the confidence in the depletion outlines is higher.
- To define the depletion and the remaining pillars, SRK elected to combine the multiple data types that define the mined areas and notes that none of them include well-defined 3D solids with measurable volumes. Rather, SRK has taken the combined CAD lines, points, and triangulations and generated distance buffers (5 m) to obtain volumes in areas that have been mined. There is still uncertainty associated with this practice, but SRK believes that this is likely balanced by the conservative nature of the distance buffer approach, which may actually flag some material that is to be mined in the near term as having been previously mined. A complete set of 3D depletion wireframes should be generated for all three mines, which the underground channel database can be cross-checked against for validation.

SRK is of the opinion that the Mineral Resource Estimate has been conducted in a manner consistent with industry best practices and that the data and information supporting the stated mineral resources.

The current lack of a grade control block model (which is updated on a monthly or quarterly basis), results in difficulty to complete accurate reconciliation between the updated Mineral Resource estimate and the current mining activities. SRK recommend the Company investigate improving the use of localized short-term planning models, which would improve the understanding of the short scale variation in grade and improve the potential to monitor the current estimates.

Finally, SRK notes that the current Mineral Resources are focused on the three main operating mines, with separate databases and models created for each mine. In addition to the current operating mines, a number of historical mines exist within the current RPP license at Segovia. To improve potential exploration planning SRK recommends that Gran Colombia generate a regional model from all the existing data plus any additional information available from historical records or small-scale operations (leased) in the area, some of which provide additional feed to the Maria Dama plant. The regional model should be generated prior to any exploration programs outside of the three main mines, to optimize the program, with the goal of initially confirming the presence of the veins, and then to target any potential higher-grade mineralization.

25.2 Mining & Reserves

Geotechnical

The rock mass characterization and design methods are acceptable at a PFS level and comply with industrial standards and the mine designs are suitable for PFS reserve estimation.

All 4 mines (Providencia, El Silencio, Sandra-K and Carla) can be treated as similar for mine design parameters, even though mining heights, rooms and pillars are different sizes. This is because rock mass qualities are similar. The use of timber packs and cement pillars help to increase the extraction ratios. However, the timbers and/or cement pillars must be well designed and follow specifications. Segovia should also implement a monitoring system to identify any excessive pillar deformation that could produce room instability. SRK recommends performing first pass mining and additional pillar recovery using timber and/or cemented pillars to give an overall extraction ratio of approximately 85%.

El Silencio mine will need to increase pillar sizes at depth in virgin areas because of the increased stresses resulting from the depth below ground. SRK recommends conducting a suitable stability assessment to determine the correct pillar dimensions.

Mine Design

Room and pillar and cut and fill mining methods are seen as appropriate selective mining methods for the deposits. Cut and fill requires off-ore development but yields a higher extraction. A cutoff grade has been used for identifying economic mining areas. The PFS mine life is approximately 5 years. The underground mines are accessed via existing apique systems with ventilation raises to surface as necessary.

Tonnages and grades presented in the reserve include dilution and recovery and are comparable to what is currently being mined. Productivities used are based on current estimates and include some improvement over the life of the mine. A monthly production schedule was generated using iGantt software for each mine. The production schedule targeted approximately 415,000 t/yr.

25.3 Recovery Methods

Gran Colombia processes ore from the Providencia, El Silencio and Sandra K Mines at its 1,500 t/d Maria Dama process plant which includes crushing, grinding, gravity concentration, gold flotation, cyanidation of the flotation concentrate, Merrill-Crowe zinc precipitation and refining of both the zinc precipitate and gravity concentrate to produce a final gold/silver doré product. SRK makes the following conclusions and recommendations regarding Gran Colombia’s processing facilities:

- Plant production for the period 2014 to 2018 increased from 237,740 t at an average gold grade of 10.92 g/t Au in 2014 to 368,825 t at an average gold grade of 1812 g/t Au;
- Overall gold recovery has been relatively constant at about 90% over the period from 2014 to 2018;
- Silver recovery is not monitored, but is a relatively minor contributor to overall project economics;
- During 2016, the process plant operating cost averaged US$29.51/t processed and was equivalent to US$66.58/Au oz produced. During 2017, the process plant operating cost averaged US$31.88/t processed and was equivalent to 66.71/Au oz produced. During 2018,

the process plant operating cost averaged US$28.88/t processed and was equivalent to 58.29/Au oz produced;

- Process plant capital expenditures for 2018 total US$2.94 million for completed projects. The major capital expenditure in 2018 was the installation of the tailings filter plant located at El Chocho that cost US$2.16 million;
- Planned capital expenditures for 2019 total US$1.71 million with US$202,000 devoted to the metallurgical laboratory;
- Tailings is discharged to dehydration cell where the tailings are partially dewatered and then transferred to the final Tailings Storage Facility (TSF) El Chocho":
  - o Slurry tailings are discharged to the TSF treated for cyanide by hydrogen peroxide; and
  - o A filter plant consisting of one 1,500 t/d plate and frame filters is being installed and will be commissioned in 2019. This filter plant will provide sufficient capacity for current production rates but lacks redundancy. A second identical filter is planned to be installed in 2020 to ensure plant availability. In 2017, Gran Colombia installed a hydrogen peroxide base cyanide detoxification system at Maria Dama and installed the Stari Water Treatment Plant to treat barren solution prior to discharging it to the environment. In 2018, the Maria Dama plant started to add hydrogen peroxide and iron sulfate to their tailing discharge stream as a form of cyanide detoxification. The tailings slurry began being treated for cyanide destruction in 2018.

Mineral Processing and Metallurgical Testing

Gran Colombia's Maria Dama process plant has been in production for many years and the metallurgical requirements for processing ore from the Providencia, El Silencio and Sandra K Mines are well understood. As such, no new metallurgical studies have been conducted.

25.4 Project Infrastructure

The infrastructure for the Project is in place and fully functional. Additional work is ongoing improving the power system and mining underground infrastructure. All major facilities are in place and have been in use for a number of years. Ongoing focus on the tailings storage and associated equipment (filters) will be important.

Based on the parameters and assumptions outlined in Section 18.2, the two phases of the TSF have been design with adequate capacity to manage planned compacted filter tailings deposition for the PFS LoM production schedule.

25.5 Water Management

Water supply at the site does not appear to be an issue for operations. Water is supplied from the underground mine dewatering and fresh water reservoirs adjacent to the processing areas, supplying sufficient water to meet the processing demands. No water balance was provided for the project, so the amount of water sourced from the mine and surface water could not be determined with certainty.

Historically, water management at the tailings facilities has been problematic with surface water run-on entering the TSFs and regular releases of tailings materials and tailings decant water from the TSFs. SRK has observed increased awareness of surface water management in the operations of the TSF with new surface water diversion structures being put into place and a concerted effort to limit the discharge of tailings and untreated tailings decant water. The addition of robust water treatment system and plans for a tailing filter press will further improve water management at the site.

Closed tailings facilities are being aggressively reclaimed and incorporating surface water controls to manage the run-off from the closed facilities.

25.6 Environmental Studies and Permitting

The following interpretations and conclusions have been drawn with respect to the currently available information provided for the Segovia Project:

- **Permitting**: Developments within RPP 140 are permitted through the posting of an Environmental Management Plan (PMA) and secondary permits for use of water abstraction, forest use, air emissions, discharges and river course (channel) construction. The original PMA was approved in 2004 and renewed in 2008. In 2011, environmental rights and obligations were granted to Zandor. From 2012 through 2015, updates to the operations prompted Corantioquia to request a summary of all the information into a single document. After its submission by the authority in September of 2016, additional information was requested by the agency. This supplemental information was delivered on August 1, 2017. The authority conducted a site inspection in October 2018, after which a technical report favoring approval of the currently-proposed PMA was issued. On February 22, 2019, Corantioquia issued draft Resolution 160ZF-RES1902-967, effectively approving and extending the PMA for an additional five years. This draft resolution is currently under review by the Company before it can be finalized.
- **Environmental and Social Management**: Environmental and social issues are currently managed in accordance with the last-approved PMA. The currently proposed PMA represents an improvement in management practices, which are legally binding, however. Substantial financial resources and technical specialist support will be required to implement the environmental monitoring and mitigation measures presented in the most recent PMA update awaiting final resolution by Corantioquia.
- **Water Management:** Water management at the site has improved significantly since the introduction of the new process water treatment facility and the discontinued practice of discharging untreated mine effluents, which were contributing to contamination of local surface water courses. There is a risk that changes to the groundwater regime through underground dewatering activities of the mines may lead to geotechnical instabilities in underground workings, though hydrogeological modeling work is proposed to predict and enable the development of management measures to address this risk. Post-closure water management in the underground workings has not yet been evaluated or addressed.
- **Health and Safety of Contract Miners**: The Company employs groups of contract miners to extract high grade RoM from the pillars in the operating mines. Although each mining group is required to meet contractual health, safety and environmental standards set by Gran Colombia, there has historically been poor compliance with these standards. Gran Colombia has improved the auditing of compliance of the contract miners, but health and safety risks may be associated with uncontrolled and potentially illegal mining of support pillars, which may potentially lead to ground collapse and loss of life.
- **Stakeholder Engagement**: Zandor/Gran Colombia has conducted a stakeholder identification and analysis program and has set stakeholder engagement objectives and goals to develop

communications plans with government, community, media and small miners but the company does not currently have a formal stakeholder engagement plan. A strike by mine workers in 2017 effectively shut down the local communities for over one month; Gran Colombia will need to continue to activity engage to try and prevent this from occurring again in the future.

- **Closure Cost**: The lack of a detailed closure cost and financial provisioning for the Segovia Project at present poses a risk that at the end of the mine life, insufficient funds will be available to close the site in a safe, environmentally and socially appropriate manner. The largest uncertainty regarding closure cost is associated with the potential need for long-term treatment of water from the disused mine workings.

Although additional studies are recommended to further develop tailings management strategies, there do not appear to be any other known environmental issues that could materially impact Gran Colombia's ability to conduct mining and milling activities at the site. Preliminary mitigation strategies have been developed to reduce environmental impacts to meet regulatory requirements and the conditions of the environmental permit.

Ongoing negotiations and relationships with the artisanal and small-miner communities always remains a risk to the operation and could affect production from time to time, potentially impacting Gran Colombia's ability to conduct mining and milling activities at the site.

Geochemistry

A substantial effort is needed to bring the mine into conformity with international best practices of data collection, management, and geochemical characterization. Implementation of a more comprehensive data collection and management program will form the quantitative basis for understanding the current status, forecasting future impacts, and designing concurrent and post-closure mitigation measures to minimize environmental impacts.

25.7 Economic Analysis

The estimated cash cost, including direct and indirect production cost, is US$650/Au-oz, while All-in Sustaining Costs (AISC), including sustaining capital, is US$907/Au-oz. Table 1-5 presents the make-up of the Segovia cash costs.

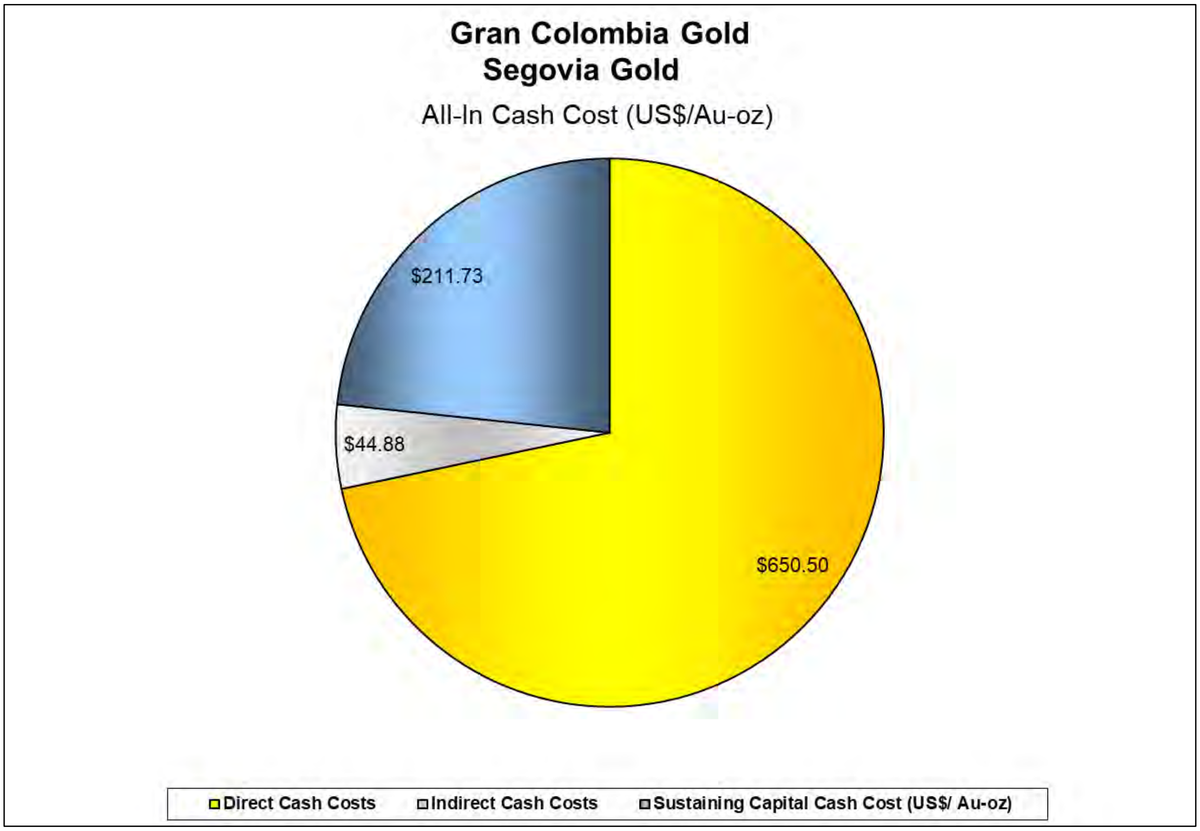
Table 25-1: Segovia Cash Costs

Cash Costs	US$000's
Direct Cash Cost	
Mining Cost	$299,661
Process Cost	$49,878
Site G&A Cost	$51,483
Smelting & Refining Charges [1]	$3,969
Direct Cash Costs	$404,992
$/t-ore	$208.63
$/ Au-oz	$650.50
Indirect Cash Cost	
Royalties	$27,942
Indirect Cash Costs	$27,942
$/t-ore	$14.39
$/ Au-oz	$44.88
Total Direct + Indirect Cash Cost	**$432,933**
$/t-ore	$223.02
$/ Au-oz	$695.38
Sustaining Capital Cash Cost (US$/ Au-oz)	$211.73
All-In Sustaining Cash Costs (US$/ Au-oz)	$907.11

Source: SRK, 2019

[1] SRK's standard Cash Cost reporting methodology for NI 43-101 reports includes smelting/refining costs; whereas Gran Colombia's basis of reporting treats these costs as a reduction of realized gold price (the refinery discounts the selling price by a factor to cover these charges) and excludes them from its reported "total cash cost per ounce".

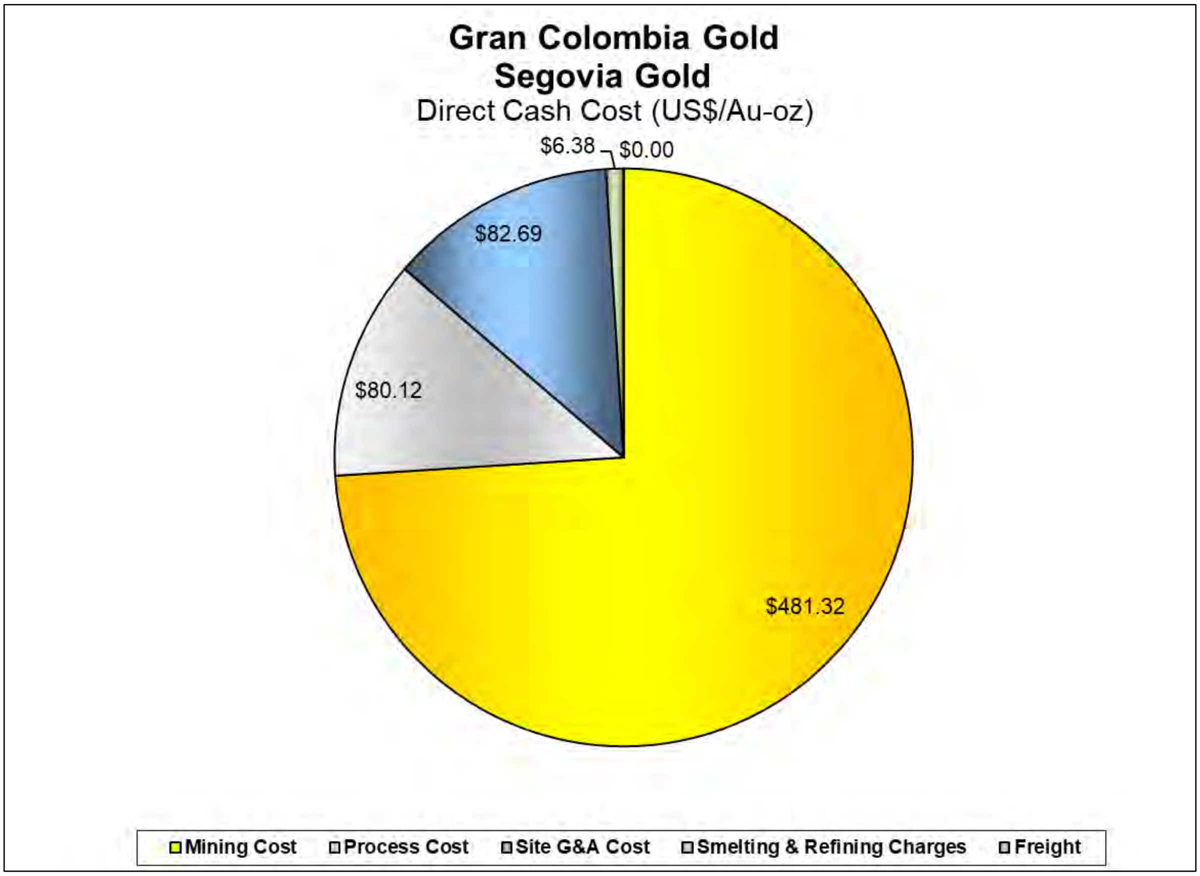
Figure 25-1 presents the breakdown of the estimated all-in sustaining cash costs associated with the reserves. Direct cash costs are the clear majority of the AISC cash cost, while the sustaining capital is a distant second.



Source: SRK, 2019

Figure 25-1: All-In Sustaining Cash Cost Breakdown

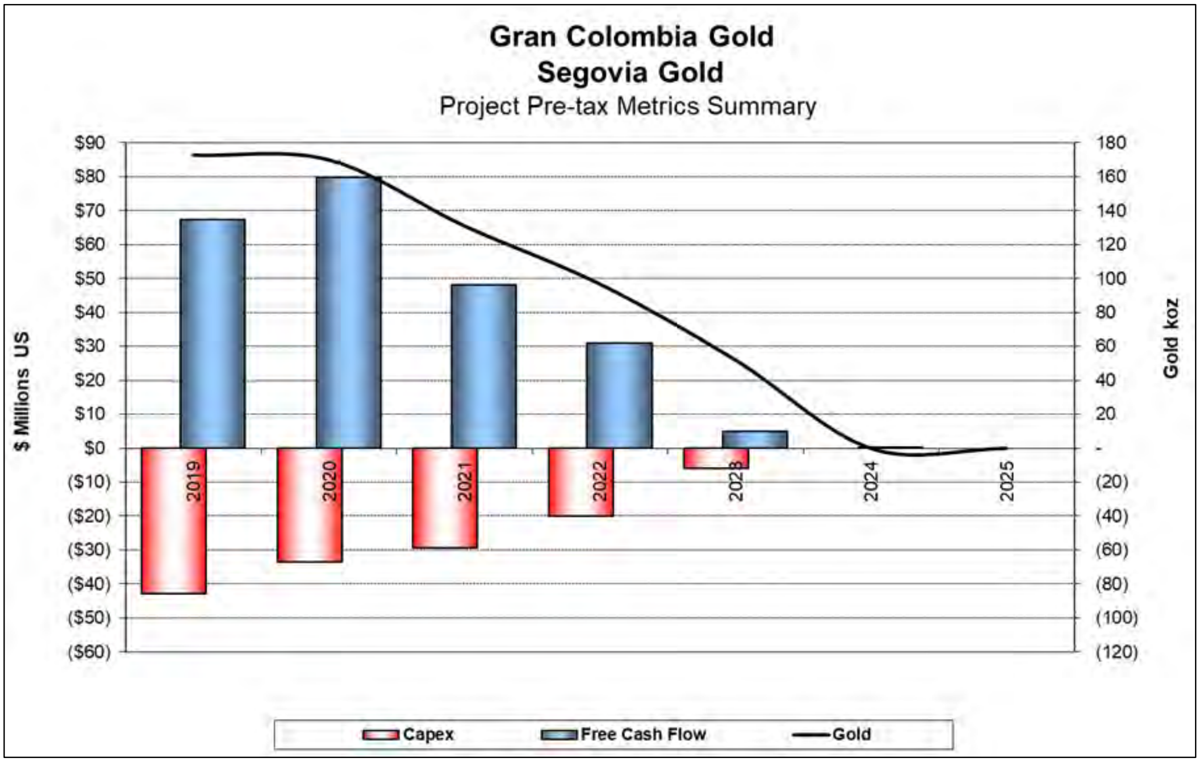
Figure 25-2 presents the breakdown of the estimated direct cash costs associated with the reserves. Mining costs represent the clear majority of the direct costs, while processing and general and administrative costs are about the same. It is interesting to note that the G&A costs are actually a bit higher than the processing costs.



Source: SRK, 2019

Figure 25-2: Direct Cash Cost

The valuation results of the Segovia Project indicate that the Project has an after-tax Net Present Value (NPV) of approximately US$135.9 million, based on a 5% discount rate. The operation is projected to have no negative cash flow periods. Revenue generation is similar in years 2019 and 2020, it is slightly higher in 2020 due to lower capital requirements, as both years have similar gold grades. The following years see a steady decrease of revenue generation, what is related to the lower gold grades in the later years. The annual free cash flow profile of the Project is presented in Figure 25-3.



Source: SRK, 2019

Figure 25-3: Segovia After-Tax Free Cash Flow, Capital and Metal Production

Indicative economic results are presented in Table 25-2. The Project is a gold operation, with gold representing 100% of the total projected revenue. The underground mining cost is the heaviest burden on the operation, followed by the sustaining capital (mostly from capitalized mine development) as a distant second.

Table 25-2: Segovia Indicative Economic Results

Description	Value	Unit Cost
Market Prices		
Gold (US$/oz)	1,275	US$/oz-Au
Estimate of Cash Flow (all values in $000's)		
Concentrate Net Return		
Gold Sales	$793,794	$1,275.00
Total Revenue	**$793,794**	**$1,275.00**
Smelting and Refining Charges	($3,969)	($6.38)
Net Smelter Return	$789,825	
Royalties	($27,942)	($44.88)
Net Revenue	$761,883	
Operating Costs		
Underground Mining	($299,661)	($481.32)
Process	($49,878)	($80.12)
G&A	($51,483)	($82.69)
Total Operating	**($401,023)**	**($644.13)**
Operating Margin (EBITDA)	$360,861	
Initial Capital	$0	
LoM Sustaining Capital	($131,820)	
Working Capital	$2,303	
Income Tax	($83,457)	
After Tax Free Cash Flow	$147,887	
NPV @: 5%	$135,918	

Source: SRK, 2019

Silver was not included in the analysis, as it is not included in the resources not the reserves. It should be noted, however, that past production indicates the production of silver in the doré and its revenue could represent an addition of about 1% to 2% to the revenue presented above.

Table 25-3 shows annual production and revenue forecasts for the life of the project. All production forecasts, material grades, plant recoveries and other productivity measures were developed by SRK and Gran Colombia.

Table 25-3: Segovia LoM Annual Production and Revenues

Period	RoM (kt)	Plant Feed (kt)	Doré (koz)	Free Cash Flow (US$000's)	Discounted Cash Flow (US$000's)
2019	351.02	351.02	172.77	40,517	39,356
2020	415.47	415.47	169.93	51,824	48,265
2021	418.68	418.68	131.02	30,727	27,314
2022	420.50	420.50	96.79	21,065	17,853
2023	335.54	335.54	52.07	4,055	3,366
2024	0.00	0.00	0.00	(301)	(236)
Total	**1,941**	**1,941**	**623**	**147,887**	**135,918**

Source: SRK, 2019

The reserves disclosed in the present report are enough to feed the existing plant for about five years of operation.

25.8 Foreseeable Impacts of Risks

Gran Colombia has proposed using a single 1,500 t/d plate and frame filter plant at the El Chocho TSF and is adding a second filter plant later in life. Until the filters are in place and operating and the sizing is confirmed to be adequate, there is some risk that alternative tailings handling will need to be implemented.

25.9 Project Infrastructure

Based on the parameters and assumptions outlined in Section 18.2, the TSF has been designed with adequate capacity to manage planned compacted filter tailings deposition for the PFS life of mine production schedule.

26 Recommended Work Programs

26.1 Geology and Resources

In relation to the required improvements to data quality with respect to mineral resource estimates, SRK recommends the following:

- Continued infill drilling using underground drill-rigs ahead of the planned mining faces to a minimum of 20 m x 20 m pattern;
- Creation of a 3D interpretation of all mining development and stoped areas;
- Continuation of the verification channel sampling at the Segovia Project to further increase the geological confidence in the associated block estimates, with a priority on El Silencio Mine. SRK recommends this starts within the lower levels of the mine;
- Gran Colombia have identified areas for possible extension and infill drilling within the 2019 budget. SRK has reviewed the proposed program and agrees these areas provide near term targets. The exploration targets depth extensions at the three operating mines in the following locations:
    - El Silencio: In the northern portions of the Veta Manto (HG10 and HG20), and at depth in veta national (HG30);
    - El Silencio: An area has been identified within El Silencio where the current mining is interpreted to have occurred within an un-named hanging-wall vein. If correct, then potential exists for Veta Manto to remain undeveloped in the footwall. An underground exploration drilling program should be designed to test the footwall for possible Veta Manto mineralization. This area has been classified as Inferred in the 2017 estimate;
    - Providencia: Further drilling will be required to trace the potential offset of the high-grade mineralization (HG20) across a large fault, with the current known mineralization extending beyond the current boundary of the RPP license, limiting further growth in the Mineral Resource to the north;
    - Sandra K: Drilling at depth below the current main mining operations targeting extensions to the current high-grade mineralization projections; and
    - Targeted drilling at other known mining areas within the RPP license.
- Prior to completing any brownfields exploration in the areas surrounding the current three operating mines, SRK has recommended generation of the regional geological model. The regional model will be a combination of the existing mine data, plus other historical records from other known veins/mining areas within the RPP license. This work will form the basis for more accurate exploration planning in the future, and all priorities to be assigned to proposed future drilling budgets; and
- SRK recommends the Company look towards the use of localized short-term planning models to improve the understanding of the short scale variation in grade and improve the potential to monitor the current estimates. These short-term models should include results from the underground infill drilling areas and adjustments to the high-grade domain boundaries.

Table 26-1 summarizes the costs for recommended work programs, and Table 26-2 summarizes the current approved 2019 exploration budgets, which SRK has reviewed and considers appropriate.

Table 26-1: Resource Estimate Recommended Work Program Costs

Discipline	Program Description	Cost (US$)
Geology and Resource	Continue verification channel sampling	On-going mine budget
	Generation of a 3D geological model and structural geology review integrating all available data	75,000
Total US$		**$75,000**

Source: SRK, 2019

Table 26-2: Summary of Current 2018 Segovia Project Exploration Budget

Discipline	Program Description	Cost (US$)
2019 Drilling Program	Infill step-out and brownfield. Estimated 20,000 m from surface and UG locations	5,500,000
Total US$		**$5,500,000**

Source: Gran Colombia, 2019

Total cost estimated for this work is approximately US$5,575,000.

26.2 Mining and Mineral Reserve Estimate

Mining

To continue to gain confidence in existing information, survey work should continue at all the mines. Continual Improvement of the reconciliation methodologies to give quick feedback for short and long term mine planning.

Continue ventilation survey and modeling and increase ventilation capacity where necessary. Estimated cost is US$5.0 million.

Hydro and geochemical sampling and analysis should occur within the current and proposed mining areas, to industry best practice standards. Estimated cost is US$200,000.

Sitewide groundwater modelling should be completed to estimate future inflows and determine future pumping requirements. Estimated cost is US$250,000.

Geotechnical

SRK recommends the following actions be implemented at the mines. Some of the actions are ongoing works and are part of the ground control management plan implemented by the Segovia Geotechnical team. The following recommendations are described in priority order:

- A suitable monitoring plan should be implemented at each mine, with special focus on mine access and critical infrastructure monitoring for stability;
- A stress measurement plan should be implemented to estimate the current mine induced stress conditions;
- The ground support standards and training of the mine staff should continue to be implemented. Preliminary work has been successfully implemented by Gran Colombia Gold;
- Continue with the pull test plan to warranty the rock bolting performance;
- Continue updating the geotechnical block model on a yearly basis;

- A 3D mine-scale numerical model should be prepared to simulate stress conditions due to the current mining. The model should have strength properties estimated from the geotechnical block model and the geometry should be from the current mine layout. The objective of this stress analysis is to determine stress levels in different areas of the mine from which local pillar and room stability of new mine designs can be determined; and
- A detailed site visit for external specialist should be implemented at least two time a year to conduct an internal audit and ensure the proposed recommendations are in place.

26.3 Recovery Methods

SRK recommends that an optimization study be performed around the Maria Dama plant to truly understand the plant limitations as well as identify areas to improve plant recovery.

Total cost estimated for this work is approximately US$50,000.

26.4 Project Infrastructure

26.4.1 General Infrastructure

There are no recommended work plans of substance noted at this time as the basic infrastructure is in place and functioning. The electrical system already has planning in place to more fully allow sourcing of power from both power suppliers.

Review the plant and dry stack filtering capacity to confirm the filtering system is adequate to meet planned plant production including downtime.

26.4.2 Tailings

The following actions are recommended to facilitate feasibility and detailed design of the proposed preliminary design reviewed as part of this update:

- Retain qualified professional engineers to prepare detailed design and issued-for-construction drawings to ensure future growth;
- Evaluate the phreatic conditions in and below the Fase 1A embankment and complete stability and liquefaction analyses to determine the current factor of safety against mass failure, including additional field and laboratory characterization as required;
- Perform additional geotechnical characterization within proposed embankment foundation footprints to confirm design criteria, inputs and assumptions. Confirm embankment footprint foundation design assumptions for grain size distribution, Atterberg limits, soil classification, moisture content, compaction, overburden removal depths and material strength properties;
- Confirm minimum design criteria applicable to the TSF via discussions with pertinent regulatory bodies, including those pertaining to closure and reclamation;
- Confirm achievable and achieved moisture contents for filtered tailings;
- Confirm geotechnical properties of filtered tailings including, at a minimum, grain size distribution, Atterberg limits; compacted density, permeability, consolidation, and shear strength;
- Confirm geochemical characteristics of tailings and waste rock for embankment construction to support design and closure planning;

- Confirm tailings containment requirements based on latest updated to the mine plan to determine overall size and staging of the TSF;
- Confirm depth to possible shallow seasonal groundwater in drainages and valley bottom and revise design recommendations for construction planning, underdrain design, and removal of unsuitable foundation materials;
- Confirm assumptions and criteria related to stability and seismic loading, including but not limited to, interface friction, internal friction and saturated foundation conditions for both rockfill and Geotube embankments;
- Complete liquefaction and seepage analyses on embankments and foundations;
- Complete a site-specific seismicity assessment, including classification of ground conditions, to provide the seismic design basis for the dam design; and
- Confirm basis of hydrological evaluation and hydraulic design, including all assumptions and design criteria, and provide for robust stormwater management system and erosion control design, particularly with regard to the capacity and long-term maintenance requirements of the upstream diversion channel diverting stormwater flows around the TSF basin.

Review and refine assumptions for TSF water balance, including consideration of 7-year dry and wet scenarios and design storm criteria.

26.5 Water

26.5.1 Geochemical

The observations and recommendations provided here have been produced based on limited information, particularly regarding hydrogeological and geochemical conditions, and further studies will be required to accurately understand the financial liabilities during operations and closure. The recommendations with respect to environmental geochemistry are summarized below.

A comprehensive environmental baseline characterization study is needed. This should consist of at least one year of quarterly water sampling that should include the following:

- Surface water upstream and downstream of the project area, sufficient to define the extent of mine influence and be of appropriate detail to segregate mine impacts from artisanal miners and non-mining contributors to local and regional contamination;
- Groundwater as feasible, including:
    - Upgradient and downgradient of existing and future facilities;
    - Points of compliance as best they can be estimated presently, and
    - Discharges in the underground workings.
- Process water;
- Existing surface waste rock dumps, and waste rock occurrences underground;
- Existing tailings;
- Existing mine wallrocks;
- Soils in and around the mine, to provide a baseline condition with respect to artisanal mining; and
- To support the baseline study, operational monitoring, and closure, a series of monitoring wells will need to be installed. Sites for wells will need to be selected and screened so that data collection is optimized.

A program should be carried out to collect data for characterizing the current and future geochemical loadings to the environment, which will include:

- Detailed data pertaining to geochemical loading from mining wastes and other contact water;
- Accurate measurements of streamflows (preferably by stream gaging); and
- Construction of a site water balance.

Total cost estimated for this work is approximately US$210,000.

26.5.2 Surface Water

Studies of the hydrological setting need to be performed to establish the level of risk associated with pluvial (rainfall) derived water.

Flow monitoring on key drainages around the site should be performed to quantify the rainfall run-off relationship and establish baseline flows in the drainages impacted by the site.

A mine water balance should be developed to improve the understanding of water use, both from pluvial sources and mine dewatering water sources, in the plant and how much water is discharged to the surface water environment.

Total Cost Estimated for this work is approximately US$275,000.

26.5.3 Groundwater

No additional hydrogeological information has been provided since the previous PFS report (SRK, 2018b). Currently, there are no monitoring wells to evaluate the drawdown outside of the mine, no information on the physical parameters of the rock (hydraulic conductivity and storage) and little information on where water enters the mine (from which geologic units or structures). SRK recommends the following hydrogeologic program which is designed to develop a basic understanding of the head distribution (water levels) around the mine. From that, SRK could prepare a model and calibrate to the existing conditions and mine inflows which will provide large-scale information on rock properties. The program will involve four work phases and a reporting phase as described below:

- Data review, complete mine reconnaissance, documentation of mine inflows, estimation of direct vertical recharge into the mine, and development of a conceptual hydrogeologic model;
- Drill core holes into the hanging-wall and footwall of the mines and equip the holes with shut-in instrumentation to allow measurement of hydraulic head beyond the mine face. SRK recommends 14 holes between the four primary mines that make up the Segovia mine complex. Each hole would extend approximately 100 m laterally beyond the mine face and would be concentrated near the bottom of the mine, or in areas where expansion is planned. The holes will be grouted and shut in at the mine face and equipped with continuous-read transducers to record head measurements. This would require 1,400 m of horizontal core drilling (NG or HQ);
- Drill approximately six deep wells beyond the immediate mine workings to a depth of approximately 700 m. Three of these would be drilled distal and three proximal to the mine workings to allow characterization of the horizontal gradient. The result of this would be a small network of wells that would provide just enough information to develop an understanding of the drawdown cone around the Segovia mines. This approach assumes that the mines

collectively create a sub-regional drawdown cone formed from the cumulative effect of dewatering the primary underground mines;

- Using data from phases 1 through 3, build a numerical model and calibrate to existing conditions. Those conditions include water levels near and away from the mine face, and inflows to the various mines. The modeling effort will help develop an understanding of the system as a whole and will support a prefeasibility-level evaluation. Additionally, the model can be used to predict future inflows based on changing mine plans; and
- A fifth task consists of reporting and documentation.

Total cost estimated for this work is approximately US$1,280,000.

26.6 Environmental Studies and Permitting

The following recommendations are made with respect to environmental, permitting and social issues regarding the Segovia Project:

- Prepare a more detailed site-wide closure plan from which a more accurate final closure cost estimate can be developed. This should include things like: equipment inventories; building inventories (with limited design details), portal and vent plugging details and conceptual designs, tec. This plan and cost estimate would require annual reviews and updates in order to capture the latest configurations and conditions at the mine site(s) and processing facilities. Estimated at US$50,000
- In conjunction with the mine water discharge characterization program described in Section 26.1.9, prepare a comprehensive plan to meet Colombian effluent discharge requirements by focusing on the following areas:
    - Complete hydrogeological investigations required for underground geotechnical stability as proposed in Section 26.1.9 and conduct an impact analysis with respect to dewatering operations and the potential to affect surface water sources (i.e., springs) (Initiation of this program is tentatively planned for 2019); and

Substantial financial resources and technical specialist support will be required to implement the environmental monitoring and mitigation measures presented in the PMA update currently awaiting final approval from Corantioquia.

26.7 Recommended Work Program Costs

Costs for recommended work programs are summarized in Table 26 1.

Table 26-3: Summary of Costs for Recommended Work

Discipline	**Program Description**	**Cost (US$)**	**No Further Work is Recommended Reason:**
Geology and Resources	Channel sampling and 3D Geological Model + Drilling Program (near mine, 20,000 m)	5,575,000	
Mining & Reserves	Additional Surveying	250,000	
Geotechnical Programs	Program as described in 26.2	225,000	
Infrastructure			There are no recommended work plans of substance noted at this time as the basic infrastructure is in place and functioning
Tailings	Program as described in Section 26.4.2	300,000	
Geochemical Study	Baseline + Characterization Work	210,000	
Surface Water Management	Flow Monitoring + Mine Water Balance	275,000	
Hydrogeologic Program	Field Program + Modeling to understand water levels around the mines.	1,280,000	
Recovery Method	Plant optimization study, tailings filtration plant trade-off study.	50,000	
Environmental & Permitting	Detailed site-wide closure plan and reclamation cost estimate	50,000	
Environmental & Permitting	Comprehensive Water Management Plan (incl. UG dewatering impacts and post closure water quality assessment; TSF surface water seepage plan)	100,000	
Total US$		**$8,315,000**	

Source: SRK, 2019

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28 Glossary

The Mineral Resources and Mineral Reserves have been classified according to CIM (CIM, 2014). Accordingly, the Resources have been classified as Measured, Indicated or Inferred, the Reserves have been classified as Proven, and Probable based on the Measured and Indicated Resources as defined below.

28.1 Mineral Resources

A **Mineral Resource** is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

An **Inferred Mineral Resource** is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

An **Indicated Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

A **Measured Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve.

28.2 Mineral Reserves

A **Mineral Reserve** is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.

The reference point at which Mineral Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. The public disclosure of a Mineral Reserve must be demonstrated by a Pre-Feasibility Study or Feasibility Study.

A **Probable Mineral Reserve** is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proven Mineral Reserve.

A **Proven Mineral Reserve** is the economically mineable part of a Measured Mineral Resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors.

28.3 Definition of Terms

The following general mining terms may be used in this report.

Table 28-1: Definition of Terms

Term	Definition
Assay	The chemical analysis of mineral samples to determine the metal content.
Capital Expenditure	All other expenditures not classified as operating costs.
Composite	Combining more than one sample result to give an average result over a larger distance.
Concentrate	A metal-rich product resulting from a mineral enrichment process such as gravity concentration or flotation, in which most of the desired mineral has been separated from the waste material in the ore.
Crushing	Initial process of reducing ore particle size to render it more amenable for further processing.
Cut-off Grade (CoG)	The grade of mineralized rock, which determines as to whether or not it is economic to recover its gold content by further concentration.
Dilution	Waste, which is unavoidably mined with ore.
Dip	Angle of inclination of a geological feature/rock from the horizontal.
Fault	The surface of a fracture along which movement has occurred.
Footwall	The underlying side of an orebody or stope.
Gangue	Non-valuable components of the ore.
Grade	The measure of concentration of gold within mineralized rock.
Hanging-wall	The overlying side of an orebody or slope.
Haulage	A horizontal underground excavation which is used to transport mined ore.
Hydrocyclone	A process whereby material is graded according to size by exploiting centrifugal forces of particulate materials.
Igneous	Primary crystalline rock formed by the solidification of magma.
Kriging	An interpolation method of assigning values from samples to blocks that minimizes the estimation error.
Level	Horizontal tunnel the primary purpose is the transportation of personnel and materials.
Lithological	Geological description pertaining to different rock types.
LoM Plans	Life-of-Mine plans.
LRP	Long Range Plan.
Material Properties	Mine properties.
Milling	A general term used to describe the process in which the ore is crushed and ground and subjected to physical or chemical treatment to extract the valuable metals to a concentrate or finished product.
Mineral/Mining Lease	A lease area for which mineral rights are held.
Mining Assets	The Material Properties and Significant Exploration Properties.
Ongoing Capital	Capital estimates of a routine nature, which is necessary for sustaining operations.
Ore Reserve	See Mineral Reserve.

Term	Definition
Pillar	Rock left behind to help support the excavations in an underground mine.
RoM	Run-of-Mine.
Sedimentary	Pertaining to rocks formed by the accumulation of sediments, formed by the erosion of other rocks.
Shaft	An opening cut downwards from the surface for transporting personnel, equipment, supplies, ore and waste.
Sill	A thin, tabular, horizontal to sub-horizontal body of igneous rock formed by the injection of magma into planar zones of weakness.
Smelting	A high temperature pyrometallurgical operation conducted in a furnace, in which the valuable metal is collected to a molten matte or doré phase and separated from the gangue components that accumulate in a less dense molten slag phase.
Stope	Underground void created by mining.
Stratigraphy	The study of stratified rocks in terms of time and space.
Strike	Direction of line formed by the intersection of strata surfaces with the horizontal plane, always perpendicular to the dip direction.
Sulfide	A sulfur bearing mineral.
Tailings	Finely ground waste rock from which valuable minerals or metals have been extracted.
Thickening	The process of concentrating solid particles in suspension.
Total Expenditure	All expenditures including those of an operating and capital nature.
Variogram	A statistical representation of the characteristics (usually grade).

28.4 Abbreviations

The following abbreviations may be used in this report.

Table 28-2: Abbreviations

Abbreviation	Unit or Term
%	percent
°	degree (degrees)
°C	degrees Centigrade
µm	micron or microns
2D	two-dimensional
3D	three-dimensional
AA	atomic absorption
AAS	atomic absorption spectrophotometer
Ag	silver
AISC	All-in Sustaining Costs
ANFO	ammonium nitrate fuel oil
ARD/ML	acid rock drainage and metal leaching
Au	gold
AuEq	gold equivalent grade
CCD	counter-current decantation
cfm	cubic feet per minute
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CIT	corporate income tax
cm	centimeter
cm^3	cubic centimeter
CoG	cut-off grade
CRM	certified reference material
Datamine™	Datamine™ Studio RM
dia.	diameter
EDA	exploratory data analysis
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EPM	Empresas Públicas de Medellín E.S.P

Abbreviation	Unit or Term
FA	fire assay
FGM	Frontino Gold Mines
ft	foot (feet)
ft^3	cubic foot (feet)
g/t	grams per tonne
gpm	gallons per minute
Gran Colombia	Gran Colombia Gold Corp.
ha	hectares
HDPE	Height Density Polyethylene
hp	horsepower
ICP	induced couple plasma
ID2	inverse-distance squared
ID3	inverse-distance cubed
IFC	International Finance Corporation
kA	kiloamperes
kg	kilograms
km	kilometer
km^2	square kilometer
koz	thousand troy ounce
kt	thousand tonnes
kt/d	thousand tonnes per day
kt/y	thousand tonnes per year
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
L	liter
lb	pound
Leapfrog®	Aranz Leapfrog® Geo (Leapfrog®)
LHD	Long-Haul Dump truck
LoM	Life-of-Mine
LTR	long-term resource material
m	meter
m^2	square meter
m^3	cubic meter
mm^2	square millimeter
mm^3	cubic millimeter
MME	Mine & Mill Engineering
Moz	million troy ounces
Mt	million tonnes
MW	million watts
NGO	non-governmental organization
NI 43-101	Canadian National Instrument 43-101
NPV	Net Present Value
OK	Ordinary Kriging
oz	troy ounce
PLS	Pregnant Leach Solution
ppm	parts per million
PTO	Programa de Trabajos y Obras
QA/QC	Quality Assurance/Quality Control
QKNA	Quantitative Kriging Neighborhood Analysis
QP	Qualified Persons
RoM	Run-of-Mine
RPP	Reconocimiento de Propiedad Privada
RQD	Rock Quality Description
SEC	U.S. Securities & Exchange Commission
sec	second
SGS	SGS Laboratories
SRK	SRK Consulting (U.S.), Inc.
t	tonne (metric ton) (2,204.6 pounds)

Abbreviation	Unit or Term
t/d	tonnes per day
t/y	tonnes per year
TSF	tailings storage facility
TSP	total suspended particulates
US$	U.S. dollars
V	volts
W	watt
y	year
Zandor	Zandor Capital S.A. Colombia

Appendices

Appendix A: Certificates of Qualified Persons

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CERTIFICATE OF QUALIFIED PERSON

I, David Bird, MSc., PG, RM-SME, do hereby certify that:

1. I am Principal Consultant (Geochemistry) of SRK Consulting (U.S.), Inc., 1125 Seventeenth Street, Suite 600, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled “Amended NI 43-101 Technical Report, Prefeasibility Study Update, Segovia Project, Colombia” with an Effective Date of December 31, 2018 (the “Technical Report”).
3. I graduated with Bachelor’s Degrees in Geology and Business Administration Management from Oregon State University in 1983. In addition, I obtained a Master’s Degree in Geochemistry/Hydrogeology from the University of Nevada-Reno in 1993. I am a Registered Member of the Society for Mining, Metallurgy, and Exploration (SME). I am a certified Professional Geologist in the State of Oregon (G1438). I have worked full time as a Geologist and Geochemist for a total of 34 years. My relevant experience includes design, execution, and interpretation of mine waste geochemical characterization programs in support of open pit and underground mine planning and environmental impact assessments, design and supervision of water quality sampling and monitoring programs, geochemical modeling, and management of the geochemistry portion of numerous PEA, PFS and FS-level mine projects in the US and abroad.
4. I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
5. I have not visited the Segovia property.
6. I am responsible for geochemistry Sections 16.8, 20.1.3 and 26.5.1 of the Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is QP authorship of the report titled, “NI 43-101 Technical Report, Prefeasibility Study, Segovia Project, Colombia” with an Effective Date of December 31, 2017 and a Report Date of May 10, 2018; and, “NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia” with an Effective Date of August 7, 2017 and a Report Date of September 28, 2017.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 8th Day of July, 2019.

__"Signed"______________________
David Bird, MSc, PG, SME-RM
Principal Geochemist

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CERTIFICATE OF QUALIFIED PERSON

I, Fredy Henriquez, MSc Eng, SME, ISRM do hereby certify that:

1. I am Principal Consultant (Rock Mechanics) of SRK Consulting (U.S.), Inc., 1125 Seventeenth Street, Suite 600, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled "Amended NI 43-101 Technical Report, Prefeasibility Study Update, Segovia Project, Colombia" with an Effective Date of December 31, 2018 (the "Technical Report").
3. I graduated with a degree in Civil Mine Engineer from University of Santiago, Chile in 2000. In addition, I have obtained a Masters degree (MSc) in Engineering (Rock Mechanics) from WASM, Curtin University, Australia (2011). I am a Registered Member of the Society for Mining, Metallurgy, and Exploration (SME, register number 4196405RM). I have worked as a geotechnical engineer for a total of 25 years since my graduation from university. My relevant experience includes civil and mining geotechnical projects ranging from conceptual through feasibility design levels and operations support. I am skilled in both soil and rock mechanics engineering and specialize in the design and management of mine excavations. My primary areas of expertise include mine operations, mine planning, hard rock and soft rock characterization, underground and open pit stability analysis, database management, geotechnical data collection, probabilistic analysis, risk assessment, slope monitoring, modeling and pit wall pore pressure reductions. I have undertaken and managed large geotechnical projects for the mining industry throughout North, Central, South America, Australia and South Africa.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Segovia property on February of 2018 for 5 days.
6. I am responsible for geotechnical Section 16.4 of the Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have not had prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 8th Day of July, 2019.

"Signed"

Fredy Henriquez, MSc Eng, SME, ISRM Principal Consultant (Rock Mechanics)

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CERTIFICATE OF QUALIFIED PERSON

I, Brian Olson, BS Chemical Engineering, do hereby certify that:

1. I am Senior Consultant (Metallurgy) of SRK Consulting (U.S.), Inc., 1125 Seventeenth Street, Suite 600, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled “Amended NI 43-101 Technical Report, Prefeasibility Study Update, Segovia Project, Colombia” with an Effective Date of December 31, 2018 (the “Technical Report”).
3. I graduated with a degree in Chemical and Petroleum Refining Engineering from Colorado School of Mines in 2000. I am a Qualified Professional (QP) Member of the Mining and Metallurgical Society of America. I have worked as a Metallurgist for a total of 18 years since my graduation from Colorado School of Mines. My relevant experience includes consulting, process development, project management and research & development experience with base metals and precious metals. Additionally, I have been involved with the preparation of project conceptual, pre-feasibility and full-feasibility studies.
4. I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
5. I visited the Segovia property on February 6-9, 2018 and June 18-22, 2018.
6. I am responsible for mineral processing, metallurgical testing and recovery, Sections 1.4, 1.8, 5.5.6, 13, 17, 25.3 and 26.3 of the Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is QP authorship of the report titled, “NI 43-101 Technical Report, Prefeasibility Study, Segovia Project, Colombia” with an Effective Date of December 31, 2017 and a Report Date of May 10, 2018.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 8th Day of July, 2019.

"Signed"
Brian Olson, BS Chemical Engineering
Senior Consultant (Metallurgy)

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CERTIFICATE OF QUALIFIED PERSON

I, Jeff Osborn, BEng Mining, MMSAQP do hereby certify that:

1. I am a Principal Consultant (Mining Engineer) of SRK Consulting (U.S.), Inc., 1125 Seventeenth, Suite 600, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled "Amended NI 43-101 Technical Report, Prefeasibility Study Update, Segovia Project, Colombia" with an Effective Date of December 31, 2018 (the "Technical Report").
3. I graduated with a Bachelor of Science Mining Engineering degree from the Colorado School of Mines in 1986. I am a Qualified Professional (QP) Member of the Mining and Metallurgical Society of America. I have worked as a Mining Engineer for a total of 32 years since my graduation from university. My relevant experience includes responsibilities in operations, maintenance, engineering, management, and construction activities.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Segovia property on February 6-8, 2018.
6. I am responsible for infrastructure, capital and operating costs, economic analysis and general report Sections 1.9, 1.11, 1.12, 2, 3, 5.5 (except 5.5.4 and 5.5.6), 18 (except for 18.2), 19, 21, 22, 24, 25.4, 25.5, 25.7, 25.8, 26.4.1, 26.5.2, 26.7, 27, and 28 of the Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is QP authorship of the report titled, "NI 43-101 Technical Report, Prefeasibility Study, Segovia Project, Colombia" with an Effective Date of December 31, 2017 and a Report Date of May 10, 2018, and, "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 and a Report Date of September 28, 2017.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 8th Day of July, 2019.

"Signed"

Jeff Osborn, BEng Mining, MMSAQP [01458QP]
Principal Consultant (Mining Engineer)

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CERTIFICATE OF QUALIFIED PERSON

I, Benjamin Parsons, MSc, MAusIMM (CP) do hereby certify that:

1. I am a Principal Consultant (Resource Geology) of SRK Consulting (U.S.), Inc., 1125 Seventeenth Street, Suite 600, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled "Amended NI 43-101 Technical Report, Prefeasibility Study Update, Segovia Project, Colombia" with an Effective Date of December 31, 2018 (the "Technical Report").
3. I graduated with a degree in Exploration Geology from Cardiff University, UK in 1999. In addition, I have obtained a Masters degree (MSc) in Mineral Resources from Cardiff University, UK in 2000 and have worked as a geologist for a total of 16 years since my graduation from university. I am a member of the Australian Institution of Materials Mining and Metallurgy (Membership Number 222568) and I am a Chartered Professional.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Segovia property on April 11-13, 2018; January 22-25, 2018; February 6-10, 2017; November 26 - December 12, 2016; May 29 – June 4, 2016; March 15-20, 2015; and August 21-23, 2018.
6. I am responsible for property, geology and mineral resources Sections 1.1 through 1.3, 1.5, 4 (except for 4.5), 5 (except 5.5), 6 through 12, 14, 23, 25.1 and 26.1 of the Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is QP authorship of the report titled, "NI 43-101 Technical Report, Prefeasibility Study, Segovia Project, Colombia" with an Effective Date of December 31, 2017 and a Report Date of May 10, 2018, "NI 43-101 Technical Report, Mineral Resource Estimate, Segovia Project, Colombia," with a Effective Date of March 15, 2017 and a Report Date of June 5, 2017, and, "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 and a Report Date of September 28, 2017.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 8th Day of July, 2019.

__"Signed"______________________
Benjamin Parsons, MSc, MAusIMM
Principal Consultant (Resource Geology)

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CERTIFICATE OF QUALIFIED PERSON

I, Cristian A. Pereira Farias, SME-RM, do hereby certify that:

1. I am Senior Consultant (Hydrogeologist) of SRK Consulting (U.S.), Inc., 1125 Seventeenth Street, Suite 600, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled “Amended NI 43-101 Technical Report, Prefeasibility Study Update, Segovia Project, Colombia” with an Effective Date of December 31, 2018 (the “Technical Report”).
3. I graduated with a degree in Bachelors of Science in Geology from Universidad de Chile in 1999. I am a registered member of the Society for Mining, Metallurgy, and Exploration. I have worked as a hydrogeologist for a total of 18 years since my graduation from university. My relevant experience includes the developing conceptual and numerical hydrogeological models, the evaluation of groundwater resources, mine dewatering requirements, environmental impacts of mining, pit lake infilling, brine extraction, and pore pressure analyses.
4. I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
5. I have not visited the Segovia property.
6. I am responsible for hydrogeological Sections 16.5, 16.7, 26.5.3 and groundwater and dewatering portions of 1.7 of the Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is QP authorship of the report titled, “NI 43-101 Technical Report, Prefeasibility Study, Segovia Project, Colombia” with an Effective Date of December 31, 2017 and a Report Date of May 10, 2018.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 8th Day of July, 2019.

__"Signed"____________________
Cristian A. Pereira Farias, SME-RM
Senior Consultant (Hydrogeologist)

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CERTIFICATE OF QUALIFIED PERSON

I, Fernando Rodrigues, BS Mining, MBA, MMSAQP do hereby certify that:

1. I am Practice Leader and Principal Consultant (Mining Engineer) of SRK Consulting (U.S.), Inc., 1125 Seventeenth Street, Suite 600, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled "Amended NI 43-101 Technical Report, Prefeasibility Study Update, Segovia Project, Colombia" with an Effective Date of December 31, 2018 (the "Technical Report").
3. I graduated with a Bachelors of Science degree in Mining Engineering from South Dakota School of Mines and Technology in 1999. I am a QP member of the MMSA. I have worked as a Mining Engineer for a total of 18 years since my graduation from South Dakota School of Mines and Technology in 1999. My relevant experience includes mine design and implementation, short term mine design, dump design, haulage studies, blast design, ore control, grade estimation, database management.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Segovia property on November 29-30, 2016; February 6-8, 2018; September 11, 2017; July 24, 2017; May 8, 2017; November 29-30, 2016; March 13-15, 2017; October 25-27, 2017; June 11-14, 2018; November 11-21, 2018; January 7-10, 2019; February 7-8, 2019.
6. I am responsible for mining and mineral reserves Sections 1.6, 1.7 (except for groundwater and dewatering), 15, 16 (except for 16.4, 16.5, 16.7 and 16.8), 25.2, and 26.2 of the Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is "NI 43-101 Technical Report, Prefeasibility Study, Segovia Project, Colombia" with an Effective Date of December 31, 2017 and a Report Date of May 10, 2018, "NI 43-101 Technical Report, Mineral Resource Estimate, Segovia Project, Colombia," with a Effective Date of March 15, 2017 and a Report Date of June 5, 2017, and, "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 and a Report Date of September 28, 2017.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 8th Day of July, 2019.

__"Signed"________________________________

Fernando Rodrigues, BS Mining, MBA, MMSAQP [01405QP]
Practice Leader/Principal Consultant (Mining)

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CERTIFICATE OF QUALIFIED PERSON

I, Joshua D. Sames, P.E. Civil, B.Sc., do hereby certify that:

1. I am Senior Consultant at SRK Consulting (U.S.), Inc., 5250 Neil Road, Suite 300, Reno, NV, USA 89502.
2. This certificate applies to the technical report titled "Amended NI 43-101 Technical Report, Prefeasibility Study Update, Segovia Project, Colombia" with an Effective Date of December 31, 2018 (the "Technical Report").
3. I graduated with a degree in Civil Engineering from University of Newcastle Australia in 2005. I am a registered Professional Engineer in the State of Nevada (PE No. 22346). I have worked as an engineer for a total of 13 years. My relevant experience includes site investigations, conceptual and detailed design, construction supervision, management and operational assessments, mine reclamation permitting and closure design and permitting at mining properties in the western United States and South and Central America.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have not visited the Gran Colombia Gold Corp. Segovia Project property.
6. I am responsible for tailings Sections 5.5.4, 18.2, and 26.4.2 of the Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have not had prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 8th Day of July, 2019.

__"Signed"______________________
Joshua D. Sames P.E.
Senior Consultant

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CERTIFICATE OF QUALIFIED PERSON

I, Mark Allan Willow, MSc, CEM, SME-RM do hereby certify that:

1. I am Practice Leader/Principal Environmental Scientist of SRK Consulting (U.S.), Inc., 5250 Neil Road, Reno, Nevada 89502.
2. This certificate applies to the technical report titled “Amended NI 43-101 Technical Report, Prefeasibility Study Update, Segovia Project, Colombia” with an Effective Date of December 31, 2018 (the “Technical Report”).
3. I graduated with Bachelor's degree in Fisheries and Wildlife Management from the University of Missouri in 1987 and a Master's degree in Environmental Science and Engineering from the Colorado School of Mines in 1995. I have worked as Biologist/Environmental Scientist for a total of 22 years since my graduation from university. My relevant experience includes environmental due diligence/competent persons evaluations of developmental phase and operational phase mines through the world, including small gold mining projects in Panama, Senegal, Peru, Ecuador, Philippines, and Colombia; open pit and underground coal mines in Russia; several large copper and iron mines and processing facilities in Mexico and Brazil; bauxite operations in Jamaica; and a coal mine/coking operation in China. My Project Manager experience includes several site characterization and mine closure projects. I work closely with the U.S. Forest Service and U.S. Bureau of Land Management on permitting and mine closure projects to develop uniquely successful and cost effective closure alternatives for the abandoned mining operations. Finally, I draw upon this diverse background for knowledge and experience as a human health and ecological risk assessor with respect to potential environmental impacts associated with operating and closing mining properties, and have experienced in the development of Preliminary Remediation Goals and hazard/risk calculations for site remedial action plans under CERCLA activities according to current U.S. EPA risk assessment guidance.
4. I am a Certified Environmental Manager (CEM) in the State of Nevada (#1832) in accordance with Nevada Administrative Code NAC 459.970 through 459.9729. Before any person consults for a fee in matters concerning: the management of hazardous waste; the investigation of a release or potential release of a hazardous substance; the sampling of any media to determine the release of a hazardous substance; the response to a release or cleanup of a hazardous substance; or the remediation soil or water contaminated with a hazardous substance, they must be certified by the Nevada Division of Environmental Protection, Bureau of Corrective Action;
5. I am a Registered Member (No. 4104492) of the Society for Mining, Metallurgy & Exploration Inc. (SME).
6. I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
7. I visited the Segovia property on November 29-30, 2016.
8. I am responsible for environmental studies, permitting and social or community impact Sections 1.10, 4.5, 20 (except 20.1.3), 25.6, and 26.6 of the Technical Report.
9. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101
10. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is “NI 43-101 Technical Report, Prefeasibility Study, Segovia Project, Colombia” with an Effective Date of December 31, 2017 and a Report Date of May 10, 2018, “NI 43-101 Technical

Report, Mineral Resource Estimate, Segovia Project, Colombia," with a Effective Date of March 15, 2017 and a Report Date of June 5, 2017, and, "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 and a Report Date of September 28, 2017.

11. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
12. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 8th Day of July, 2019.

"Signed"

Mark Allan Willow, MSc, CEM, SME-RM [4104492]

Practice Leader/Principal Environmental Scientist

Appendix B: Detailed Production Scheduled Information and Yearly Mine Progression

Providencia	Units	01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	01/2020	02/2020
Total Ore Tonnes	(t)	8,655	8,673	8,770	8,699	8,852	8,829	8,763	8,983	9,027	9,018	8,999	9,313	9,451	9,539
Total Ore Au	(g/t)	24.65	25.04	24.59	24.60	25.20	24.96	25.15	24.72	24.55	26.20	26.93	24.71	25.66	25.70
Total Ore In Situ	(oz)	6,859	6,981	6,933	6,880	7,171	7,086	7,086	7,139	7,124	7,596	7,792	7,399	7,797	7,883
Owner Ore Tonnes	(t)	7,418	7,459	7,485	7,455	7,594	7,594	7,504	7,754	7,780	7,753	7,765	8,069	8,095	8,062
Owner Ore Au	(g/t)	24	25	24	24	25	24	25	24	24	26	27	24	25	25
Owner Au Mined	(oz)	5,718	5,906	5,775	5,741	6,021	5,944	5,927	6,008	5,907	6,459	6,643	6,257	6,558	6,524
Waste Tonnes	(t)	5,774	5,890	5,947	5,584	5,914	5,459	5,692	5,522	3,486	3,737	3,183	2,021	2,013	1,446
Owner Cut & Fill Tonnes	(t)	960	1,700	2,180	2,700	2,561	2,700	2,617	2,790	2,700	2,878	3,338	2,697	2,632	2,193
Owner Cut & Fill Au	(g/t)	54	34	26	25	36	35	35	34	34	34	30	27	27	27
Owner Cut & Fill Oz	(oz)	1,657	1,849	1,829	2,157	2,969	3,078	2,954	3,087	2,988	3,153	3,269	2,364	2,309	1,888
Owner Room & Pillar Tonnes	(t)	6,458	5,758	5,305	4,755	5,033	4,894	4,887	4,964	5,080	4,875	4,427	5,372	5,463	5,869
Owner Room & Pillar Au	(g/t)	19.56	21.91	23.14	23.44	18.86	18.22	18.92	18.30	17.87	21.09	23.71	22.54	24.20	24.57
Owner Room & Pillar Oz	(oz)	4,061	4,057	3,946	3,583	3,052	2,866	2,973	2,921	2,919	3,305	3,374	3,893	4,250	4,636
Masora Contractor	(t)	1,238	1,214	1,285	1,243	1,258	1,236	1,259	1,229	1,247	1,265	1,235	1,244	1,356	1,477
Masora Au	(g/t)	28.69	27.54	28.02	28.51	28.43	28.75	28.64	28.63	30.36	27.97	28.94	28.58	28.41	28.61
Masora Contractor oz	(oz)	1,141	1,075	1,157	1,139	1,150	1,142	1,159	1,131	1,218	1,137	1,149	1,143	1,238	1,359
Development Total	(m)	237	229	233	232	253	210	243	220	132	168	178	84	87	71
Apique Meters (apq)(4mx2.5m)	(m)	41	37	39	20	20	38	41	41	39	30	20	20	9	-
Attack Ramp Meters (atk) (3mx3m	(m)	53	29	75	-	28	-	21	-	-	13	40	11	19	51
Conrapozo Vent (cpz) (2.5mx2.5m	(m)	41	17	-	-	-	-	-	-	-	-	-	-	-	-
Development Drift Meters (dft)	(m)	87	94	97	104	85	113	112	125	89	100	49	51	51	8
Pocket Meters (ptk) 2.7m dia	(m)	-	-	-	-	-	4	10	17	3	-	-	-	9	12
Tambores (tam) (1.8mx1.8m)	(m)	-	-	-	45	53	17	59	38	1	24	68	1	-	-
Ramp Meters (rmp)	(m)	16	53	23	64	66	38	-	-	-	-	-	-	-	-

Providencia	Units	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020	12/2020	01/2021	02/2021	03/2021	04/2021
Total Ore Tonnes	(t)	10,025	10,110	10,656	9,919	10,086	10,306	10,495	10,701	10,811	10,855	10,840	10,813	10,902	10,867
Total Ore Au	(g/t)	23.82	23.10	19.74	18.07	17.69	17.65	17.57	18.31	16.93	15.42	16.33	15.14	13.75	13.12
Total Ore In Situ	(oz)	7,678	7,508	6,763	5,763	5,737	5,848	5,930	6,300	5,886	5,381	5,691	5,263	4,821	4,582
Owner Ore Tonnes	(t)	8,537	8,482	8,857	8,084	8,078	8,083	8,079	8,056	8,009	8,036	8,044	8,002	8,099	8,044
Owner Ore Au	(g/t)	23	22	18	16	15	15	14	16	14	14	15	15	13	12
Owner Au Mined	(oz)	6,307	6,005	5,133	4,063	3,915	3,839	3,759	4,029	3,603	3,688	3,998	3,817	3,375	3,161
Waste Tonnes	(t)	162	969	-	359	-	716	613	-	809	851	-	-	834	197
Owner Cut & Fill Tonnes	(t)	2,790	2,468	2,790	2,564	2,790	2,519	2,468	2,790	2,394	2,475	2,790	2,520	1,865	1,276
Owner Cut & Fill Au	(g/t)	27	27	27	27	27	27	27	30	31	31	32	33	34	41
Owner Cut & Fill Oz	(oz)	2,402	2,172	2,390	2,207	2,423	2,181	2,108	2,721	2,350	2,439	2,849	2,669	2,056	1,685
Owner Room & Pillar Tonnes	(t)	5,747	6,013	6,067	5,519	5,288	5,564	5,610	5,266	5,615	5,561	5,254	5,482	6,234	6,768
Owner Room & Pillar Au	(g/t)	21.13	19.83	14.06	10.46	8.77	9.27	9.15	7.72	6.94	6.99	6.80	6.51	6.58	6.78
Owner Room & Pillar Oz	(oz)	3,905	3,833	2,743	1,856	1,492	1,658	1,651	1,307	1,253	1,249	1,149	1,148	1,320	1,476
Masora Contractor	(t)	1,488	1,629	1,799	1,835	2,008	2,223	2,417	2,645	2,802	2,819	2,796	2,812	2,803	2,823
Masora Au	(g/t)	28.67	28.72	28.17	28.83	28.24	28.12	27.93	26.71	25.35	18.67	18.83	16.00	16.03	15.66
Masora Contractor oz	(oz)	1,372	1,504	1,630	1,701	1,823	2,009	2,170	2,271	2,283	1,692	1,693	1,446	1,445	1,421
Development Total	(m)	13	65	-	17	-	33	28	-	37	39	-	-	39	9
Apique Meters (apq)(4mx2.5m)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Attack Ramp Meters (atk) (3mx3m	(m)	-	28	-	17	-	33	28	-	37	39	-	-	39	9
Conrapozo Vent (cpz) (2.5mx2.5m	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Development Drift Meters (dft)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pocket Meters (ptk) 2.7m dia	(m)	13	10	-	-	-	-	-	-	-	-	-	-	-	-
Tambores (tam) (1.8mx1.8m)	(m)	-	26	-	-	-	-	-	-	-	-	-	-	-	-
Ramp Meters (rmp)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Providencia	Units	05/2021	06/2021	07/2021	08/2021	09/2021	10/2021	11/2021	12/2021	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	Totals
Total Ore Tonnes	(t)	10,853	10,817	10,842	10,868	10,813	10,862	10,834	10,844	10,839	9,866	9,843	8,109	-	-	**398,347**
Total Ore Au	(g/t)	11.73	8.51	8.43	8.39	8.64	8.60	8.44	8.39	8.38	8.46	7.78	7.47	-	-	**17.15**
Total Ore In Situ	(oz)	4,093	2,958	2,938	2,931	3,004	3,003	2,940	2,925	2,919	2,683	2,462	1,948	-	-	**219,681**
Owner Ore Tonnes	(t)	8,027	8,000	8,040	8,056	8,016	8,059	8,018	8,033	8,025	7,465	7,737	6,434	-	-	**316,187**
Owner Ore Au	(g/t)	10	6	6	6	7	7	7	7	7	7	7	7	-	-	**16.24**
Owner Au Mined	(oz)	2,638	1,645	1,654	1,657	1,735	1,736	1,754	1,746	1,733	1,697	1,697	1,364	-	-	**165,136**
Waste Tonnes	(t)	676	-	-	-	-	-	-	-	-	-	-	-	-	-	**67,854**
Owner Cut & Fill Tonnes	(t)	1,098	-	-	-	-	-	-	-	-	-	-	-	-	-	**70,243**
Owner Cut & Fill Au	(g/t)	32	-	-	-	-	-	-	-	-	-	-	-	-	-	**30.70**
Owner Cut & Fill Oz	(oz)	1,135.00	-	-	-	-	-	-	-	-	-	-	-	-	-	**69,338**
Owner Room & Pillar Tonnes	(t)	6,930	8,000	8,040	8,056	8,016	8,059	8,018	8,033	8,025	7,465	7,737	6,434	-	-	**245,941**
Owner Room & Pillar Au	(g/t)	6.75	6.40	6	6	7	7	7	7	7	7	7	7	-	-	**12.11**
Owner Room & Pillar Oz	(oz)	1,503	1,645	1,654	1,657	1,735	1,736	1,754	1,746	1,733	1,697	1,697	1,364	-	-	**95,797**
Masora Contractor	(t)	2,826	2,817	2,802	2,812	2,797	2,802	2,816	2,811	2,814	2,401	2,106	1,675	-	-	**82,164**
Masora Au	(g/t)	16.01	14.50	14	14	14	14	13	13	13	13	11	11	-	-	**20.65**
Masora Contractor oz	(oz)	1,454	1,313	1,285	1,274	1,268	1,267	1,185	1,179	1,186	986	766	584	-	-	**54,545**
Development Total	(m)	31	-	-	-	-	-	-	-	-	-	-	-	-	-	**2,888**
Apique Meters (apq)(4mx2.5m)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**394**
Attack Ramp Meters (atk) (3mx3m	(m)	31	-	-	-	-	-	-	-	-	-	-	-	-	-	**604**
Conrapozo Vent (cpz) (2.5mx2.5m	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**57**
Development Drift Meters (dft)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1,164**
Pocket Meters (ptk) 2.7m dia	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**77**
Tambores (tam) (1.8mx1.8m)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**332**
Ramp Meters (rmp)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**207**

El Silencio	Units	01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020	12/2020	01/2021	02/2021	03/2021	04/2021
Total Ore Tonnes	(t)	15,657	15,822	15,788	16,033	15,956	15,912	15,920	16,020	15,957	15,952	15,986	16,432	17,095	18,107	19,123	20,130	20,094	20,065	20,035	20,058	19,749	20,066	19,224	19,145	19,017	19,041	19,063	19,047
Total Ore Au	(g/t)	15.54	15.10	15.04	14.75	14.72	14.84	14.96	15.00	15.04	15.50	15.35	13.54	13.65	12.74	12.37	12.14	11.89	11.80	11.75	11.73	11.37	11.34	11.24	10.66	10.70	10.59	10.77	10.65
Total Au Oz Mined	(oz)	7,823	7,681	7,634	7,601	7,551	7,592	7,659	7,724	7,718	7,949	7,887	7,155	7,503	7,414	7,607	7,858	7,679	7,612	7,568	7,564	7,219	7,319	6,946	6,563	6,544	6,485	6,598	6,520
Waste Tonnes	(t)	5,108	5,528	6,126	6,197	4,932	4,949	4,566	4,587	2,829	3,551	2,645	1,326	1,057	1,558	1,273	1,228	1,459	1,222	1,684	1,796	2,298	2,800	2,232	2,284	2,636	2,322	2,427	2,262
Development Meters Total	(m)	169	182	199	196	186	188	158	155	132	134	120	64	79	97	72	69	91	70	105	115	145	173	151	171	208	187	198	187
Access Meters	(m)	-	20	-	29	39	-	-	-	39	33	2	-	39	30	-	-	30	4	-	-	26	3	-	27	30	32	-	4
Camara Meters	(m)	24	14	12	53	1	21	3	7	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CPZ Meters	(m)	8	-	40	54	77	34	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ENS Meters	(m)	-	-	-	-	1	49	51	51	49	51	49	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pocket Meters	(m)	-	-	-	-	6	10	10	4	12	12	11	-	-	10	11	10	1	8	13	13	5	-	12	22	26	13	5	-
Ramp Meters	(m)	101	116	122	59	61	59	61	61	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sills Drift Meters	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	41	39	78	79	81	121	115	163	153
Apique Meters	(m)	36	32	26	-	-	13	30	31	30	30	58	33	40	57	61	59	61	59	61	61	75	91	60	41	30	28	30	30
Contractor Ore Tonnes	(t)	8,099	8,081	7,997	8,090	8,097	8,066	8,082	8,107	8,092	8,097	8,039	8,134	8,056	8,067	8,054	8,060	8,060	8,058	8,025	8,036	8,036	8,021	8,009	8,026	8,021	8,011	8,043	8,006
Contractor Ore Au	(g/t)	25.81	25.15	25.14	23.78	23.34	23.63	23.59	23.93	23.96	23.89	23.85	19.90	19.14	17.36	17.09	16.76	16.26	15.97	15.99	15.96	14.74	14.62	13.55	12.11	12.70	12.60	12.81	12.75
Owner Ore Tonnes	(t)	7,558	7,741	7,792	7,943	7,859	7,847	7,838	7,913	7,865	7,855	7,947	8,298	9,039	10,040	11,069	12,070	12,034	12,007	12,010	12,022	11,713	12,045	11,215	11,119	10,997	11,030	11,020	11,041
Owner Ore Au	(g/t)	4.54	4.60	4.67	5.55	5.84	5.81	6.06	5.84	5.87	6.85	6.75	7.31	8.76	9.02	8.94	9.06	8.96	9	8.92	8.90	9.05	9.16	9.59	9.62	9.25	9.13	9.27	9.12

El Silencio	Units	05/2021	06/2021	07/2021	08/2021	09/2021	10/2021	11/2021	12/2021	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	07/2022	08/2022	09/2022	10/2022	11/2022	12/2022	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023
Total Ore Tonnes	(t)	19,040	19,047	19,032	19,034	19,048	18,999	19,072	18,975	26,754	26,845	28,123	27,140	27,204	26,277	26,731	26,659	26,699	26,764	26,732	26,699	26,788	26,730	26,756	26,680	26,843	26,847	26,789	26,875
Total Ore Au	(g/t)	10.87	10.83	10.71	10.76	10.98	10.66	10.50	10.22	8.64	8.79	8.63	7.79	7.31	6.09	6.22	6.09	6.53	6.22	5.83	5.82	5.83	5.86	5.76	5.38	5.14	5.00	5.03	**4.95**
Total Au Oz Mined	(oz)	6,652	6,630	6,552	6,583	6,722	6,509	6,439	6,237	7,431	7,583	7,804	6,801	6,393	5,148	5,346	5,217	5,608	5,349	5,010	4,992	5,017	5,036	4,955	4,619	4,432	4,316	4,334	4,275
Waste Tonnes	(t)	1,327	944	975	538	478	494	466	480	480	434	480	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Development Meters Total	(m)	109	74	76	44	39	41	35	36	36	32	36	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Access Meters	(m)	41	2	-	-	-	38	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Camara Meters	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CPZ Meters	(m)	-	33	36	3	-	-	31	36	36	32	36	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ENS Meters	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pocket Meters	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ramp Meters	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sills Drift Meters	(m)	67	39	41	41	39	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Apique Meters	(m)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contractor Ore Tonnes	(t)	8,061	8,029	8,021	8,028	8,033	8,033	8,037	8,041	8,004	7,936	7,986	5,766	3,064	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contractor Ore Au	(g/t)	13.22	13.08	13.00	12.90	12.61	13.03	12.37	12.88	12.18	13.22	13.24	11.97	12.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Owner Ore Tonnes	(t)	10,979	11,018	11,011	11,006	11,015	10,966	11,035	10,934	18,750	18,908	20,138	21,374	24,140	26,277	26,731	26,659	26,699	26,764	26,732	26,699	26,788	26,730	26,756	26,680	26,843	26,847	26,789	26,875
Owner Ore Au	(g/t)	9.14	9.19	9.04	9.20	9.79	8.91	9.14	8.27	7.13	6.92	6.80	6.67	6.69	6.09	6.22	6.09	6.53	6.22	5.83	5.82	5.83	5.86	5.76	5.38	5.14	5.00	5.03	4.95

El Silencio	Units	09/2023	10/2023	11/2023	12/2023	Totals
Total Ore Tonnes	(t)	27,791	25,098	14,740	10,703	**1,268,008**
Total Ore Au	(g/t)	4.85	4.79	4.41	4.16	**9.34**
Total Au Oz Mined	(oz)	4,333	3,868	2,090	1,431	**380,685**
Waste Tonnes	(t)	-	-	-	-	**90,164**
Development Meters Total	(m)	-	-	-	-	**4,573**
Access Meters	(m)	-	-	-	-	**471**
Camara Meters	(m)	-	-	-	-	**143**
CPZ Meters	(m)	-	-	-	-	**472**
ENS Meters	(m)	-	-	-	-	**332**
Pocket Meters	(m)	-	-	-	-	**214**
Ramp Meters	(m)	-	-	-	-	**641**
Sills Drift Meters	(m)	-	-	-	-	**1,131**
Apique Meters	(m)	-	-	-	-	**1,164**
Contractor Ore Tonnes	(t)	-	-	-	-	**322,609**
Contractor Ore Au	(g/t)	-	-	-	-	**17.01**
Owner Ore Tonnes	(t)	27,791	25,098	14,740	10,703	**945,402**
Owner Ore Au	(g/t)	4.85	4.79	4.41	4.16	**6.72**

Sandra K	Units	01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020	12/2020	01/2021	02/2021	03/2021	04/2021
Total Ore Tonnes	(t)	3,725	4,360	4,340	4,133	4,415	4,544	4,570	4,560	4,541	4,660	4,559	4,593	5,044	4,928	5,052	4,957	4,936	4,950	4,977	4,951	4,907	4,963	5,002	4,961	4,968	4,951	4,966	4,942
Total Ore Au	(g/t)	6.72	6.79	6.84	7.22	7.43	7.09	7.56	7.81	7.46	8.23	8.48	8.82	8.49	9.51	9.30	9.90	10.06	11.11	11.19	11.54	13.03	11.37	11.05	11.48	12.32	11.07	10.61	11.61
Total Au Oz Mined	(oz)	805	951	954	959	1,055	1,035	1,111	1,145	1,090	1,233	1,243	1,303	1,377	1,507	1,511	1,577	1,596	1,769	1,790	1,837	2,056	1,814	1,776	1,832	1,968	1,762	1,694	1,844
Waste Tonnes	(t)	1,592	2,169	3,208	3,299	2,577	1,924	2,210	2,141	2,352	2,196	2,041	2,225	1,703	1,415	1,437	1,418	1,372	2,736	2,207	2,247	2,029	826	687	800	411	-	-	-
Development Meters Total	(m)	84.17	105.96	142.30	148.35	130.58	122.95	137.12	137.37	159.95	147.29	137.16	146	128.27	110.51	112.70	110.14	107.09	209.06	178.41	181.15	162.99	63.18	53.41	61.24	28.10	-	-	-
Apique Meters (apq) - Various	(m)	45.74	41.31	45.74	44.26	45.74	44.26	80.47	75.68	44.26	47.21	19.67	20.33	6.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Development Drift Meters (dft)	(m)	38.43	36.72	40.66	28.49	55.36	78.69	51.58	51.38	90.08	80.16	78.69	69.51	93.36	76.07	81.31	78.69	81.31	136.51	162.62	162.62	144.16	41.70	39.34	40.66	2.44	-	-	-
Pocket Meters (pkt)	(m)	-	-	-	-	-	-	5.07	10.31	7.59	6.86	7.84	16.29	7.34	9.85	8.10	2.80	-	-	-	-	-	-	-	-	-	-	-	-
Vent Raise Meters (vnt) (3.5mx3.5m)	(m)	-	27.93	55.90	54.10	29.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tambores Meters (tam)(1.8mx1.8m)	(m)	-	-	-	21.49	-	-	-	-	18.02	13.06	30.96	39.88	21.31	24.59	23.29	28.65	25.78	72.55	15.79	18.53	18.83	21.48	14.06	20.58	25.66	-	-	-

Sandra K	Units	05/2021	06/2021	07/2021	08/2021	09/2021	10/2021	11/2021	12/2021	Totals
Total Ore Tonnes	(t)	4,982	4,918	4,942	4,937	4,969	4,805	4,709	4,123	**170,840**
Total Ore Au	(g/t)	10.73	10.49	11.91	12.62	11.83	9.38	9.21	9.91	**9.82**
Total Au Oz Mined	(oz)	1,718	1,659	1,892	2,004	1,891	1,449	1,394	1,313	**53,914**
Waste Tonnes	(t)	-	-	-	-	-	-	-	-	**47,222**
Development Meters Total	(m)	-	-	-	-	-	-	-	-	**3,105**
Apique Meters (apq) - Various	(m)	-	-	-	-	-	-	-	-	**561**
Development Drift Meters (dft)	(m)	-	-	-	-	-	-	-	-	**1,841**
Pocket Meters (pkt)	(m)	-	-	-	-	-	-	-	-	**82**
Vent Raise Meters (vnt) (3.5mx3.5m)	(m)	-	-	-	-	-	-	-	-	**167**
Tambores Meters (tam)(1.8mx1.8m)	(m)	-	-	-	-	-	-	-	-	**455**

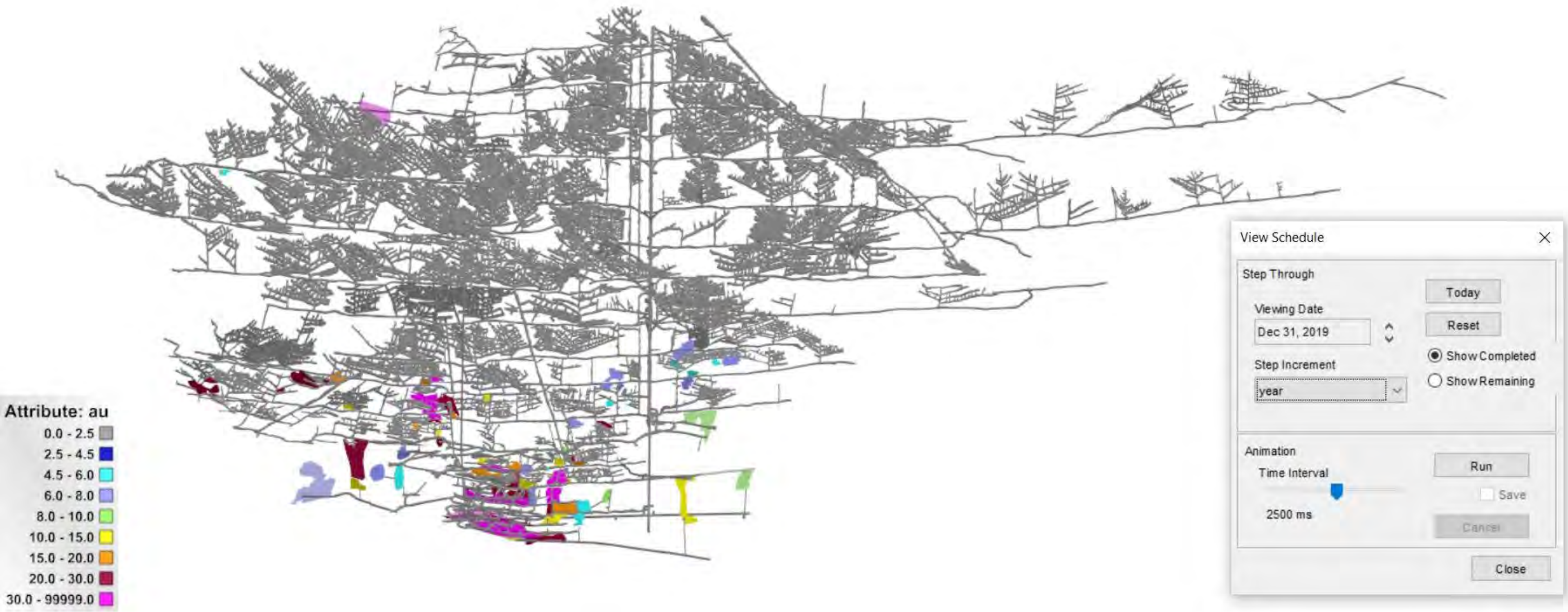
Carla	Units	01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020	12/2020	01/2021	02/2021	03/2021	04/2021
Total Ore Tonnes	(t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Ore Au	(g/t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Au Oz Mined	(oz)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waste Tonnes	(t)	-	-	-	-	-	-	-	-	-	-	-	-	888	1,088	1,088	1,053	1,298	1,527	1,149	1,088	1,018	1,092	1,527	1,379	1,371	316	448	656
Development Meters	(m)	-	-	-	-	-	-	-	-	-	-	-	-	24.90	30.49	30.49	29.51	47.95	68.85	35.60	30.49	28.53	30.82	68.85	53.41	70.69	22.62	35.02	52.51
Apique (6mx2.5m)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	24.90	30.49	30.49	29.51	30.49	29.51	30.49	30.49	28.53	30.49	29.51	30.49	21.16	-	-	-
Development Drift Meters (2.2mx2.3m)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.46	39.34	5.10	-	-	0.32	39.34	15.09	39.14	-	21.45	40.12
Pocket Meters (2.7m dia)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.83	10.38	22.62	13.57	12.39
Vent Raise Meters (2.5mx2.5m)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tambores Meters (2mx2m)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Carla	Units	05/2021	06/2021	07/2021	08/2021	09/2021	10/2021	11/2021	12/2021	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	07/2022	08/2022	09/2022	10/2022	11/2022	12/2022	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023
Total Ore Tonnes	(t)	-	-	-	-	-	-	808	1,085	1,919	3,767	5,265	5,250	5,338	5,250	5,425	5,425	5,459	5,425	5,250	5,446	5,443	5,411	5,243	5,250	5,425	5,351	4,777	3,991
Total Ore Au	(g/t)	-	-	-	-	-	-	9.21	9.21	9.64	13.59	12.90	12.81	12.89	12.92	12.92	12.92	12.47	12.72	12.72	12.66	8.52	6.90	5.97	5.93	5.93	5.78	5.90	6
Total Au Oz Mined	(oz)	-	-	-	-	-	-	239	321	595	1,646	2,183	2,162	2,211	2,180	2,253	2,253	2,189	2,219	2,148	2,216	1,491	1,200	1,006	1,002	1,035	994	906	770
Waste Tonnes	(t)	979	947	979	979	1,762	1,533	1,192	489	474	489	72	-	657	474	489	818	488	702	995	741	38	268	418	474	383	105	67	125
Development Meters	(m)	81.31	78.69	81.31	81.31	118.96	102.50	81.90	40.66	39.34	40.66	6.01	-	58.44	39.34	40.66	75.16	41.54	58.35	84.88	70.06	4.04	28.14	34.73	39.34	39.22	11.04	6.99	13.09
Apique (6mx2.5m)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Development Drift Meters (2.2mx2.3m)	(m)	81.31	78.69	81.31	81.31	50.69	40.66	39.34	40.66	39.34	40.66	6.01	-	39.89	39.34	40.66	40.66	36.72	58.35	74.25	19.43	-	-	34.73	39.34	3.93	-	-	-
Pocket Meters (2.7m dia)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent Raise Meters (2.5mx2.5m)	(m)	-	-	-	-	68.27	61.85	42.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tambores Meters (2mx2m)	(m)	-	-	-	-	-	-	-	-	-	-	-	-	19	-	-	34.50	4.82	-	10.64	50.62	4.04	28.14	0.00	0.00	35.29	11.04	6.99	13.09

Carla	Units	09/2023	Totals
Total Ore Tonnes	(t)	2,004	**186,853**
Total Ore Au	(g/t)	6.63	**8.30**
Total Au Oz Mined	(oz)	427	**49,844**
Waste Tonnes	(t)	-	**298,277**
Development Meters	(m)	-	**23,905**
Apique (6mx2.5m)	(m)	-	**94,868**
Development Drift Meters (2.2mx2.3m)	(m)	-	**-**
Pocket Meters (2.7m dia)	(m)	-	**25,939**
Vent Raise Meters (2.5mx2.5m)	(m)	-	**91,986**
Tambores Meters (2mx2m)	(m)	-	**-**

Providencia

End of 2019



Providencia

End of 2020

Providencia

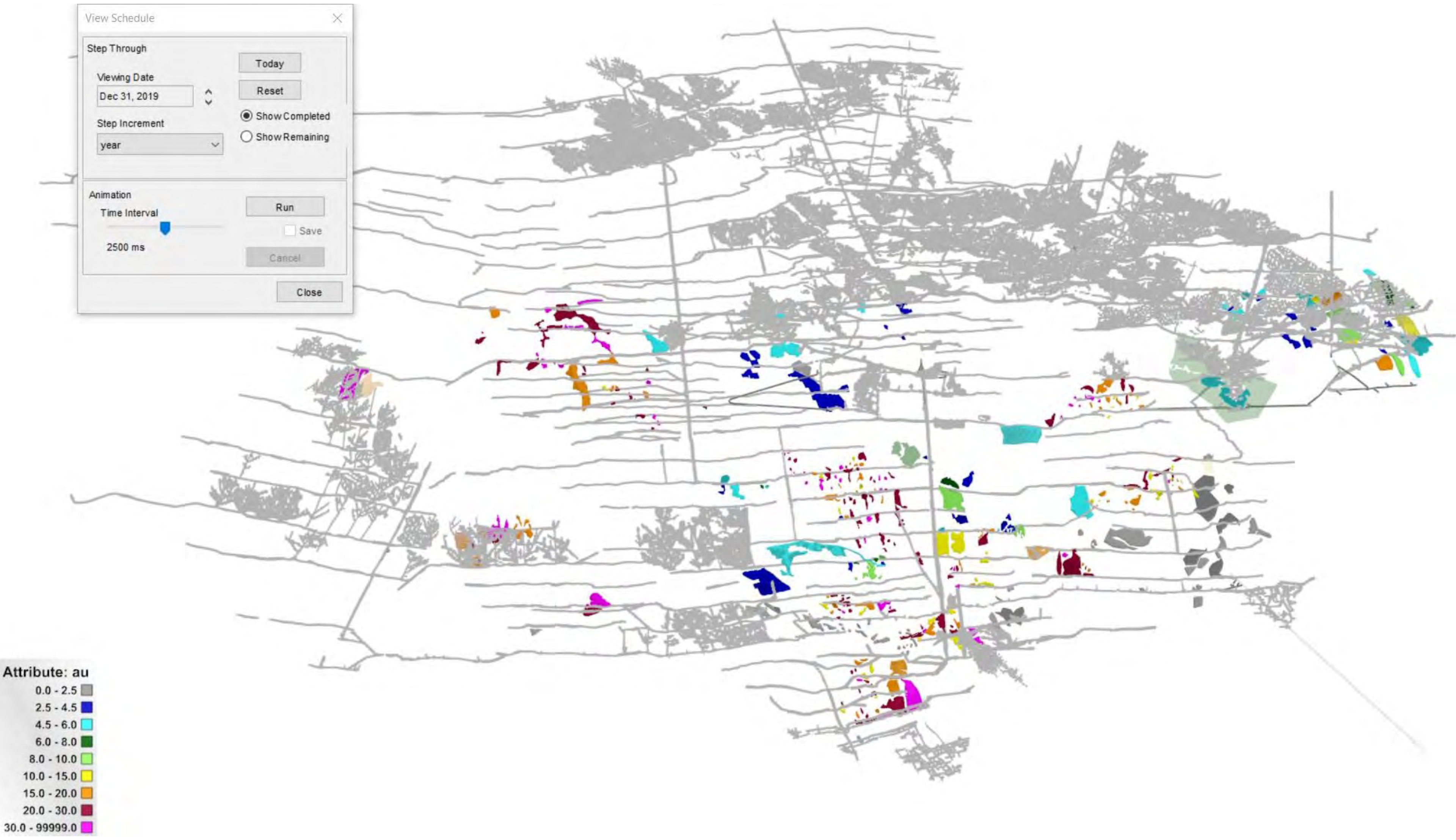
End of 2021

Providencia

End of 2022

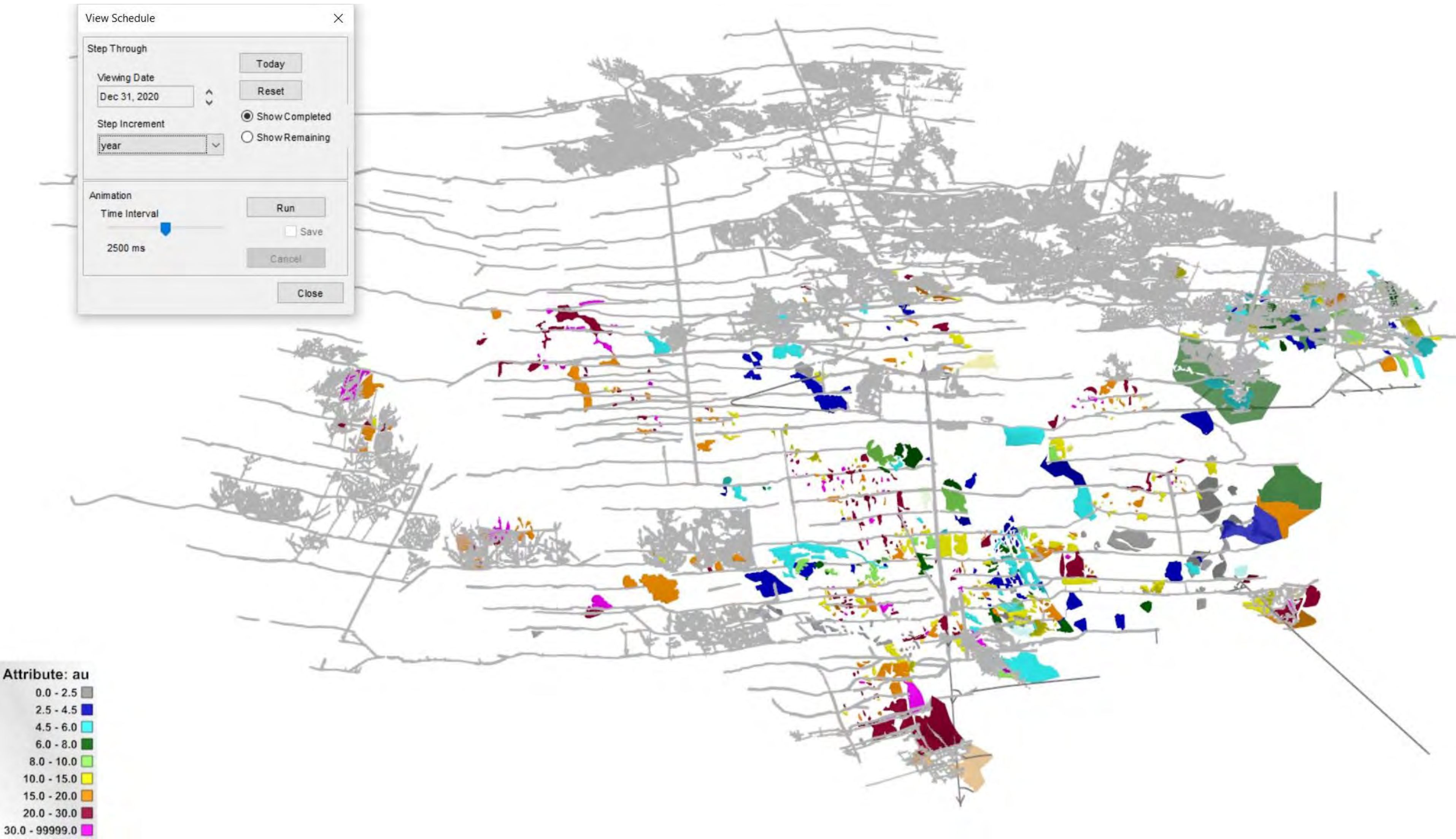
El Silencio

End of 2019



El Silencio

End of 2020



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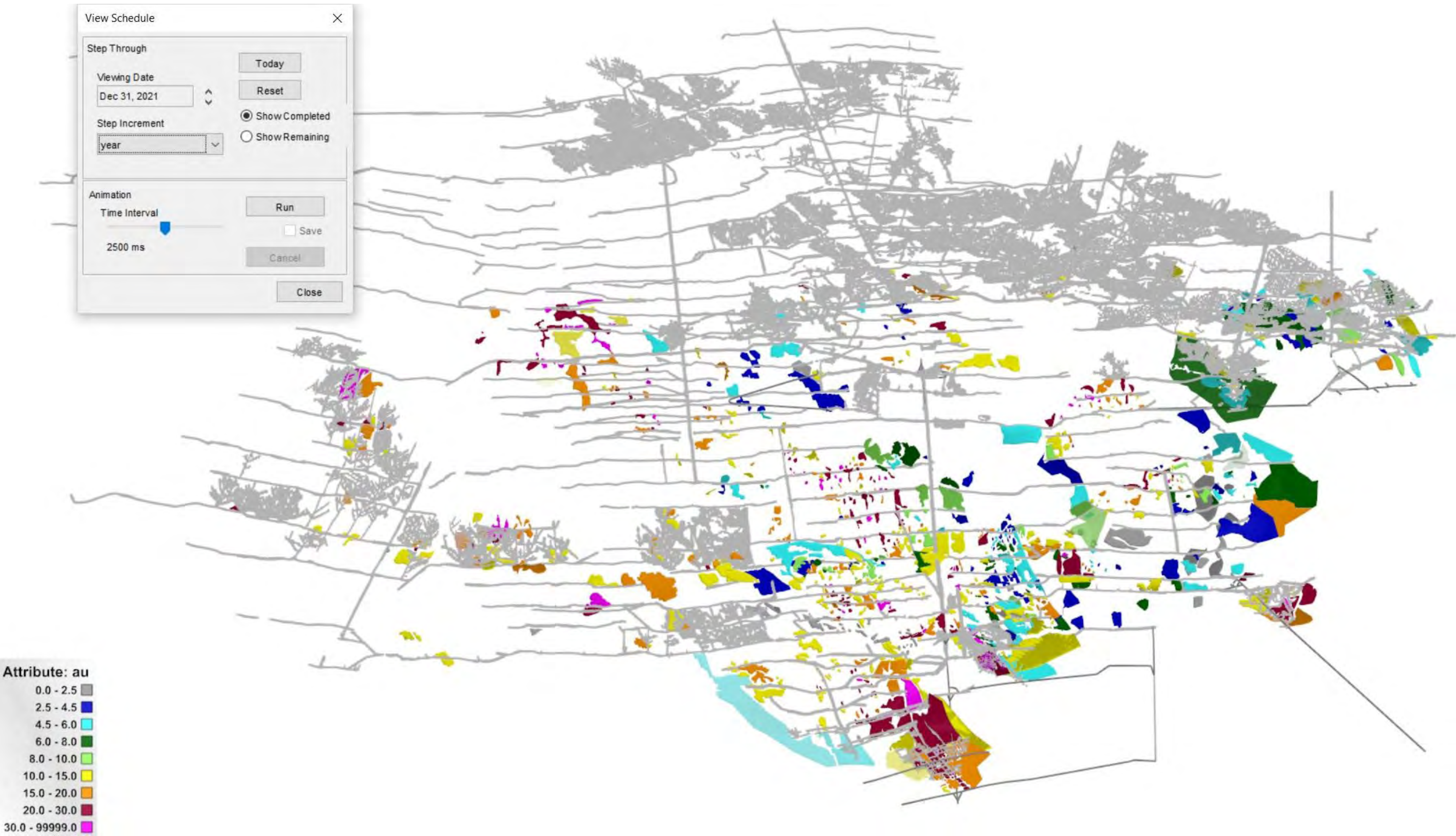

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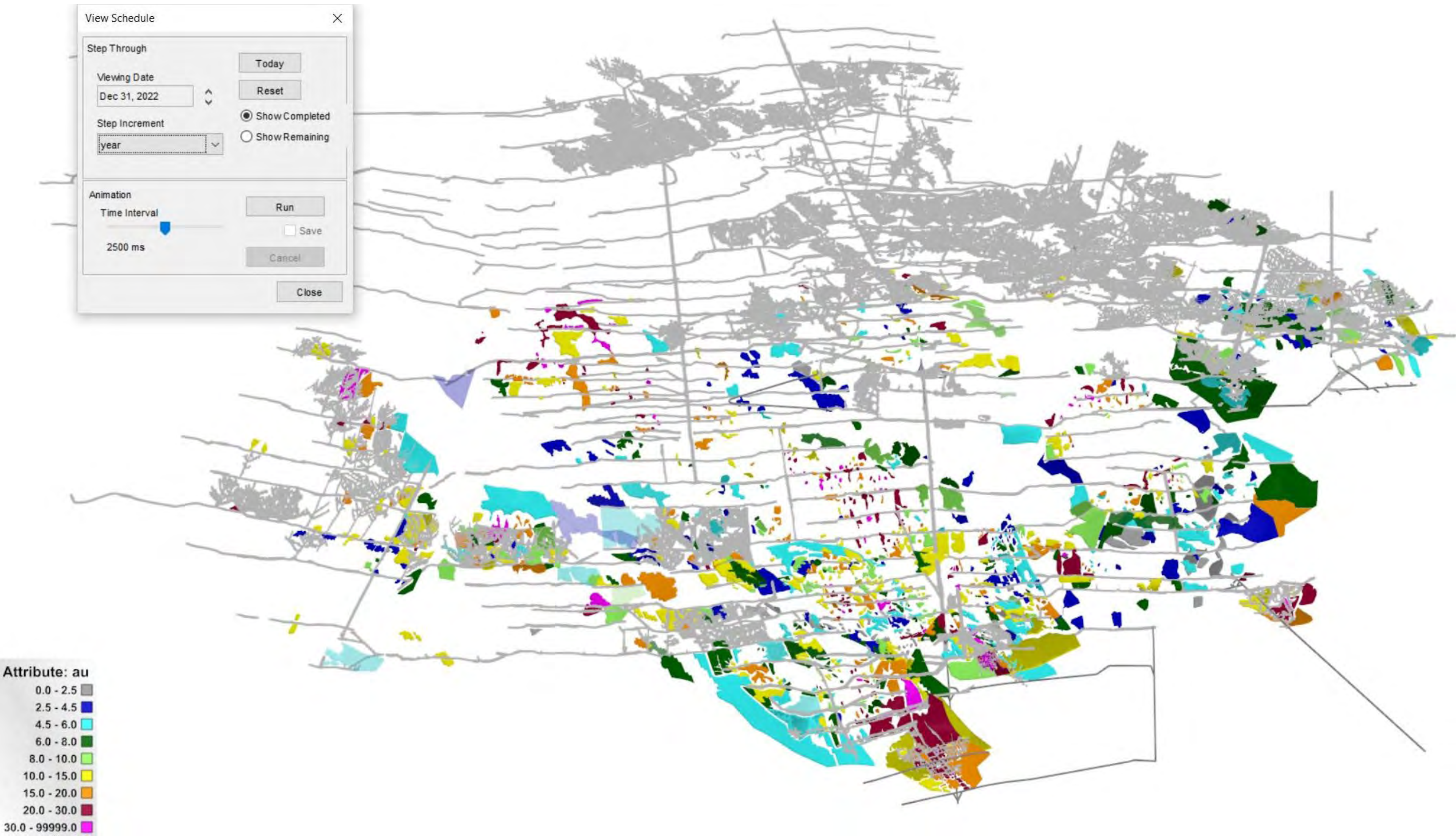

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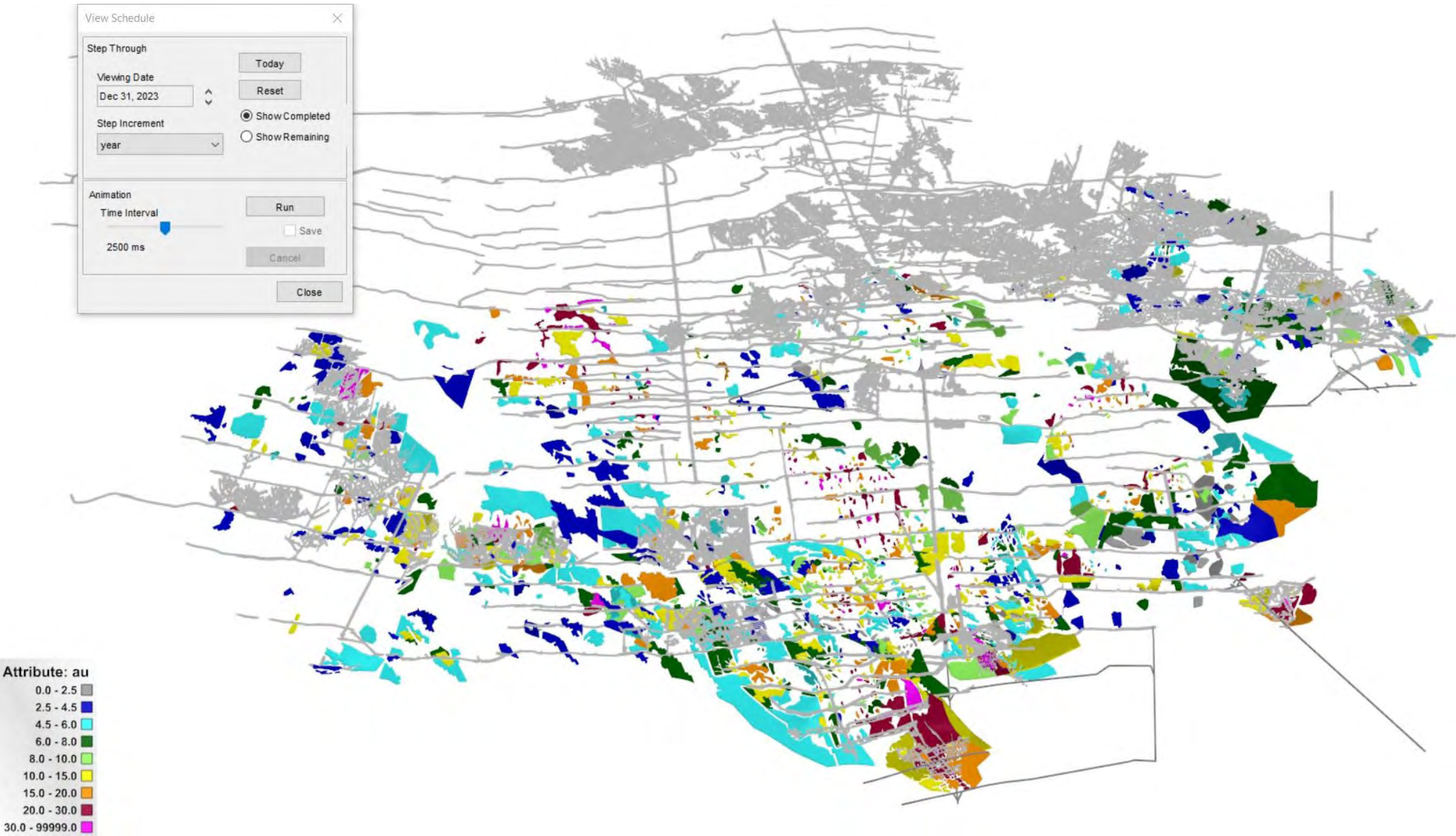
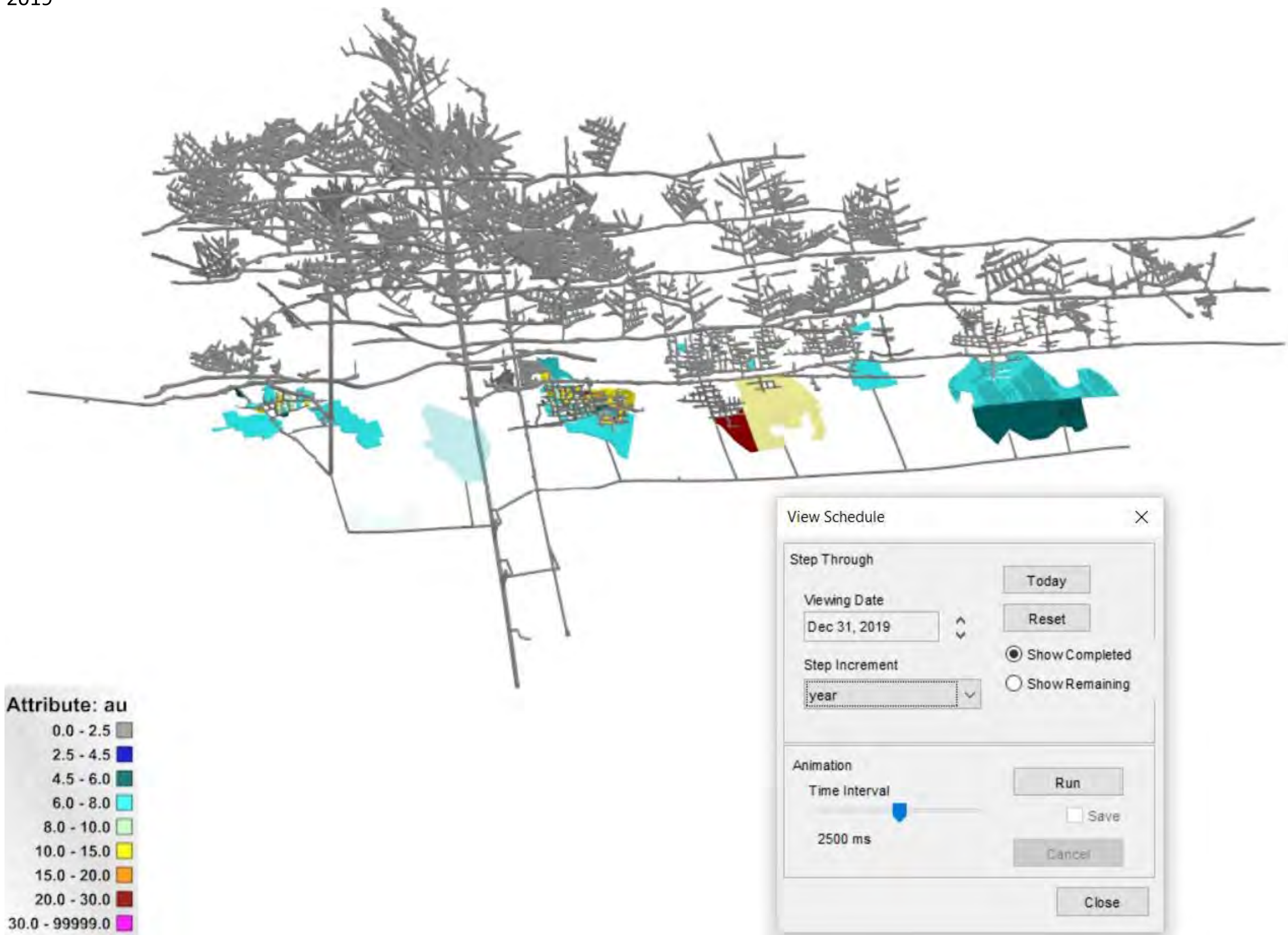


Sandra K

End of 2019



Sandra K

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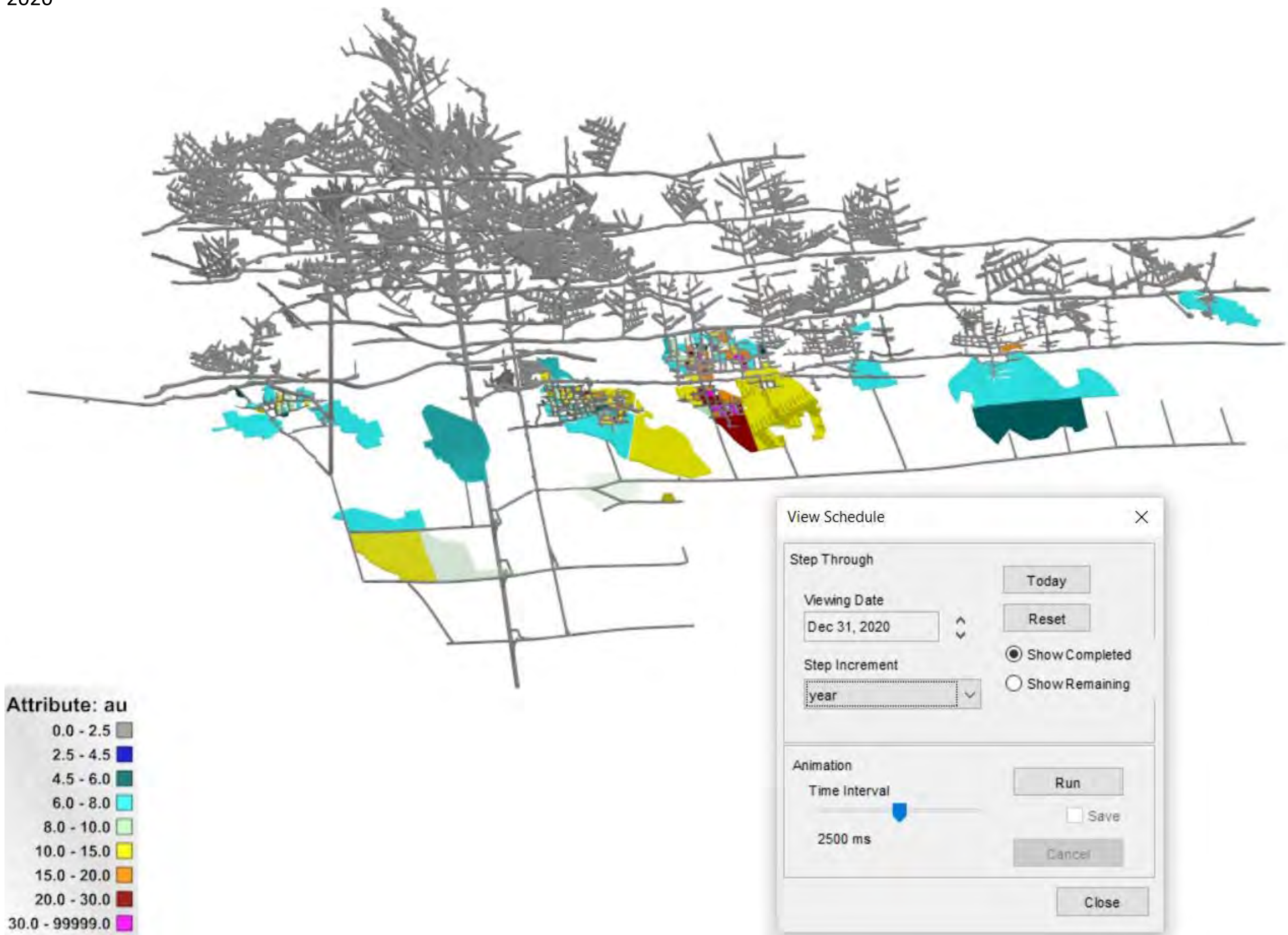

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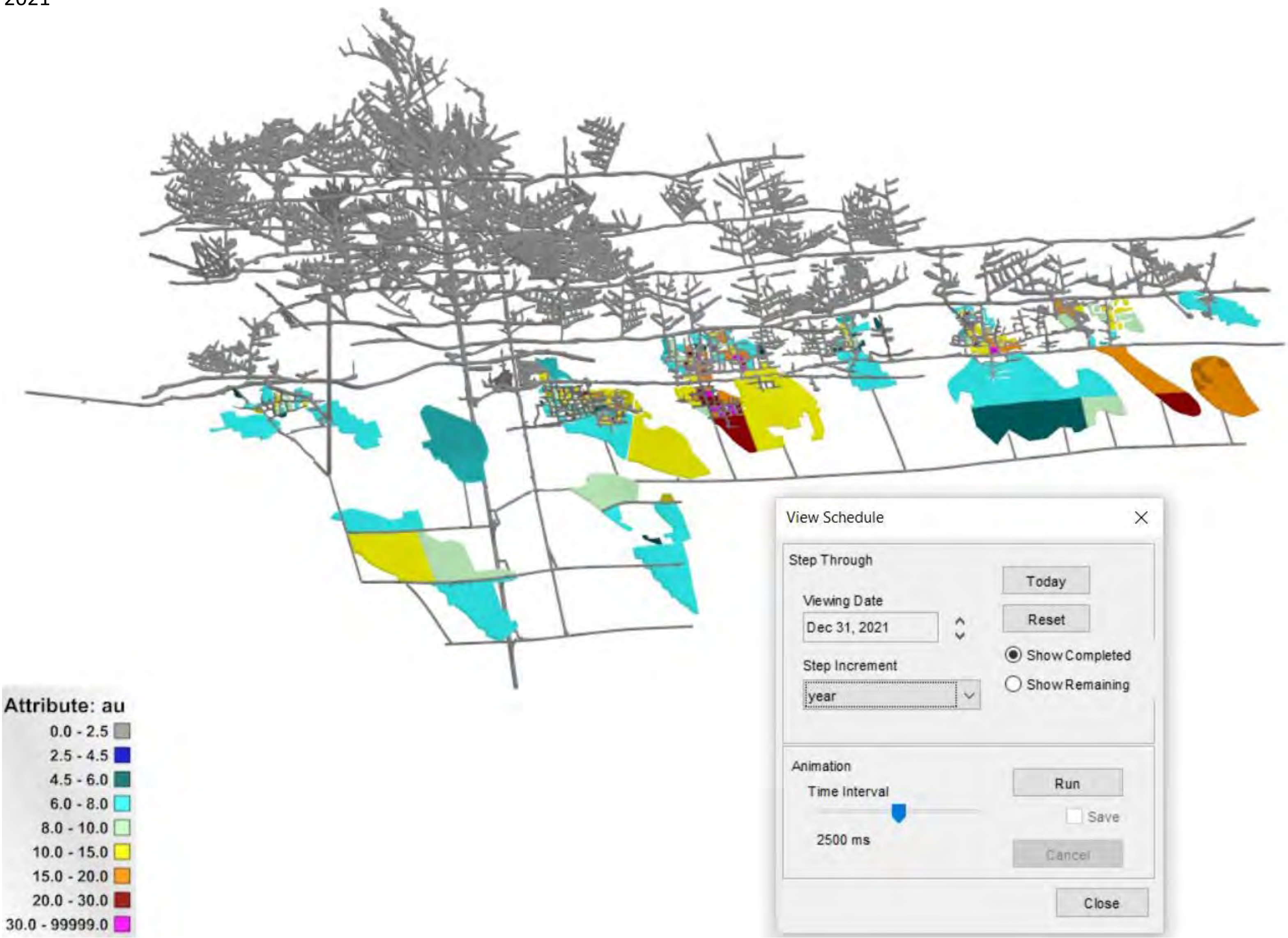

Carla

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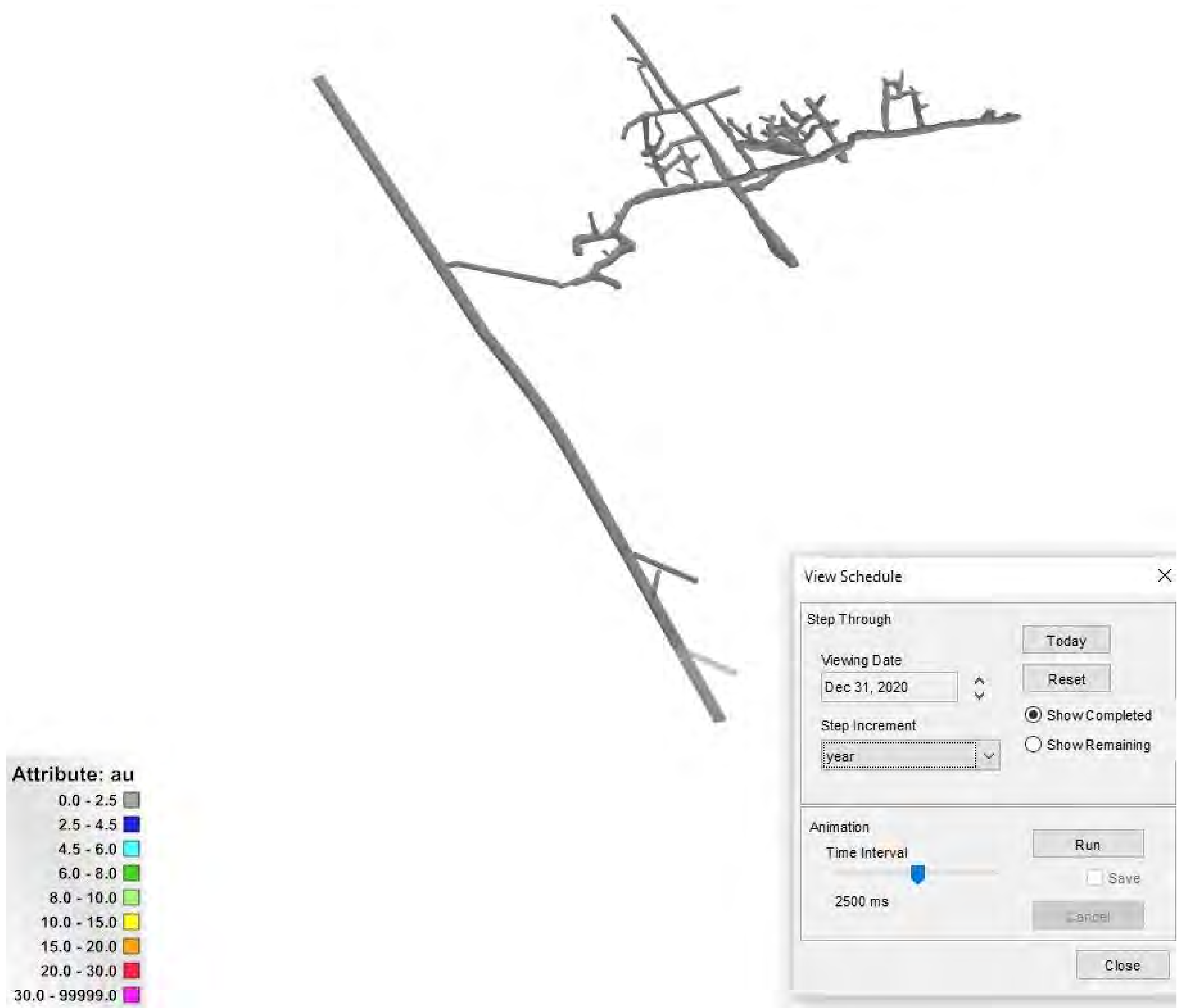

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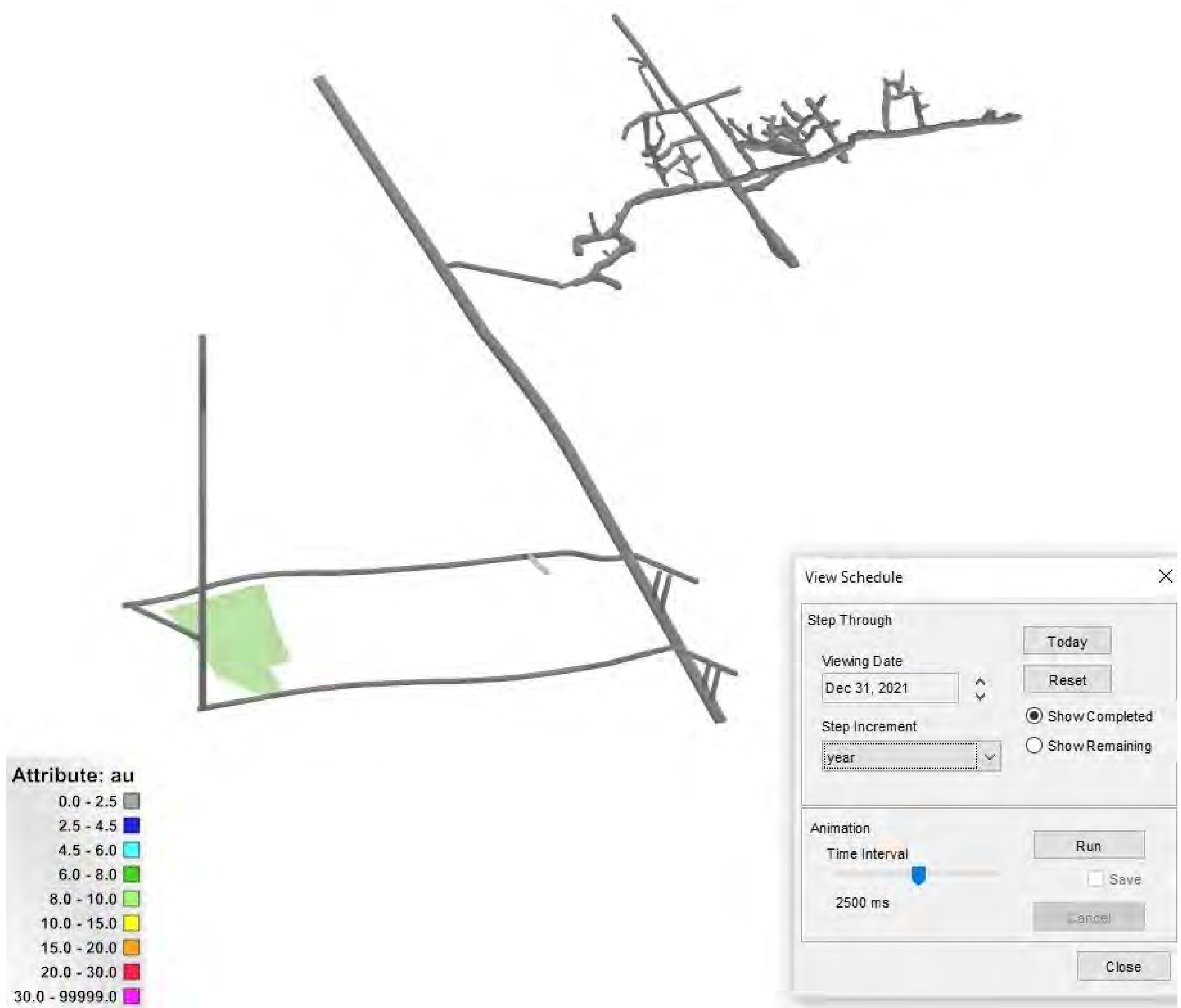

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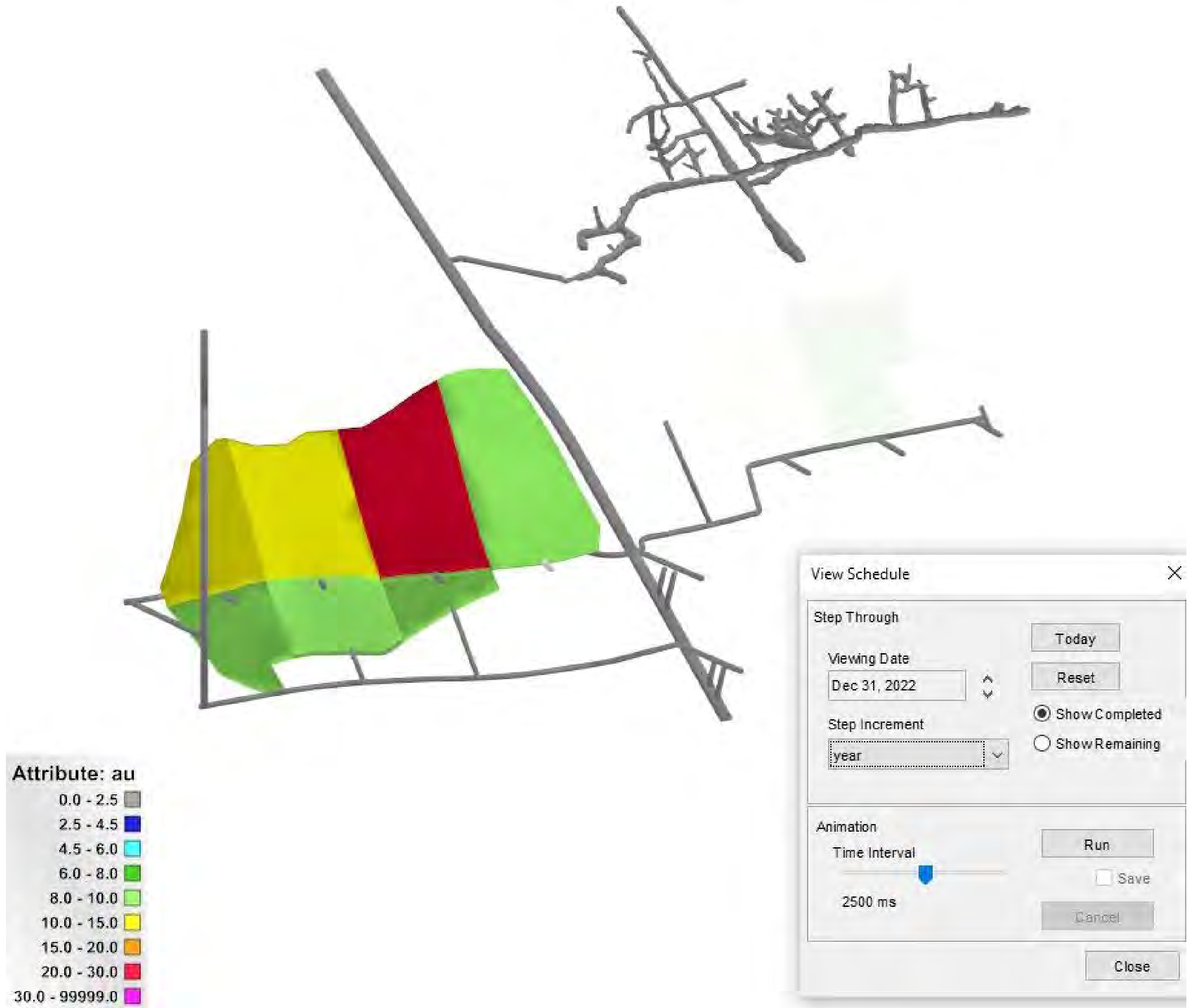

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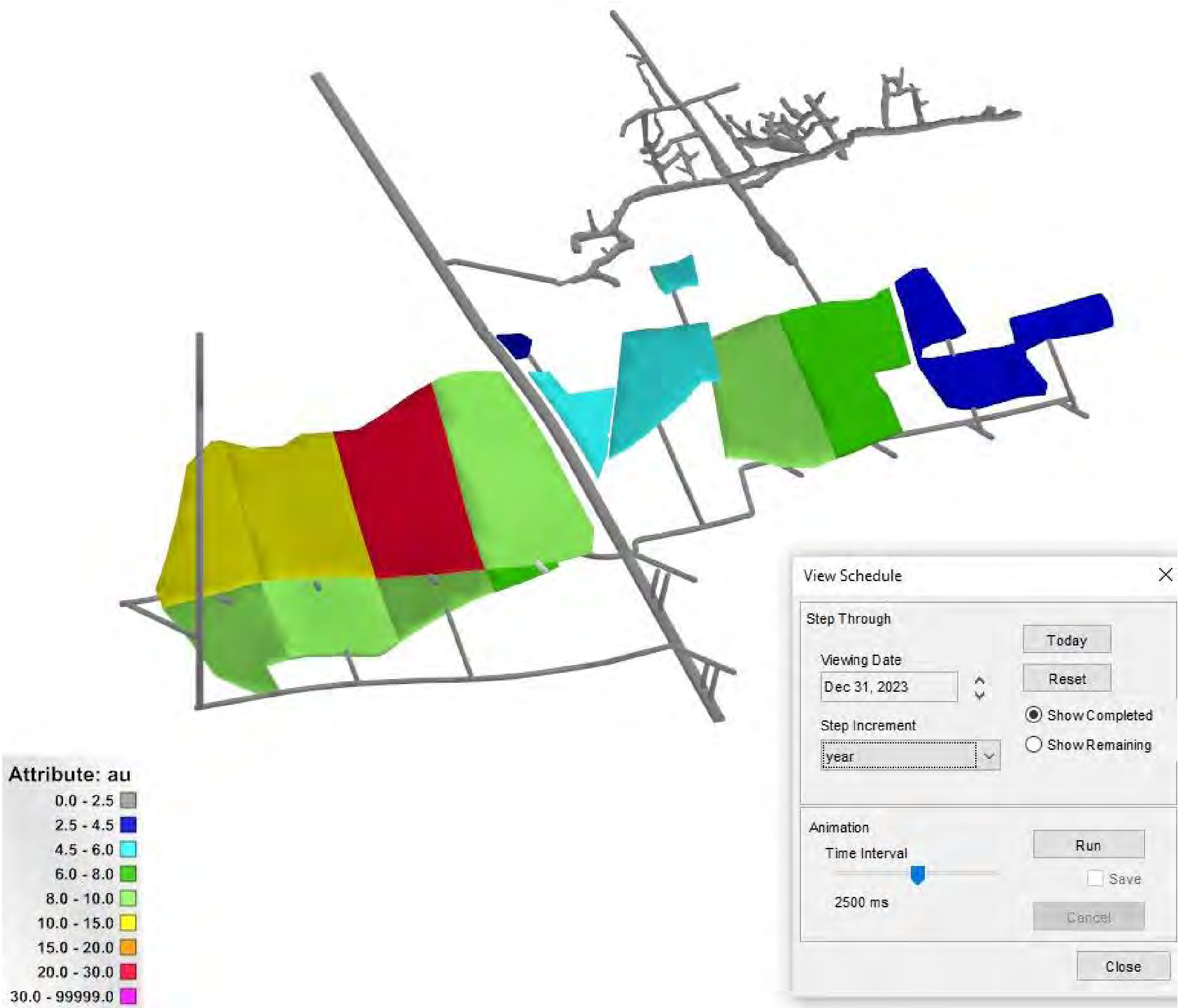

Appendix C: Annual TEM Detail

BUSINESS UNIT	Segovia Gold								
OPERATION	Q1 2019 Costs & Prices								
Period		units /	Total	2019	2020	2021	2022	2023	2024
Project Timeline		sensit.	or Avg.	1	2	3	4	5	6
Discount Factors	EOP @ 5%		(Start January, 2019)	1.0000	0.9524	0.9070	0.8638	0.8227	0.7835
Market Prices									
Gold (US$/oz)	1.00	$/oz	$1,275	$1,275	$1,275	$1,275	$1,275	$1,275	$1,275
Silver (US$/oz)	1.00	$/oz	$18.00	$18.00	$18.00	$18.00	$18.00	$18.00	$18.00
Physicals Summary									
Total Ore Mined		kt	1,941	351	415	419	421	336	-
Total Waste Mined		kt	149	86	41	14	6	2	-
Total Material Mined		kt	2,090	437	456	432	427	337	-
Total Ore Tons Processed		kt	1,941	351	415	419	421	336	-
Processed Ore Gold Grade		g/t	11.02	16.92	14.06	10.75	7.91	5.33	-
Processed Ore Silver Grade		g/t	-	-	-	-	-	-	-
Contained Gold, Processed		koz	688	191	188	145	107	58	-
Contained Silver, Processed		koz	-	-	-	-	-	-	-
Average Gold Recovery, Doré		% recovery	90.5%	90.5%	90.5%	90.5%	90.5%	90.5%	-
Average Silver Recovery, Doré		% recovery	--	-	-	-	-	-	-
Recovered Gold, Doré		koz	623	173	170	131	97	52	-
Recovered Silver, Doré		koz	-	-	-	-	-	-	-
Doré		koz	623	173	170	131	97	52	-
Cash Flow									
Gold Revenue	100%	$000s	793,794	220,286	216,661	167,046	123,409	66,392	-
Silver Revenue	0%	$000s	-	-	-	-	-	-	-
Gross Revenue		**$000s**	793,794	220,286	216,661	167,046	123,409	66,392	-
Gold Revenue		$000s	793,794	220,286	216,661	167,046	123,409	66,392	-
Gross Revenue After By-Product Credits		**$000s**	793,794	220,286	216,661	167,046	123,409	66,392	-
Mining Cost		$000s	(299,661)	(80,891)	(73,164)	(62,764)	(47,894)	(34,948)	-
Process Cost		$000s	(49,878)	(9,122)	(10,509)	(10,178)	(10,653)	(9,417)	-
Site G&A Cost		$000s	(51,483)	(11,300)	(10,762)	(10,549)	(9,639)	(9,234)	-
Smelting & Refining Charges		$000s	(3,969)	(1,101)	(1,083)	(835)	(617)	(332)	-
Impurities Penalties		$000s	-	-	-	-	-	-	-
Freight		$000s	-	-	-	-	-	-	-
By-Product Credits		$000s	-	-	-	-	-	-	-
Direct Cash Costs		**$000s**	(404,992)	(102,415)	(95,517)	(84,326)	(68,803)	(53,931)	-
Royalties		$000s	(27,942)	(7,754)	(7,626)	(5,880)	(4,344)	(2,337)	-
Total Operating Expense		$000s	(432,933)	(110,169)	(103,144)	(90,206)	(73,147)	(56,268)	-
Operating Margin		**$000s**	360,861	110,116	113,517	76,840	50,262	10,124	-
Earnings & Cash Flow									
Earnings Before Taxes & Depreciation		$000s	360,861	110,116	113,517	76,840	50,262	10,124	-
Depreciation Allowance		$000s	(90,106)	(25,844)	(20,182)	(18,286)	(14,584)	(11,209)	-
Other Non-Cash Tax Adjustments		$000s	-	-	-	-	-	-	-
Earnings Before Taxes		$000s	270,755	84,272	93,336	58,554	35,678	(1,085)	-
Income Tax		$000s	(83,457)	(26,707)	(28,413)	(17,190)	(9,927)	(1,221)	-
Net Income		**$000s**	187,298	57,566	64,923	41,364	25,751	(2,305)	-
Non-Cash Add Back - Depreciation		$000s	90,106	25,844	20,182	18,286	14,584	11,209	-
Working Capital		$000s	2,352	-	18	664	542	754	374
Operating Cash Flow		**$000s**	279,756	83,410	85,123	60,314	40,878	9,657	374
Capital									
Initial Capital		$000s	-	-	-	-	-	-	-
CAPEX		$000s	(131,820)	(42,855)	(33,638)	(29,470)	(19,927)	(5,929)	-
Other Capital		$000s	-	-	-	-	-	-	-
Total Capital		**$000s**	(131,820)	(42,855)	(33,638)	(29,470)	(19,927)	(5,929)	-
Acquisition Cost		**$000s**	-	-	-	-	-	-	-
Other Cash Flow Adjustments		**$000s**	-	-	-	-	-	-	-
Summary Metrics									
Before-Tax Metrics									
O **Free Cash flow**		**$000s**	231,393	67,261	79,898	48,034	30,877	4,950	374
Cumulative Cash Flow		**$000s**		67,261	147,159	195,193	226,070	231,020	231,393
NPV @	5.00%	**$000s**	213,221	65,435	74,775	42,607	26,276	4,364	(236)
Cumulative NPV		**$000s**		65,435	140,210	182,818	209,093	213,457	213,221
After-Tax Metrics									
O **Free Cash flow**		**$000s**	147,937	40,555	51,485	30,844	20,951	3,729	374
Cumulative Cash Flow		**$000s**		40,555	92,039	122,883	143,834	147,563	147,937
NPV @	5.00%	**$000s**	135,918	39,356	48,265	27,314	17,853	3,366	(236)
Cumulative NPV		**$000s**		39,356	87,621	114,935	132,788	136,154	135,918
Operating Metrics									
Mine Life		**Years**	5						
Average Mining Rate (Ore + Waste)		**MTPA**	456						
Average Processing Rate		**MTPA**	421						
Mining Cost		**$ / t ore**	$ 154.37	$ 230.45	$ 176.10	$ 149.91	$ 113.90	$ 104.16	$ -
Processing Cost		**$ / t ore**	$ 25.69	$ 25.99	$ 25.29	$ 24.31	$ 25.33	$ 28.07	$ -
G&A Cost		**$ / t ore**	$ 26.52	$ 25.85	$ 23.57	$ 24.39	$ 22.58	$ 27.37	$ -
Metal Sales (Payable Metal)									
LOM Gold Sales		**koz**	622.6	172.8	169.9	131.0	96.8	52.1	-
1st 5 Years Avg. Gold Sales		**koz / yr**	124.5						
Direct+Indirect Cash Costs (incl. By-Product Credits)									
LOM Cash Costs / tAu-oz		**$ / Au-oz**	$ 695.38	637.65	606.98	688.51	755.72	1,080.57	-
PRODUCTION SUMMARY									
Mining Summary									
Open Pit									
Mined Ore		kt	0	-	-	-	-	-	-
Mined Waste		kt	0	-	-	-	-	-	-
Total Material Mined		kt	0	-	-	-	-	-	-
Strip Ratio		W/O	N/A						
Daily Mining Rate	329	tpd	0	-	-	-	-	-	-
Gold Grade, Mined		g/t	-	-	-	-	-	-	-
Silver Grade, Mined		g/t	-	-	-	-	-	-	-
Contained Gold, Mined		koz	0	-	-	-	-	-	-
Contained Silver, Mined		koz	0	-	-	-	-	-	-
Underground									
Mined Ore		kt	1,941	351	415	419	421	336	-
Mined Waste		kt	149	86	41	14	6	2	-
Total Material Mined		kt	2,090	437	456	432	427	337	-
Strip Ratio		W/O	0.08	0.2	0.1	0.0	0.0	0.0	
Daily Mining Rate	329	tpd	1,539	2,662	1,390	1,316	1,300	1,027	-
Gold Grade, Mined		g/t	11.02	16.92	14.06	10.75	7.91	5.33	-
Silver Grade, Mined		g/t	-	-	-	-	-	-	-
Contained Gold, Mined		koz	688	191	188	145	107	58	-

BUSINESS UNIT	Segovia Gold								
OPERATION	Q1 2019 Costs & Prices								
Period		units /	Total	2019	2020	2021	2022	2023	2024
Project Timeline		sensit.	or Avg.	1	2	3	4	5	6
Discount Factors	EOP @ 5%		(Start January, 2019)	1.0000	0.9524	0.9070	0.8638	0.8227	0.7835
Contained Silver, Mined		koz	0	-	-	-	-	-	-
Total Mined									
Mined Ore		kt	1,941	351	415	419	421	336	-
Mined Waste		kt	149	86	41	14	6	2	-
Total Material Mined		kt	2,090	437	456	432	427	337	-
Daily Mining Rate	329	tpd	1,539	2,662	1,390	1,316	1,300	1,027	-
Gold Grade, Mined		g/t	11.02	16.92	14.06	10.75	7.91	5.33	-
Silver Grade, Mined		g/t	-	-	-	-	-	-	-
Contained Gold, Mined		koz	688	191	188	145	107	58	-
Contained Silver, Mined		koz	0	-	-	-	-	-	-
Stockpile									
Begin Ore		kt		-	-	-	-	-	-
Ore Mined		kt	1,941	351	415	419	421	336	-
RoM to Plant		kt	1,941	351	415	419	421	336	-
End Ore		kt		-	-	-	-	-	-
Begin Gold		g/t		-	-	-	-	-	-
Gold Mined		g/t		16.92	14.06	10.75	7.91	5.33	-
Gold to Plant		g/t		16.92	14.06	10.75	7.91	5.33	-
End Gold		g/t		-	-	-	-	-	-
Begin Gold		koz		-	-	-	-	-	-
Gold Mined		koz	688	191	188	145	107	58	-
Gold to Plant		koz	688	191	188	145	107	58	-
End Gold		koz		-	-	-	-	-	-
Begin Silver		g/t		-	-	-	-	-	-
Silver Mined		g/t		-	-	-	-	-	-
Silver to Plant		g/t		-	-	-	-	-	-
End Silver		g/t		-	-	-	-	-	-
Begin Silver		koz		-	-	-	-	-	-
Silver Mined		koz	0	-	-	-	-	-	-
Silver to Plant		koz	0	-	-	-	-	-	-
End Silver		koz		-	-	-	-	-	-
Process Summary			560						
Milled Ore		kt	1,941	351	415	419	421	336	-
Daily Ore Process Rate	329	tpd	1,182	1,069	1,265	1,275	1,280	1,021	-
Ore Gold Grade, Processed		g/t	11.02	16.92	14.06	10.75	7.91	5.33	-
Ore Silver Grade, Processed		g/t	-	-	-	-	-	-	-
Ore Gold Content, Processed		koz	688	191	188	145	107	58	-
Ore Silver Content, Processed		koz	0	-	-	-	-	-	-
DORÉ NET SMELTER RETURN									
Doré									
Gold Met. Recovery		%	90.5%	90.5%	90.5%	90.5%	90.5%	90.5%	-
Silver Met. Recovery		%	0.0%	-	-	-	-	-	-
Doré Produced	-	koz	623	173	170	131.02	97	52	-
Gold Recovered		koz	623	173	170	131	97	52	-
Silver Recovered		koz	0	-	-	-	-	-	-
Payable Gold									
Au in Doré		koz	623	173	170	131	97	52	-
Au Payfor	100%	koz	0	-	-	-	-	-	-
Payable Gold			623	173	170	131	97	52	-
Gold Gross revenue		$000s	793,794	220,286	216,661	167,046	123,409	66,392	-
Gold Deductions									
S&R Charge	$6.38	$000s	(3,969)	(1101)	(1083)	(835)	(617)	(332)	-
Gold Revenue		$000s	789,825	219,184	215,578	166,211	122,792	66,060	-
Payable Silver									
Ag in Doré		koz	0	-	-	-	-	-	-
Ag Payfor	85%	koz	0	-	-	-	-	-	-
Payable Silver			0	-	-	-	-	-	-
Silver Gross revenue		$000s	0	-	-	-	-	-	-
Silver Deductions									
S&R Charge	$0.00	$000s	0	-	-	-	-	-	-
Silver Revenue		$000s	0	-	-	-	-	-	-
Doré Freight & Impurities									
Doré Transported	0.00%	koz	623	173	170	131	97	52	-
Freight	$0	$000s	0	-	-	-	-	-	-
Impurities	$0.00	$000s	0	-	-	-	-	-	-
Freight & Third Parties	$0.00	$000s	0	-	-	-	-	-	-
			(644.13)						
Doré Net Smelter Revenue	-	$000s	789,825	219,184	215,578	166,211	122,792	66,060	-
ROYALTY (Extraordinary Mining Right)									
4.4% Over Gold and Silver									
Gold Sales	-	$000s	793,794	220,286	216,661	167,046	123,409	66,392	-
Silver Sales	-	$000s	0	-	-	-	-	-	-
Total	-	$000s	793,794	220,286	216,661	167,046	123,409	66,392	-
Total Extraordinary Right	4.4%	$000s	(27,942)	(7,754)	(7,626)	(5,880)	(4,344)	(2,337)	-
Royalty Factor	80%								
ECONOMIC VALUE (FREE CASH FLOW CHECK)									
NSR									
Doré NSR		$000s	789,825	219,184	215,578	166,211	122,792	66,060	-
Total NSR		$000s	789,825	219,184	215,578	166,211	122,792	66,060	-
Royalties		$000s	(27,942)	(7,754)	(7,626)	(5,880)	(4,344)	(2,337)	-
-									
Total NSR After Royalties		$000s	761,883	211,430	207,951	160,331	118,448	63,723	-
Operating Costs									

BUSINESS UNIT	**Segovia Gold**								
OPERATION	**Q1 2019 Costs & Prices**								
Period		**units /**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Project Timeline		**sensit.**	**or Avg.**	**1**	**2**	**3**	**4**	**5**	**6**
Discount Factors	**EOP @ 5%**		**(Start January, 2019)**	**1.0000**	**0.9524**	**0.9070**	**0.8638**	**0.8227**	**0.7835**
Mining		1.00	**(299,661)**	(80,891)	(73,164)	(62,764)	(47,894)	(34,948)	-
Re-Handle		1.00	**0**	-	-	-	-	-	-
Process		1.00	**(49,878)**	(9,122)	(10,509)	(10,178)	(10,653)	(9,417)	-
G&A		1.00	**(51,483)**	(11,300)	(10,762)	(10,549)	(9,639)	(9,234)	-
Operating Costs	**-**	**$000s**	**(401,023)**	**(101,314)**	**(94,434)**	**(83,491)**	**(68,186)**	**(53,599)**	**-**
		$/t-ore	**$206.584**						
Operating Cost as % of Revenue		%	**53%**						
OPERATING MARGIN		**US$000**	**360,861**	**110,116**	**113,517**	**76,840**	**50,262**	**10,124**	**-**
Operating Margin		$000s	**360,861**	110,116	113,517	76,840	50,262	10,124	-
Capital		$000s	**(131,820)**	(42,855)	(33,638)	(29,470)	(19,927)	(5,929)	-
Working Capital		$000s	**2,352**	-	18	664	542	754	374
Pre Tax Free Cash Flow		**$000s**	**231,393**	**67,261**	**79,898**	**48,034**	**30,877**	**4,950**	**374**
				67,261	**147,159**	**195,193**	**226,070**	**231,020**	**231,393**
Income Tax		$000s	**(83,457)**	**(26,707)**	**(28,413)**	**(17,190)**	**(9,927)**	**(1,221)**	**-**
After Tax Free Cash Flow		**$000s**	**147,937**	**40,555**	**51,485**	**30,844**	**20,951**	**3,729**	**374**
				40,555	**92,039**	**122,883**	**143,834**	**147,563**	**147,937**
PROJECT CAPITAL - See backup tabs for capital cost details.				**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Development		$000s	**26,256**	12,650	7,369	5,016	1,049	172	-
Exploration		$000s	**16,331**	5,460	4,033	4,033	1,738	1,068	-
Providencia		$000s	**8,824**	4,986	2,398	960	324	156	-
El Silencio		$000s	**25,650**	6,717	3,749	7,836	6,540	809	-
Sandra K		$000s	**10,410**	3,202	4,700	2,508	-	-	-
Carla		$000s	**11,259**	-	1,870	3,204	5,592	593	-
Mine Planning		$000s	**677**	191	115	156	144	72	-
Maria Dama Plant		$000s	**4,357**	971	1,053	1,508	605	220	-
Assay Lab		$000s	**202**	202	-	-	-	-	-
Maintenance		$000s	**5,806**	1,450	2,464	1,200	440	252	-
Civil		$000s	**28**	28	-	-	-	-	-
Logistics		$000s	**73**	73	-	-	-	-	-
Environment		$000s	**12,006**	2,546	3,960	1,650	2,200	1,650	-
Health and Safety		$000s	**2,187**	387	975	318	228	278	-
Security		$000s	**625**	145	120	120	120	120	-
IT		$000s	**1,472**	225	337	374	326	210	-
Administration		$000s	**3,179**	1,304	460	550	580	285	-
Finance		$000s	**4**	4	-	-	-	-	-
HR		$000s	**196**	37	36	38	41	44	-
Carry Over (2018 Projects)		$000s	**2,277**	2,277	-	-	-	-	-
Total Capital	1.00	**$000s**	**131,820**	**42,855**	**33,638**	**29,470**	**19,927**	**5,929**	**-**
Initial		$000s	**0**	-	-	-	-	-	-
Sustaining		$000s	**131,820**	**42,855**	**33,638**	**29,470**	**19,927**	**5,929**	**-**
CHANGES IN WORKING CAPITAL									
Receivables									
Gross Revenues		$000s	**$ 793,794**	220,286	216,661	167,046	123,409	66,392	-
Less Metal Deducts		$000s	**$ (3,969)**	(1,101)	(1,083)	(835)	(617)	(332)	-
Net Receivables	**219,184**	**$000s**	**$ 789,825**	**219,184**	**215,578**	**166,211**	**122,792**	**66,060**	**-**
Delay In Receivables	**5**	**$000s**	**$ (3,002.5)**	**-**	**(49)**	**(676)**	**(595)**	**(777)**	**(905)**
Payables									
Mining		$000s	**$ 299,661**	80,891	73,164	62,764	47,894	34,948	-
Processing		$000s	**$ 49,878**	9,122	10,509	10,178	10,653	9,417	-
G&A		$000s	**$ 51,483**	11,300	10,762	10,549	9,639	9,234	-
Labor Cost Deduct (30%)		$000s	**$ (120,307)**	(30,394)	(28,330)	(25,047)	(20,456)	(16,080)	-
Net Payables	**70,920**	**$000s**	**$ 280,716**	**70,920**	**66,104**	**58,444**	**47,730**	**37,519**	**-**
Delay In Payables	**30**	**$000s**	**$ 5,829.0**	**-**	**396**	**630**	**881**	**839**	**3,084**
Inventories									
Mining COGS		$000s	**$ 299,661**	80,891	73,164	62,764	47,894	34,948	-
Processing COGS		$000s	**$ 49,878**	9,122	10,509	10,178	10,653	9,417	-
Labor Cost Deduct (30%)		$000s	**$ (104,862)**	(27,004)	(25,102)	(21,883)	(17,564)	(13,310)	-
Total COGS	**63,010**		**$ 244,678**	**63,010**	**58,571**	**51,059**	**40,983**	**31,056**	**-**
Net Inventories	**30**	**$000s**	**$ (5,178.87)**	-	(365)	(617)	(828)	(816)	(2,553)
Total Changes in Working Capital		**$000s**	(2,352)	**-**	**(18)**	**(664)**	**(542)**	**(754)**	**(374)**