

NI 43-101 Technical Report Preliminary Economic Assessment, Segovia Project Colombia

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Report Prepared for

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Appendix D: Swath Plots

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1 Summary

This report was prepared as a Preliminary Economic Assessment (PEA) Canadian National Instrument 43-101 (NI 43-101) Technical Report (Technical Report) for Gran Colombia Gold Corp. (Gran Colombia or GCM) by SRK Consulting (U.S.), Inc. (SRK) on the Segovia Project, which comprises of the Providencia, El Silencio, Sandra K Mines, the Las Verticales Veins System (Las Aves, Pomarosa and Pomarosa 2 veins), and the Carla Project.

1.1 Property Description and Ownership

The Segovia Project (Segovia or the Segovia Project) is an operational gold mine, located in Colombia located in the Segovia-Remedios mining district, Department of Antioquia, north-west Colombia approximately 180 km northeast of Medellin (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 km southeast of Segovia at approximately 7° 04' 18.0" N, 74° 41' 55.5" W.

1.2 Geology 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.

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.

Gold mineralization at Segovia occurs in mesothermal quartz-sulfidic veins hosted by granodiorites 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 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 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 for more than 2.0 km, and has an average thickness of 0.5 m, reaching over 2.0 m in areas of vein swelling.

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 hangingwall, 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, GCM 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 SA laboratories (SGS) facility in Medellin. Additionally, at Sandra K, 11 underground holes were drilled on the Chumeca vein totaling some 2,038.3 m.

1.4 Mineral Processing and Metallurgical Testing

GCM ore is processed through the Maria Dama process plant at the rate of 1,300 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.

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

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 GCM. The new database considers in total 90 additional diamond core boreholes, drilled by GCM during the period of 2013 to 2017. The resource evaluation work was completed by Mr. Benjamin Parsons, MAusIMM (CP#222568). The effective date of the Mineral Resource Statement is March 15, 2017, which is the last date assays were provided to SRK.

The Mineral Resource estimation process was a collaborative effort between SRK and GCM staff. GCM provided to SRK an exploration database with flags of the main veins as interpreted by GCM. In

addition to the database GCM also supplied a geological interpretation comprising preliminary 3D digital files (DXF) through the areas investigated by core drilling for each of the main veins.

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.

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, to ensure consistency across all three mines. SRK has worked with GCM 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.

During the on-going work with SRK and GCM at the Segovia operations between 2015 and 2017 the capping levels have been discussed in detail. Based on the discussions SRK has reduced the capping levels that were used in the previous estimate. As part of the revised capping strategy in the 2017 estimate capping has been set at 300 grams/tonne (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 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.

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 (IDW2). 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 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 change in the classification compared to the previous estimate, 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 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. An investigation into cut-off grades was completed by SRK as part of the previous (2014) 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 cut-off grade 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.

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 pattern of 20 m x 20 m;
- Creation of a 3D interpretation of all mining development and stoped areas;
- Continuation of the verification channel sampling at the Segovia Operations to further increase the geological confidence in the associated block estimates, with a priority on El Silencio Mine. SRK recommends this starts in the lower levels of the mine currently available (dewatered);
- Further work is required to better understand the potential economic viability for mining of the lower confidence material within pillars at Providencia and El Silencio.
- 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 infill underground drilling areas and adjustments to the high-grade domain boundaries;
- GCM has identified areas for possible extension and infill drilling within the 2017 budget. SRK has reviewed the proposed program and agrees that these areas provide near mine targets; and
- An area has been identified within El Silencio where the current mining is interpreted to have occurred within an unnamed hangingwall vein. If correct, the 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. Mineral resources in this area has been classified as Inferred in the 2017 estimate.

Table 1-1: SRK Mineral Resource Statement for the Segovia and Carla Projects with Effective Date of March 15, 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	113	19.4	71	275	14.8	131	388	16.1	201	163	9.4	49
		Pillars	76	18.4	45	116	10.1	38	191	13.4	82	376	19.8	239
	Sandra K	LTR				241	10.4	81	241	10.4	81	240	7.5	58
		Pillars				91	9.8	29	91	9.8	29	1	9.3	0
	El Silencio	LTR				609	12.5	245	609	12.5	245	997	8.0	258
		Pillars				1,187	10.8	414	1,187	10.8	414	347	13.0	144
	Verticales	LTR										771	7.1	176
	Subtotal Segovia Project	LTR	113	19.4	71	1,125	12.6	456	1,238	13.2	527	2,171	7.7	541
		Pillars	76	18.4	45	1,394	10.7	480	1,469	11.1	525	724	16.5	384
	Carla	Subtotal Carla Project	LTR				154	9.7	48	154	9.7	48	178	9.3

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 long-term resource material (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.

1.6 Mineral Reserve Estimate

There are currently no Mineral Reserve estimates on the Segovia property that comply with CIM guidelines due to lack of underground surveying of depleted areas plus deficiencies in geotechnical, site water management and Tailings Storage Facility (TSF) practices.

Provided GCM implements the work substantially as identified in the Recommendations section of this PEA report, then SRK would expect that the formal resource to reserve conversion process can proceed and reserves be publicly reported.

The mine schedule as reported in this PEA report includes Inferred Mineral Resources.

1.7 Mining Methods

1.7.1 Geotechnical

Recently exploration holes have been logged for some of the geotechnical parameters required for mine design. Overall, very little geotechnical information exists in historic mining areas. Mine personnel have recently begun collecting basic geotechnical information within the lower levels that are being mined. This data requires thorough QA/QC review and is missing some geotechnical characterization parameters.

Only limited discontinuity information (e.g., orientation, length and spacing of discontinuity sets) and rock mass characterization data for each mine has been collected. Additional data should be collected within proposed future mining areas. The mine has geotechnical personnel dedicated to collecting data for design, but training should be conducted for proper geotechnical mapping and documentation procedures. This training will allow GCM geotechnical personnel to accurately classify rock mass conditions and make necessary adjustments to room and pillar sizes and ground support requirements during mining. Geotechnical mapping should be correlated to corehole data at a minimum of approximately five to ten locations within the existing workings.

Geotechnical core drilling through several future mining locations is limited. Additional geotechnical logging of core in these areas would provide a higher level of confidence in predicting the ground support and room and pillar design requirements. A minimum of five to ten coreholes approximately 30 m in length would be needed to characterize the planned future mining areas. Encountering unexpectedly poor ground conditions may result in increased costs and delays to the construction schedule, so the need to predict ground conditions is important.

SRK recommends contracting an in-country laboratory to perform additional Uniaxial Compressive Strength (UCS) tests to better define the expected range of intact rock strengths. Based on the limited information available, the footwall and hangingwall intact rock strength is anticipated to be relatively high strength and not likely a geotechnical concern. Having actual UCS data will allow more accurate estimations of drill penetration rates and explosive needs for contractors when bidding on the project.

1.7.2 Mining

Based on the review of the Company Life of Mine Plan (LoMP) and limited technical work undertaken as part of the PEA, SRK concludes the following:

- The LoMP developed for the Zandor assets has been undertaken at a level of detail suitable for a preliminary economic assessment and SRK therefore considers there to be further potential for optimization of the plan. There is potential for additional material to be added to the Resource through further drilling in the existing mining areas and of additional veins identified by the Company to extend the mine life.
- The contained gold production profile for each mine has been levelled, resulting in a varying tonnage production schedule. However, by proper planning by the Company, the overall processed tonnages should be reasonably stable.
- A Secondary mining phase is practiced after the Primary mining phase with an associated lower mill throughput.

SRK notes that the individual mines are currently extracting material that is not included in the current Resource model and there is significant scope for the current Resources to be expanded through additional drilling. As a result, whilst the mine plan produced by GCM is considered generally achievable, SRK believes mining of these areas to be of lower geological confidence and will likely result in a shortfall in the LoMP.

Based on the review of the Company's LoMP and limited technical work undertaken as part of the PEA, SRK recommends the following:

- The exploration program that is supported by this Technical Report is implemented with a view to upgrading the knowledge of the deposits in order to determine Reserves in accordance with the CIM Code as part of future revisions to the mine plans;
- More investigation and analysis is undertaken into the costs of production from the various areas in order to get a better handle on cut-off grades;
- Better tracking and monitoring of the secondary mining activities in order to improve safety, accountability and reconciliation;
- More detailed short term underground mine planning is undertaken to optimize and implement the LoMP generated by the Company;
- Detailed development designs, ground support parameters, and production plans are still to be developed based on the results of the geo-mechanical analysis to be undertaken in the coming year; and
- Production of an updated underground mining and geotechnical study.

1.7.3 Mine Dewatering

The estimated total discharge rate from all of the Segovia mines is approximately 190 L/s; the combination of Providencia (~100 L/s) and El Silencio (~ 60 L/s) accounts for ~85% of that total. The dewatering systems appear to be well understood by site personnel and are reasonably well documented, particularly in the case of the Providencia Mine.

1.7.4 Mine Ventilation

For the El Silencio Mine, recommended immediate upgrades can bring the improved ventilation system closer to the total calculated airflow requirement of approximately 62.8 m³/s with the current equipment load and personnel distribution as calculated. The recommended long-term solution will require significant upgrades and capital expenditures through the addition of shafts to surface and large

surface fan installations. Approximately 113.6 m³/s will be required and additional airflow may be necessary for dedicated transfers and alternative or multiple working areas.

For the Sandra K Mine, SRK recommended minor short-term ventilation system modifications but have not yet proposed a long term solution.

For the Providencia Mine, there are currently two scenarios under consideration for the future ventilation. Scenario 1 uses a newly constructed ramp that is developed from surface to Level 11 to provide additional ventilation to the mine with associated total calculated airflow requirement of approximately 69.7 m³/s. Scenario 2 makes use of a pipe conveyor system from Level 11 to the top of the apique system with the development of a new access portal with associated total calculated airflow requirement of approximately 55.6 m³/s.

1.8 Recovery Methods

GCM processes ore from the Providencia, El Silencio and Sandra K Mines at its 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. Process plant performance during the period 2014 -2016 (January to November) is summarized in Table 1-2.

Table 1-2: Maria Dama Process Plant Production Summary

Parameter	2014	2015	2016
Ore Tonnes	237,740	211,049	284,896
Average (t/d)	651	578	780
Ore Grade (Au g/t)	10.64	14.32	13.77
Au Contained (oz)	81,349	97,189	126,144
Mill Circuit Inventory Change (Au oz) ⁽¹⁾	1,915	4,678	12,400
Au Recovery (%)	89.2	90.4	90.1
Other (Au oz) ⁽²⁾	-	355	240
Au Produced (oz)	74,506	92,894	126,261

⁽¹⁾ Gold production includes additional ounces recovered from the mill circuit during the period. Tonnes milled, head grade and mill recovery statistics do not include any data related to these additional gold ounces produced from the Company-operated properties.

⁽²⁾ Represent gold produced for the Company from ore milled by a contract mining cooperative within the Company's mining title and shipped directly to the refinery. Tonnes milled, head grade and mill recovery statistics do not include any data related to these gold ounces produced.

Source: GCM, 2017

The following key observations can be made regarding the Maria Dama process plant:

- Average plant throughput has increased from about 651 to 780 t/d over the period from 2014 to 2016;
- Overall gold recovery has been ⁽¹⁾ relatively constant at about 90% over the period from 2014 to 2016;
- Silver recovery is not monitored, but is a relatively minor contributor to overall project economics;
- During 2015, plant operating costs averaged US\$25.23/t ore processed, which was equivalent to US\$57.34/ Au oz produced. During 2016, the process plant operating cost averaged US\$29.52/t processed and was equivalent to US\$66.58/Au oz produced;

- Planned process plant capital expenditures for 2017 total US\$1.96 million. Most of the identified capital expenditures are for replacement and refurbishment of existing equipment and facilities;
- Planned capital expenditures for 2018 total US\$3.83 million;
- SRK has observed that the tailings management protocol is not consistently adhered to and that untreated tailings are regularly discharged directly into a creek located downstream from the process plant. GCM has stated that they are taking steps to remediate this issue, however, SRK has not verified the extent to which proper tailing disposal protocols have been implemented; and
- Based on the current mine plan, the planned construction of the 2,500 t/d Pampa Verde process plant will not be required.

1.9 Project Infrastructure

The Project is operating with existing infrastructure, company housing and cafeteria facilities, mine and plant access into the area by paved and dirt roads, power supply from the country power grid, water supply from the underground mine dewatering activities, minimal but adequate maintenance facilities, administrative offices and offices at the mine portals to support the ongoing operation of the Project.

However, site water management and TSF design/capacity parameters are critical items that require additional work to raise them to accepted western world mining standards.

1.10 Environmental Studies and Permitting

1.10.1 Environmental Studies and Permitting

Based on a review of the available information, the following key environmental and social issues were identified:

Impacts on water quality: The most significant issue identified by prior assessments was the continued discharge of underground dewatering effluent (Note: the bulk of the water from the El Silencio underground mine is used in the Maria Dama process plant), tailings settling basin underflow, and periodic releases of raw tailings to area surface waters without treatment. As of July 2017, the Company claims that these discharges have all been eliminated; however, SRK has not verified this claim and will investigate and provide recommendations for prevention and mitigation. Parameters in excess of the Colombian ambient water quality standards include, but are not limited to, metals such as cadmium, lead, zinc and iron and microbiological parameters including coliforms.

The site Environmental Management Plan (“Plan de Manejo Ambiental” or PMA) was last approved in 2012. The first PMA was approved in 2004 and renewed in 2008. The current 2016 PMA and its complimentary information provided in 2017, is still under review by Corantioquia (the Regional Environmental Authority). As such, the 2012 PMA remains in effect and includes commitments to implement treatment of the effluent from the operating mines three years from the date of PMA approval. In 2017, Corantioquia approved the industrial discharges El Silencio and Sandra K; the authorization of dewatering discharge from Providencia is still under review. Water management measures for recycling and reuse of water are proposed for the Maria Dama plant to be implemented two years from approval of the PMA. As part of this proposal, Maria Dama process water is recycled

and, according to the Company, the tailings dewatering underflows will be reused as well, starting in the fourth quarter of 2017, following treatment. SRK plans to follow up in 2018 to confirm this commitment.

Physical and chemical characterization studies for waste rock within a year of the 2012 PMA approval and evaluation and design of appropriate disposal sites will also improve management of ambient water quality. Until the 2016 PMA is approved and treatment measures are implemented, there is a risk the Segovia operation will continue to contaminate surrounding surface water courses and may experience action from the Corantioquia. With implementation of the proposed mitigation measures, this risk should be significantly reduced.

Changes to groundwater regime: The 2012 PMA highlights 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 2012 PMA 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.

Health and safety of contract miners: Gran Colombia employs groups of contract miners to extract high grade run-of-mine mill feed from supporting pillars 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 mining of support pillars, which may potentially lead to ground collapse and loss of life.

Access to El Chocho Tailings Storage Facility Area: While the regulatory aspects regarding the disposal of tailings in the El Chocho area appear to have been approved, the presence of artisanal mining operations within the TSF area remains to be fully resolved. The upper areas of the El Chocho site have been secured and are currently being deposited with tailings; the lower area remains under negotiation with an artisanal miner. SRK is unaware of the current state of this negotiation, but recognizes the fact that this is a sensitive issue, and the forced relocation of artisanal miners could lead to conflict and production interruption.

1.10.2 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 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 are discussed in more detail in the sections that follow:

ARD/ML: Insufficient data exist to understand the current and future acid rock drainage and metal leaching (ARD/ML) potential. 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 component that represent the greatest risk in terms of environmental geochemistry. The tailings must be subjected to a detailed 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.

Mine Water: A water balance is needed, per Section 25.9.3, in order to understand the quantities and management requirements for contact water. Specifically pertinent to geochemistry will be mine water (e.g., dewatering effluent), and contact water associated with tailings and waste rock dumps.

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 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 LOMP work indicates that the project will require LoM sustaining capital expenditures of US\$207.4 million, as summarized in Table 1-3.

Table 1-3: Segovia Capital Estimate Summary

Description	LoM Sustaining Capex (US\$000s)
Development	92,402
Providencia	6,227
Sandra K	8,835
Carla	3,297
El Silencio	26,117
Vetas Verticales	4,000
Contract Miners	3,088
Maria Dama Plant	19,167
Assay Lab	918
Equipment and Infrastructure Maintenance	10,013
Environment	1,554
IT	577
Health & Safety	2,108
Security	1,227
Administration	607
Geological Exploration & Infill	26,320
44 kV Transmission Line	902
Total Capital	\$207,357

Source: GCM/SRK, 2017

SRK and the Company prepared the operating cost estimate for the current mine plan resource production schedule which is presented in Table 1-4. Underground mining costs are the most relevant direct cost of the operation, corresponding to approximately 73% of the on-site operating costs.

Table 1-4: Segovia Operating Costs Summary

Description	LoM (US\$000s) ⁽¹⁾	LoM (US\$/t-Mill Feed)	LoM (US\$/oz-Au)
Mining	504,571	123.82	485.43
Processing	114,728	28.15	110.38
Site G&A	70,800	17.37	68.11
Total Operating Costs	\$690,098	\$169.35	\$663.92

⁽¹⁾ Includes both GCM and contractor miner costs
 Source: GCM/SRK, 2017

1.12 Economic Analysis

Segovia is a gold project, where the revenue contribution from gold is 99%. Silver is considered a by-product of the operation, where this metal contributes about 1% of the project revenue.

Using the operating parameters discussed in the previous sections, the Project is valued at an after-tax NPV 5% of US\$178.8 million. The Project is expected to produce an average of 116 koz/y Au per annum when operating at full capacity (2018-2025) with annual production in the first five years averaging 127 koz/y. The Project's cash costs are estimated at US\$722/oz Au and its All-in Sustaining Costs (AISC) are estimated to be US\$921/Au-oz.

The Project is most sensitive to fluctuations in the metal prices. The impact of exchange rate fluctuations was not evaluated, as all costs were estimated directly in US\$.

Even under distressed (-20%) metal prices of US\$1,000/oz Au, the project is slightly above break even on an after-tax NPV 5% basis with the project breakeven point occurring when metal prices are reduced by about 26% to US\$950/oz Au.

All production costs are based on currently incurred costs and possible gains of increasing the project scale from 640 to 1,500 t/d have not been completely evaluated. It is recommended that a specific study about this optimization is undertaken.

It is recommended that exchange rate information is included in future evaluations to better estimate the impact of exchange rate fluctuations on project economics as the majority of costs are incurred in Colombian Pesos (COP).

The PEA is preliminary in nature and 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.

2 Introduction

2.1 Terms of Reference and Purpose of the Report

This report was prepared as a Preliminary Economic Assessment (PEA) Canadian National Instrument 43-101 (NI 43-101) Technical Report (Technical Report) for Gran Colombia Gold Corp. (Gran Colombia or GCM) by SRK Consulting (U.S.), Inc. (SRK) on the Segovia Project, which comprises of the Providencia, El Silencio, Sandra K Mines, the Las Verticales Vein System (Las Aves, Pomarosa, Pomarosa 2 veins), and the Carla Project.

The quality of information, conclusions, and estimates contained herein are consistent with the level of effort involved in SRK's services, based on: i) information available at the time of preparation, 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 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.

The PEA is preliminary in nature and 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. However, with respect to the current milling facility which has been in operation for the better part of one hundred years, SRK chooses to call historical plant feed as "ore" without any judgement of past profitability in Sections 13, 17 and 20 of this report as well as Sections 1.4, 1.8, 25.4 and 25.8. Furthermore, SRK chooses to use "ore" in various parts of Section 16 to describe certain existing physical mine infrastructure assets such as ore pass, ore stockpile area, ore bin, etc. without implying economic value.

This report provides Mineral Resource estimates, and a classification of Mineral Resources 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).

2.2 Qualifications of Consultants (SRK)

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 responsible for specific sections are as follows:

- Ben Parsons, SRK Principal Resource Geologist, is the QP responsible for background, geology and resource estimation Sections 1.1, 1.2, 1.3, 1.5, 4 except 4.5, 6, 7, 8, 9, 10, 11, 12, 14, 23, 24, and portions of Sections 25 and 26 summarized therefrom of this Technical Report.
- John Tinucci, SRK Practice Leader/Principal Consultant (Geotechnical), is the QP responsible for geotechnical Sections 1.7.1, 16.2 and 18.2, and portions of Sections 25 and 26 summarized therefrom of this Technical Report.
- Fernando Rodrigues, SRK Practice Leader/Principal Consultant (Mining Engineer), is the QP responsible for mine design and mine planning Sections 1.6, 1.7.2, 1.7.4, 1.11, 1.12, 2, 3, 15, 16 except 16.2 and 16.8, 19, 21, 22, 27, 28 and portions of Sections 25 and 26 summarized therefrom of this Technical Report.
- Eric Olin, SRK Principal Consultant (Metallurgy), is the QP responsible for mineral processing and metallurgy Sections 1.4, 1.8, 13, 17, and portions of Sections 25 and 26 summarized therefrom of this Technical Report.
- Jeff Osborn, SRK Principal Consultant (Mining), is the QP responsible for infrastructure Sections 1.9, 5, 18 except for 18.2, and portions of Sections 25 and 26 summarized therefrom of this Technical Report.
- Paul Williams, SRK Principal Consultant (Hydrogeology), is the QP responsible for hydrogeology Sections 1.7.3, 16.8 except 16.8.2, 18.3.2, and portions of Sections 25 and 26 summarized therefrom of this Technical Report.
- David Hoekstra, SRK Principal Consultant (Civil Engineer), is the QP responsible for hydrology Sections 16.8.2, 18.3.1, and portions of Sections 25 and 26 summarized therefrom of this Technical Report.
- David Bird, SRK Principal Consultant (Geochemistry), is the QP responsible for geochemistry Sections 1.10.2, 20.1.3, and portions of Sections 25 and 26 summarized therefrom of this Technical Report.
- Mark A. Willow, SRK Principal Environmental Scientist/Practice Leader, is the QP responsible for environmental studies, permitting and social or community impact Sections 1.10.1, 4.5, 20 except 20.1.3, and portions of Sections 25 and 26 summarized therefrom of this Technical Report.

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	2/6/2017–2/10/2017	Database Review, site discussions, review drill core
		Mineral Resources	11/27/2016–12/1/2016	Technical Meetings, database review, laboratory inspection
		Mineral Resources	5/29/2016–6/4/2016	Underground site inspection, review sampling protocols
		Mineral Resources	3/15/2015–3/20/2015	Database review, and geological modelling
Fernando Rodrigues	SRK	Mining	11/29/2016–11/30/2016	Cost review, mine planning discussions,
		Mining	5/29/2016–6/4/2016	Underground site inspection,
		Mining	3/15/2015–3/20/2015	Cost review, mine planning discussions, visit underground infrastructure
		Mining	3/15/2015–3/20/2015	Site review of mining methods
Mike Levy	SRK	Geotechnical	11/29/2016–11/30/2016	Mining area / Drill Core
Eric Olin	SRK	Processing/ Metallurgy	11/29/2016–11/30/2016	Process Plant, laboratory review, TSF
Mark Willow	SRK	Environmental/ Permitting	11/29/2016–11/30/2016	Project area, TSF

Source: SRK, 2017

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 the References Section 0.

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

- Numerous technical review meetings held at GCM’s offices in Medellin;
- 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); and
 - Structural Review of the Zandor Capital Project Colombia, January 2013 (Telluris Consulting).

- 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 2D section interpretations, stope outlines and mined depletions.

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 the References.

2.5 Effective Date

The effective date of this report is August 7, 2017.

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 GCM 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 has relied on GCM'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 GCM 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.

The Consultants used their experience to determine if the information from other reports was suitable for inclusion in this Technical Report and adjusted information that SRK considered 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 (Segovia or the Segovia Project) is an operational gold mine, located in Colombia located in the Segovia-Remedios mining district, Department of Antioquia, north-west Colombia approximately 180 km northeast of Medellin (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 km southeast of Segovia at approximately 7° 04' 18.0" N, 74° 41' 55.5" W (Figure 4-1).



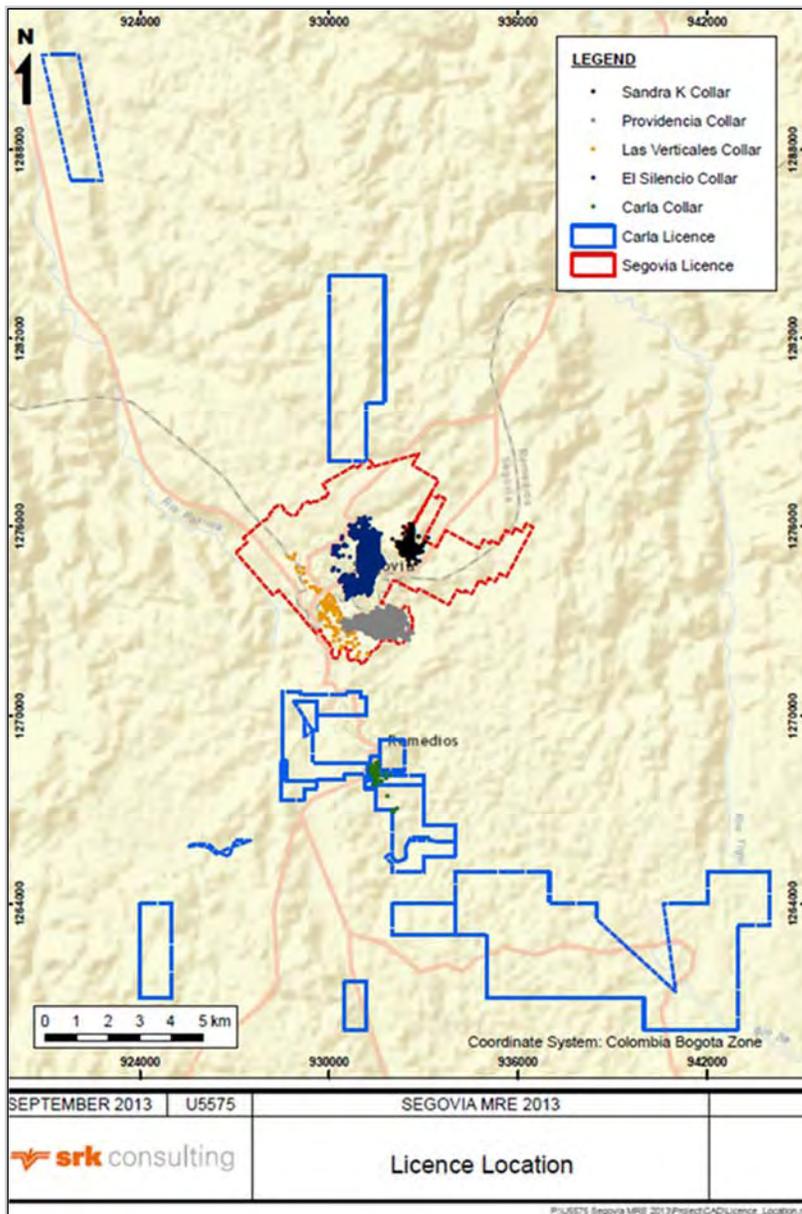
Source: SRK

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 2,910 hectares (ha), located in the municipalities of Segovia and Remedios, in the Department of Antioquia. The license was previously held by FGM but, since August 2010, is now owned by Zandor Capital SA (a subsidiary of GCM). The Carla Project comprises 16 Concessions, which have a combined area of approximately 6,000 ha, and are located largely to the south of the Segovia License.

The location of the Segovia and Carla License boundaries are shown in relation to drillhole collars per deposit area in **Error! Reference source not found.**



Source: SRK, 2014

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 GCM'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 No.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 quarterly 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.

FGM also had two Exploration Licenses within the area of 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.
- 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. SRK has been informed by the Company that the required documents for the exploration license No. 3855 were filed on June 19, 2013, and Zandor Capital S.A. Colombia is waiting for a pronouncement from the mining authority granting the area under a concession contract. As to the case of the Exploration License No. 3854, the documents have not been filed because the Programa de Trabajos y Obras (PTO) cannot be prepared without clarifying some issues related to the exploitation of the El Silencio Mine within this area.

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.

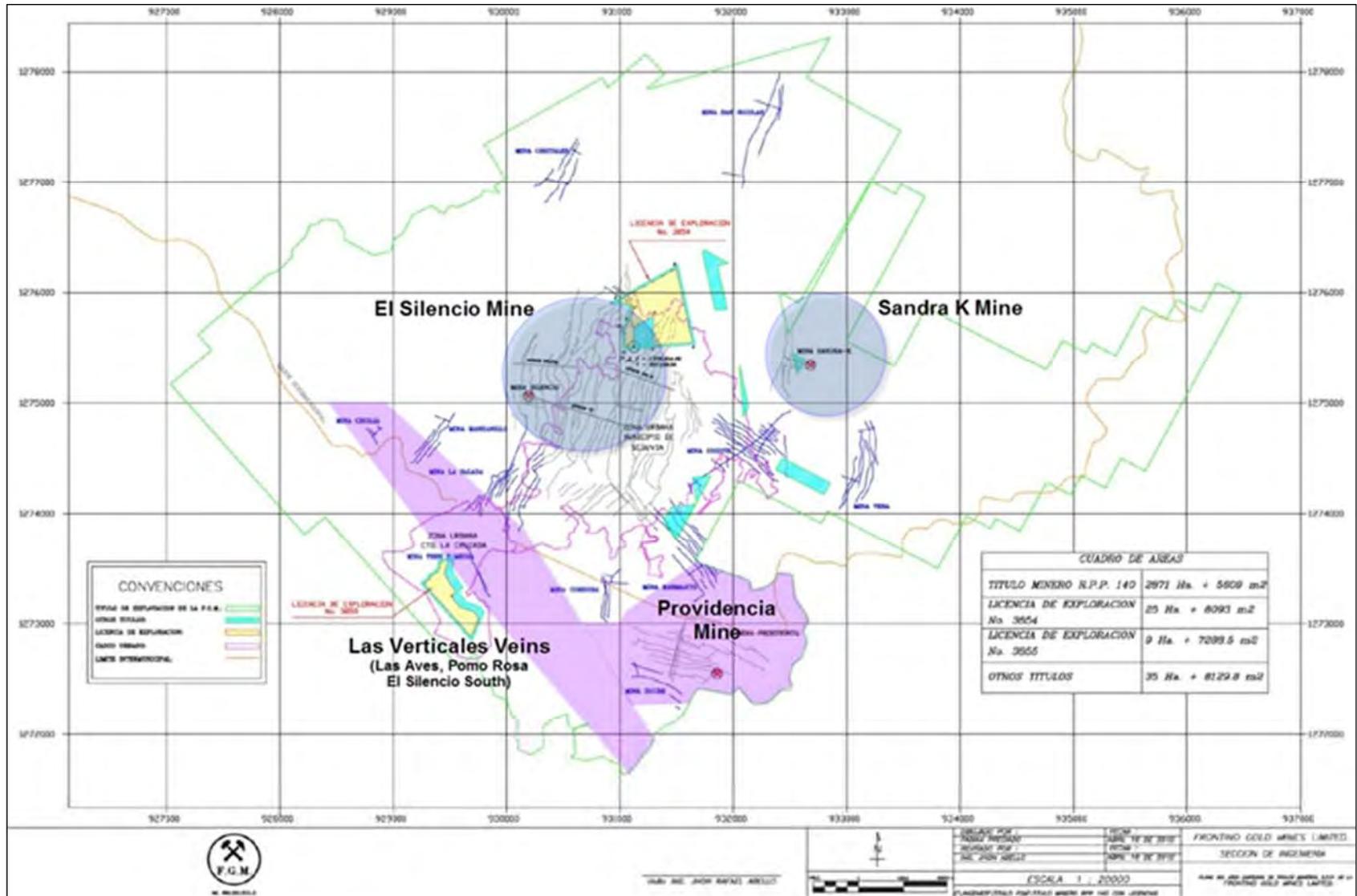
There are also seven "Other titles" that belong to third parties surrounded by the area of RPP 140 with a total area of 35.81 ha. These are shown on Figure 4-3 and summarized in Table 4-1.

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	Date Expiry
RPP 140	2,871	RPP Exploitation	March 27, 1998	August 3, 2028
No. 3854	25	Exploration	July 27, 1998	Undergoing conversion to concession
No. 3855	9	Exploration	August 3, 1998	Awaiting
Total	2,907			
Other (7 minor licenses)	35			

Source: SRK



Source: Zandor, 2014

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.

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 hangingwall of the Providencia Mine. The agreement is 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. GCM is currently in discussions with representatives of the Cogote mine, to bring mining operations under the Company’s contract mining model.

The Company also leases sections of the Providencia and El Silencio mines to third party artisanal contractors known as Navar y Masora to extract high grade pillars from old parts of the mines.

The Masora Providencia and Navar El Silencio contracts started in 2013. The Company buys run of mine material from the contractor but SRK has not been provided with details of the annual production.

4.5 Environmental Liabilities and Permitting

4.5.1 Environmental Liabilities

The Company’s subsidiary, Zandor Capital S.A. Colombia (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 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 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.

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

There are no 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 130 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 (Figure 5-1).

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.



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 m 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 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 Infrastructure Availability and Sources

The towns of Segovia and La Cruzada lie within the mining title RPP 140, with Segovia directly above the El Silencio vein, and the town of La Cruzada on the southwest side of RPP 140 title. The town of Remedios lies to the south of Segovia. It is previously reported that the population of the Municipality of Segovia is given as 35,071 (2005 census) and more recently there are various figures of 37,154, including 30,266 urban and 6,888 rural (2009), and 39,938 inhabitants.

The Company currently operates three underground mines on RPP 140 called El Silencio, Providencia, and Sandra K, and a mill and treatment plant called Maria Dama, which historically processed about 400 tonnes of run of mine material per day (t/d), but since early 2013 has been expanded to a capacity of 1,300 t/d, and with further investment can be expanded to 1,500 t/d.

The Company previously owned three hydroelectric power generation plants built in the 1930s on rivers called Doña Teresa No. 1, Doña Teresa No. 2 (located on La Cianurada Creek), and Pocuné, with a reported capacity to produce 3,400 kilowatts (kW). All three plants have been decommissioned. The Company has three diesel power plants with capacity to generate 750 kW each; these are used for backup during periods of low rainfall.

A mine camp exists on RPP 140 with 230 houses with water supplied by the Company and electricity from the national grid. The Company has three social clubs and a school for 300 children, which is also used by the University of Antioquia.

As of March 2017, the mine directly employs approximately 1,300 people, including the office in Medellin, and approximately 1,500 workers engaged in secondary mining activity mainly through two separate local contract miners.

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.

Medoro Resources Ltd. (Medoro) through its subsidiary Zandor Capital S.A. Colombia (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.

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. Due to the historical nature of the project, not all of these estimates can be considered to be compliant with CIM Standards.

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.

Per Table 6-1 and Table 6-2, no Measured Resources or Proven Reserves were reported as part of the study. The Mineral Resource was reported inclusive of the Mineral Reserve. No breakdown was provided per deposit and therefore no direct comparison can be made to the current estimate.

Table 6-1: SEWC Mineral Resource Estimate for Frontino Gold Mines (FGM), effective date June 9, 2010

Classification	Cut-off Grade (g/t Au)	Type	Tonnes (t)	Grade (g/t Au)	Metal (oz)
Measured		Gold			
Indicated	7.1	Gold	315,000	13.1	132,000
Total M&I	7.1	Gold	315,000	13.1	132,000
Inferred	6.5	Gold	914,000	15.4	453,000

Source: SEWC, 2010

Table 6-2: SEWC Mineral Reserve Estimate for Frontino Gold Mines (FGM), effective date June 9, 2010

Classification	Cut-off Grade (g/t Au)	Type	Tonnes (t)	Grade (g/t Au)	Metal (oz)
Proven		Gold			
Probable	7.1	Gold	210,000	13.3	90,000
Total M&I	7.1	Gold	210,000	13.3	90,000

Source: SEWC, 2010

In March 2012, SRK reported a Mineral Resource Estimate for the Segovia Project. 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 Resource categories respectively. The reported resource has been further sub-divided into material within the remaining pillars, and the longer-term resource material outside of the previously mined areas. SRK defined “pillars” to indicate all material which exists between existing development which has yet to be extracted and this includes the historical pillars within old stoped areas. In fact, the pillar resource has all been allocated to the Inferred category, as a function of inaccuracies in the pillar surveys owing to a relatively unknown extent of pillar extraction activity by Company-organized cooperative miners.

Table 6-3 gives SRK’s Mineral Resource Statement for the areas not yet mined. Table 6-4 gives SRK’s Mineral Resource Statement for the pillars remaining in the mined-out areas. This is sub-divided into vein areas and the areas allocated for cooperative mining.

Table 6-3: SRK Segovia CIM Long-Term Mineral Resource Statement as of March 2, 2012, at 3 g/t Au Cut-off ⁽¹⁾

Vein	Category	Quantity (t)	Grade (Au g/t)	Metal (Au oz)
Providencia LTR Underground ⁽¹⁾				
Providencia	Measured	263,000	16.2	136,000
	Indicated	245,000	12.3	97,000
	Measured and Indicated	508,000	14.3	233,000
	Inferred	243,000	14.1	110,000
Las Verticales LTR Underground ⁽¹⁾				
Las Verticales	Measured			
	Indicated			
	Measured and Indicated			
	Inferred	480,000	19.4	299,000
SK_Techo LTR Underground ⁽¹⁾				
Sandra K	Measured			
	Indicated			
	Measured and Indicated			
	Inferred	103,000	8.4	28,000
SK_Piso LTR Underground ⁽¹⁾				
Sandra K	Measured			
	Indicated			
	Measured and Indicated			
	Inferred	9,000	10.9	3,000
SK_Extension LTR Underground ⁽¹⁾				
Sandra K	Measured			
	Indicated			
	Measured and Indicated			
	Inferred	331,000	17.6	187,000
SK_Chumeca LTR Underground ⁽¹⁾				
Sandra K	Measured			
	Indicated			
	Measured and Indicated			
	Inferred	3,000	9.0	1,000
El Silencio LTR Underground ⁽¹⁾				
El Silencio	Measured			
	Indicated			
	Measured and Indicated			
	Inferred	339,000	7.8	85,000
Underground LTR Combined				
Segovia LTR Total	Measured	263,000	16.2	136,000
	Indicated	245,000	12.3	97,000
	Measured and Indicated	508,000	14.3	233,000
	Inferred	1,508,000	14.7	713,000

⁽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.

Source: SRK

Table 6-4: SRK CIM Segovia Pillar Mineral Resource Statement as of March 2, 2012, at 3 g/t Au Cut-off ⁽¹⁾

Vein	Category	Quantity(t)	Grade (Au g/t)	Metal (Au oz)
Providencia	COOP0 (GCG) Underground			
	Measured			
	Indicated			
	Measured and Indicated Inferred	127,000	15.7	64,000
Providencia	COOP1 (Contrato La Provi) Underground			
	Measured			
	Indicated			
	Measured and Indicated Inferred	157,000	17.9	90,000
Providencia	COOP2 (Proyecto Roc) Underground			
	Measured			
	Indicated			
	Measured and Indicated Inferred	145,000	26.2	122,000
Providencia	COOP3 (Corte 4240) Underground			
	Measured			
	Indicated			
	Measured and Indicated Inferred	6,000	10.9	2,000
Sandra K	SK_Techo Pillar Underground			
	Measured			
	Indicated			
	Measured and Indicated Inferred	86,000	11.9	33,000
Sandra K	SK_Piso Pillar Underground			
	Measured			
	Indicated			
	Measured and Indicated Inferred	9,000	10.9	5,000
Sandra K	SK_Chumeca Pillar Underground			
	Measured			
	Indicated			
	Measured and Indicated Inferred	400	6.2	100
Silencio	Silencio Pillar Underground			
	Measured			
	Indicated			
	Measured and Indicated Inferred	223,000	7.9	56,000
Segovia Pillars Total	Underground Pillar Combined			
	Measured			
	Indicated			
	Measured and Indicated Inferred	753,600	15.3	371,600

⁽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.

Source: SRK

At the time of reporting, SRK noted that grade estimates at Providencia indicate that the high-grade shoots continue into the neighboring property to the east. 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.

On the April 2, 2012, SRK produced a Mineral Resource Statement for the Carla Project, 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. The Carla Mineral Resource statement is presented in Table 6-5.

Table 6-5: SRK Carla Mineral Resource Statement as of April 2, 2012, at 3 g/t Au Cut-off ⁽¹⁾

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

⁽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.

Source: SRK

In 2013, SRK produced an updated Mineral Resource Estimate for the Segovia and Carla projects, which considered 94 additional diamond core boreholes drilled by Zandor during the period of 2012 to 2013. The resource evaluation work was completed by Robert Goddard under the supervision of Mr. Benjamin Parsons, MAusIMM (CP#222568). The effective date of the Mineral Resource Statement is August 1, 2013. The 2013 Segovia and Carla Projects Mineral Resource Statement is presented in Table 6-6.

Annual reporting between August 1, 2013 and December 31, 2016 used the 2013 estimate as the basis for any depletion.

Table 6-6: SRK Mineral Resource Statement for the Segovia and Carla Projects for Zandor Capital Dated August 1, 2013 ⁽¹⁾

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	200	14.8	95	247	24.6	195	447	20.2	291	88	20.1	57
		Pillars										392	14.8	186
		Pillars (Historic Mined Area) ⁽²⁾										224	26.9	193
	Sandra K	LTR				263	10.9	92	263	10.9	92	422	8.2	111
		Pillars				77	12.3	31	77	12.3	31	14	14.4	6
	El Silencio	LTR										681	11.6	254
		Pillars										1309	9.7	406
	Verticales	LTR										771	7.1	176
	Subtotal Segovia Project	LTR	200	14.8	95	510	17.5	287	709	16.8	383	1962	9.5	598
		Pillars				77	12.3	31	77	12.3	31	1715	10.9	599
Pillars (Historic Mined Area) ⁽²⁾											224	26.9	193	
Carla	Subtotal Carla Project	LTR				154	9.7	48	154	9.7	48	178	9.3	53

(1) 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 subdivided into Pillar areas (“Pillars”), which represent the areas within the current mining development, and Long-Term Mineral Resources (“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.

(2) Note Providencia Pillars has been subdivided into areas of increased mining of historical areas to provide a breakdown on the level of confidence.

Source: SRK

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 2016 is given in Table 6-7, with the majority of production noted to be from the Providencia Mine.

Table 6-7: Summary Statistics for Total Gold Production at Providencia, El Silencio and Sandra K Mines 2000 – 2016 ⁽¹⁾

Year	Tonnes (t)	Gold (oz)	Rec (%)	Gold Grade (g/t)
		Total		
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

(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.

Source: GCM, 2017

A big contributor to the ounces produced are the contract miners. Table 6-8 shows the Tonnes milled, gold sales in ounces, silver sales in ounces, realized gold and silver prices and FX rate for the last 6 years including the first quarter of 2017.

Table 6-8: Summary Statistics for Total Production Including Contractors 2012 - 2016

Description	2012	2013	2014	2015	2016
Tonnes milled					
Company operated	175,345	188,401	104,359	104,346	145,541
Contract miners	85,075	139,013	133,380	106,703	139,353
Total	260,420	327,414	237,739	211,049	284,894
Per day	713	897	651	578	778
Gold sales (oz)					
Company operated	29,318	24,016	15,237	15,935	30,075
Contract miners	48,702	55,483	58,604	77,358	95,772
Total	78,020	79,499	73,841	93,293	125,847
Per day	214	218	202	256	344
Silver sales (oz)					
	88,762	111,173	86,445	99,236	144,178
Realized prices (net of refining charges) (US\$ per oz)					
Gold	\$1,665	\$1,418	\$1,237	\$1,125	\$1,220
Silver	\$30	\$23	\$18	\$14	\$14
COP/USD FX Rate	1,797	1,869	2,002	1,743	3,051

Source: GCM, 2017

Table 6-9 shows the production per mine for Company operated mining areas.

Table 6-9: Company Operated Mining Areas Summary Statistics for 2013 – 2016 ⁽¹⁾

	2013	2014	2015	2016
Milling days	365	365	365	366
Company-Operated Mining Areas				
Mina Providencia				
Tonnes milled			27,800	49,355
Head grade (g/t)			4.51	6.60
Recovered gold (oz)			3,640	9,435
Mina Sandra K				
Tonnes milled			7,523	5,296
Head grade (g/t)			4.30	10.11
Recovered gold (oz)			938	1,551
Mina Carla				
Tonnes milled				
Head grade (g/t)				
Recovered gold (oz)				
Mina El Silencio				
Tonnes milled			69,025	90,890
Head grade (g/t)			3.30	2.58
Recovered gold (oz)			6,612	6,788
MILL CIRCUIT INVENTORY CHANGE	1,856	1,915	4,679	12,400
Total Company-Operated				
Tonnes milled	188,401	104,358	104,348	145,541
Tonnes milled per day	516	286	286	398
Average mill head grade	4.35	4.45	3.69	4.22
Mill Recovery (excluding mill circuit)	86.0%	89.2%	90.3%	90.1%
Total Gold Production (oz)	24,526	15,235	15,869	30,174

(1) Detailed information by the mine is not available for 2013 and 2014.

Source: GCM, 2017

Table 6-10 shows the production per mine for Contract Miner operated mining areas.

Table 6-10: Contract Miners Operated Mining Areas Summary Statistics for 2013 - 2016

	2013	2014	2015	2016
Milling days	365	365	365	366
Processed at Maria Dama Plant				
Mina Providencia				
Tonnes milled	33,102	33,029	13,282	13,102
Head grade (g/t)	15.39	21.94	55.07	53.00
Recovered gold (oz)	14,294	20,786	21,289	20,119
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
Head grade (g/t)	17.64	21.91	55.14	50.50
Recovered gold (oz)	32,825	23,438	45,086	64,467
Other				
Tonnes milled	24,283	51,423	65,277	82,168
Head grade (g/t)	5.52	7.61	5.42	4.73
Recovered gold (oz)	3,765	11,213	10,295	11,262
Total Contract Miners				
Tonnes milled	139,013	133,380	106,702	139,355
Tonnes milled per day	381	365	292	381
Average mill head grade	14.32	15.49	24.72	23.75
Mill Recovery	87.0%	89.2%	90.4%	90.1%
Recovered gold (oz)	55,700	59,271	76,669	95,847
Processed at Contract Miner Facility ⁽¹⁾				
Total Gold Production (oz)			357	240

(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 GCM's behalf. As such, tonnes, grade and recovery data is not available.
 Source: GCM, 2017

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

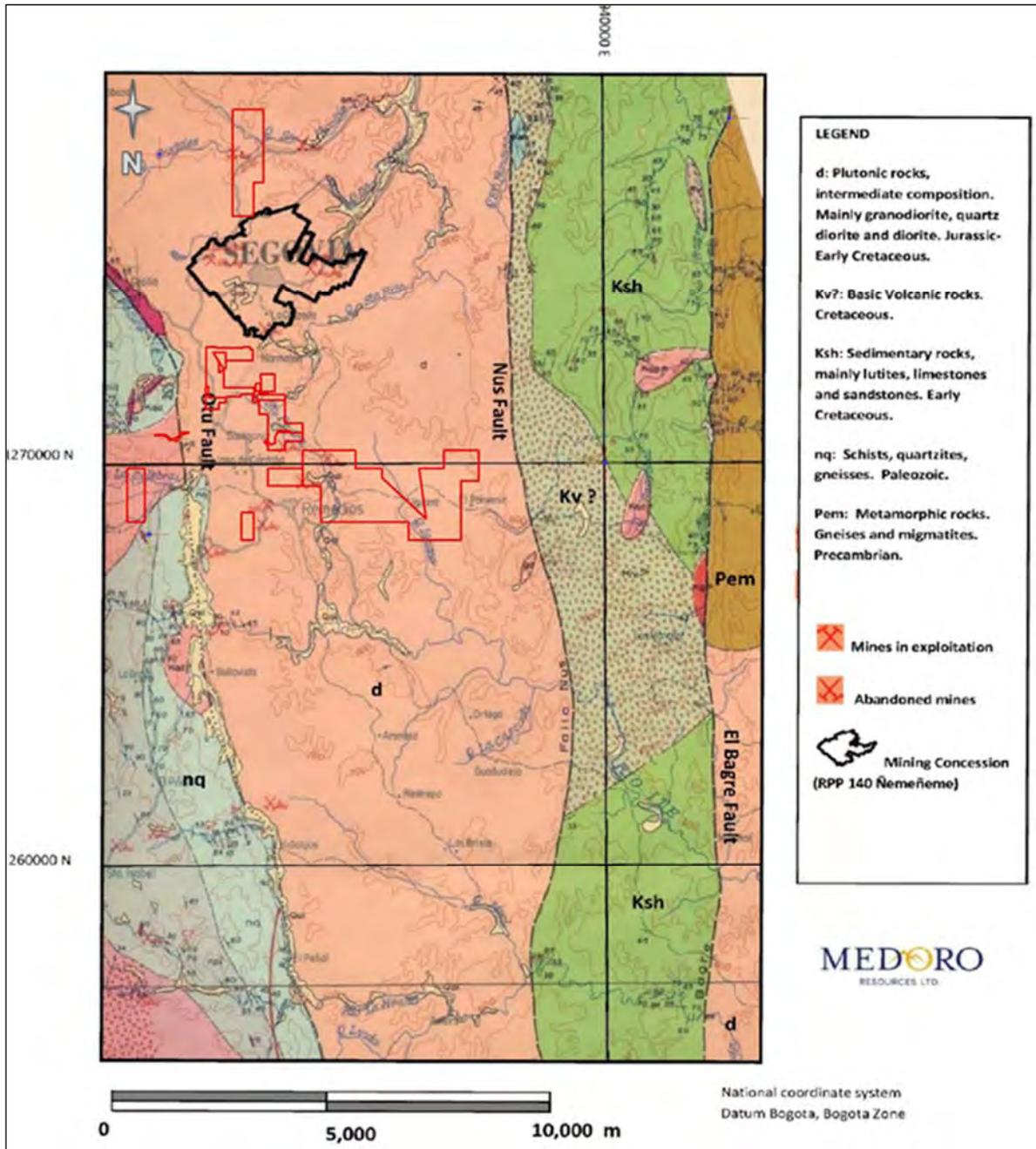
The Segovia-Remedios gold district is located in and around the Municipalities of the same names within the Colombian Central Cordillera. This region is dominated by metamorphic and igneous rocks which are broadly orientated north-south. The region also contains minor/localized deposits of unconsolidated 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 Isobel 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 km² 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.



Source: GCM, (under previous ownership Medoro)

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

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

- Early compression to produce 010 040° towards 030° and vertically dipping at 310 295° 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;

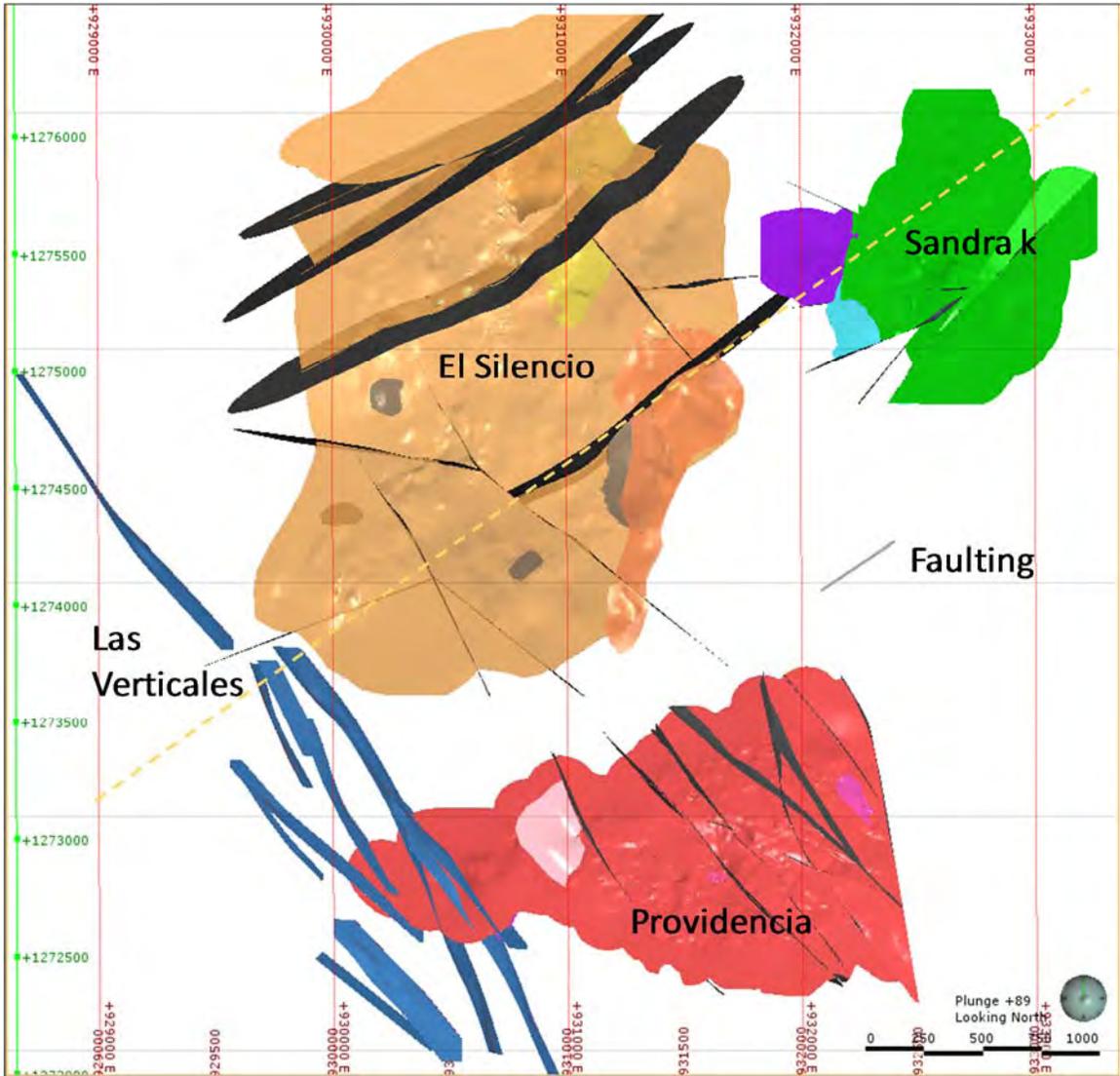
- Clean fractures at 310° to 270° which dip 25° to 30° towards north; and
- Vertically dipping fractures which trend 325° (González and Londoño, 2002).

7.2 Local Geology

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

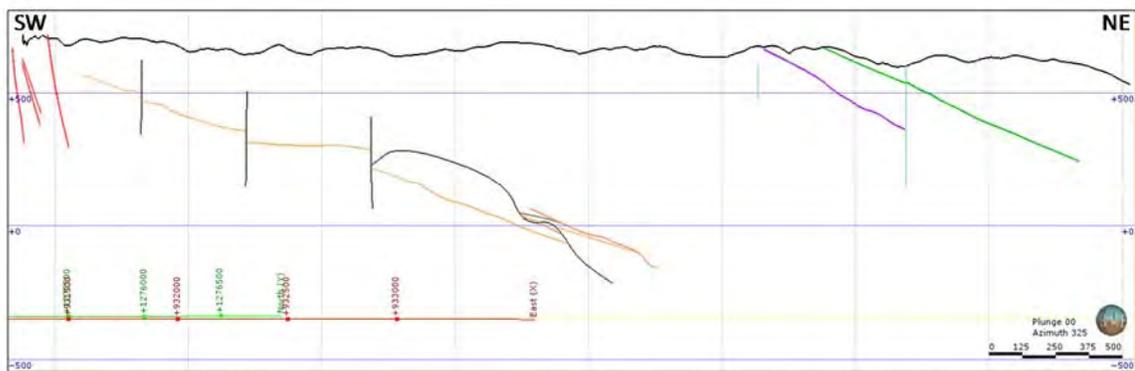
- Providencia;
- El Silencio;
- Sandra K; and
- Las Verticales.

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 degrees. The Las Verticales Vein System is made up of a series of structures which strike to the northwest and are considered steeply dipping (>80°).



Source: SRK, 2017

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



Source: SRK, 2017

Figure 7-3: Schematic Cross Section (SW-NE) Showing Example of the Mineralized Veins

7.2.1 Segovia Licenses

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.

7.2.2 Mineralization

Gold mineralization at Segovia occurs in mesothermal quartz-sulfidic veins hosted by granodiorites 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 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 $65-85^\circ$ 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; there 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 hangingwall 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: GCM, 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)



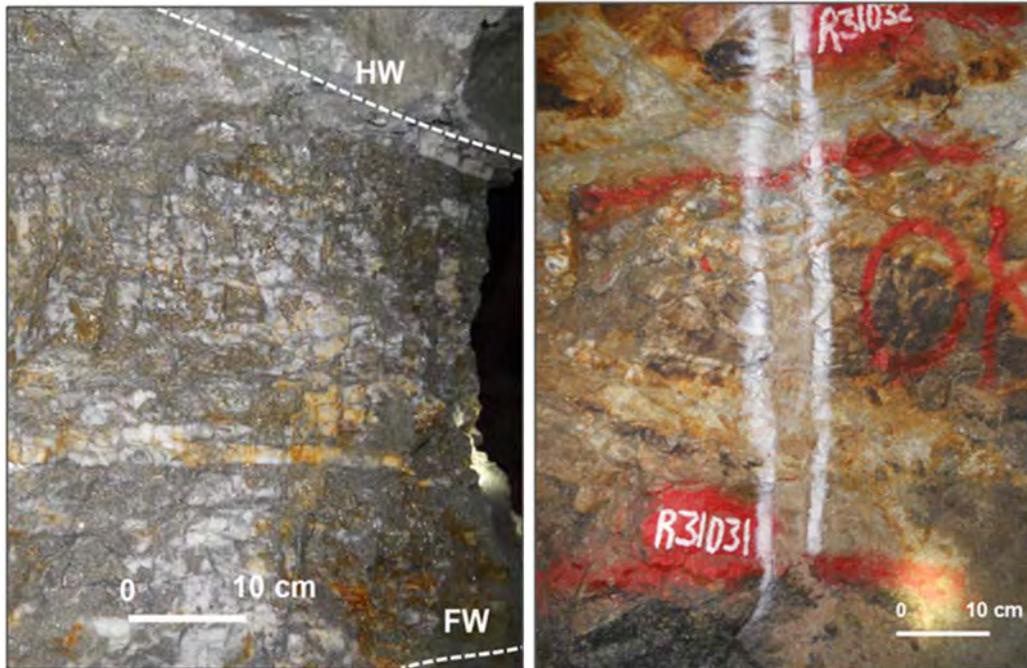
Source: SRK, 2014

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



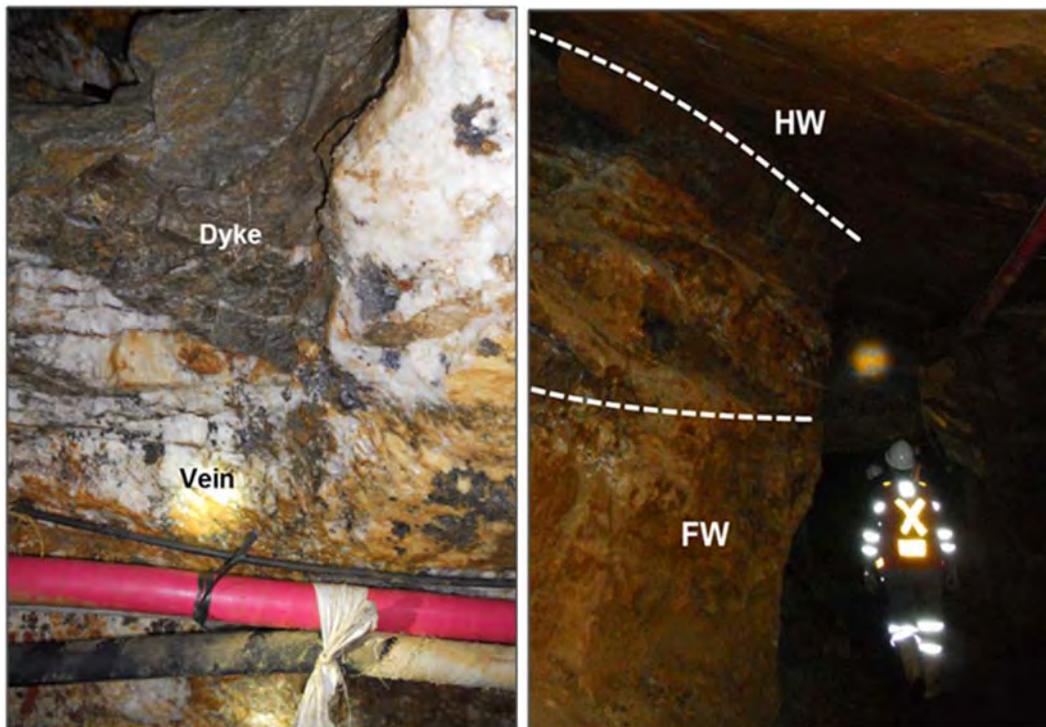
Source: GCM, 2014

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, 2014

Figure 7-8: Vein Exposures in Underground workings at El Silencio Showing Relationship with Dykes (left) and Typical Vein Thickness at Dewatered Mine Level 29 (right)

7.2.3 Structural Analysis

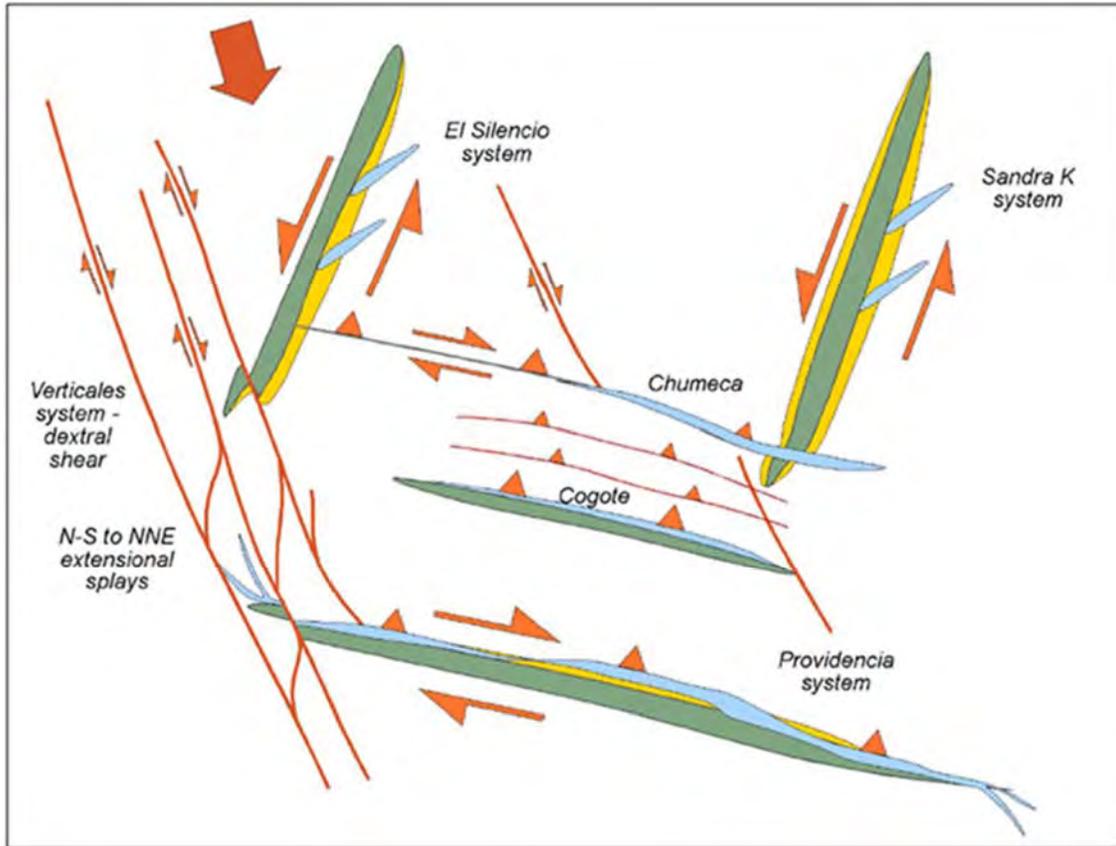
SRK notes that detailed structural analysis per vein at the Segovia project has been completed by the Company's external structural consultant (Dr. Tony Starling), considering controls on dike emplacement, phases of quartz veining and deformation, vein morphology and termination, and kinematic evolution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



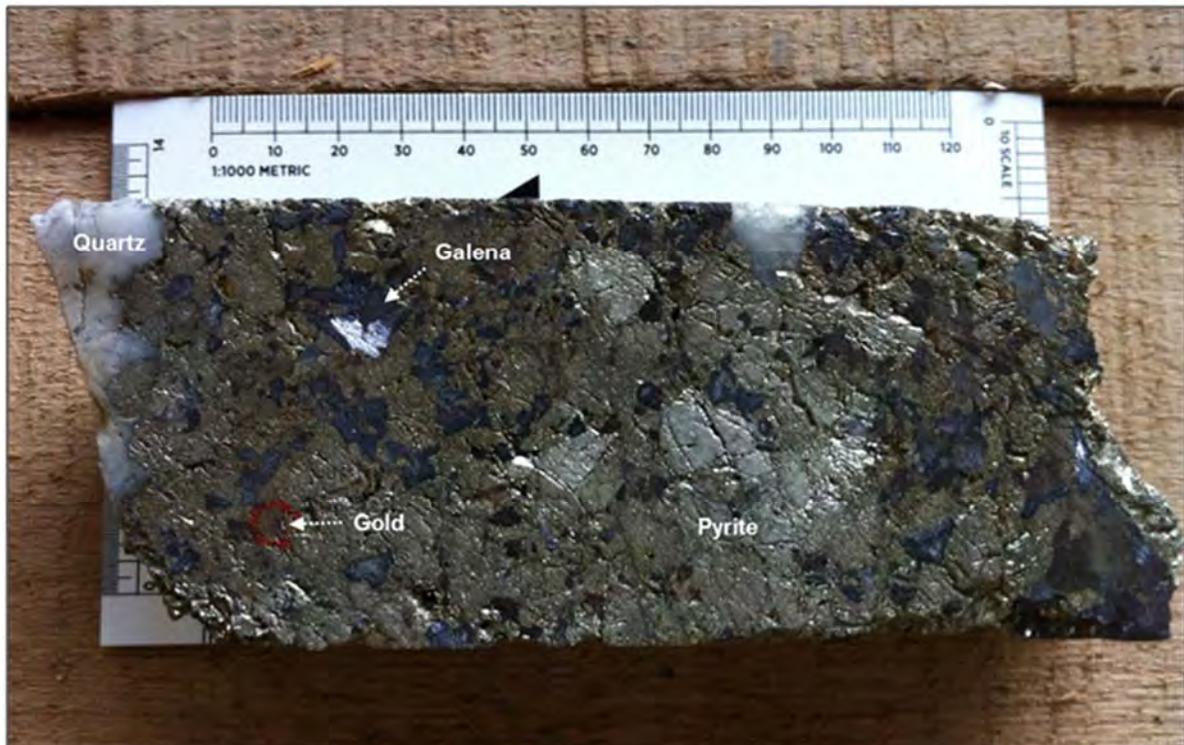
Source: Telluris Consulting, 2013

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 2.0 km on a trend of 140° S and dip 75° 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 27° towards E, 2.2 km (El Silencio).

7.2.4 Mineralization Relationships

SRK noted from discussions with the GCM geologist, during a review of the drillcore 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 grades.



Source: SRK

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.

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 has 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 centimeters 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 GCM exploration adit at the Carla Project.



Source: SRK, 2012 – March 2012 site inspection

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

7.3 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 2.0 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.

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 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.

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 hangingwall, 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 previous NI 43-101 (SRK, 2014), work has progressed on surveying the underground workings and development of the underground workings. The improvement in the spatial location of the workings has enabled GCM 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 GCM 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, GCM has completed a review of the original sample locations underground to verify the location, and adjusted the elevation accordingly. SRK has completed a number of technical meetings at GCM offices in Medellin to review the geological database.

9.2 Relevant Exploration Work

9.2.1 GCM Exploration Work

Recently 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, hangingwall and footwall from both sides of the drive depending on the exposure of the vein (complete exposure). GCM 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 GCM since ownership has changed over time, but in general remains consistent in terms of sample volume.

Sampling is completed by GCM 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 meter, 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).
- In each sampling point shall be taken as far as possible three samples, thus distributed: footwall, mineralized structure and hangingwall. In areas where full exposure is not possible, this is noted on the sampling sheet.

The process 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 hangingwall (RS).

In all sampling completed by the Company, a clean plastic sheet is used to collect each sample to prevent contamination. GCM guidelines state a channel of 100 cm x 5 cm x 3 cm, should be taken, with a density of rock of 2.7 g/cm³, (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 hangingwall 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. GCM has reported subsequently that the sample depth has been increased to obtain the desired amount of sample which is required by the laboratory. GCM has not employed

any subsampling routines within the mine as testwork indicates that this results in large sampling errors.



Source: GCM

Figure 9-1: GCM Sampling Procedures 2012 - 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 are checked and re-labelled if required prior to dispatch to SGS Medellin 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).

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 future reference which is then photographed for a digital archive and for sampling quality control (Figure 9-2).



Source: SRK

Figure 9-2: Channel Sampling Completed by Company during 2013 Sampling Program

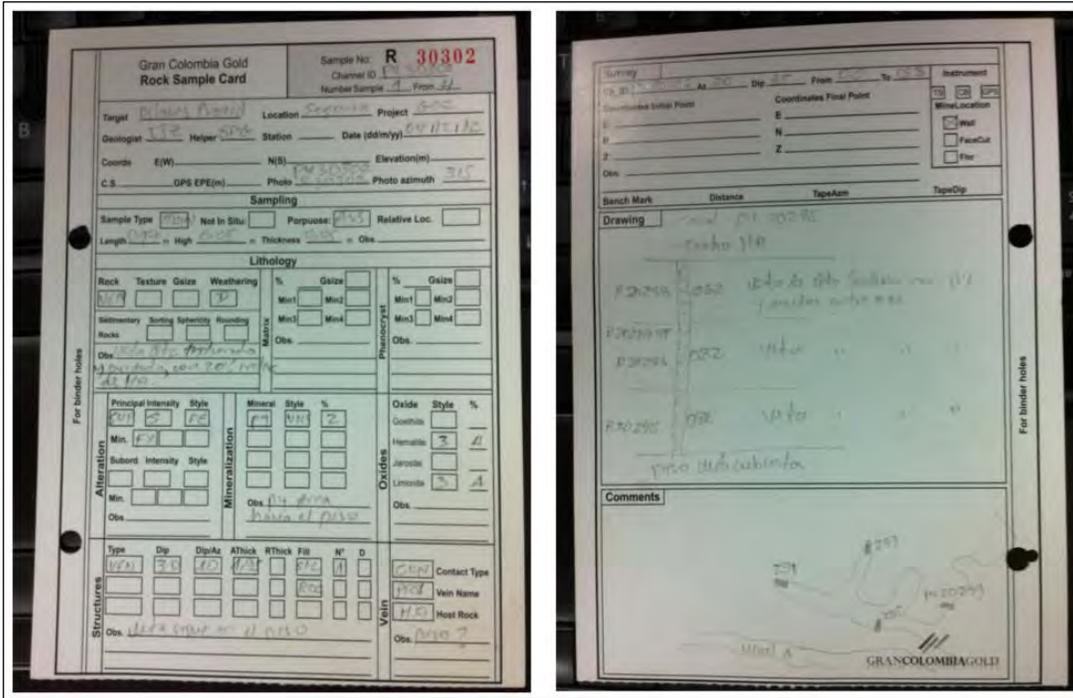
In 2016 SRK completed a site inspection with the intent to review the current sampling procedures at Segovia. SRK visited Providencia during routine sampling by GCM at the base of the mine. During the review SRK noted the procedures were followed in terms of safety, mark-up, logging, but noted that the 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. A diamond saw is then used to cut the channel 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.

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 therefore a full review of the sampling cards (Figure 9-3) which highlight under the Observations if the vein is located in the roof or the floor (“*veta sigue en el piso*”). SRK recommended that the Company review all the sampling cards and in the case of the vein being located as the first or last sample, revisit the channels underground to flag any samples which are not representative of the full vein width.



Source: GCM

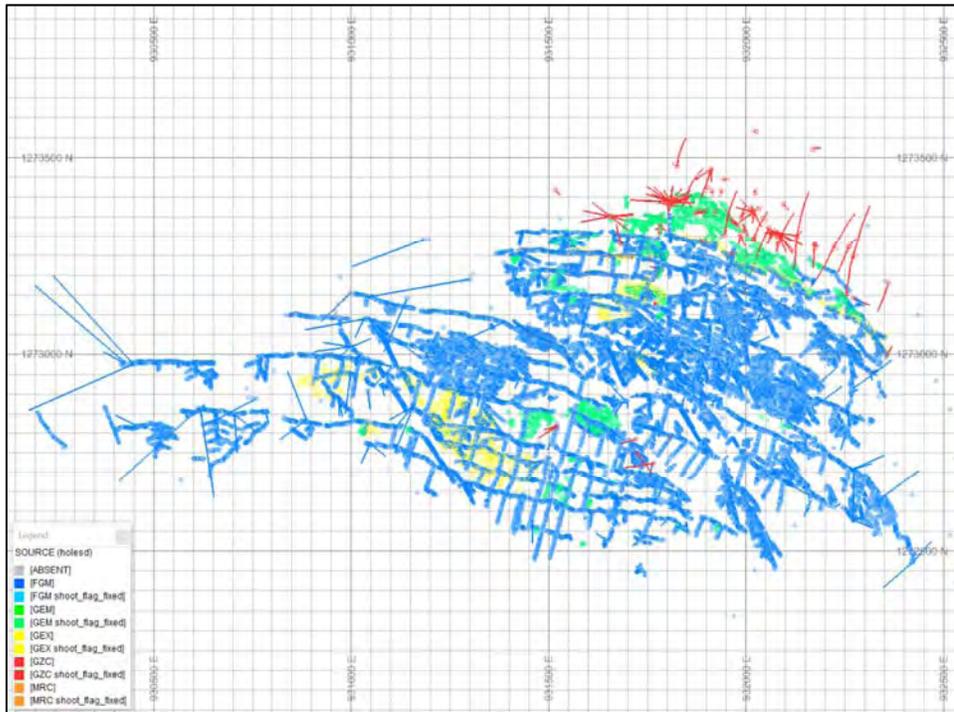
Figure 9-3: Logging Sheets used for the Company Channel Sampling Program

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 9-4.

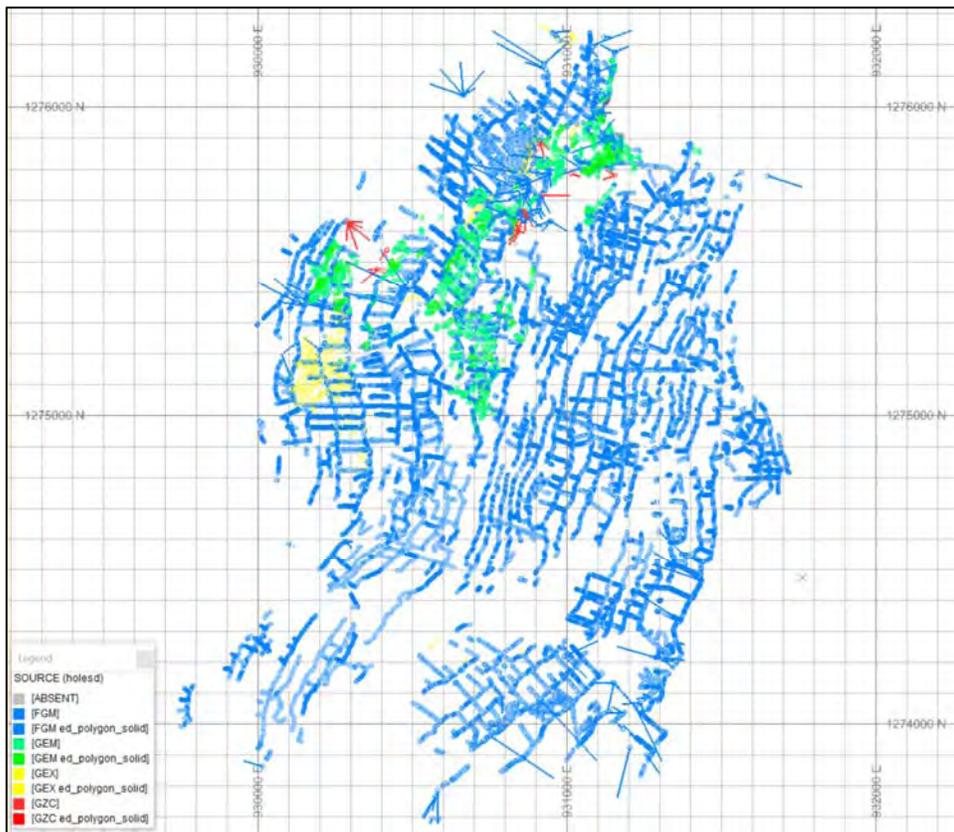
Table 9-1: Summary of Sampling Sources in Exploration Database

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

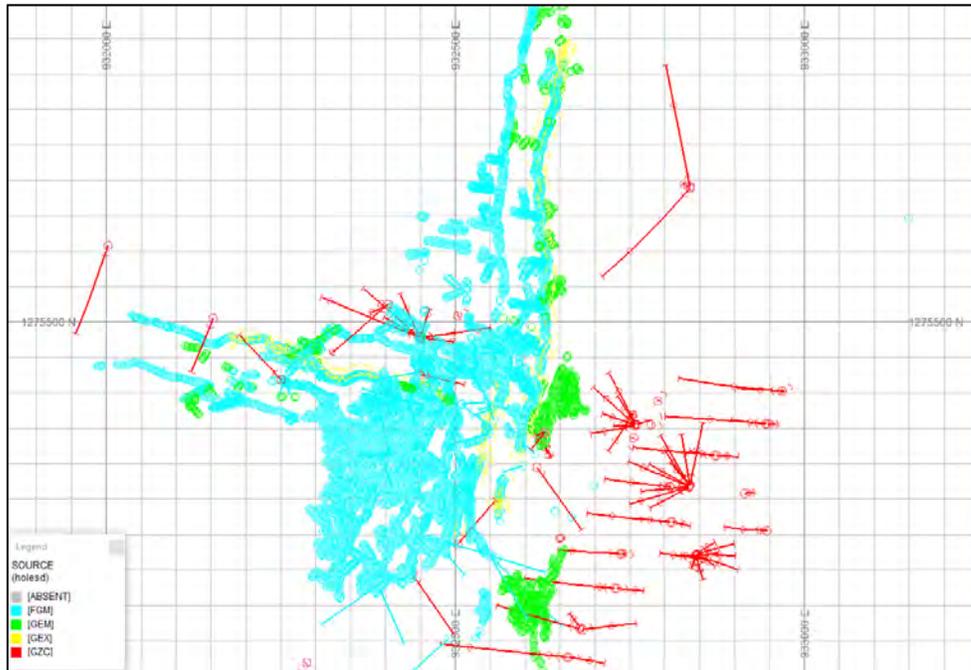
Source: SRK



Providencia



El Silencio



Sandra K

Source: SRK, 2017

Figure 9-4: Mine Sampling Split by Data Source for Providencia (top), El Silencio (middle), and Sandra K (bottom)

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

10.1.1 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.

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 GCM 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 Medellin, 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 Medellin.

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 GCM 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 was logged and sent for preparation and fire assay to the SGS facility in Medellin. Additionally, at Sandra K 11 underground holes were drilled in the Chumeca vein area totaling some 2,038.3 m. A summary of the number of holes per mine split by Company is shown in Table 10-1 while drillhole and sampling plotted by location are presented in Figure 10-2.



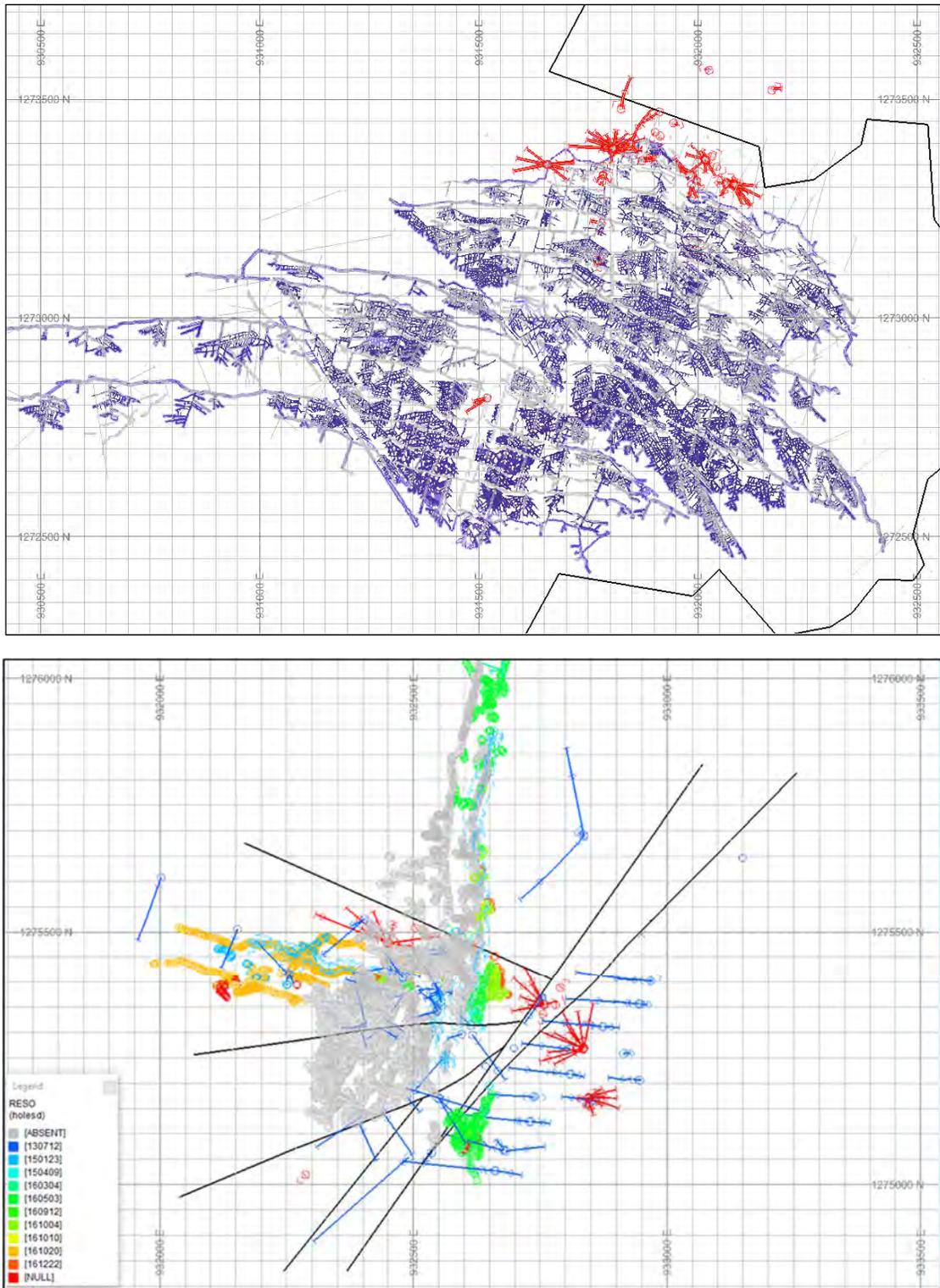
Source: GCM, 2017

Figure 10-1: Underground Drilling Rig (LM30) in use at Providencia

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	3,068	2,974.9	FGM	1,586	971.8	FGM	1,301	920.6	FGM	5,955	4,867.2
	GEM	4,502	4,372.1	GEM	6,226	5,320.0	GEM	1,933	1,851.1	GEM	12,661	11,543.2
	GEX	615	1,061.3	GEX	384	499.5	GEX	219	430.7	GEX	1,218	1,991.4
	MRC	292	241.9	MRC	0	0.0	MRC	0	0.0	MRC	0	0.0
	Subtotal	8,477	8,650.2	Subtotal	8,196	6,791.3	Subtotal	3,453	3,202.3	Subtotal	20,126	18,643.7
Drillhole	FGM	231	26,289.0	FGM	198	13,922.5	FGM	48	3,252.7	FGM	477	43,464.2
	GZC	142	25,403.8	GZC	61	6,855.6	GZC	100	18,672.0	GZC	303	50,931.4
	Subtotal	373	51,692.8	Subtotal	259	20,778.1	Subtotal	148	21,924.6	Subtotal	780	94,395.6
Historical	FGM	36,918	36,404.3	FGM	57,178	64,340.9	FGM	7,686	5,652.1	FGM	101,782	106,397.4
	Subtotal	36,918	36,404.3	Subtotal	57,178	64,340.9	Subtotal	7,686	5,652.1	Subtotal	101,782	106,397.4

Source: SRK



Source: SRK, 2017

Figure 10-2: Providencia (top) and Sandra K (bottom) Drillhole and Sampling Plot Colored by Database Phase (red indicates new data)

10.1.2 Carla

No new drilling has been completed at Carla since the previous Mineral Resource estimate. During 2011, GCM 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 current 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.

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

GSG				GSG Total		GZC				GZC Total		Grand Total	
New		Original		Subtotal		New		Original		Subtotal		TOTAL	
Count	Total (m)	Count	Total (m)	Count	Total (m)	Count	Total (m)	Count	Total (m)	Count	Total (m)	Count	Total (m)
4	438.49	48	9,085	52	9,523	5	850	-	-	5	850	57	10,373

Source: SRK, 2013

10.2 Procedures

10.2.1 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 GCM 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.

10.2.2 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.

GCM 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.

10.2.3 Core Logging

During the 2012, 2013 and 2016 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.

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 10-3;
- Technicians at the core shed log the core for recovery and RQD;
- All core is photographed wet;
- 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 hangingwall 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 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 the SGS Colombia S.A. facilities in Medellin 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 Access database maintained on site by one of two responsible data managers.

10.2.4 Core Storage

The GCM 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, with sufficient space for the on-going exploration work (Figure 10-3).



Source: SRK

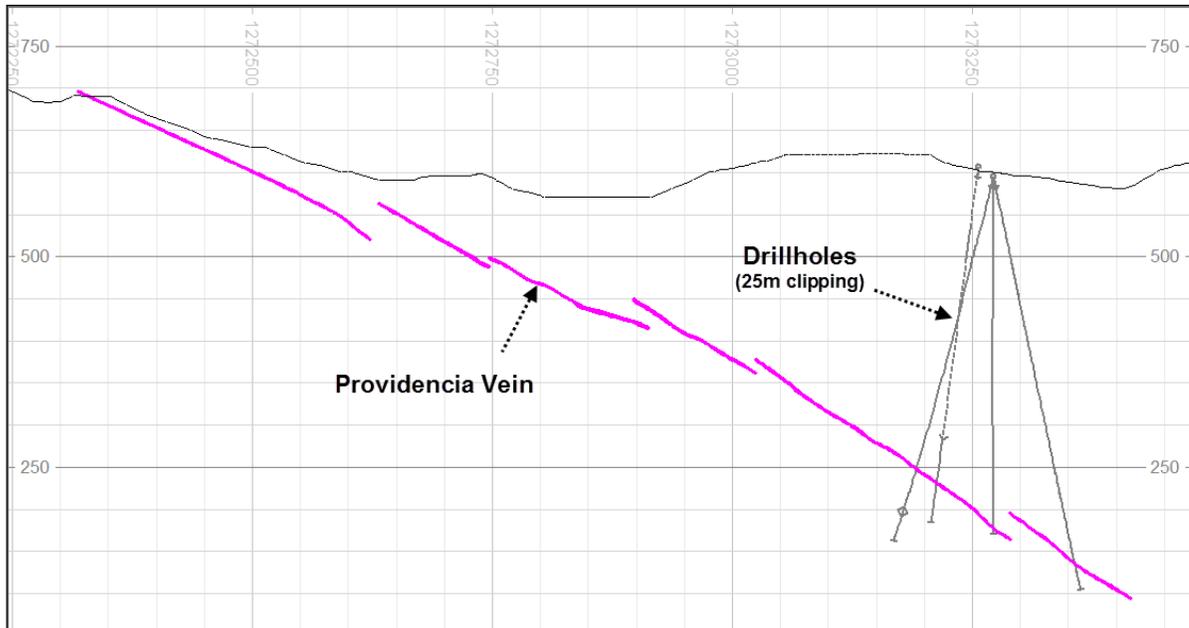
Figure 10-3: Core Storage Facility at Segovia

10.3 Interpretation and Relevant Results

At Providencia, the drilling intersects the mineralised 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. The Providencia drillholes are plotted on sections oriented north 25° east across the principal structural control of the deposit and spaced approximately 50 to 100 m apart. The dips range from -64° to -90° degrees, with the average dip of the holes in the order of -83° and hole lengths ranging from 140 to 550.0 m. In places, fan drilling has been completed to maximise the information made available from a single drill site.

During the latest exploration program, the GCM drilling completed at Sandra K intersects the mineralization largely from the east and data is plotted on sections orientated south 95° east across the strike of the target structure and spaced approximately 50 m apart. The dip of the holes is typically either -60° or -70°, and hole lengths range from 160.0 to 326.1 m. A limited number of drillholes with more variable orientation has also been drilled to target the north-dipping Chumeca Vein.

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° degrees, 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

Figure 10-4: Cross Section (25m clipping width) through the Providencia Deposit, Showing Typical Drillhole Orientation, looking West

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.

11 Sample Preparation, Analysis and Security

11.1.1 Diamond Drillcore

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 palm top computers with designed drop-down menus as well as space allocated for detailed descriptions;
- Sampling lengths are allocated; only the vein material and through into the hangingwall 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 Medellin 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 Access database maintained on site by one of two responsible data managers.



(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.

Source: Documented by GeolIntegral, (2011) in GCM Internal Report.

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

11.2 Sample Preparation for Analysis

11.2.1 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 105°C 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 SGS Laboratory

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

SRK visited the SGS Medellin sample preparation facilities on November 17, 2011. The sample preparation method at SGS Medellin was to dry the sample in a large oven (at 105°C 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.

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

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 SGS Laboratory

Since August 15, 2013, SGS has upgraded the SGS laboratory at Medellin 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 (Medellin) 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).

11.3.3 Mine Laboratory, 2015

GCM 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. The only samples assayed in the onsite lab 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 Medellin for analysis.

SRK visited the facility on August 10, 2016. The sample preparation methods are consistent with those used at the SGS facility (Figure 11-2). 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 (Medellin) 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

11.3.4 Specific Gravity

GCM, 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: Core Sample coated in paraffin wax with logging sheet, prior to entry to the database.

The program has been implemented by the Company and a total of 580 drill core and channel samples have been analyzed to date. Density values measured range from 1.51 to 4.97 g/cm³.

A total of seven samples were sent to SGS Peru in 2012 for external verification. 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/cm³ as a reasonable representation of mineralized vein density.



Source: SRK

Figure 11-3: Core Sample coated in paraffin wax with logging sheet, prior to entry to the database

11.4 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 2013 sample submissions.

Certified Reference Materials (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: Summary of Analytical Quality Control Data Produced by the Company for the Project (2013-17)

Sampling Program	Count Gold	Total (%) Gold	Comment
Drilling Blanks	90	0.25%	Sourced from Rocklabs
Fine Blanks	200	0.56%	
Coarse Blanks	1,510	4.24%	
CRM Samples	83	0.23%	Sourced from Rocklabs, Oreas, and Geostats
Field duplicates	16	0.04%	
Mine channel duplicates	232	0.65%	
Exploration channel duplicates	81	0.23%	
Drilling duplicates	116	0.33%	
Total QC Samples	2,328	6.53%	

Source: SRK, 2017

11.4.1 Standards

The Company has introduced twelve different CRMs into the sample analysis stream. The CRMs for gold were supplied by Rocklabs, New Zealand, by Geostats, Australia, and by Ore Research and Exploration, Australia (Table 11-2). Summary statistics for the four most commonly used CRM samples are shown in (Table 11-3 and Figure 11-4). 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 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.

Four standards have been most heavily used in the period from 2015 to 2017: SF57, SG40, SJ80, and SK78. SRK has reviewed the CRM results 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) and hence give sufficient confidence in the assays for these to be used to derive a Mineral Resource estimate.

Table 11-2: Summary of Certified Reference Material Produced by Geostats and Rocklabs and submitted by the Company in sample submissions

Standard Material	Gold; Au (ppm)		
	Certified Value	SD	Supplier
G910-7	0.51	0.03	Geostats Pty Ltd.
SE58	0.607	0.019	Rocklabs
SF57	0.848	0.03	Rocklabs
G908-4	0.96	0.05	Geostats Pty Ltd.
SG40	0.976	0.022	Rocklabs
SJ80	2.6656	0.057	Rocklabs
SK78	4.134	0.138	Rocklabs
SL76	5.96	0.192	Rocklabs
SQ47	122.3	5.7	Rocklabs
Oreas 12A	11.79	0.24	Oreas
SP73	18.17	0.42	Rocklabs
SN75	8.671	0.199	Rocklabs

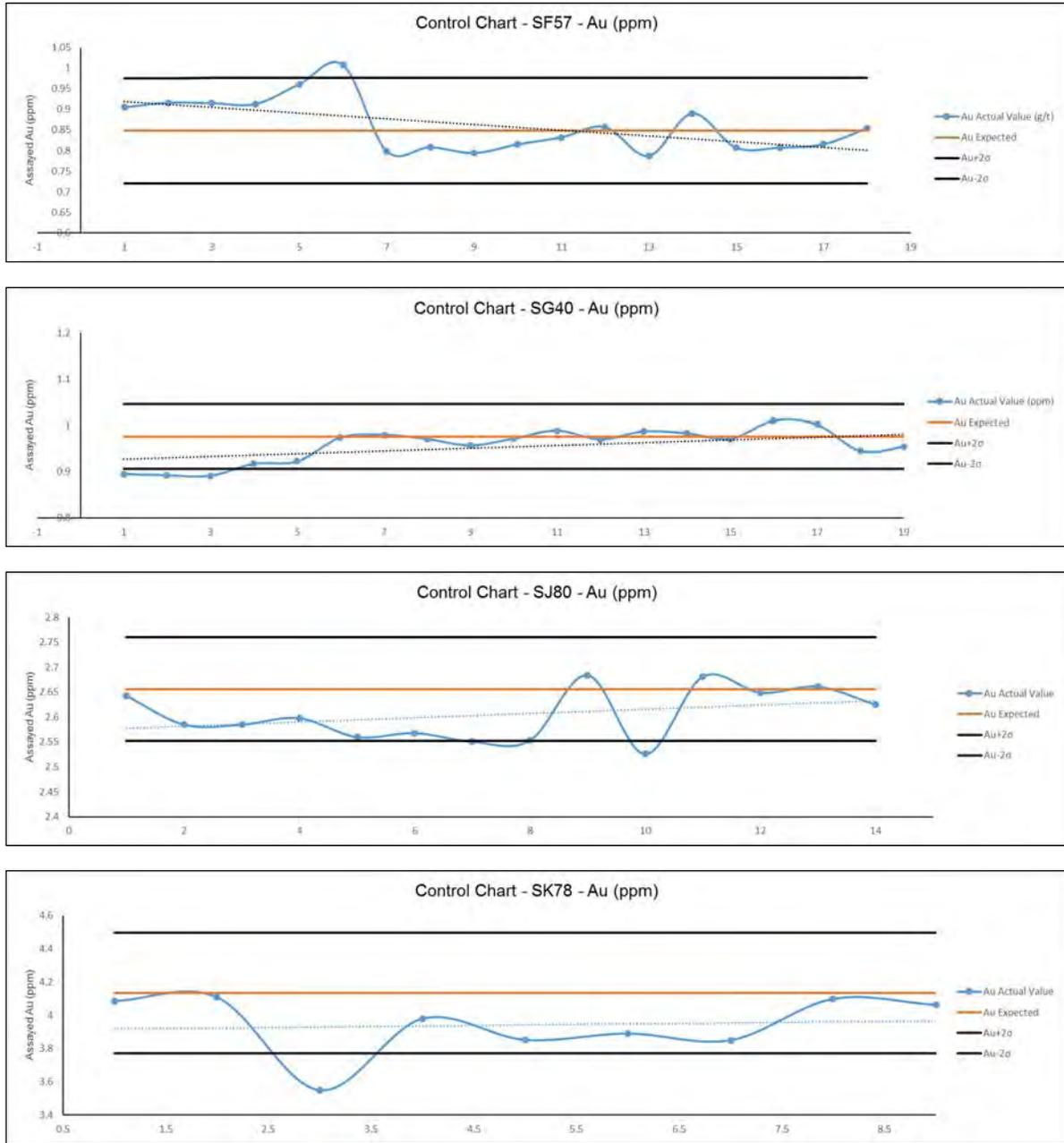
Source: SRK

Table 11-3: Analysis of Gold Assays vs. Assigned CRM Values for 2015-2017 Submissions

Standard Code	Count	Assigned	Mean	Variance	Maximum	Minimum
Standard SF57	18	1.52	0.86	0.42%	1.008	0.787
Standard SG40	26	1.52	0.96	0.12%	1.01	0.891
Standard SJ80	14	0.51	2.60	0.27%	2.684	2.526
Standard SK78	9	3.474	3.94	3.29%	4.108	3.548

Source: SRK

Figure 11-4 shows the performance of SF57, SG40, SJ80, and SK78. 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 GCG 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. Although SF57 standards submitted in early 2016 returned higher-than-expected values, SRK notes that the values were generally within two standard deviations and the variance decreased over the next several months.



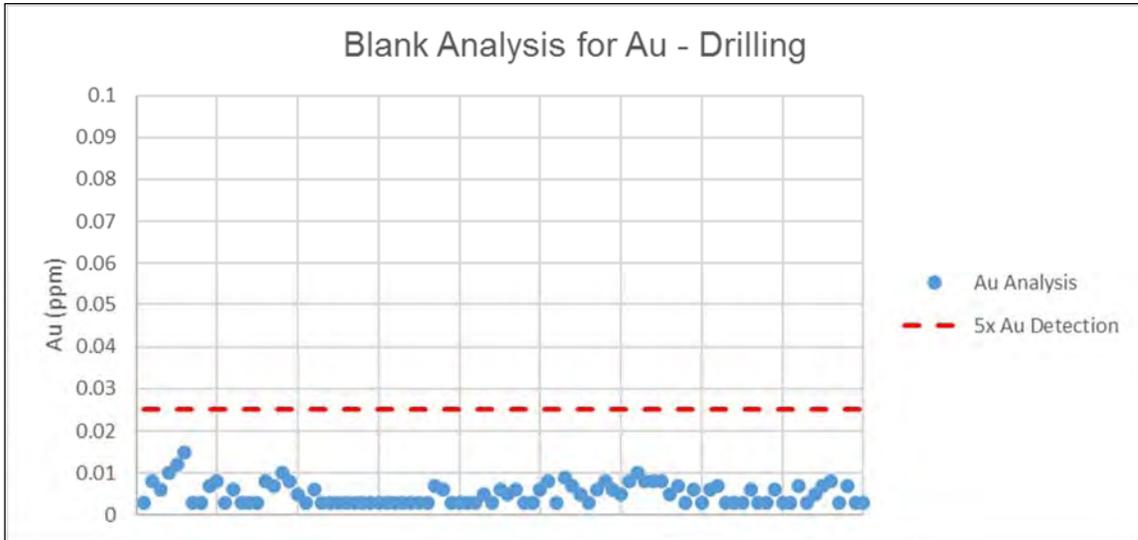
Source: SRK, 2017

Figure 11-4: Control Charts Showing Performance of Au Standards

11.4.2 Blanks

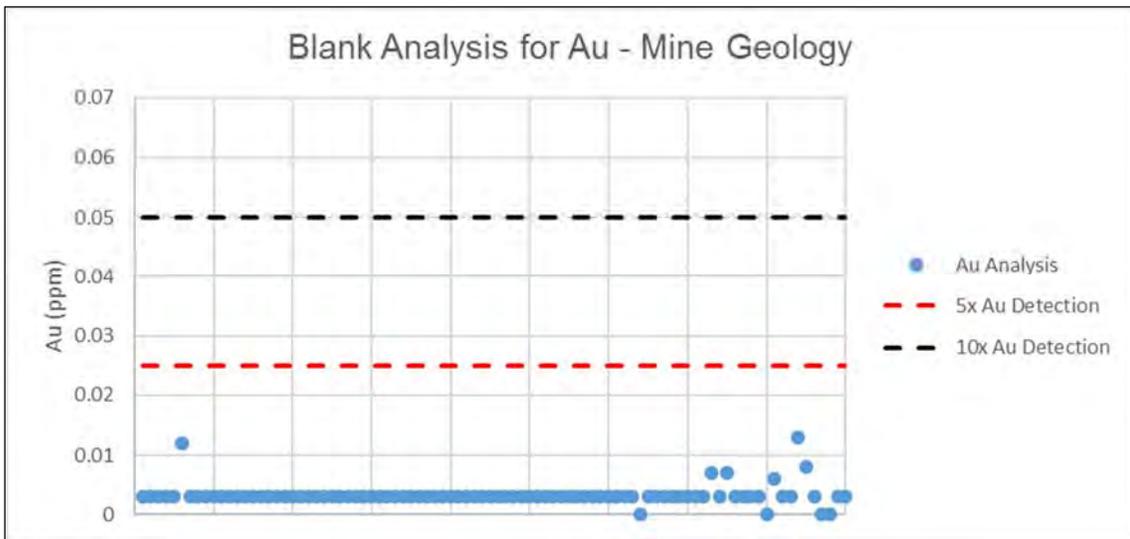
Coarse quartz brought in from Medellin, and a certified fine grained blank from Rocklabs are included in the sample stream. Blank samples were submitted with both mine drillcore (Figure 11-5) and mine pulps (Figure 11-6). Between 2015 and 2017, ninety blank samples were submitted with drilling samples to verify that contamination is not affecting assay results at Segovia. Between 2013 and 2017, 1,710 blanks (1,510 coarse blanks 200 fine blanks) were submitted with mine pulps, representing 5%

of the total sample submissions to date. Of the 1,800 total samples submitted, none were anomalous. SRK has reviewed the results from the blank sample analysis, and has determined that there is little evidence of sample contamination at SGS.



Source: SRK, 2017

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



Source: SRK, 2017

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

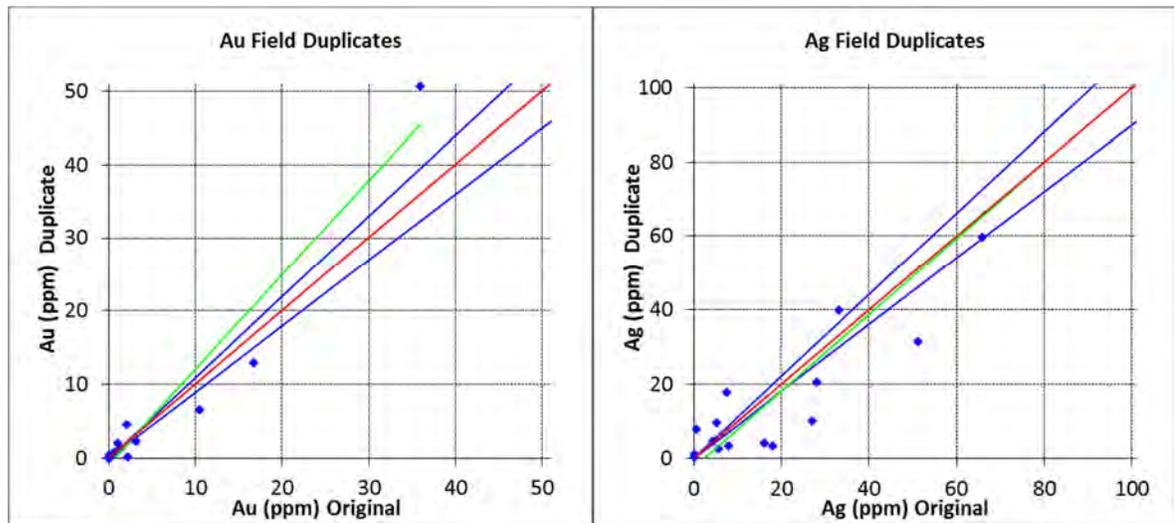
11.4.3 Duplicates

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; i.e., generate a new pulp using

the rejection of the sample. This new pulp is tested and the results are compared with the results of the original sample assayed by the original laboratory.

Sixteen field duplicates (1/4 core) were inserted into the routine sample submissions (0.04% of the total sample submissions) and assayed for Au and Ag to ensure laboratory precision. Despite the low number of samples, field duplicates showed fairly good correlation for both Au and Ag (97 and 91%, respectively; Figure 11-7).

In the context of a deposit with noted high geological variability, SRK is reasonably confident in the repeatability of the sample preparation process.



Source: SRK, 2017

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

11.4.4 Actions

Verification of Primary Laboratory by Umpire Laboratory

To confirm the quality of the assays at SGS (Medellin) submitted during the 2013-2017 programs, an umpire laboratory check was completed. To complete the analysis, selected batches from SGS Medellin were resubmitted to Actlabs Laboratories in Rionegro, Antioquia, Colombia.

The selected samples were sourced from a range of drillcore rejects, plus reject material from channel sampling from underground drives and pillars. Samples were selected on a batch basis.

Samples were submitted on a like for like basis with the original QAQC samples, including blank and CRM material replaced to ensure sufficient quality checks were in place. SRK independently reviewed the results and completed a comparison (Table 11-4, Figure 11-8 and Figure 11-9). In general, the performance of the control samples inserted with samples submitted for assaying is acceptable, with the highest errors noted in the exploration drilling due to the relatively low grade nature of the selected samples. The key values for comparison are considered to be the Mine Drilling based on the mean grades, which returned a difference in mean grades of 1%.

SRK notes that for the exploration drilling the reported percentage difference for all 117 duplicates is relatively high (50%), but this is in part due to the low-grade nature of the selected samples. SRK

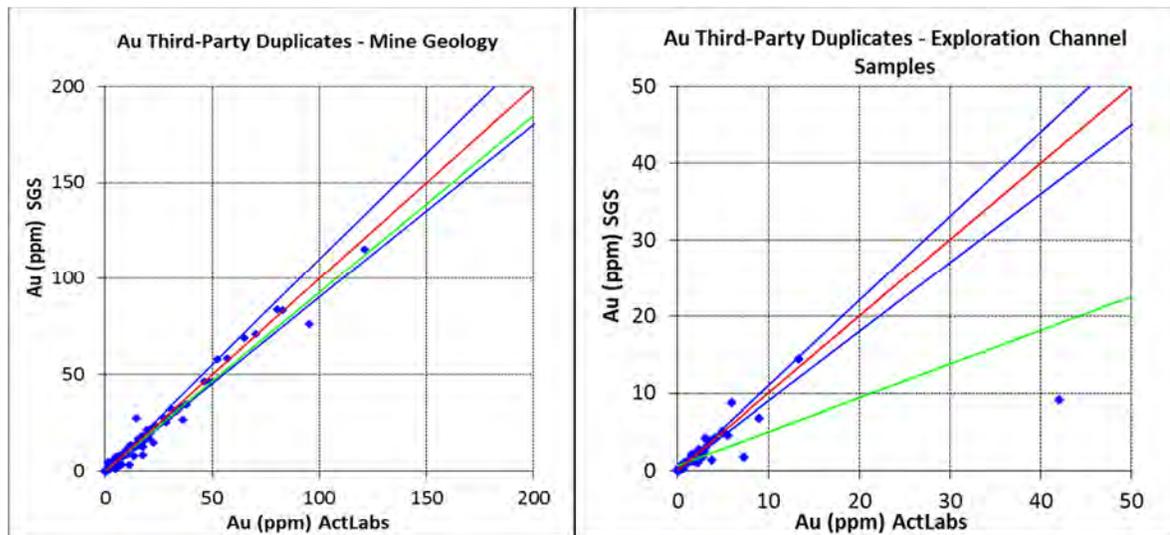
revised the analysis to only consider samples where the original assay reported higher than 0.3 g/t Au, (35 duplicate pairs), which saw the mean grades increase to an average of 1.72 g/t and 1.76 g/t Au at Actlabs and SGS respectively. This represents a difference in the mean grades of 2%, which SRK considers to be within acceptable limits. One outlier was removed from the analysis which reported significantly different results.

The exploration channel sample dataset also showed a high bias towards Actlabs reporting higher, and SRK noted the presence of one significant outlier when Actlabs reported 42.0 g/t versus 9.2 g/t Au at SGS. The resultant plot reduced the sample population to 50 pairs, and the bias reduced from 51 % to 29 %. SRK noted four further samples where Actlabs reported higher results.

Table 11-4: Summary Statistics of SGS vs. Actlabs Pair Duplicate Assays

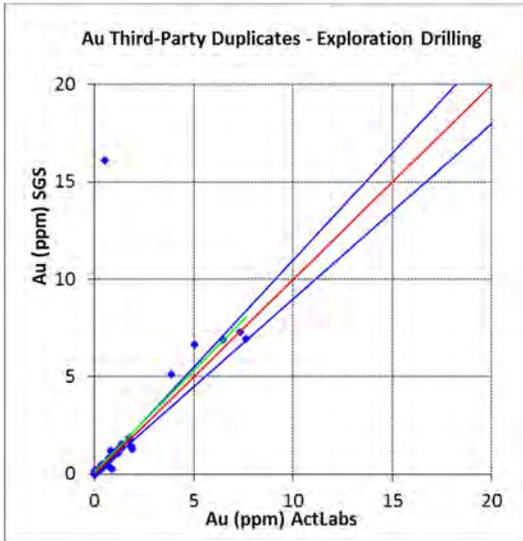
Exploration Drilling	Actlabs Au (ppm)	SGS Au (ppm)	% Difference
Mean	0.023	0.046	50%
Standard Deviation	1.293	1.983	
Min.	0.003	0.003	
Max.	7.610	16.110	
No. Samples	117	117	
Mine Drilling	Actlabs Au (ppm)	SGS Au (ppm)	% Difference
Mean	2.695	2.729	1%
Standard Deviation	71.701	66.251	
Min.	0.015	0.032	
Max.	1072.710	989.070	
No. Samples	232	232	
Channel Samples	Actlabs Au (ppm)	SGS Au (ppm)	% Difference
Mean	0.889	0.581	-53%
Standard Deviation	9.851	4.244	
Min.	0.003	0.012	
Max.	66.830	33.160	
No. Samples	63	81	

Source: SRK, 2017



Source: SRK, 2017

Figure 11-8: Dispersion Plots for Mine and Exploration Channel Third-Party Duplicates



Source: SRK, 2017

Figure 11-9: Third-party Duplicates for Exploration Drilling at Segovia

11.5 Opinion on Adequacy

GCM completed a very limited QA/QC program consisting of field duplicate sampling during the first few years of its exploration drilling programs.

SRK is of the opinion that, given the recent QA/QC results and comparison to the mill reconciliation, as well as the fact that Segovia is a producing mine with a robust production history, that the quality of the analytical data is sufficient to report mineral resources in the Indicated and Inferred categories. SRK strongly advises GCM to continue to support ongoing QA/QC monitoring and document the procedures and methods for actions to be taken in the event of failures.

12 Data Verification

12.1 Procedures

12.1.1 GCM 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 GCM, 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 GCM data for the previous Mineral Resource Estimate.

Additional channel sampling completed at the operating mines between 2013 to 2017, 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 Medellin, 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 GCM downhole surveys were resurveyed by an external contractor (Weatherford) and all GCM 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, and on February 10, 2017. 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 GCM offices in Medellin and site to review the geological database and progress on updating the 3D spatial locations with the new mine survey information.

Since GCM have taken ownership, SRK has completed reviews of the sample preparation methodology and assay laboratory at SGS Medellin, the old GEM 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:

- 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 hangingwall of the structure continuing in to the floor or roof of the underground drive (and therefore effectively representing incomplete samples). The exposed hangingwall 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.

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 GCM 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

GMC's Maria Dama process plant has been in production for many years and the metallurgical requirements for processing ore from the Providencia, Silencio and Sandra K Mines are well understood. 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 utilises some 780 diamond drillholes and over 100,000 historical samples and over 20,000 underground channel samples. 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 March 15, 2017.

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.

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.

Aranz Leapfrog Geo Modeling Software (Leapfrog) was used to construct the geological solids, whilst Datamine Studio RM (Datamine) was used to prepare assay data for geostatistical analysis, construct the block model, estimate metal grades and tabulate the resultant Mineral Resources. Snowden Supervisor software was used for geostatistical analysis and variography.

The Mineral Resource model presented herein represents an updated resource evaluation prepared for the Segovia Project. 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.

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 cut-off grades; and
- Preparation of the Mineral Resource Statement.

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 March 15, 2017. 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. 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 GCM staff. GCM provided to SRK an exploration database with flags of the main veins as interpreted by GCM. In addition to the database GCM also supplied a geological interpretation comprising preliminary 3D digital files (DXF) through the areas investigated by core drilling for each of the main veins.

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. The following process was undertaken to complete the geological models:

- Import the geological database and complete standard validation. Any erroneous data was reported to GCM for review.
- Import GCM geological interpretation, which was in polyline formats.
- Construction of the fault model using the GCM polylines 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.

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 Company geologists for use as a modeling guide 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 GCM to confirm that the current interpretation is representative of the underlying geological data, and the knowledge of the veins from site.

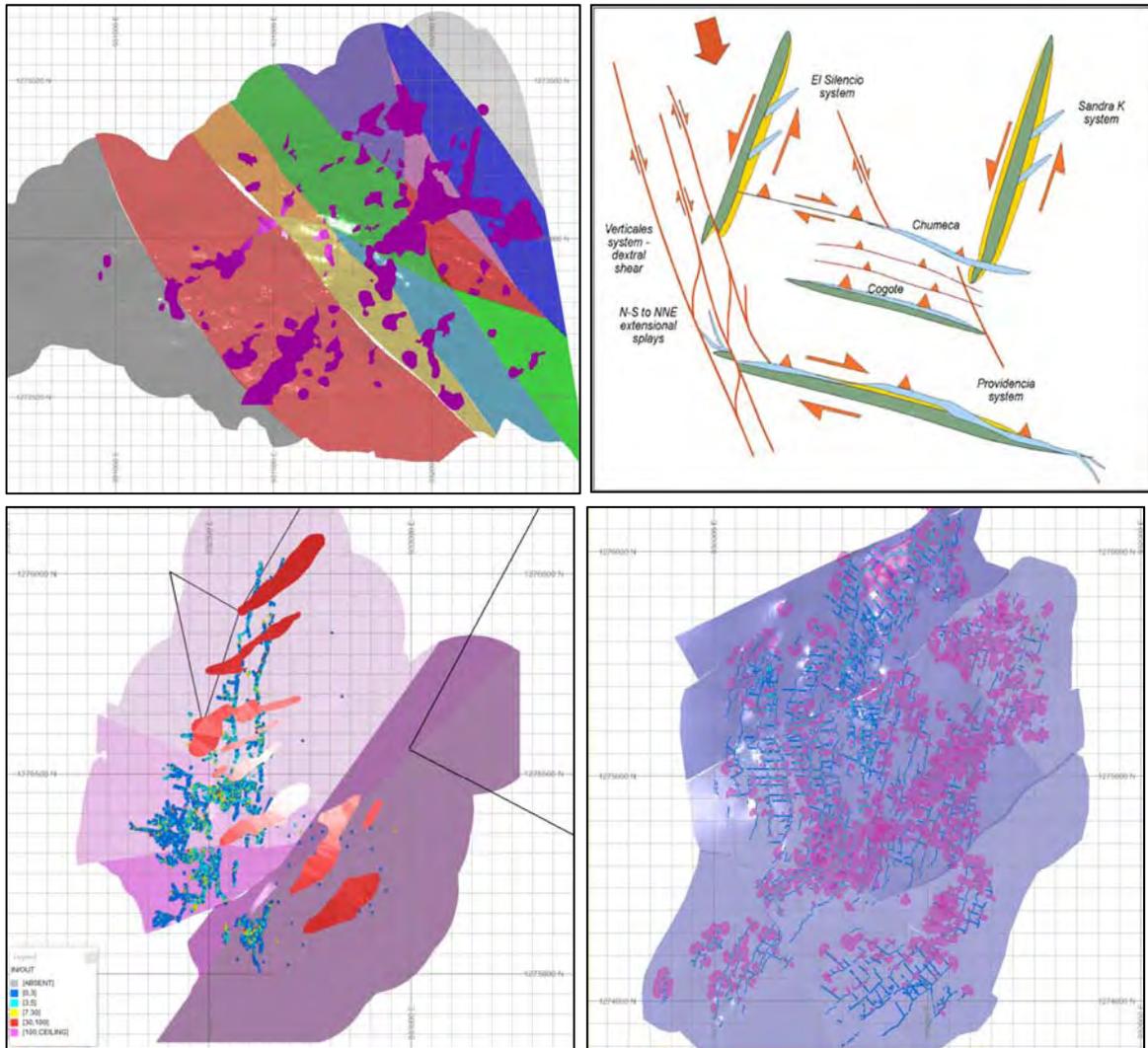
Statistical analysis and visual validation indicated the presence of two sample populations (medium and high grade), at El Silencio and Providencia (and to a limited extent at Sandra K). SRK considers that the application of internal high-grade domains should continue to be required at both these mines, and has introduced the same procedures at Sandra K, to ensure consistency across all three mines. SRK worked with GCM 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 14-1) 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 January 2013 (Figure 14-1).

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 Table 14-1.



Source: SRK

Figure 14-1: 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_1010 - pro_1120	LG
	20	pv_shoot_0317	HG
	30	pro_2010, pro_2860, pro_4150, pro_4320	Other
El Silencio	10	vem1001 - vem1110	VEM - LG
	20	es_shoot_0317	VEM - HG
	30	nal2001 - nal2004	nal
	40	vep3001	vep
	50	esi4001	esi
	60	lan5001	lan
	70	unk6001	unk
	80	sal7001	sal
	90 - 120	sno8001, sno9001, sno9002, sno1330	sno
Sandra K	10	sk_1001 - sk_1003	Techo North LG
	15	sk_1004 - sk_1006	Techo South LG
	20	sk_high_grade	Techo HG
	30	sk_2001 - sk_2003	Piso
	40	sk_3001	Chumeca

Source: SRK

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.

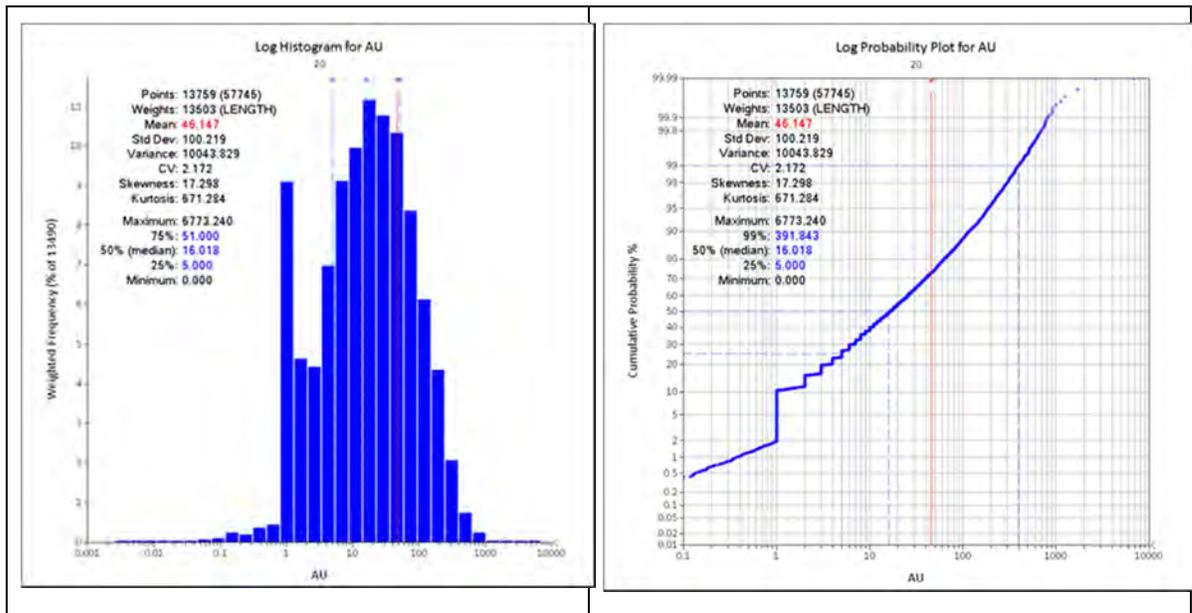
The raw assay data was first plotted on histograms and cumulative distribution plots (Figure 14-2) to understand its basic statistical distribution. High-grade capping was applied based on a combination of these plots, plus log histogram information. To create the plots, the domained samples for all zones were created in Datamine and imported into Snowden Supervisor v8.3 (Supervisor) for analysis.

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 14-3). 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.

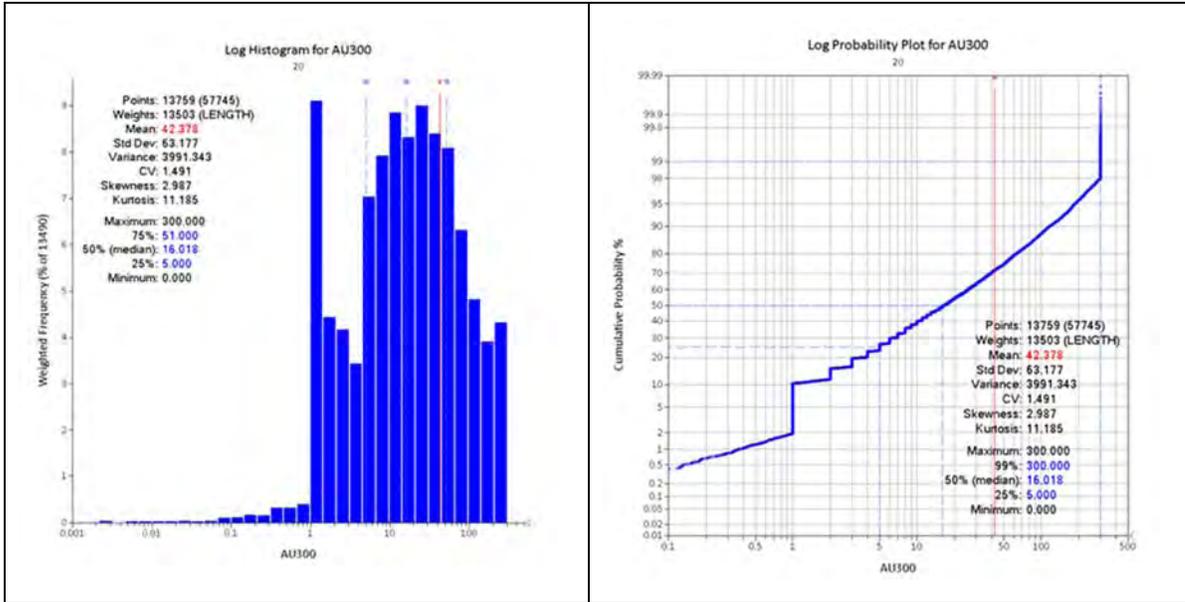
During the on-going work with SRK and GCM at the Segovia operations between 2015 and 2017 the capping levels were discussed in detail. It is GCM view that the capping levels used in the 2013 estimates were considered high and that more strict application of capping would be more appropriate. SRK therefore reviewed the statistics and lognormal probability plots per domain to determine appropriate grade capping thresholds.

In 2012 capping limits of 480 g/t Au (high-grade shoot) and 200 g/t Au (vein) at Providencia, 150 g/t Au (high-grade shoot) and 125 g/t Au (vein) at El Silencio and 25 g/t Au at Las Verticales were selected. A capping limit of 240 g/t was applied to the major Sandra K vein set, while 180 g/t Au was applied to the Sandra K–Chumeca sub-vein. 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

Figure 14-2: Example of Raw Histogram and Log-Probability Plot for Providencia High-Grade Domain

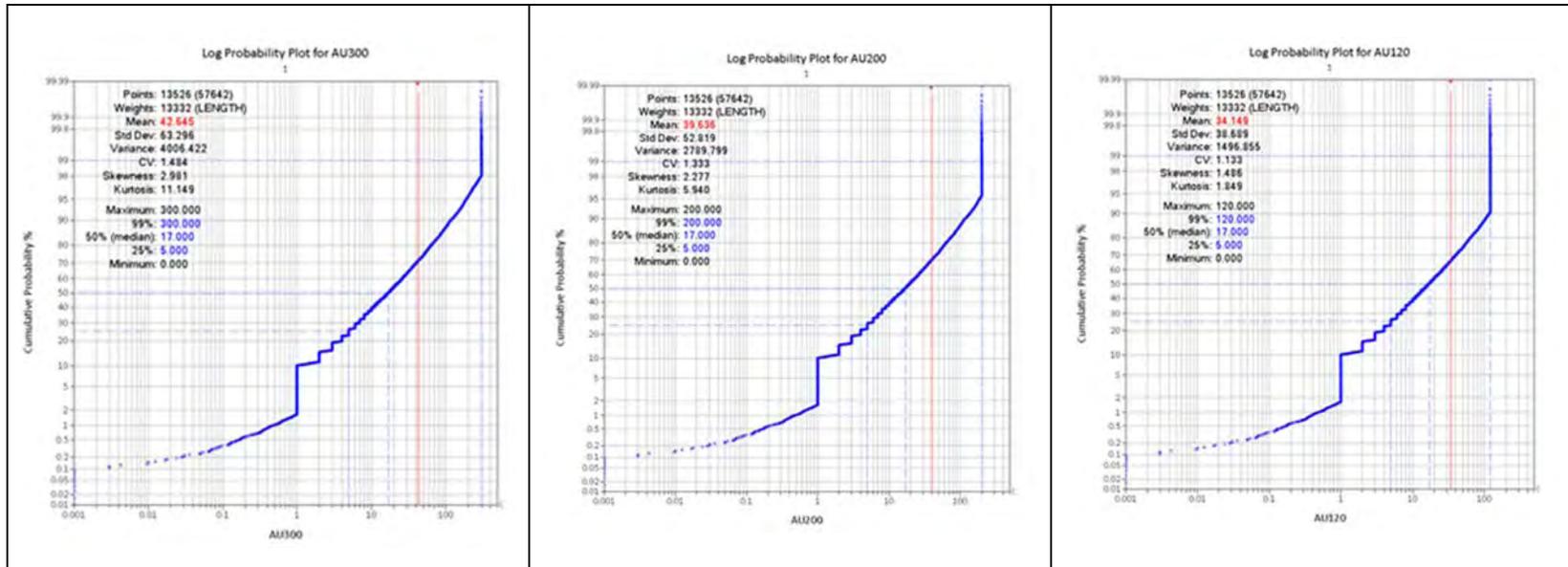


Source: SRK

Figure 14-3: Example of Capped Histogram and Log-Probability Plot for Providencia High-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. As part of the revised capping strategy in the 2017 estimates capping was set at Providencia 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. A summary of the raw, capped and composited histograms and log probability plots are shown in Appendix B.

SRK completed sensitivity studies both on samples (Figure 14-4) and estimation to changes in the capping levels which showed that adjusting the capping has a reasonably significant impact on the resultant contained metal. Capping the Providencia high-grade at 300 g/t Au resulted in approximately 2% of the values being capped, but dropping the cap to 200 g/t Au increased this percentage to approximately 5% of the database, which increases to 10% at 120 g/t Au. SRK considers that capping at these levels is significant as the mean grade for the domain drops more than 10 g/t Au (Figure 14-4). SRK considers that a more appropriate approach would be to limit the potential impact of the higher grades to the first search pass.



Source: SRK

Figure 14-4: Log Probability Plots Showing Impact of Capping to Various Levels on the Mean (Providencia high-grade domain)

Table 14-2 shows 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.

Table 14-2: Summary of Raw versus Capped Samples

Vein	Domain	Field	Count	Minimum Au (g/t)	Maximum Au (g/t)	Mean Au (g/t)	Variance	Standard Deviation	Coefficient of Variation	% Difference
PV	10 - LG	Raw	31887	0	1750	6.258	729.1	27.002	4.315	
		Capped	31887	0	60	5.078	93.162	9.652	1.901	-18.9%
		Composite	29199	0	60	5.198	94.665	9.73	1.872	-16.9%
PV	20 - HG	Raw	13759	0	6773.24	46.147	10043.829	100.219	2.172	
		Capped	13759	0	300	42.378	3991.343	63.177	1.491	-8.2%
		Composite	12498	0	300	37.517	3358.866	57.956	1.545	-18.7%
PV	30 - Other	Raw	875	0	223.76	10.614	479.479	21.897	2.063	
		Capped	875	0	60	9.119	213.211	14.602	1.601	-14.1%
		Composite	725	0	60	9.219	207.241	14.396	1.561	-13.1%
Vein	Domain	Field	NSAMP	MIN	MAX	MEAN	VAR	STDDEV	COV	% DIFF
ES	VEM 10 - LG	Raw	29373	0	317.76	2.751	37.1	6.091	2.214	
		Capped	29373	0	30	2.594	11.892	3.448	1.33	-5.7%
		Composite	26949	0	30	2.594	11.171	3.342	1.288	-5.7%
ES	VEM 20 - HG	Raw	25119	0	833.573	20.957	1582.843	39.785	1.898	
		Capped	25110	0	120	18.883	805.899	28.388	1.503	-9.9%
		Composite	23947	0	120	18.869	802.799	28.334	1.502	-10.0%
ES	30 - NAL	Raw	776	0	1381	11.345	1025.318	32.021	2.823	
		Capped	5951	0	90	9.965	379.968	19.493	1.956	-12.2%
		Composite	5910	0	90	9.965	380.036	19.495	1.956	-12.2%
ES	40 - VEP	Raw	766	0.006	1220	19.613	3292.721	57.382	2.926	
		Capped	776	0.006	90	15.781	567.497	23.822	1.51	-19.5%
		Composite	700	0.006	90	15.837	548.171	23.413	1.478	-19.3%
ES	50 - ESI	Raw	Insufficient coded samples to define a sample population							
		Capped								
		Composite								
ES	60 - LAN	Raw	2018	0	392	11.783	735.55	27.121	2.302	
		Capped	2018	0	60	8.945	189.243	13.757	1.538	-24.1%
		Composite	1713	0	60	8.869	188.794	13.74	1.549	-24.7%
ES	70 - UNK	Raw	1460	0	311	14.261	729.851	27.016	1.894	
		Capped	1460	0	60	12.015	287.465	16.955	1.411	-15.7%
		Composite	1412	0	60	12.014	287.592	19.959	1.412	-15.8%
ES	80 - SAL	Raw	Insufficient coded samples to define a sample population							
		Capped								
		Composite								
ES	90 - SNO	Raw	86	0	408	13.035	2439.587	49.392	3.789	
		Capped	86	0	30	4.885	55.382	7.442	1.523	-62.5%
		Composite	86	0	30	4.885	55.382	7.442	1.523	-62.5%

continued

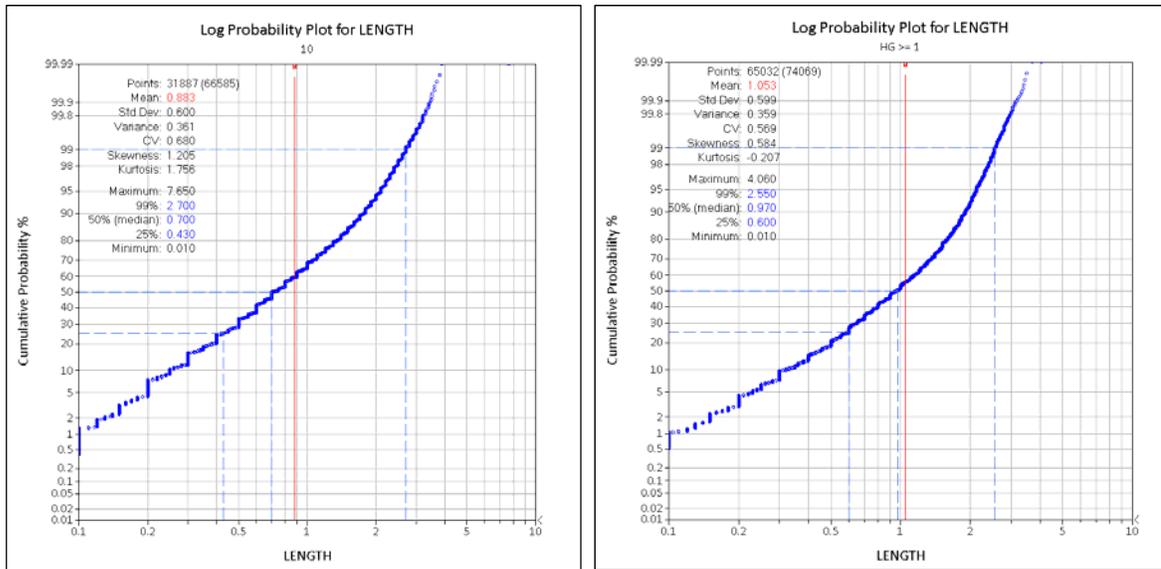
Vein	Domain	Field	NSAMP	MIN	MAX	MEAN	VAR	STDDEV	COV	% DIFF
ES	100 - SNO	Raw	135	0	156	5.975	249.913	15.809	2.646	
		Capped	135	0	30	4.482	28.084	5.299	1.182	-25.0%
		Composite	135	0	30	4.482	28.084	5.299	1.82	-25.0%
ES	110 - SNO	Raw	45	0	28.4	5.556	51.404	7.17	1.29	
		Capped	45	0	15	4.102	23.71	4.869	1.187	-26.2%
		Composite	41	0	15	4.187	24.007	4.9	1.17	-24.6%
Vein	Domain	Field	NSAMP	MIN	MAX	MEAN	VAR	STDDEV	COV	% DIFF
SK	10 TECHNO - LG1	Raw	4812	0	553	5.774	299.006	17.292	2.955	
		Capped	4818	0	60	5.067	87.342	9.346	1.844	-12.2%
		Composite	4670	0	60	5.011	83.679	9.148	1.826	-13.2%
SK	15 TECHNO - LG2	Raw	698	0	57.5	3.98	40.115	6.334	1.592	
		Capped	698	0	30	3.861	32.51	5.702	1.477	-3.0%
		Composite	509	0	30	3.845	26.976	5.194	1.351	-3.4%
SK	20 - TECHO HG	Raw	2447	0	487	14.628	748.174	27.353	1.87	
		Capped	2443	0	120	13.866	467.952	21.632	1.56	-5.2%
		Composite	1756	0	120	14.392	415.859	20.393	1.417	-1.6%
SK	30 - PISO	Raw	2437	0	1840	11.306	41.928	41.928	3.709	
		Capped	2437	0	90	9.828	274.462	16.567	1.686	-13.1%
		Composite	2006	0	90	9.718	271.102	16.465	1.694	-14.0%
SK	40 - CHUMECA	Raw	1734	0	386	9.929	1037.324	32.208	3.244	
		Capped	1734	0	60	7.138	167.172	12.929	1.811	-28.1%
		Composite	1318	0	60	7.117	159.166	12.616	1.773	-28.3%

	GROUP	FIELD	NSAMP	MIN	MAX	MEAN	VAR	STDDEV	COV	% DIFF
CA	Carla	Raw	115	0.00	290.22	6.55	758.49	27.54	4.20	-25.3%
		Capped	115	0.00	100.00	4.90	131.98	11.49	2.35	
LV	Las Verticales	Raw	135	0.00	56.00	4.30	64.58	8.04	1.87	-11.1%
		Capped	135	0.00	25.00	3.82	33.39	5.78	1.51	

Source: SRK

14.3.2 Compositing

SRK analysed 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 14-5 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, 2017

Figure 14-5: 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 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 11.3.4, which indicated that a default block density of 2.7 g/cm³ 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

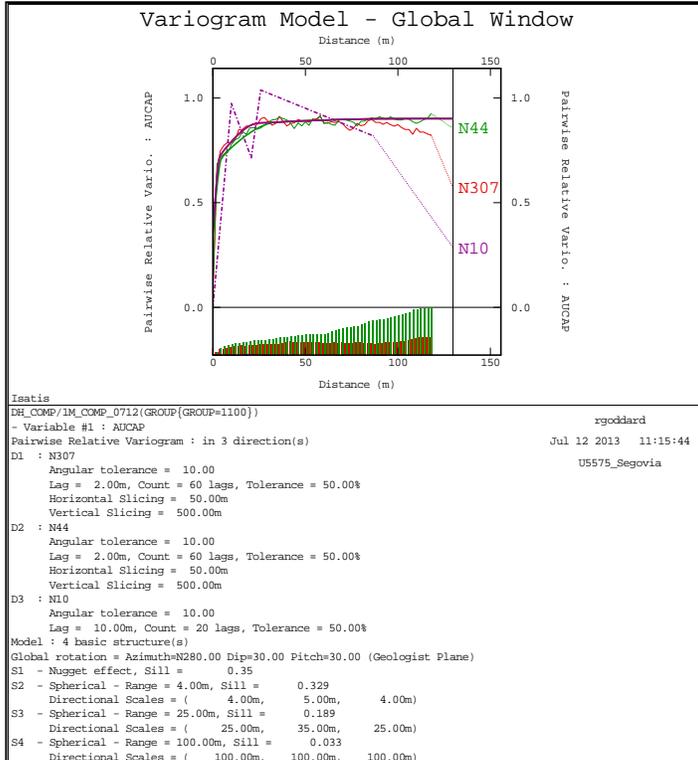
Variography is the study of the spatial variability of an attribute, in this case gold (Au) grade. ISATIS Software (Isatis) was used for geostatistical analysis for the Project previously. SRK completed a detailed Variography study during the 2013 Mineral Resource estimate, which, given the relative 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 pairwise relative variograms modeled for the Providencia high-grade shoot and vein domains is shown in Figure 14-6 with variograms for all zones shown in Appendix C.



Source: SRK, 2013

Figure 14-6: Summary of Modeled Semi-variogram Parameters for the Providencia for Gold (shown left and right); August 2013

The final variogram parameters for the Project are displayed in Table 14-3.

Table 14-3: Final Variogram Parameters

Variogram Parameter	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	10	30	-150	38.9%	36.5%	4	5	4	21.0%	25	35	25	3.7%	100	100	100
El Silencio	105	27	-43	69.9%	16.5%	5	5	5	1.4%	25	35	25	12.2%	80	100	80
El Silencio	105	27	-43	58.0%	14.7%	12	8	12	6.9%	55	25	55	20.4%	90	80	90
Sandra K	60	25	-15	69.9%	16.5%	5	5	5	1.4%	25	35	25	12.2%	80	100	80
Sandra K	60	25	-15	58.0%	14.7%	12	8	12	6.9%	55	25	55	20.4%	90	80	90
Carla	80	45	0	30.0%	14.0%	5	5	5	56.0%	130	70	30				
Las Verticales	0	0	0	23.1%	36.8%	30	30	30	40.1%	120	120	120				

Source: SRK

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 14-4.

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 14-4: 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

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 14-5 summarizes geological fields created within the block model and the codes used.

Table 14-5: Summary of Block Model Fields used for flagging different 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, 2017

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 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.

Grade estimation was performed in Datamine using IDW2 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 (IDW), 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.

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 honouring the geological interpretation (for highly variable gold grade distribution) favoured by SRK and the Company.

Table 14-6 summarizes the final kriging parameters for the Segovia Project.

Table 14-6: Summary of Final Kriging Parameters for the Segovia Project

Vein	Domain	SDIST1	SDIST2	SDIST3	SANGLE1	SANGLE2	SANGLE3	SAXIS1	SAXIS2	SAXIS3	MINNUM1	MAXNUM1	SVOLFAC2	MINNUM2	MAXNUM2	SVOLFAC3	MINNUM3	MAXNUM3	METHOD	CAP FIELD
PV	10 - LG	25	35	12.5	10	30	-150	3	1	3	6	15	2	2	12	3	1	8	OK	AU60
PV	20 - HG	25	35	12.5	10	30	-150	3	1	3	6	15	2	2	12	3	1	8	OK	AU300, AU200
PV	30 - Other	25	35	12.5	10	30	-150	3	1	3	6	15	2	2	12	3	1	8	IDW	AU60
ES	VEM 10 - LG	25	50	25	105	27	-43	3	1	3	6	20	2	4	16	3	1	8	OK	AU30
ES	VEM 20 - HG	25	50	25	105	27	-43	3	1	3	6	20	2	4	16	3	1	8	OK	AU120
ES	30 - NAL	25	50	25	105	27	-43	3	1	3	6	20	2	4	16	3	1	8	OK	AU90
ES	40 - VEP	35	50	25	105	27	-43	3	1	3	6	15	2	2	12	3	1	8	OK	AU90
ES	50 - ESI	35	50	25	105	27	-43	3	1	3	6	15	2	2	12	3	1	8	OK	AU15
ES	60 - LAN	35	50	25	105	27	-43	3	1	3	6	15	2	2	12	3	1	8	OK	AU60
ES	70 - UNK	35	50	25	105	27	-43	3	1	3	6	15	2	2	12	3	1	8	OK	AU60
ES	80 - SAL	35	50	25	105	27	-43	3	1	3	6	15	2	2	12	3	1	8	OK	AU15
ES	90 - SNO	35	50	25	105	27	-43	3	1	3	6	15	2	2	12	3	1	8	OK	AU30
ES	100 - SNO	35	50	25	105	27	-43	3	1	3	6	15	2	2	12	3	1	8	OK	AU15
ES	110 - SNO	35	50	25	105	27	-43	3	1	3	6	15	2	2	12	3	1	8	OK	AU15
SK	10 TECHNO - LG1	45	75	50	60	25	-15	3	1	2	6	12	2	2	12	3	1	8	OK	AU60
SK	15 TECHNO - LG2	45	75	50	60	25	-15	3	1	2	6	12	2	2	12	3	1	8	OK	AU30
SK	20 - TECHO HG	45	75	50	60	25	-15	3	1	2	6	12	2	2	12	3	1	8	OK	AU120
SK	30 - PISO	45	75	50	60	25	-15	3	1	2	6	12	2	2	12	3	1	8	OK	AU90
SK	40 - CHUMECA	50	50	50	0	35	0	3	1	3	6	15	2	2	12	3	1	8	OK	AU60
CA	Carla ¹	100	35	60	80	45	0	3	1	3	4	12	2	4	10	2.6	2	20	OK	AUCAP
CA	Carla ²	100	100	100	80	45	0	3	1	3	1	4	2	1	4	2.6	1	4	OK	AUCAP
LV	Las Verticales	400	400	400	0	0	0	3	1	3	4	8	1	3	12	1.5	2	10	OK	AUCAP

- (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
- Source: SRK, 2017

14.8 Model Validation

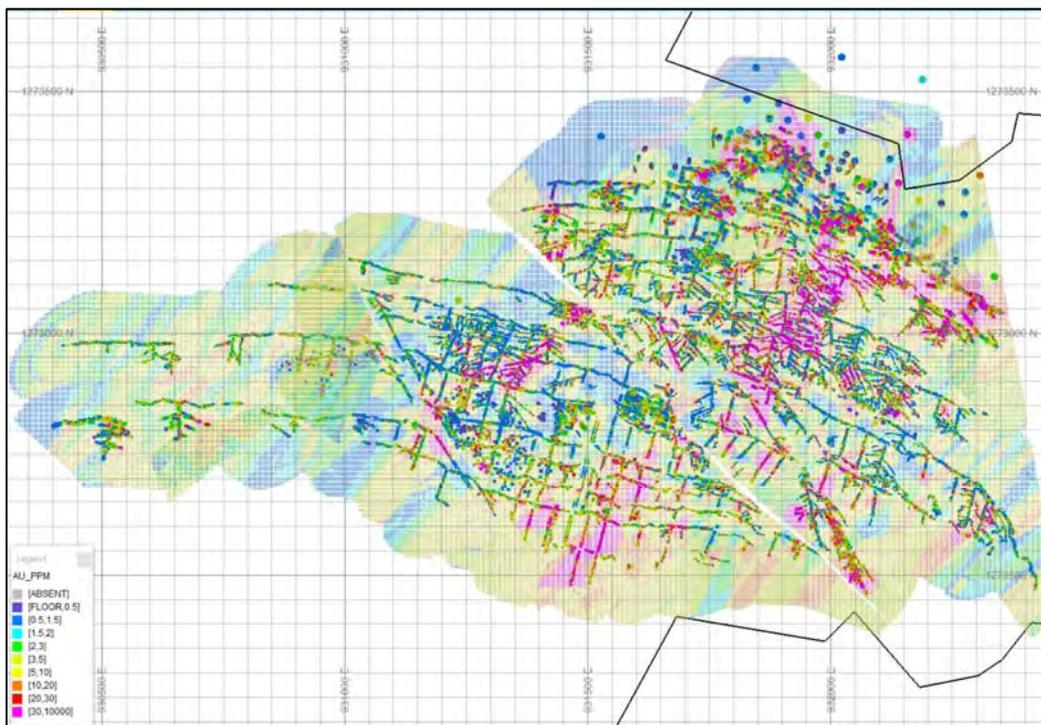
SRK undertook a thorough validation of the resultant interpolated model in order to: confirm the estimation parameters, check that the model represents the input data on both local and global scales, and check that the estimate is not biased. SRK undertook this using a number of different validation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

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

14.8.1 Visual Comparison

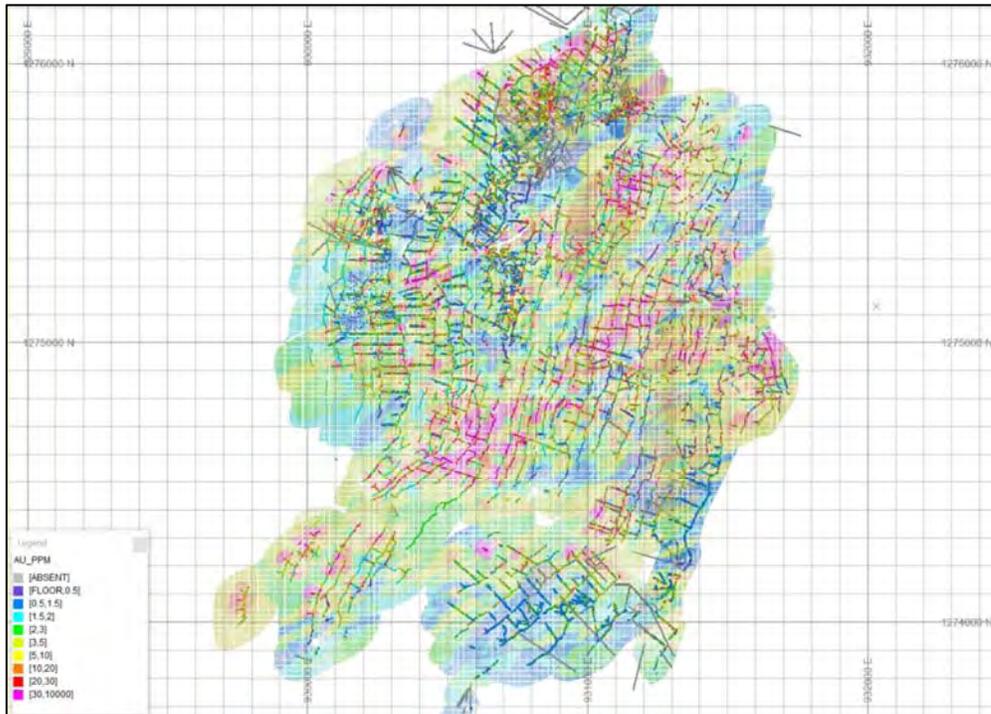
Visual validation provides a comparison of the interpolated block model on a local scale. A thorough visual inspection was undertaken in 3D, comparing the sample grades with the block grades, which demonstrates in general good comparison between local block estimates and nearby samples, without excessive smoothing in the block model. Figure 14-7 through Figure 14-9 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.



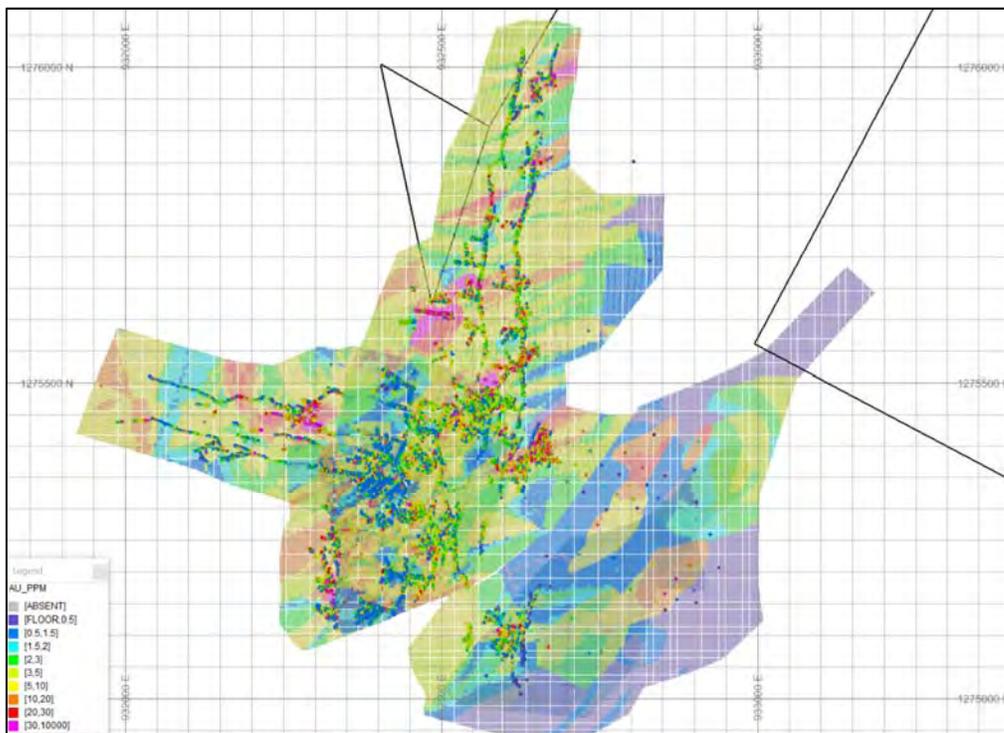
Source: SRK, 2017

Figure 14-7: Providencia Example of Visual Validation of Grade Distribution



Source: SRK, 2017

Figure 14-8: El Silencio Example of Visual Validation of Grade Distribution



Source: SRK, 2017

Figure 14-9: Sandra K Example of Visual Validation of Grade Distribution

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 14.8.3.

Summary tables of the main veins is shown in Figure 14-97. 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. In addition, SRK produced reasonable declustered means of the composites within Supervisor, which improved the comparisons.

At Providencia, the difference between the composite and estimates for the vein is in the order of 7.4% (lower in the model), compared to 6.5% in the high-grade domain. The differences in the HG reported much higher differences (28.7%), but visual validation indicates these areas represent low tonnages in the mineral resources (approximately 7.5% of the total tonnages), that will not materially impact the global mineral resources. 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 13.6% lower in terms of the average grades. The biggest notable differences are reported in the block estimates for the high-grade domain, where the estimates reported higher grades. SRK comments that it is typical to expect the estimates to be lower but a review of the sample distribution aids the explanation (Figure 14-10). In the domain, the sample distribution has a significant portion of the database with low tonnages of high-grade blocks and relatively lower grades. In comparison within the highest-grade areas for the domain larger tonnages exist, which results in a higher weighted average. SRK would recommend follow-up via underground mapping and sampling of the low-tonnage high grade areas by a GCM geologist to confirm if these should be treated as high-grade domains (HG20) or moved into the vein domain (HG10). SRK comments that in the statistical exercise shown all material is treated inclusive of depleted material, and that the high tonnage, high grade areas have been actively mined, and therefore the impact is expected to have a reduced impact. Visual validation on a local scale support the high-grade estimates shown and therefore SRK is satisfied that the current estimate is reasonable.

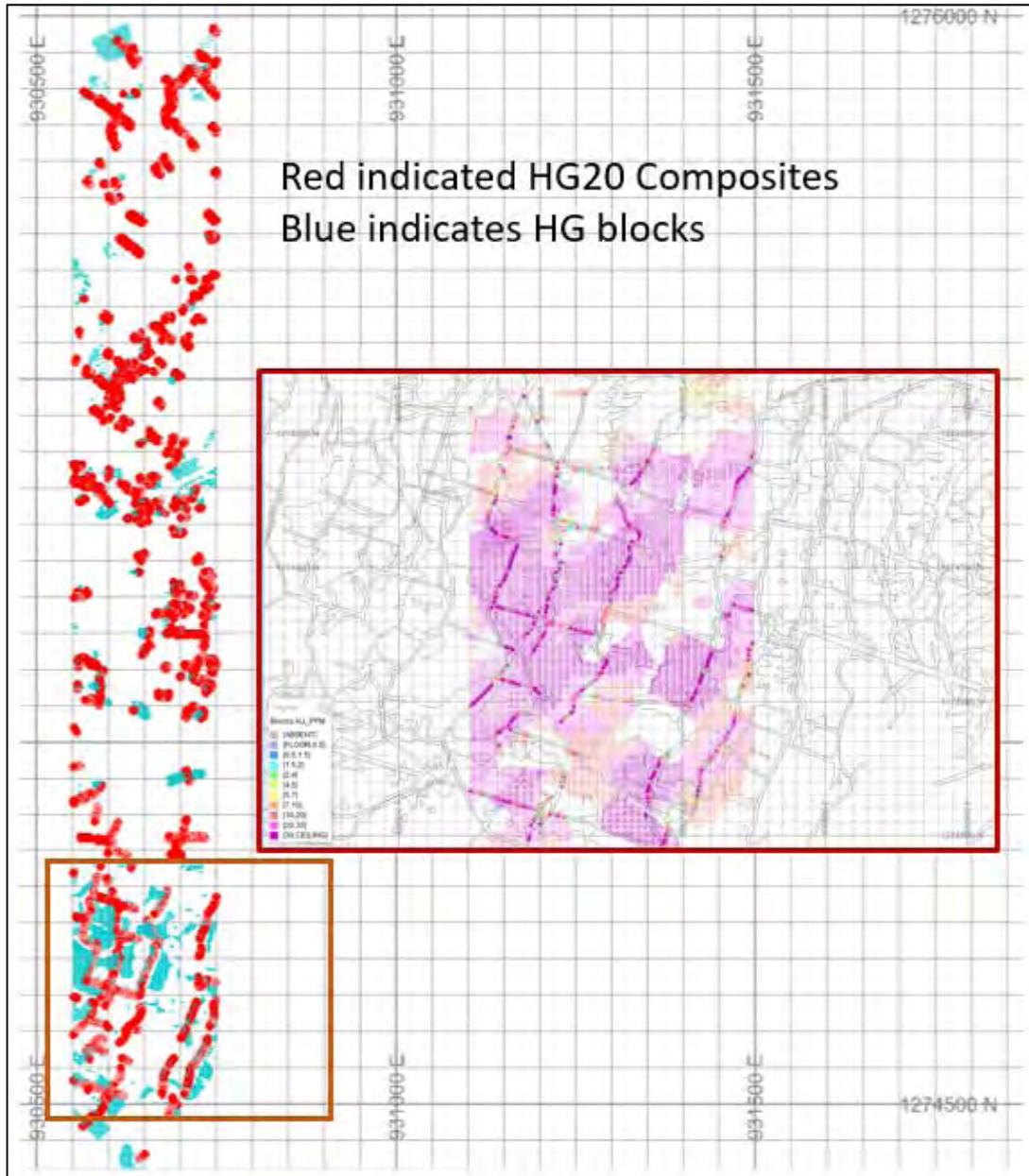
At Sandra K, the reconciliation between the composite mean and the block estimates are reasonable within HG10 – HG20 (Veta Techo), but the results for Veta Piso (HG30) reported lower grades in the block estimates. The reason for the difference can be explained by the fact that the majority of the Piso samples have been taken within the main portion of the mine, where the vein is known to be well mineralized, compared to lower grades interpreted in the most recent drilling which covers a larger tonnage (Figure 14-11). 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.

While SRK notes that differences exist between the composite and the block estimates, SRK is of the opinion these have been explained by further validation and that the current estimates are reasonable.

Table 14-7: Summary of Composite Means versus Block Estimates

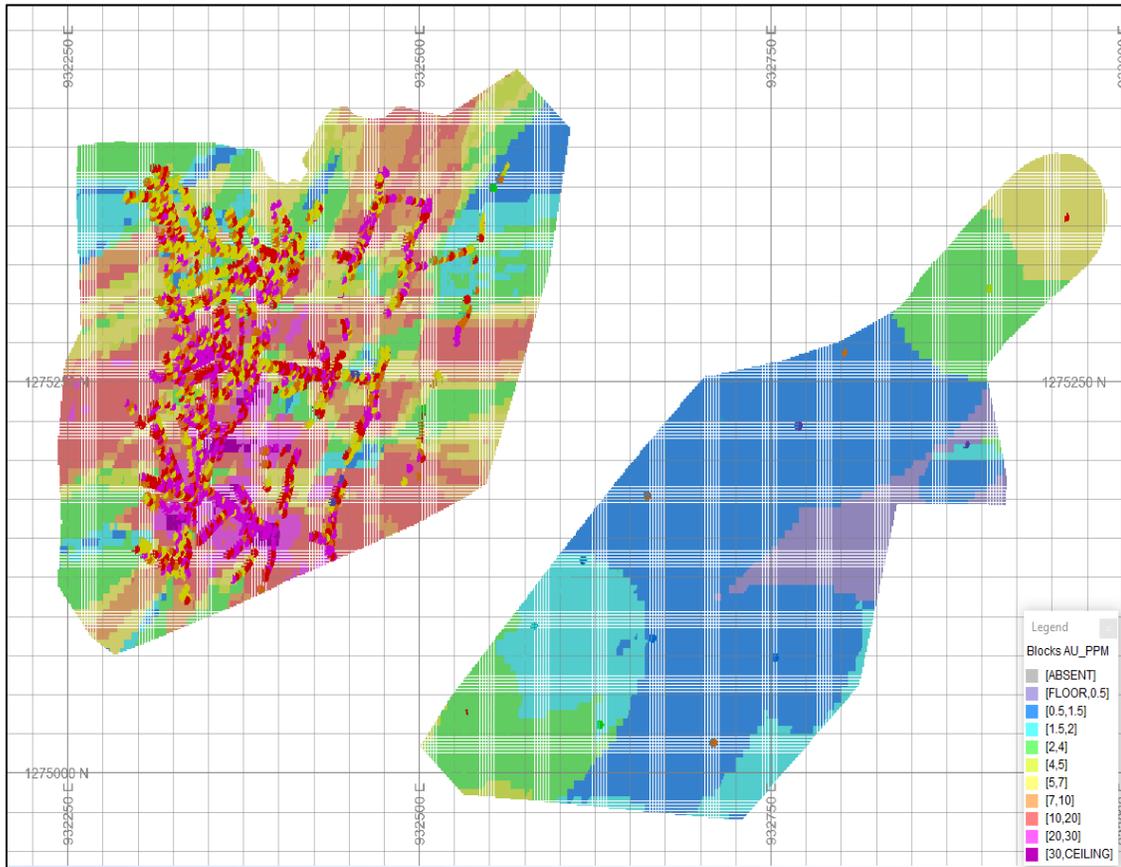
Domain		Statistic	Mean Sample Data Au (g/t)	Declustered Sample Data Au (g/t)	BlockData1 (Tonnage Weighted) Au (g/t)	BlockData1 vs. Sample % Diff	BlockData1 vs. Declustered % Diff
PV	10	Mean	5.16	4.99	4.61	-10.54	-7.43
		Std Dev	9.63	9.18	3.67		
		Variance	92.78	84.24	13.44		
		CV	1.87	1.84	0.79		
	20	Mean	38.94	37.52	39.94	2.56	6.45
		Std Dev	58.99	57.96	32.56		
		Variance	3480.29	3358.87	1059.87		
		CV	1.52	1.54	0.82		
	30	Mean	8.34	6.08	4.33	-48.02	-28.65
		Std Dev	13.59	10.87	4.41		
		Variance	184.79	118.26	19.44		
		CV	1.63	1.79	1.02		
ES	10	Mean	3.03	3.01	2.60	-13.95	-13.60
		Std Dev	4.40	4.19	1.37		
		Variance	19.37	17.58	1.89		
		CV	1.45	1.39	0.53		
	20	Mean	20.07	18.92	22.09	10.06	16.77
		Std Dev	29.44	28.57	14.50		
		Variance	866.83	816.51	210.18		
		CV	1.47	1.51	0.66		
	30	Mean	9.67	9.51	8.76	-9.39	-7.93
		Std Dev	19.21	18.98	9.33		
		Variance	369.18	360.20	87.07		
		CV	1.99	1.99	1.07		
SK	10	Mean	4.98	4.64	4.43	-10.98	-4.55
		Std Dev	9.04	8.62	3.12		
		Variance	81.67	74.34	9.71		
		CV	1.81	1.86	0.70		
	20	Mean	4.10	2.09	1.87	-54.46	-10.67
		Std Dev	5.69	3.81	1.71		
		Variance	32.42	14.53	2.93		
		CV	1.39	1.83	0.92		
	30	Mean	14.88	13.94	14.37	-3.43	3.08
		Std Dev	21.41	21.74	8.62		
		Variance	458.30	472.66	74.25		
		CV	1.44	1.56	0.60		
	40	Mean	10.85	6.36	4.96	-54.34	-22.06
		Std Dev	17.96	12.81	5.78		
		Variance	322.43	164.16	33.38		
		CV	1.65	2.02	1.17		
50	Mean	7.19	6.00	6.20	-13.70	3.27	
	Std Dev	12.69	11.05	5.16			
	Variance	160.95	122.01	26.62			
	CV	1.77	1.84	0.83			

Source: SRK, 2017



Source: SRK

Figure 14-10: El Silencio HG20 Areas with Significant Differences Between Composite and Block Estimates



Source: SRK

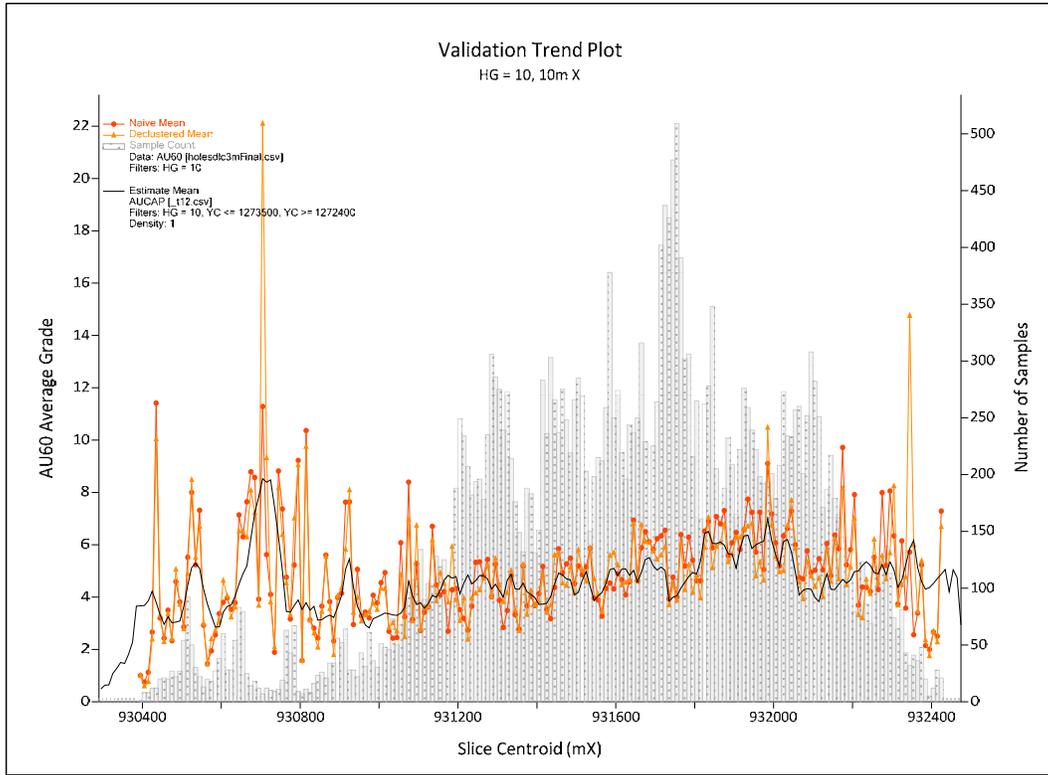
Figure 14-11: Sample Distribution vs. Modeled Area within Veta Piso (HG30) at Sandra K

14.8.3 Swath Plots

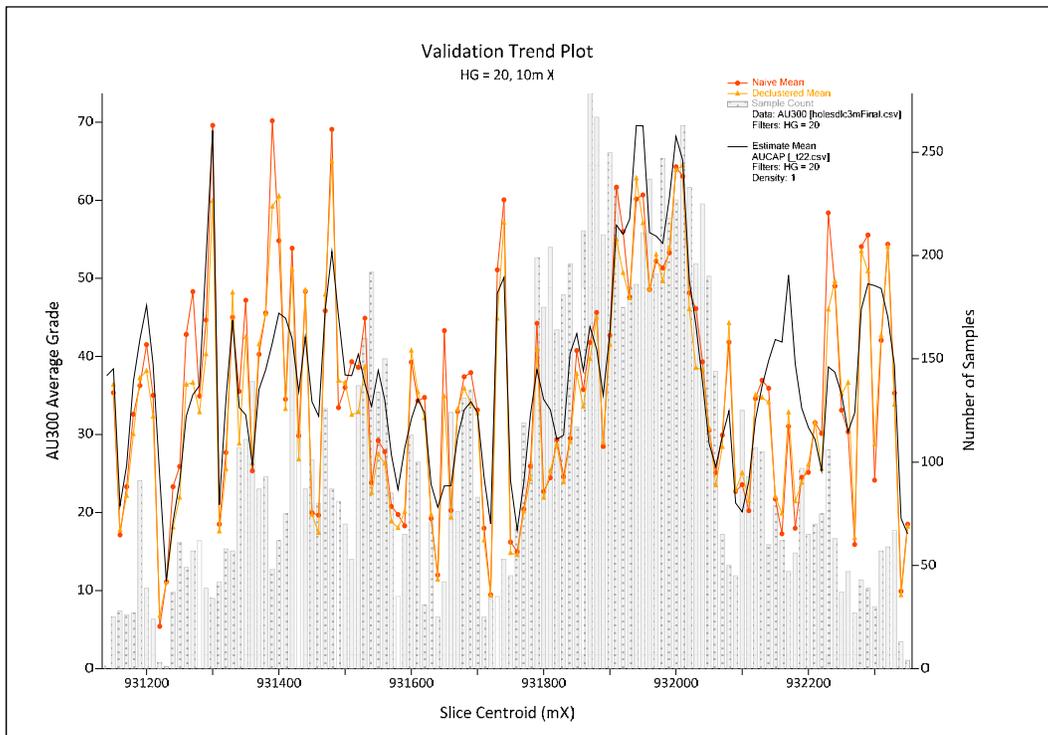
A more local comparison between the blocks and the composites is made using swath plots. These show both the varying means of the block and composites (declustered) along swaths or slices through the model, as well as the amount of data supporting the estimate in each swath. The swath plots show that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

The areas of highest variability between the composites and estimates at Providencia (Figure 14-12), 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 GCM 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. Swath plots for the other veins for key orientations are included in Appendix D.

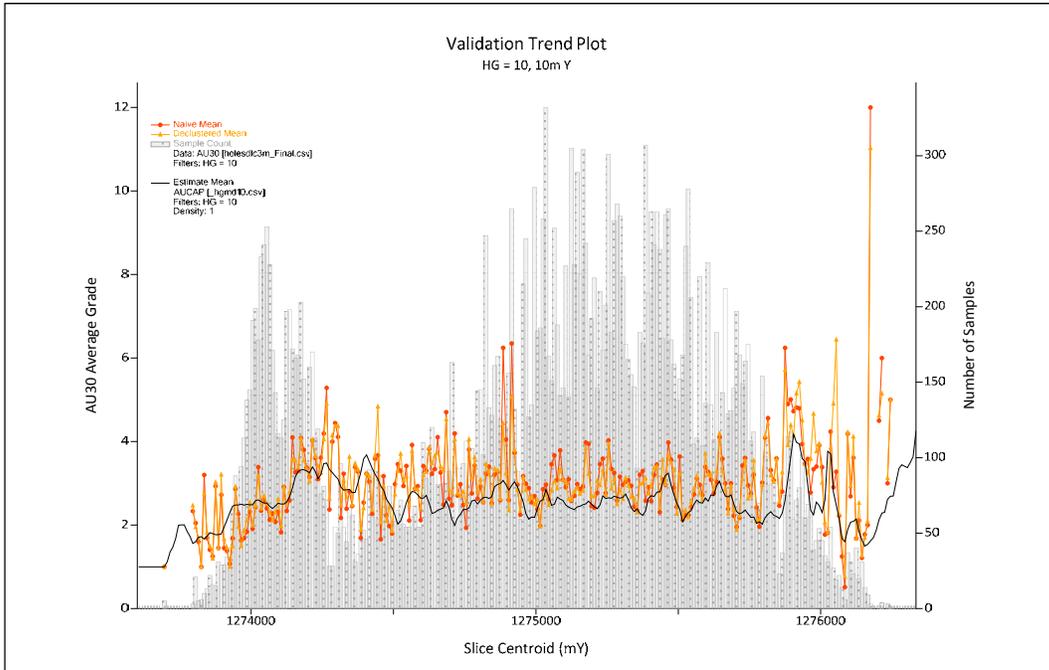


Providencia Low Grade Domain

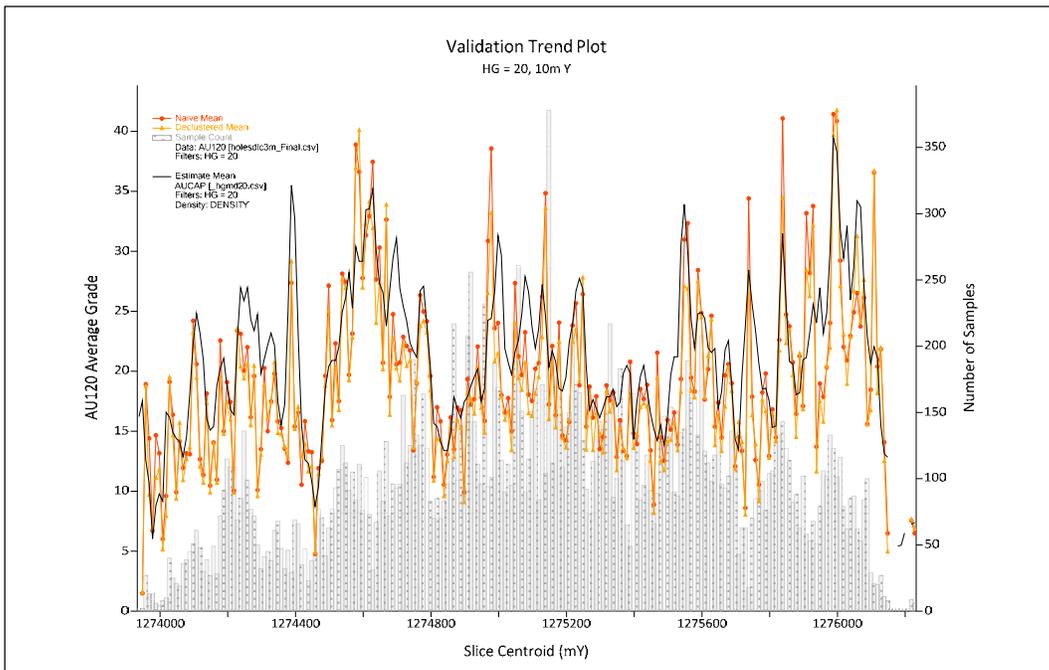


Providencia High Grade Domain
 Source: SRK

Figure 14-12: Example of Swath plots (E-W) across the Providencia Low and High Grade Domains



EI Silencio Low Grade Domain



EI Silencio High Grade Domain
 Source: SRK

Figure 14-13: Example of Swath plots (E-W) across the EI Silencio Low and High-Grade Domains

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 2013 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 GCM, or the last level of mining in the west, where confidence in the accuracy of the depletion remains high.

Indicated: For the 2017 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.

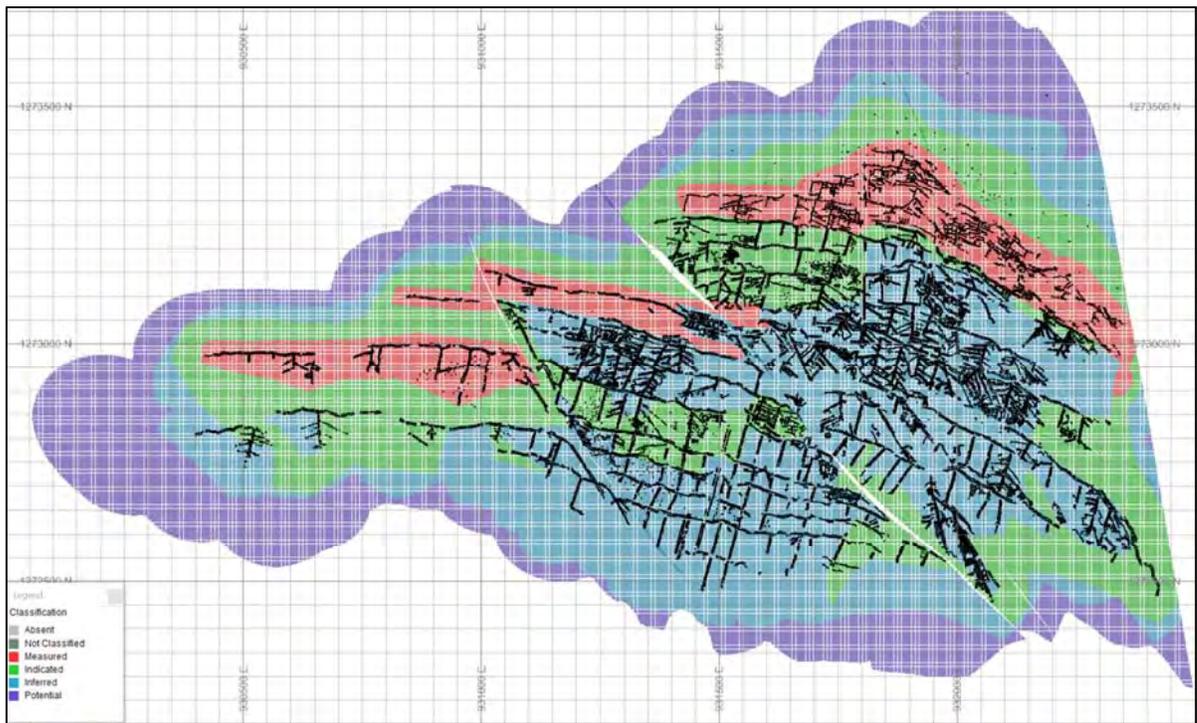
Inferred: In general, Inferred Mineral Resources were limited to within areas of reasonable grade estimate quality and sufficient geological confidence, and are extended no further than 100 m from peripheral drilling on the basis of modeled variogram ranges.

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:

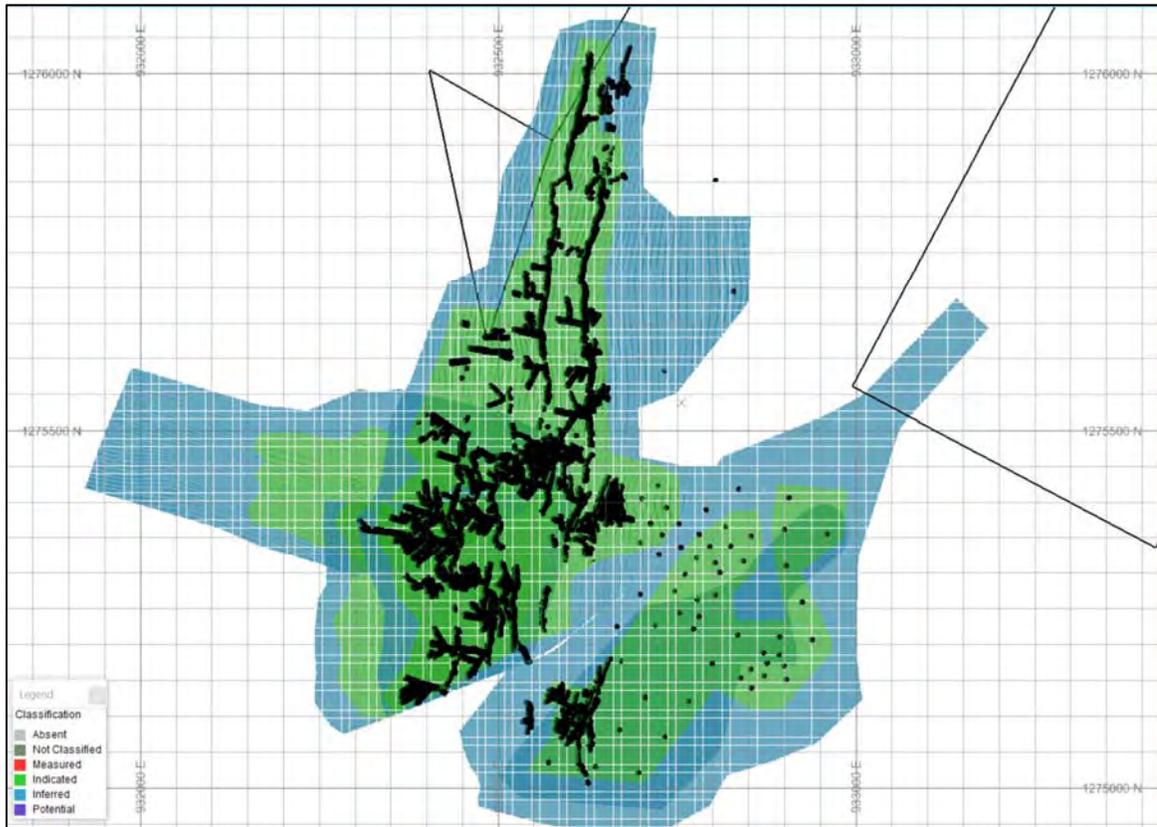
- Indicated Pillar Mineral Resources were limited to areas where a sufficient level of verification channel sampling has been completed by GCM, and there is a relatively high confidence in the accuracy of the pillar surveys. For Providencia, these areas largely represent the pillars where the contractor 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 14-14 through Figure 14-16.



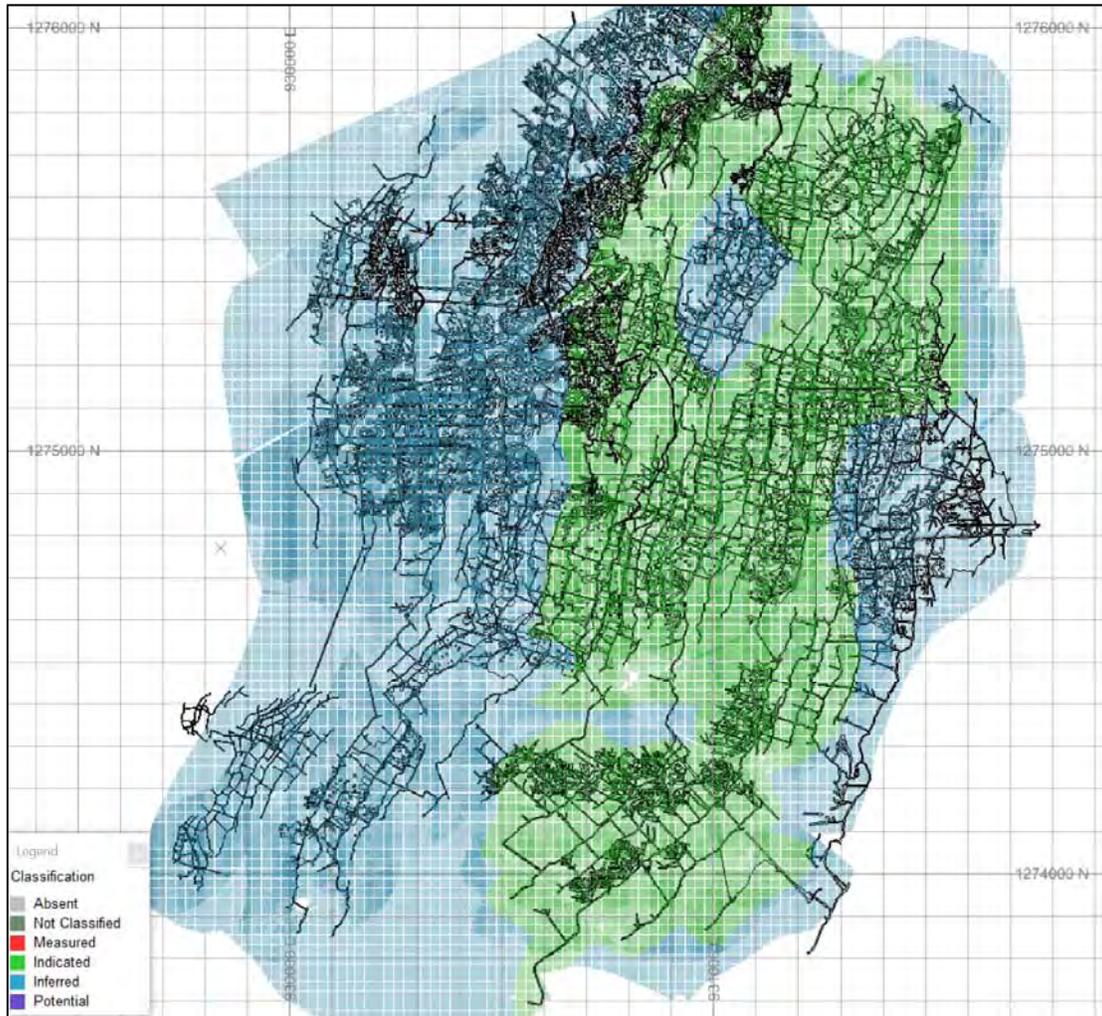
Source: SRK, 2017

Figure 14-14: Classification Systems for Providencia



Source: SRK, 2017

Figure 14-15: Classification Systems for Sandra K



Source: SRK, 2017

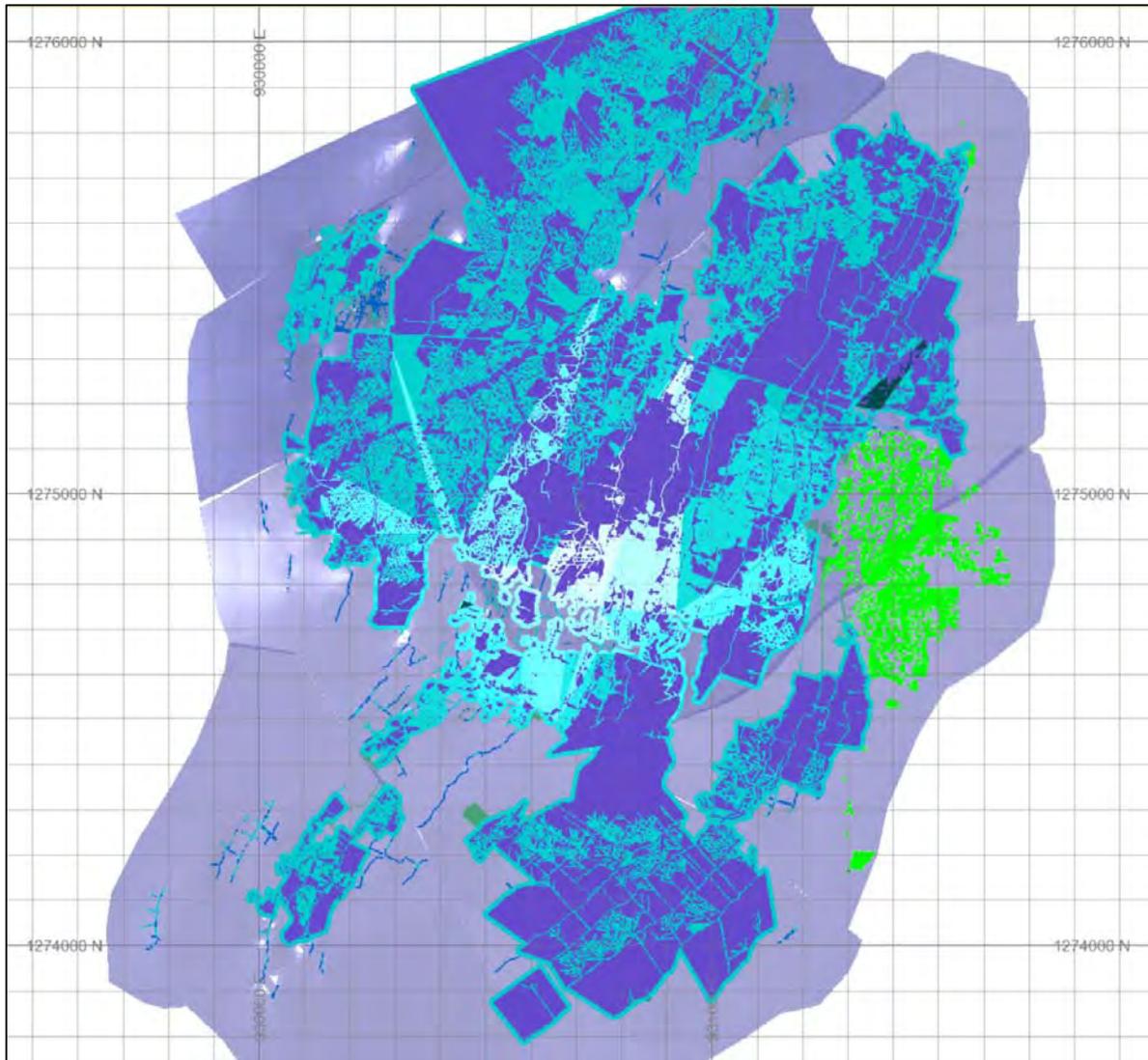
Figure 14-16: Classification Systems for El Silencio

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 14-17).

SRK notes that this method of defining the mined areas is likely conservative in areas of active mining, but also accounts for the local uncertainty associated with the multiple data types and lack of complete detailed 3D surveys.



Source: SRK, 2017

Figure 14-17: Example of Depletion Limits (El Silencio Veta Manto), with depletion shown in blue and remaining pillars in purple

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 cut-off grade 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 used the following key assumptions for the costing, but notes that the deposit has variable mining costs depending on the mining methods resulting in a range of cut-off grades (Table 14-8). A gold price of US\$1,400/oz was used based on a market consensus forecast which SRK subscribe to, and a metallurgical recovery of 90.5% Au, has been assumed based on the current performance of the operating plant. SRK notes that in the cost assumptions below the total cost of mining the areas of the mine controlled by contractor mining is included. It is reported that the Company is covering the majority of the fixed costs, and therefore some future gains could be realized if these costs can be reduced. By Product credits shown in Table 14-8 are silver credits, which have not been included in the Mineral Resource due to incomplete database, but historical production data supports the assumptions below.

Table 14-8: Assumed Mining Costs Projected per Mine for Cut-off Grade Assumptions

Cash Costs	Owner's US\$/t-Mill Feed			
	Providencia	El Silencio	Sandra K	Carla
Direct Cash Cost				
Mining Cost	108.6	66.7	77.2	82.1
Process Cost	27.7	27.7	27.7	27.7
Site G&A Cost	21.1	21.1	21.1	21.1
Smelting & Refining Charges	7.6	7.6	7.6	7.6
Freight	0.6	0.6	0.6	0.6
By-Product Credits	(5.0)	(5.0)	(5.0)	(5.0)
Direct Cash Costs	161	119	129	134
Cut-Off	3.94	2.92	3.17	3.29

Source: SRK, 2017

Based on the above, SRK limited the Resource based on a cut-off grade 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 has been sub-divided into pillar areas (Pillar) as previously defined, which represent the areas within the current mining development, and Long Term Resources (LTR), which lies along strike or down dip of the current mining development. The Mineral Resource statement for the Project is shown in Table 14-9.

Table 14-9: SRK Mineral Resource Statement for the Segovia and Carla Projects Effective March 15, 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	113	19.4	71	275	14.8	131	388	16.1	201	163	9.4	49	
		Pillars	76	18.4	45	116	10.1	38	191	13.4	82	376	19.8	239	
	Sandra K	LTR				241	10.4	81	241	10.4	81	240	7.5	58	
		Pillars				91	9.8	29	91	9.8	29	1	9.3	0	
	El Silencio	LTR				609	12.5	245	609	12.5	245	997	8.0	258	
		Pillars				1,187	10.8	414	1,187	10.8	414	347	13.0	144	
	Verticales	LTR										771	7.1	176	
	Subtotal Segovia Project	LTR		113	19.4	71	1,125	12.6	456	1,238	13.2	527	2,171	7.7	541
		Pillars		76	18.4	45	1,394	10.7	480	1,469	11.1	525	724	16.5	384
	Carla	Subtotal Carla Project	LTR				154	9.7	48	154	9.7	48	178	9.3	53

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

The results of grade sensitivity analysis completed per vein are tabulated in Table 14-10 to Table 14-14.

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 cut-off grade. 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 cut-off grade. 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 14-10: Block Model Quantities and Grade Estimates, Providencia Deposit at Various Cut-off Grades

Grade - Tonnage Table, Providencia LTR						
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	453	14.2	206	175	8.9	50
2.0	441	14.5	206	173	9.0	50
2.5	421	15.1	204	169	9.1	50
3.0	388	16.1	201	163	9.4	49
3.5	356	17.3	198	155	9.7	48
4.0	328	18.5	195	147	10.0	47
4.5	298	19.9	191	134	10.6	46
5.0	276	21.1	187	116	11.5	43
5.5	256	22.3	184	103	12.2	41
6.0	231	24.1	179	87	13.5	38
7.0	195	27.4	172	74	14.6	35
8.0	162	31.4	164	59	16.4	31

Grade - Tonnage Table, Providencia Pillar						
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	226	11.7	85	414	18.2	242
2.0	217	12.1	85	404	18.6	242
2.5	205	12.7	84	392	19.1	241
3.0	191	13.4	82	376	19.8	239
3.5	177	14.2	81	355	20.8	237
4.0	163	15.2	79	334	21.8	235
4.5	151	16.0	78	315	22.9	232
5.0	138	17.1	76	296	24.1	229
5.5	128	18.0	74	279	25.2	226
6.0	119	18.9	72	263	26.4	223
7.0	103	20.9	69	233	29.0	217
8.0	89	22.9	66	210	31.3	212

Source: SRK, 2017

Table 14-11: Block Model Quantities and Grade Estimates, Sandra K Deposit at Various Cut-off Grades

Grade - Tonnage Table, Sandra K LTR						
Cut-off Grade	Indicated			Inferred		
	Quantity	Gold		Quantity	Gold	
AUM1 (g/t Au over 1m)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)
1.0	256	9.9	82	273	6.9	61
1.5	256	9.9	82	273	6.9	61
2.0	252	10.1	82	266	7.0	60
2.5	247	10.2	81	257	7.2	60
3.0	241	10.4	81	240	7.5	58
3.5	227	10.9	79	224	7.8	56
4.0	207	11.5	77	198	8.3	53
4.5	194	12.0	75	184	8.7	51
5.0	187	12.3	74	153	9.4	47
5.5	183	12.5	73	144	9.7	45
6.0	173	12.8	71	135	10.0	43
7.0	149	13.8	66	113	10.6	39
8.0	128	14.9	61	87	11.6	32

Grade - Tonnage Table, Sandra K Pillar						
Cut-off Grade	Indicated			Inferred		
	Quantity	Gold		Quantity	Gold	
AUM1 (g/t Au over 1m)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)
1.0	97	9.3	29	2	7.8	0
1.5	97	9.3	29	2	7.8	0
2.0	95	9.5	29	2	7.8	0
2.5	93	9.7	29	1	8.9	0
3.0	91	9.8	29	1	9.3	0
3.5	86	10.2	28	1	9.3	0
4.0	80	10.7	27	1	9.4	0
4.5	74	11.2	27	1	9.5	0
5.0	68	11.7	26	1	9.8	0
5.5	62	12.3	25	1	10.6	0
6.0	56	13.0	24	1	12.5	0
7.0	48	14.1	22	1	13.4	0
8.0	42	15.1	20	1	14.2	0

Source: SRK, 2017

Table 14-12: 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 Grade	Measured and Indicated			Inferred			Cut-off Grade	Measured and Indicated			Inferred		
	Quantity	Gold		Quantity	Gold			Quantity	Gold		Quantity	Gold	
AUM1 (g/t Au over 1 m)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)	AUM1 (g/t Au over 1 m)	(kt)	Grade (g/t)	Metal (koz)	(kt)	Grade (g/t)	Metal (koz)
1.0	748	10.6	256	1449	6.3	292	1.0	1600	8.6	445	452	10.5	153
2.0	724	10.9	254	1395	6.5	290	2.0	1494	9.1	439	443	10.7	152
2.5	674	11.6	251	1180	7.2	274	2.5	1364	9.8	429	393	11.8	149
3.0	609	12.5	245	997	8.0	258	3.0	1187	10.8	414	347	13.0	144
3.5	549	13.5	239	810	9.2	238	3.5	1028	12.0	397	300	14.5	140
4.0	498	14.5	233	690	10.1	224	4.0	900	13.2	382	260	16.1	135
4.5	453	15.5	227	605	10.9	212	4.5	809	14.2	369	234	17.5	131
5.0	411	16.7	220	522	11.9	200	5.0	740	15.1	359	211	18.8	128
6.0	364	18.1	212	357	14.9	171	6.0	657	16.3	344	184	20.8	123
7.0	318	19.8	202	261	18.0	151	7.0	596	17.3	331	171	21.9	120
8.0	286	21.1	195	236	19.2	145	8.0	541	18.3	318	162	22.7	118

Source: SRK, 2017

Table 14-13: 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, 2017

Table 14-14: 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, 2017

14.13 Comparison to Previous Estimate

A comparison to the previous (August 2013) Mineral Resource estimate for the Segovia Project was conducted at a cut-off grade of 3.0 g/t Au over a width of 1.0 m, which was depleted on an annual basis and most recently reported as of December 31, 2016.

The new estimate includes additional Resource material with an increase of approximately 700 koz of gold, within the Measured and Indicated (M&I) portion of the Mineral Resource at Segovia. The increase in gold relates to a global increase in tonnage with a decrease in mean grade for the Measured and Indicated portion of the Mineral Resources. This can be highlighted as follows:

- Increase in the tonnage for the M&I portion of the Segovia operation from 485 kt to 1,238 kt in the LTR, and 58 kt to 1,469 kt in the Pillars.
- Drop in the average grade within the M&I from 21.1 g/t to 13.1 g/t in the LTR at the economic cut-off. The decrease in the grade of the Pillars dropped from 13.2 g/t to 11.1 g/t Au.

- Increase in the contained metal in the M&I portion of the Segovia operation from 330 koz in the LTR to 527 koz, and from 24 koz to 525 koz in the pillars.

SRK attributes these changes most significantly to the upgrading of the El Silencio Mineral Resource below Mine Level 29. The previous estimate reported all material at El Silencio as Inferred and the estimates were limited to Veta Manto material in lower areas of the mine, as only this material had been validated at the time of reporting.

Additional changes in estimation methodology with more restrictive capping and improved domaining at El Silencio are also factors. Studies on the Providencia model showed that changing the capping levels could vary the grade by 2 to 3 g/t within the same common volumes. SRK considered this by introducing more restrictive capping levels in the second and third search pass of the estimation process.

On-going validation work by the Segovia geology team has significantly increased the area of validated data within not only Veta Manto, but also five other veins within the system resulting in the increase in the tonnage. Overall at El Silencio the validation process has added 1,797 kt at a grade of 11.4 g/t Au, for 659 koz of contained Au in the Indicated category, with an additional 1,344 kt at 9.3 g/t Au for 402 koz Au remaining in Inferred. In comparison, the previous estimate contained 1,794 kt at a grade of 9.6 g/t Au for 552 koz Au.

Other key changes have included increasing the confidence in the lower portions of the Providencia Mine through on-going mining activities, resulting in a 14 % increase in the contained metal in the Measured and Indicated categories. A summary of the key changes is shown in Table 14-15 below. Infill drilling at Sandra K has confirmed the confidence assigned in the eastern fault blocks with a slight increase in the M&I of 2% contained gold.

Table 14-15: Mineral Resource Comparison of 2017 versus 2016 Roll Forward Numbers for the Three Mines

Estimation Domain	Measured			Indicated			M&I			Inferred		
	Tonnes (kt)	Au (g/t)	Metal (koz)	Tonnes (kt)	Au (g/t)	Metal (koz)	Tonnes (kt)	Au (g/t)	Metal (koz)	Tonnes (kt)	Au (g/t)	Metal (koz)
Comparison Providencia 2017 versus 2016 Estimate												
March 15, 2017	189	19.0	115	390	13.4	168	579	15.2	284	538	16.7	288
December 31, 2016	46	36.1	53	247	24.6	195	293	26.4	248	637	18.5	379
Comparison El Silencio 2017 versus 2016 Estimate												
March 15, 2017				1,797	11.4	659	1,797	11.4	659	1,344	9.3	402
December 31, 2016										1,794	9.6	552
Comparison Sandra K 2017 versus 2016 Estimate												
March 15, 2017				331	10.3	109	331	10.3	109	241	7.5	58
December 31, 2016				250	13.3	107	250	13.3	107	436	8.3	117

Source: SRK, 2017

14.14 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

There are currently no Mineral Reserve estimates on the Segovia property that comply with CIM guidelines as follows:

- Underground surveying is lagging in locating areas of depletion in the operations;
- Hydrological, hydrogeological and geochemical baseline characterization has not been established as of the time of this report;
- Geotechnical parameters have not been fully incorporated into the mine design; and
- Tailings disposal and water management procedures are often in violation of currently approved western standards.

There are no Mineral Reserves estimated for this PEA report as the mine schedule includes Inferred Mineral Resources.

Artisanal mining has been taking place for decades at the Project site and some of the mineralized material from these small scale privately owned operations is sent to the Maria Dama plant for toll processing. There also are illegal mining operations on the Project site which do not send material to the Maria Dama plant. In any event, GCM has very little to no information on these artisanal mine operations in terms of as-builts, water flows and ventilation.

The presence of un-surveyed old mine workings in upper levels of the deposit, in some cases centuries old, also adds uncertainty to the current understanding of the Project and subsequent design.

Thus, in total, these knowledge gaps may have an impact on mine design programs that GCM will implement in the future to improve safety and productivity.

16 Mining Methods

The Segovia mining complex is a very old mining district. During the last 100 plus years of mining, different mining methods were applied. Due to the fact that the majority of the mineralized zones dip between 30 to 36 degrees, not many underground mining methods are suitable. This section of the report describes the current mining methods applied at the different mines. GCM use a combination of many different mining methods depending on the thickness of the mineralized zone and grades. During the last decade, the mine has attempted to switch to more mechanized mining methods and these methods have been successful in some areas but not in others.

16.1 Current and Proposed Mining Methods

Currently, mining within the Segovia mines takes place in two phases, primary and secondary. Additionally, some of the mines have switched to cut and fill mining methods for high grade zones.

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 scraper, 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 (Figure 16-1). The layouts follow the typical 32 to 35 degrees mineralized zone.

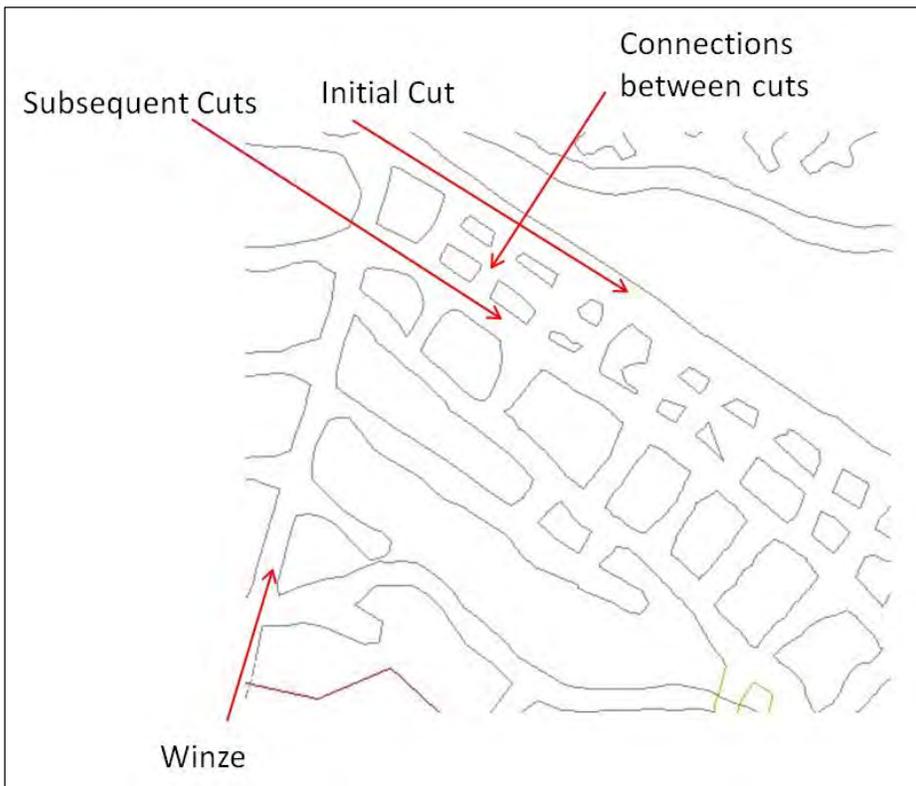


Source: SRK, 2017

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) then a rescue 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 m wide; however, dimensions vary due to ground conditions as shown in Figure 16-2. Ground support, in most areas of the mines, is typically by split sets, timber and shotcrete.



Source: SRK, 2017

Figure 16-2: Current Mining Layout

The Company states that future mining will use pillars centered 6 m apart with a minimum pillar dimension of 1.5 m by 1.5 m. 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. The Company plans to undertake geotechnical studies in 2017 to provide a better understanding of the pillar requirements to maximize recovery during primary mining.

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 GCM 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 32 mm blastholes drilled using airlegs. Blastholes are usually drilled to a 2m depth although shorter drill steels are also used. The blastholes are charged using predominately emulsion cartridges although some 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 scrapers, 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 m³ 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 by 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 meshes, 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.

Development

Development is achieved using airleg drills boring 2.2 m horizontal drillholes. The faces are charged with INDUFEL 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.

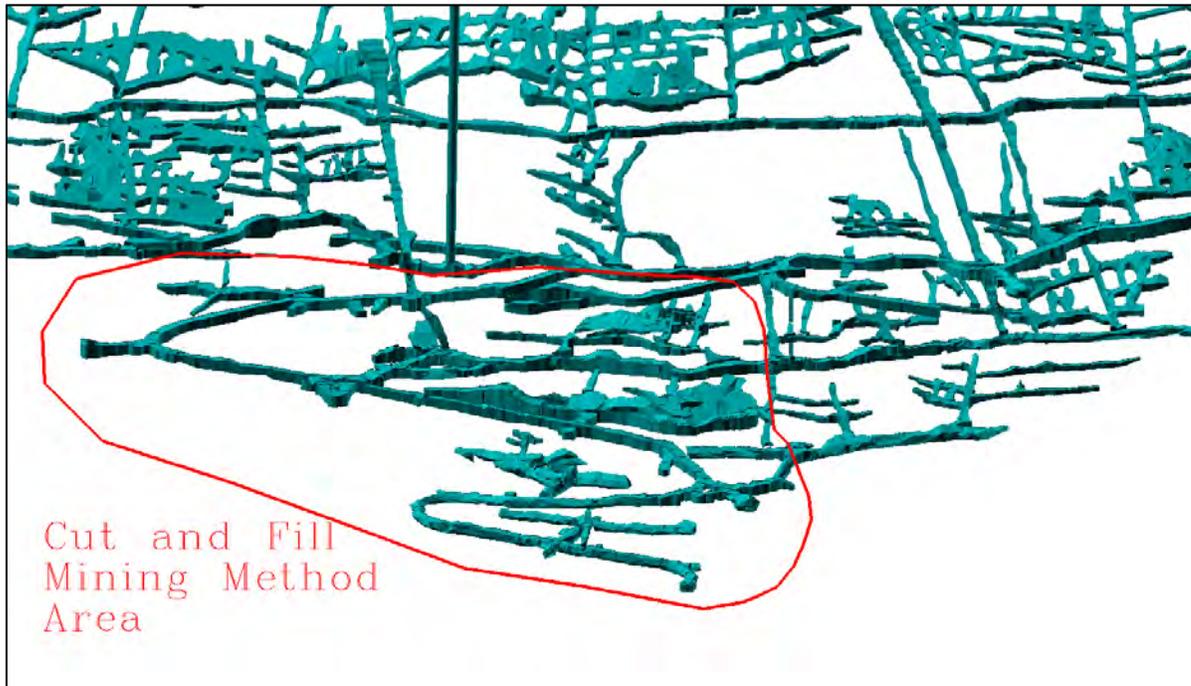
There is no rock bolting underground and the rock support is limited to timbering or steel frames. Much of the development is left unsupported.

Ventilation raises are developed using airlegs drilling vertical holes from a constructed staging area. This staging area is advanced as the raise progresses upward and blasted rock is loaded below using a rocker shovel. 1.5 m by 1.5 m raises are mined initially and then enlarged to 4 m by 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.

The mine is working towards a more mechanized cut and fill mining method as described in more detail in Section 16.1.6.

The change of mining method remains to be fully implemented as the required ramp development is still ongoing. For this report, existing mining areas scheduled to be mined in the near term have been designed as room and pillar areas. New mining areas, mainly below existing workings (250 m elevation and lower) have been designed as cut and fill. Figure 16-3 shows the current workings and identifies the two areas where ramps in waste are being developed.

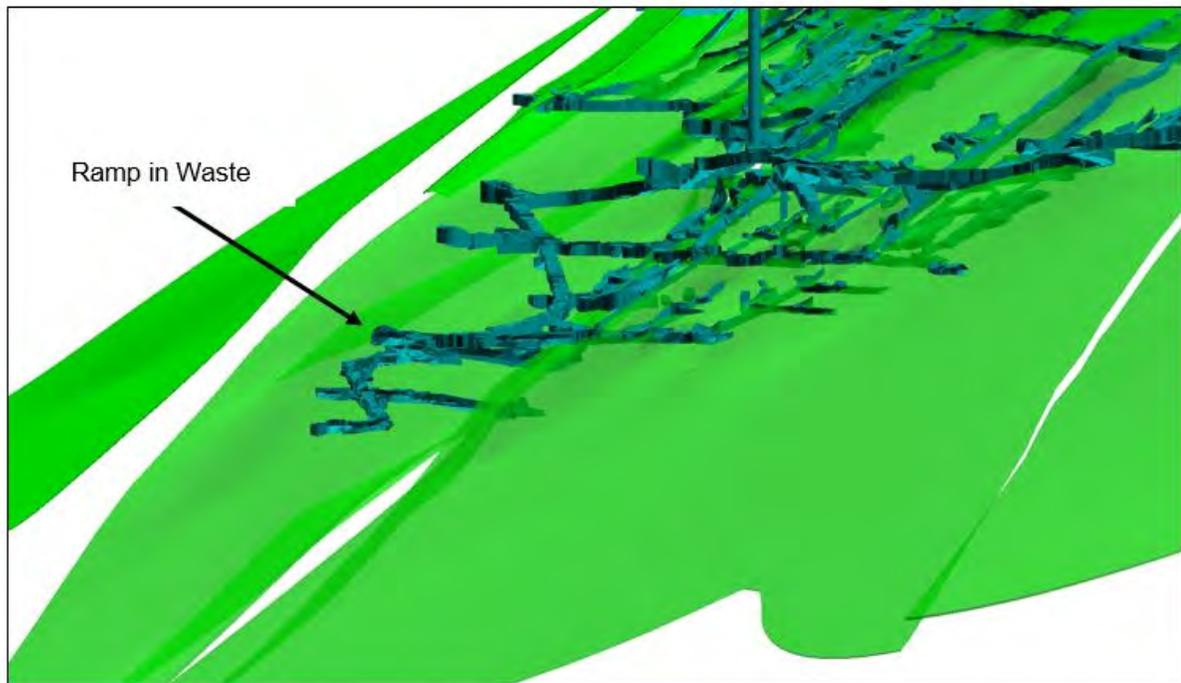


Source: SRK, 2017

Figure 16-3: Providencia Existing Workings, Ramps in Waste Material (red line)

Additionally, the Company has started using cut and fill mining in very specific high grade areas. The decision was made to go with this new mining method to ensure higher mining recovery since minimal pillars are needed.

Figure 16-4 shows the current ramp system in waste for Providencia Mine on levels 12 through 15.



Source: SRK, 2017

Figure 16-4: Providencia Ramp System in Waste and Mineralized Vein

16.1.1 Providencia Mine

Mining Method

The Providencia Mine is currently split into two mining districts, primary mining is used in the down dip extension of the veins and secondary mining occurs in the pillars of the historic mining in the levels above. In current operations, primary mining only takes place below the 10 level and secondary above this level to prevent interaction, however, there are minor exceptions. There are two areas on the 14 level where the company has converted to cut and fill method.

Access

The mine is accessed via an adit in the side of a hill at an elevation of 682 m above sea level (masl). This extends laterally to the mineralized vein where inclined shafts are used, following the vein, to access below the adit. The adit and inclined shafts are used for both materials handling and personnel access.

The Company has developed a vertical shaft from surface to 12 level, near to the high-grade enrichment zone. When the entire infrastructure is installed the plan is to use the shaft for ventilation purposes and not for production. To create the lateral access, a Sandvik DD210 jumbo is to be used, plus mini-scoops of 1.15 m³ and 7 t trucks.

All other accesses are based on the old “apique” systems, which are inclined shafts where rail cars run on rails and use a simpler hoisting system with pulleys and a single steel cable.

Production

Primary mining is currently concentrated around the 11, 12, 13 and 14 levels (approximately 330 to 450 m below the surface adit) in the Providencia vein. The mine operates multiple working faces simultaneously to produce payable material from primary mining. The Company has recently converted to using a company owned group at Providencia for all development work, preparation and production, internal transport, maintenance and minor works.

All future development is anticipated to be in vein, except where faults are present, truncating the mineralized vein requiring connecting drives in waste. All lower levels of the mine will use the cut and fill mining method. If the vein thickness is below 1 m, the company will use the old mining method which includes pillars.

Equipment

Mining in Providencia Mine uses manual methods for the primary and secondary mining. The cut and fill mining method uses Drill Jumbos, LHDs and haul trucks. Drilling uses airleg drills and loading is via scrapers. Haulage is achieved using a small rail network on each level feeding an inclined shaft equipped with 3 t skips. In the lower part of the mine, haul trucks dump the material into loading bins which are loaded directly into a 3 t inclined skip.

Since 2014, the mine has used ELT 210 mini-scoops, manufactured by MTI (Canada), accompanied by 7 t low profile trucks built by Young Machine (USA). Drilling is undertaken using a Sandvik DD210 jumbo.

Labor

Providencia Mine utilizes the services of company hired miners for primary, secondary and cut and fill mining. For all mining methods, approximately 170 miners are employed by the local mine contractor. In addition, The Company employs 15 people working on coordination and control of scheduled work. Secondary mining, which is completed by different contractors, currently employs 450 workers.

16.1.2 Sandra K

Mining Method

The Sandra K Mine is currently split into two mining districts, primary mining in the down dip extension of the vein and secondary mining in the pillars of the historic mining in the levels above. SRK notes that the smaller footprint of the Sandra K deposits results in less separation of the two mining activities as observed in the Providencia Mine though the extraction philosophy is fundamentally the same. A new area of higher grade material will be mined using cut and fill mining methods.

Access

The mine is accessed via an adit in the side of a hill located 605 masl. The adit is used for run of mine (RoM) transportation, men/materials and as the main ventilation intake. The access adit and the supporting surface infrastructure is located in the center of the mineralized vein and connects with inclined shafts connecting to the levels below.

Production

Primary mining is currently concentrated around the levels 3 and 4 in the Sandra K Mine. The Company operates multiple mining blocks simultaneously.

The pillar extraction sequence for secondary mining is undefined in the schedule and the pillars targeted are determined by a group of company hired miners who undertake the mining. Pillar extraction operations are currently focused on level 1 through 4.

In areas of unstable ground, 1.5 m split sets are installed. The Company plans to use friction bolting in future primary mining as required.

Equipment

Mining in Sandra K Mine is achieved using manual methods. Drilling uses airleg drills and loading is via scrapers. Haulage is achieved using a small rail network on each level feeding an inclined shaft equipped with 3 t skips.

In 2019, the mine will convert to ELT 210 mini-scoops, manufactured by MTI (Canada), accompanied by 7 t low profile trucks built by Young Machine (USA). Drilling will be undertaken using a Sandvik (France) DD210 jumbo.

Labor

Sandra K Mine utilizes the services of company hired miners for primary, secondary and cut and fill mining. For all mining methods, approximately 90 miners are employed by the local mine contractor. In addition, the Company employs 15 people working on coordination and control of scheduled work.

16.1.3 El Silencio Mine

Mining Method

El Silencio Mine currently applies a combination of primary and secondary mining methods. Future mining will see the reintroduction of primary methods; however, the company is planning to convert to a cut and fill mining method in new higher grade areas.

Where the mineralized zones are thinner, secondary mining is undertaken with a two blast, 'resuing' approach. The first stage blasts the waste which is spread over the floor to avoid handling it. The second stage blasts the mineralized portion of the pillar onto the waste rock. The payable material is then separated manually from the waste.

Access

The mine is accessed via an inclined shaft from surface. The shaft is used for materials handling, men/materials and as the main ventilation intake. Mine access and the supporting surface infrastructure is positioned in the center of the mineralized vein.

The El Silencio Mine has undergone extensive historical mining and the company plan is to "revive" the areas where mining has not taken place in many years. A series of Apique systems are in place.

Production

Current mining activities are at a depth of approximately 459 m; however, legacy mining extends 44 levels down to a depth of 814 m. The mine was flooded to the 30 Level at a depth of 518.6 m. Currently, all mining above level 23 is set up for Zandor miners. From levels 23 to 44, a contractor performs primary and secondary mining. Eventually these areas will revert back to Zandor for mining the lower grade materials.

As with secondary mining in the other mines, the pillar extraction sequence is determined by the

contractors undertaking the mining and is focussed on the high-grade zones. Blasting at El Silencio consumes more packaged emulsion than at the other operations due to the increased groundwater content.

Equipment

Mining in El Silencio is performed using manual methods. Drilling uses airleg drills and RoM is loaded by hand into 40 kg sacks feeding an inclined shaft.

Since 2015, the mine has used ELT 210 mini-scoops, manufactured by MTI (Canada), accompanied by 7 t low profile trucks built by Young Machine (USA). Drilling is undertaken using a Sandvik DD210 jumbo.

Labor

El Silencio Mine utilizes the services of company hired miners for primary, secondary and cut and fill mining. For all mining methods, approximately 240 miners are employed by the local mine contractor. In addition, The Company employs 15 people working on coordination and control of scheduled work. Secondary mining, which is completed by different contractors, currently employs 450 workers.

16.1.4 Carla Mine

Mining Method

Initially, only primary mining will take place until sufficient extraction has taken place to undertake secondary mining independent of primary mining activities.

A new area of higher grade material will be mined using cut and fill mining methods.

Access

Access to the mine is currently by an inclined adit in the side of a hill that intersects the mineralized vein in a central location. In the second half of 2020 the Company plans to start construction of a ramp which will start from surface to access high-grade material on level 5.

Production

There are no current stoping activities at the Carla Mine, although development is underway to resume production in mid-2020. The mining method is anticipated to be a combination of cut and fill and primary method mining, as currently applied in the existing operations.

Equipment

Mining at Carla is currently using similar equipment to the existing mines. A combination of airleg drilling, rocker shovels loading a rail haulage network and dumping into inclined shaft skips for transportation to the surface. The Company indicated that the plan is to use mechanized equipment in the higher grade areas.

16.1.5 Las Verticales Mine

Mining Method

The current plan is to access the Las Verticales Veins System area by using Providencia level 4 which is approximately 1 km in length to reach the medium levels of Las Verticales. Currently, the top 100

meters of one of the main structures that belongs to the Las Verticales Veins System is being mined by La Vega Gold contractors and this material is sold to the company for processing. The proposed mining method is a combination of longhole stoping and benching. A top and bottom sill access will be designed and longhole drills will drill between each sill level. Material will be extracted from the bottom sill and placed in ore chutes near the main ramp system.

A new area of higher grade material will be mined using cut and fill mining methods.

Access

Access to this area will be from level 4 of Providencia and material will be hauled 1.5 km to the main Providencia Apique system. Ventilation raises will need to be developed for through ventilation.

Production

The plan is to generate approximately 300 to 400 t/d of processable economic material from this area. Another 800 to 1,000 t/d of waste development is also part of the production plan. Combined, the total material movement is planned to be approximately 1,200 t/d to 1,600 t/d.

Equipment

In 2021, the mine will use ELT 210 mini-scoops, manufactured by MTI (Canada), accompanied by 7 t low profile trucks built by Young Machine (USA). Drilling will be undertaken using a Sandvik DD210 jumbo.

Labor

A similar approach is expected for this area where company miners will perform all the necessary work.

16.1.6 Proposed New Mining Methods (Cut and Fill Method)

As discussed in the previous sections, SRK has proposed changes to the mining methods to maximize extraction and safety as well as to add confidence to the mine plan by accounting for all material in the production schedule. This method does not require backfill as the waste from the cut remains in the stope. The basic premise for the methodology 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 yd³ 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.

This type of mining method uses more mechanized equipment and as such should be less labor intensive. It is also amenable to using the existing equipment as all drilling can be done using jacklegs and mucking can be completed using slushers. The extraction ratio within a panel should be nearly

100% with pillars left between panels and in infrastructure / ramp areas if required. All material from the panel is scheduled and secondary mining is not required.

Geotechnical modeling work should be undertaken to determine required pillars using this proposed mining method.

For design purposes, new mining areas will use the new cut and fill type methodology. Existing areas or areas mined early in the mine plan will use the current room and pillar type method (primary and secondary mining methodology).

16.1.7 Reconciliation

With either the current mining method or the proposed mining method reconciliation should occur to ensure the mine plan is predicting appropriate tonnes and grades. Within a known mining area, the tonnes and grades mined should be compared to the tonnes and grades in the block model. If there are continuous discrepancies between the mined material and the predicted mine plan, modifications to the mine plan process should be made to more accurately predict future mining. SRK is of the opinion that the reconciliation differences may not necessarily be an issue with the modeling, but rather variable grades and poor mining practices.

16.1.8 Mining Dilution for Proposed Cut and Fill Mining Method

Dilution mined with the mineralization has a large impact on the grade delivered to the mill and, therefore, the economics of the Project.

Multiple dilution scenarios were evaluated in increments of 10 cm, starting with 10 cm and ranging up to 1.50 m. These dilution options were based on site experience and SRK input.

This translates to, as an example for the 1.50 m dilution option, 75 cm on each side of the vein mined as dilution using a zero grade. A typical vein width at the mine could be 80 cm. Including 1.50 m dilution, the total mining width would be 2.30 m. This methodology uses a true geometric dilution rather than a single factor for all vein thickness. Based on experience, SRK is of the opinion that geometric dilution calculations better represent the expected dilution, particularly with veins that vary significantly in width.

SRK used Vulcan™ software to calculate the dilution amounts in the block model. A diluted grade and diluted mining thickness was back calculated into the block model for each column of blocks. A block calculation script in Vulcan™ was used to generate these new variables and estimates.

SRK suggest that a true geometric dilution calculation should be applied instead of a single factor for all the vein thicknesses. Based on experience, SRK is of the opinion that a geometric dilution calculation better represents the dilution expected in the future.

Table 16-1 shows example values of a single block calculation.

Table 16-1: Dilution Evaluation Example

Block Model Variables	Value
au	60.90
au_dil_10_cm	56.51
au_dil_20_cm	52.71
au_dil_30_cm	49.38
au_dil_40_cm	46.45
au_dil_50_cm	43.85
au_dil_80_cm	37.55
au_dil_100_cm	34.26
au_dil_120_cm	31.51
au_dil_150_cm	28.11
tthk	1.07
thick_p10	1.17
thick_p20	1.27
thick_p30	1.37
thick_p40	1.47
thick_p50	1.57
thick_p80	1.87
thick_p100	2.07
thick_p120	2.27
thick_p150	2.57
tonnes_original	3.47
tonnes_p10	3.74
tonnes_p20	4.01
tonnes_p30	4.28
tonnes_p40	4.55
tonnes_p50	4.82
tonnes_p80	5.63
tonnes_p100	6.17
tonnes_p120	6.71
tonnes_p150	7.52

Note: Variables that end with the letters “cm” indicate the additional thickness applied as a dilution at zero grades. Variables that contain the word “thick” indicate the thickness of mining with the additional dilution in cm. The variables that contain the word “tonnes” indicate the diluted tonnes with the different dilution measured in cm.

Source: SRK, 2017

Table 16-2 shows the dilution used for each mine assuming the mining method is cut and fill. The historical primary and secondary mining method dilution reconciliation shows a 10 cm dilution on each side of the vein for a total of 20 cm dilution.

Table 16-2: Dilution Metrics Used for Each Mine (Cut and Fill Mining Method)

Mining Method	Mine	Dilution in Meters
Cut and Fill Mining Method	Carla	1.00
	Providencia	1.00
	El Silencio	0.80
	Sandra K	1.00
Long Hole Stopping	Vetas Verticales	1.00
Primary and Secondary Mining Method	All Mines	0.20

Source: SRK, 2017

16.2 Parameters Relevant to Mine Designs and Plans

16.2.1 Geotechnical

Geotechnical Characterization Program

GCM has conducted a preliminary field geotechnical characterization program that included data collection, laboratory testing, and recommended geotechnical mine design parameters. However, no detailed geomechanical studies have been carried out to date. The spacing between pillars and the type of ground support have been historically selected based on the experience of GCM engineers and the experience of the miners who gained knowledge from their parents who used to work at the mines. GCM has occasionally contracted geomechanical consultants to make short site visits to their mines (SRK 2016; Berrocal, 2017). SRK conducted a site visit to Providencia Mine on September 12, 2016 to visually observe ground conditions. GCM has assigned a full-time engineer to geomechanical activities as of early 2017.

The geotechnical characterization data collected for the TSF and mill infrastructure is documented in Section 18.2.

GCM now routinely collects geotechnical characterization data in conjunction with the exploration drilling program. The program was designed to characterize subsurface geotechnical conditions in support of a prefeasibility-level design.

The geotechnical field investigation consisted of 321 drillholes (63,880 m) used for rock mass characterization, designed to examine rock mass fabric in and around the mineralized zone at different depths and orientations. Holes were drilled at varying orientations into the hangingwall, footwall, and mineralized rock. The field investigation included geotechnical core logging and core sample collection for laboratory strength testing.

The rock testing program included 4 unconfined compression (UCS) tests, 17 triaxial compression (TCS) tests, and 32 direct shear strength (DSS) tests of rock joint sampling. Tests were conducted at different confinement levels (80 tests). A set of 25 static and dynamic elastic moduli measurements, and 13 Brazilian tensile strength (BTS) tests were conducted. This information was used for calibration of the 1,992 point load tests conducted in the field and the 14,400 m of field estimated strength parameters estimated during the core logging. The laboratory tests were sufficient to develop discontinuity shear strength parameters and estimates of the static and dynamic elastic properties.

Geotechnical Domains

The geologic profile in the mining area consists of the primary mineralized (mostly quartz) vein with competent granodiorite hangingwall (HW) and footwall (FW). Four geotechnical domains were identified based on lithology, weathering, structural conditions and rock mass strength similarities. The domains are as follows:

- Domain I – Hangingwall granodiorite rock material;
- Domain II – Mineralized vein;
- Domain III – Footwall granodiorite rock material; and
- Domain IV – Andesite dykes.

The primary vein ranges in thickness between less than 1 m to greater than 5 m in some areas. The primary vein follows pre-existing andesite dykes with average widths of about 2 to 3 m. These dykes can be found in the HW or the FW material, as well as in both, or in the middle of the mineralized vein.

The andesite dykes are commonly unstable when in the immediate HW. The overall rock mass quality of the dykes appears to be fair to good. Large blocks have fallen from unsupported backs in many areas. These ground falls appear to have been fostered primarily by vein-parallel jointing. The dyke rock and the granodiorite where the dykes are absent has been affected by potassic (biotite), argillic (illite) and propylitic alteration within a few meters of the vein, which has weakened the rock strength from its unaltered or fresh state.

The mineralized vein is of variable rock quality and typically heavily fractured with faults and gouge above and below its contacts. Rock mass quality was estimated by SRK for the vein at one location while underground according to the Barton (1974) Q rock mass rating system. A Barton Q' value of 1 was estimated at one location corresponding to 'Poor' rock quality according to Barton's system. Lower and upper bound Q' values of 0.5 and 5, respectively, are estimated for the vein rock mass.

The rock quality of the granodiorite from the available data appears to be Very Good quality in areas away from the vein. The rock near the vein is typically Good quality, but can have zones of increased fracturing and alteration associated with the veins. This was noted in core hole ZC0035 that was reviewed during the site visit.

The vein splits into two in some areas with only the upper containing mineralized grades. Only the upper vein may have been mined in these areas leaving the lower vein in the footwall. This lower portion of the vein can have increased fracturing and alteration associated with it which results in reduced rock quality compared to the granodiorite footwall. This was noted in particular in core hole ZC0035 which was reviewed during the visit.

No ground support was noted in any of the historic mining areas visited.

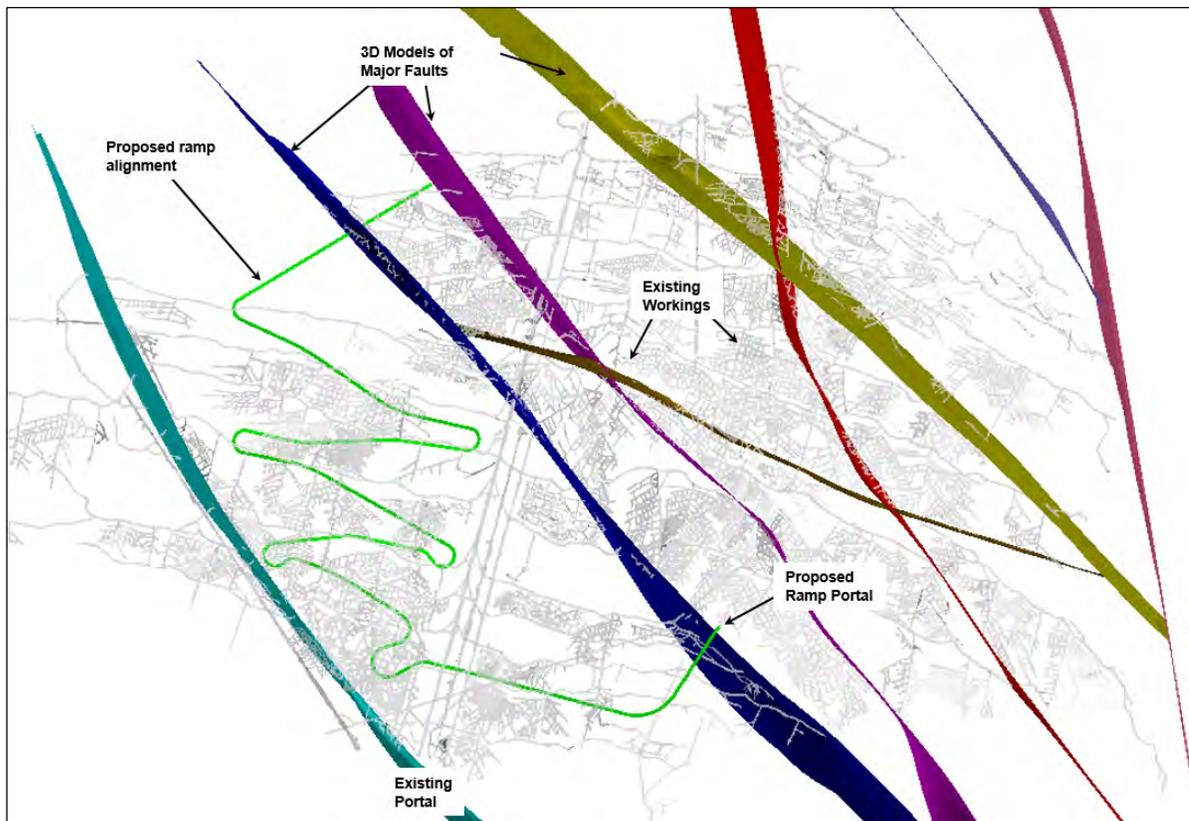
16.2.2 Structural Geology

GCM geologists perform geological mapping of all sills and raises developed in vein, as well as in some ramp and historic access zones. Mapping was recorded at a scale of 1: 500, in which the dip and dip direction of the vein and faults were measured. This data is available in paper and/or digital form, and covers all levels of the Providencia, El Silencio, Sandra K and Carla Mines. The main objective for collecting these data is for the geological interpretation of the veins and their interrelation with the faults. The structural data is insufficient to determine joint sets for geotechnical characterization. SRK recommends that more geotechnical detail on structures be collected as part of routine mapping.

Detailed surveys of vein, faults, diaclasses, fractures, have been carried out by the GCM geomechanical engineer or mine geologists in areas where detailed jointing information is required for assessment of ground control stability. No oriented core logging from exploration boreholes has been conducted to date.

The regional structural geology and the borehole logging data have been used to estimate the mine-scale structural geology. A total of 7 major structures have been identified. Figure 16-5 shows a plan view with the position of mining and footwall accesses relative to the geologic structures. These

structures have been modeled in 3D. The vein is offset more than 50 m (vertically) at several locations as a result of steep northwest trending reverse faulting.



Source: SRK, 2016

Figure 16-5: Map Showing Current 3D Structural Model

16.2.3 Rock Mass Properties

During the 2016 visit to the GCM mines in Segovia, SRK did a review of drilling cores at the El Silencio, Providencia, Sandra K and Carla Mines (SRK, 2016). A set of 22 samples from 4 mines were selected for laboratory testing of USC strength. Samples were sent to the Geotechnics and Pavements laboratory of the National University. Insufficient testing has been conducted to establish the statistical ranges of values. However, Table 16-3 shows a summary of the rock mass properties for the 22 tests conducted in 2016. The average UCS strengths and Young's modulus values by mine are shown on Table 16-4.

Table 16-3: Summary of Laboratory Tests

Muestra	Litología	DDH	From	To	Mina	Peso del espécimen (g)	Longitud del espécimen (mm)	Diámetro del espécimen (mm)	Esfuerzo Máx. de Rotura (MPa)	Carga Máx. de Rotura (kN)	Deformación Unitaria Máx. (%)	Área del espécimen (m2)	Volumen del espécimen (m3)	Peso unitario seco (kN/m3)	Duración del Ensayo (min)	Módulo de Young E0m (GPa)
D202548	HA	DS-0126	477.70	477.90	Providencia	589.30	140.33	44.56	160.56	251.50	0.44	1.56E-03	2.19E-04	26.42	5.35	34.90
D202549	HA	DS-0126	478.60	478.80	Providencia	594.86	140.99	44.43	141.62	221.79	1.01	1.55E-03	2.19E-04	26.69	4.72	11.06
D202550	HA	DS-0126	479.00	479.20	Providencia	590.41	137.64	44.73	160.09	253.19	0.62	1.57E-03	2.16E-04	26.78	5.34	25.01
D202561	HA	PV-IU-043	33.85	34.02	Providencia	531.48	123.62	45.02	61.03	97.88	0.79	1.59E-03	1.97E-04	26.50	2.03	7.44
D202562	HA	PV-IU-043	35.00	35.15	Providencia	554.74	129.29	44.91	137.08	218.40	0.59	1.58E-03	2.05E-04	26.57	4.57	19.58
D202543	HA	SK-IS-011	144.74	144.99	Sandra K	1469.26	173.88	61.12	128.52	381.06	1.19	2.93E-03	5.10E-04	28.26	4.28	14.60
D202553	HA	SK-IS-003	248.69	248.94	Sandra K	1536.57	169.55	63.61	112.59	362.38	1.27	3.18E-03	5.39E-04	27.98	3.75	8.28
D202554	HA	SK-IS-003	250.59	250.84	Sandra K	1546.91	173.47	63.64	77.64	250.07	1.30	3.18E-03	5.52E-04	27.50	2.59	6.69
	Promedio HA								122.39	254.53	0.90	2.14E-03	3.32E-04	27.09		15.95
D202544	IGD	DS-0142	86.70	86.90	Carla	1298.49	163.12	60.89	94.84	278.93	1.00	2.91E-03	4.75E-04	26.82	3.16	9.30
D202545	IGD	DS-0142	86.90	87.10	Carla	1420.99	178.40	61.05	74.99	221.22	0.78	2.93E-03	5.22E-04	26.70	2.50	7.81
D202546	IGD	DS-0126	471.78	471.98	Providencia	571.91	132.93	44.82	120.32	190.67	0.42	1.58E-03	2.10E-04	26.75	4.01	26.16
D202547	IGD	DS-0126	473.34	473.54	Providencia	571.91	132.93	44.82	72.02	114.20	0.48	1.58E-03	2.10E-04	26.75	2.40	13.34
D202559	IGD	PV-IU-043	30.39	30.59	Providencia	569.47	128.80	45.04	61.48	98.44	0.50	1.59E-03	2.05E-04	27.23	2.05	19.21
D202560	IGD	PV-IU-043	31.25	31.45	Providencia	603.60	139.01	44.98	126.46	201.70	0.39	1.59E-03	2.21E-04	26.81	4.22	27.49
D202541	IGD	SK-IS-011	142.85	143.10	Sandra K	1411.25	176.52	61.09	111.23	330.98	1.51	2.93E-03	5.17E-04	26.76	3.71	10.11
D202542	IGD	SK-IS-011	143.35	143.60	Sandra K	1416.59	177.62	61.10	100.53	297.60	0.98	2.93E-03	5.21E-04	26.68	3.35	11.69
D202551	IGD	SK-IS-003	246.47	246.72	Sandra K	1462.35	169.00	63.64	105.32	338.90	1.14	3.18E-03	5.38E-04	26.68	3.51	11.97
D202552	IGD	SK-IS-003	249.38	249.63	Sandra K	1402.12	161.83	63.64	64.22	206.80	1.21	3.18E-03	5.15E-04	26.72	2.14	5.26
D202555	IGD	ES-U15-16	24.73	24.93	Silencio	652.04	138.53	47.16	84.28	147.95	0.51	1.75E-03	2.42E-04	26.44	2.81	15.61
D202556	IGD	ES-U15-16	25.14	25.34	Silencio	625.97	133.56	47.30	148.14	262.24	0.73	1.76E-03	2.35E-04	26.16	4.94	16.83
D202557	IGD	ES-S05/16	54.25	54.45	Silencio	651.06	137.73	47.18	154.00	271.01	0.67	1.75E-03	2.41E-04	26.53	5.13	19.25
D202558	IGD	ES-S05/16	56.93	57.13	Silencio	655.15	139.48	47.20	146.76	258.57	0.72	1.75E-03	2.44E-04	26.33	4.89	19.31
	Promedio IGD								104.61	229.94	0.79	2.24E-03	3.50E-04	26.67		15.24
	Promedio general								111.08	238.89	0.83	2.21E-03	3.43E-04	26.82		15.50

Source: GCM, 2017

Table 16-4: Summary of Average Rock Properties by Mine

Mine	UCS (MPa)	Young's Modulus (GPa)	No. Samples
Providencia	115	20.5	9
Sandra K	100	9.8	7
Carla	85	8.6	2
El Silencio	133	17.7	4

Source: GCM, 2017

16.2.4 Rock Mass Quality

Rock mass quality was determined for the HW and FW. Barton (1974) Q' values ranged between 15 and 32 ('Good' rock quality) and one location was calculated to be a Q' of 8 ('Fair' rock quality) according to Barton's system.

The quality of the rocks varies from place to place in the mine. However, the average quality of the rock can be defined as follows (Berrocal, 2017):

- Hangingwall granodiorite rock material (RMR = 60-80, Type II, Good);
- Mineralized vein (RMR = 40-50, Type III – IV, Fair to Poor);
- Footwall granodiorite rock material (RMR = 60-80, Type II, Good); and
- Andesite dykes (RMR 50, Type IV, Poor).

Based on fracture frequency descriptions in the geotechnical logs and using the approach by Palmström (1995, 1996), volumetric joint and block sizes were estimated for each domain. The results are variable depending on the fracture frequency, degree of weathering, domain, and mine. Using the logging data plus observations from the site visit, the following Volumetric joints (J_v) have been estimated.

- Domain I – HW Granodiorite: approximately 2 to 15 joints/m³;
- Domain II- Mineralized Vein: approximately 15 to 25 joints/m³;
- Domain III – FW Granodiorite: approximately 2 to 15 joints/m³; and
- Domain IV – Andesite Dykes: approximately 20 to 25 joints/m³.

This information is used to estimate ground support requirements and potential stope dilution.

16.2.5 Pre-Mining Stresses

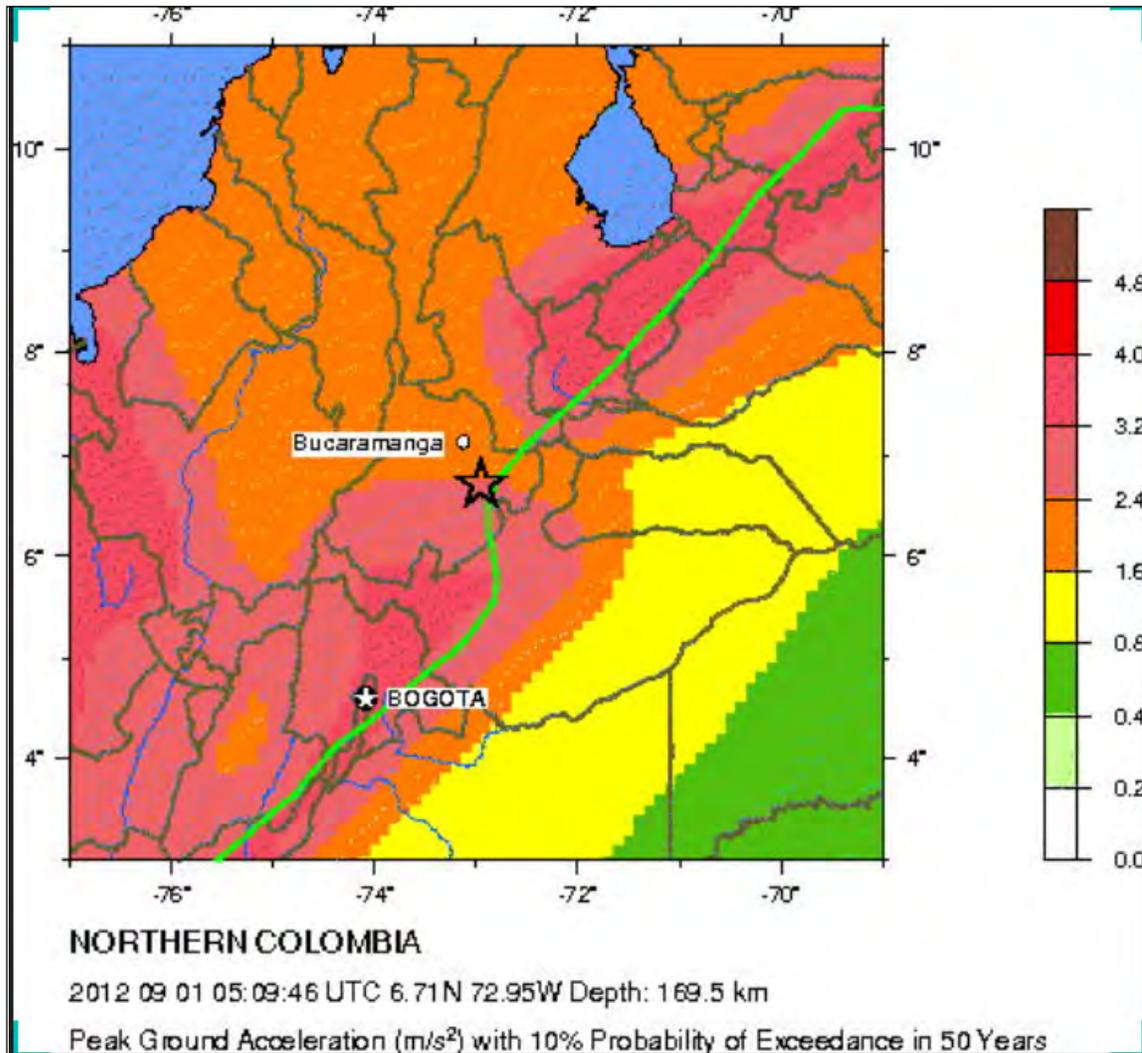
Berrocal (April 2017), estimated the in-situ residual stress field by the incremental blasthole drilling strain-gauge method (ASTM E837), which makes use of plates with strain gauges glued to the rock to measure the strain rosette during hole drilling to estimate stress magnitudes and orientations. Tests were conducted on panel 3650, Level 8 of the Providencia Mine at 234 meters below ground surface (mbgs) and obtained the following:

- $\sigma_v = 5.8$ MPa assuming density of 2.7 t/m³
- $\sigma_H / \sigma_v = 0.44$
- $\sigma_H = 2.55$ MPa

16.2.6 Seismicity

A high-level assessment of the local seismic earthquake potential suggests that the local peak ground acceleration (PGA) of 2.4 g for 10% probability of exceedance for a 50-year return earthquake event. Figure 16-6 shows a map of the predicted peak ground acceleration for northern Colombia.

No site-specific earthquake hazard assessment has been conducted for the project. Experience indicates that the underground workings are minimally influenced by earthquake ground movements. This is primarily the consequence due to the natural frequency of the workings being significantly higher than the large seismic events with significant peak ground accelerations.



Source: http://www.friendlyforecast.com/earthquake/2012/09/5-1-bucaramanga-colombia-barrancabermeja-earthquake-september-01-2012-at-12-09-46-am/neic_c000cd2t_w.jpg

Figure 16-6: Peak Ground Acceleration Map for Northern Colombia with 10% Probability of Exceedance in 50 Years

16.2.7 Underground Geotechnical Mine Design Parameters

Pillar Design – The sizing of the pillars in the GCM mines has traditionally been carried out empirically. Geomechanics staff at the mine have performed sector analysis of pillar stability by the method of Obvert and Duvall (1967) to determine the optimum spacing between pillars. For example, for Level 23 at El Silencio Mine, which has 2.2 m by 2.2 m pillars on 6.1 m spacing, the pillars have an estimated safety factor higher than 2.2. This result is in agreement with experience in the underground workings where pillars of this dimension are used and remain stable. Similar analyses for panels on Level 14 at Providencia Mine which have been designed with 2.5 m by 2.5 m pillars with 4.0 m spacing between pillars and have an estimated safety factor higher than 1.6.

Ground Support – The type of ground support at the mines is currently determined based on the experience of the mining engineers. Recently the use of the geotechnical Unwedge software (Rocscience, 2016) has been used to determine the type of support to be used (bolt lengths, spacing and sizes).

The ramps and footwall accesses in granodiorite rock generally do not require ground support since the massive rock is of Good to Very Good quality and stable without permanent support. When faults or fracture zones are encountered in the granodiorite and ground conditions change to less stable, then support is required. Usually helical bolts or split sets are used for spot bolting. Occasionally shotcrete and mesh are required to supplement the bolts.

In active mining areas within the vein, installation of ground support depends on the judgement of the engineers. This varies from one mine to another. In Providencia, in mechanized development drifts in vein it is common to have welded wire mesh and split sets. The mesh is reinforced with straps and if the rock is rubblized, shotcrete is used. GCM has managed to maintain stable ground, especially in the 14-08A sill area where a high percentage of the production grade comes from Providencia Mine. It is recommended, that quantitative geomechanical analysis be used in the future to establish the optimal level of ground support, especially in blocky ground loosened by nearby mining.

The stability of the development drifts and the operating panels at El Silencio Mine is generally very favorable. Unlike Providencia, the dyke that accompanies the vein has a much lower fracturing degree, which gives good conditions in the HW. It is common have historical mining areas with 8 m to 10 m of roof span between pillars that remain stable several years after they have been mined.

Ground conditions at the Sandra K Mine are more similar to those at Providencia Mine. The roof dyke is moderately weakened by fracturing. GCM currently carries out manual room and pillar mining with average room heights of 1.2 to 1.5 m and support with timber cribs for roof support. In the more recent development drifts, fiber reinforced shotcrete is used to manage rock instability.

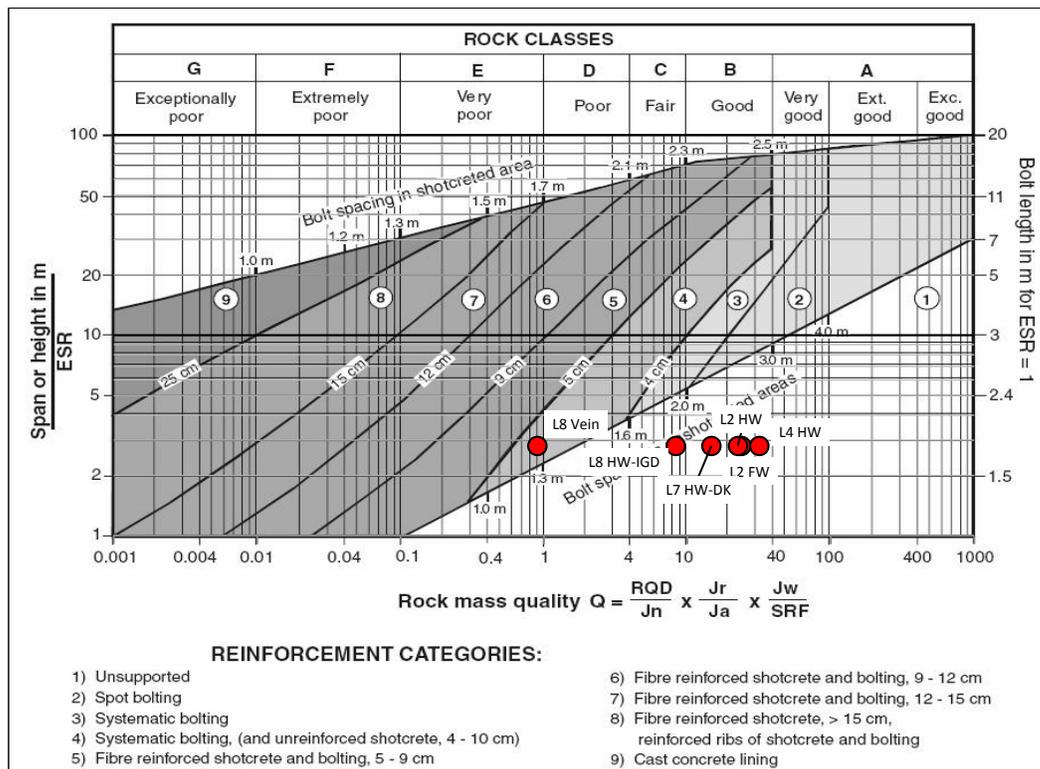
GCM has four shotcrete machines at its mines; three are for wet application and one for dry. They also have equipment to conduct pull tests on bolts. GCM personnel, in cooperation with ground support suppliers, have carried out pull tests at the Providencia Mine. The results indicate that the resistance of the granodiorite-installed helical bolts with Ground-Lock resin varies from 5 to 13 tonnes and split sets vary between 3 and 8 tonnes.

The Q' estimates obtained during the site visit are plotted on Figure 16-7 for a 4.5 m wide excavation, assuming an Excavation Support Ratio (ESR) value of 1.6 ('Permanent Mine Openings'). This figure indicates that, according to the Barton (1974) Q method, only 'spot bolting' should be required for the estimated rock quality in a 4.5 m wide drift.

Equivalent average rock mass rating (RMR) values according to the Bieniawski (1976) system are plotted on Figure 16-8 along with the empirical critical span curve of Ouchi, Pakalnis & Brady (2004). This figure demonstrates that the estimated footwall RMR range of 60 to 65 exceeds the minimum RMR of 50 that might typically be expected to allow a stable, unsupported 4.5 m span according to Ouchi, Pakalnis & Brady (2004).

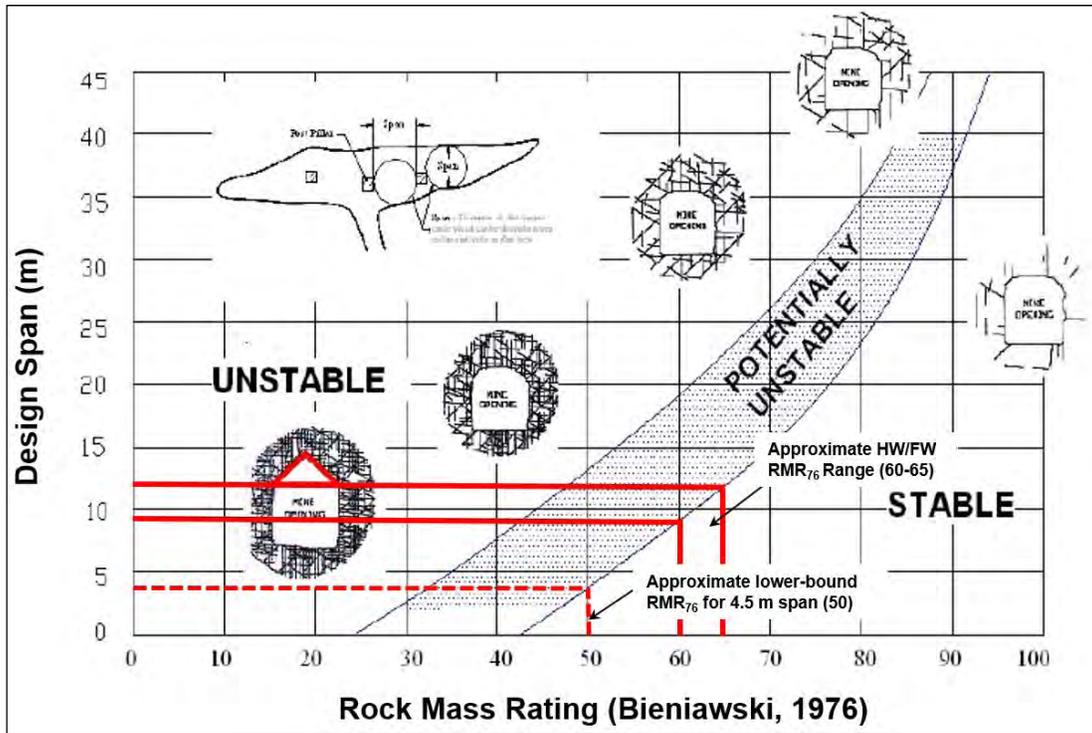
Based on estimates of rock quality obtained from the historic workings and from a rock mass perspective, a 4.5 m x 4.5 m decline ramp or haulage drive is anticipated to be stable with minimal ground support if constructed within the vein footwall or hangingwall away from the vein. Note that both of these empirical methods are intended to serve as a starting point for estimating stable spans and ground support requirements for underground excavations. Ground conditions and support requirements need to be continually assessed on a site-specific basis during drift development.

The stability of individual intact blocks in the drift back is analyzed using kinematic type analyses. Fracture orientation data obtained from oriented core or face mapping is used to define potential blocks which are then compared to an excavation surface and their potential for removability is assessed (i.e., blocks that are removable under gravitational loading should be bolted). Very minimal information is currently available to base such analyses for the ramp or haulage design. Additional information regarding the orientation, length and spacing of discontinuity sets within the ramp and haulage areas should be collected.



Source: SRK, 2016

Figure 16-7: Estimates of Rock Mass Quality Parameter Q' (Barton, 1974)



Source: SRK, 2016

Figure 16-8: Critical Span Curve (Ouchi, Pakalnis & Brady, 2004)

Infrastructure Setback Distances

To minimize mining-induced damage to long-term drifts the setback distances used in the design are:

- 95% of haulages are on-ore and those in the FW that are vein-parallel are about 10 m from production areas; and
- Decline ramp setback: 20 m from production areas.

16.3 Mine Optimization

16.3.1 Mineral Resource Models

SRK mining engineers used the recent updated block models for Providencia, El Silencio and Sandra K. Block models for Carla and Vetás Verticales were generated in 2012-13 and have not been updated since minimal to no mining has taken place in those areas. The mineral resource models were converted to mine models where dilution and mining recovery factors were applied. SRK used Maptek Vulcan software to perform all the calculations.

16.3.2 Topographic Data

Topography data has been gathered by the site and previous ownership. Where the company is currently mining, the topography is well understood but in areas where the topography was measured prior to GCG’s ownership, some of these areas need additional survey updates. For this PEA, SRK applied reasonable mining recovery factors to account for some unknowns in the topography survey.

16.3.3 Optimization Constraints

SRK has identified the following constraints to evaluate which mining areas should and should not be part of the economic evaluation:

- Areas which are known to have major geotechnical issues;
- Areas where it requires much capital investment to recover pillars or broken down Apiques;
- 80 to 100 meters past the last known assay sample or workings; and
- No material within 50 meters of the surface topography due to weak rock conditions (saprolite).

16.3.4 Optimization Process

Cut-Off Grade

In cut-off grade determination, all the costs associated with the operations and related activities must be identified. The following are typical costs and inputs used in a cut-off grade calculation for an operating gold mine:

- Mining;
- Processing;
- Site and corporate general administration;
- Environmental and permitting;
- Plant, mine, tailings, discharges and other sustaining costs;
- Royalties;
- Taxes (local, state and federal);
- Smelting and refining charges;
- Metallurgical recoveries; and
- Site infrastructure.

SRK was provided many cost structures for each mine. For this PEA, it is important to note that the company owned cost structure carries. The following operating costs were provided by Gran Colombia and used to calculate the Au cut-off grade.

- **Mining:** US\$83.00/t of processed material (current contract mining). This includes some costs for ramp development and infrastructure. Direct in-stope mining cost may be lower;
- **Processing:** US\$23.00/t of processed material;
- **Site G&A:** US\$3.3 million per year or US\$7.05/t of processed material at 1,300 t/d plant operating capacity;
- **Corporate G&A:** US\$7.5 million per year or US\$16.02/t of processed material at 1,300 t/d plant operating capacity (optional to put into the gold cut-off calculation);
- **Site annual security:** US\$3.0 million per year or US\$6.41/t of processed material at 1,300 t/d plant operating capacity;
- **Au refining:** US\$24.00/oz or 2% of gold selling price or (average) US\$3.47/t of processed material at 1,300 t/d plant operating capacity;
- **Au royalty (NSR):** US\$52.8/oz or 4.4% of gold selling price or (average) US\$7.67/t of processed material at 1,300 t/d plant operating capacity;
- **Yearly in-fill drilling and geology exploration:** US\$2.0 million per year or US\$4.27/t of processed material at 1,300 t/d plant operating capacity;

- **Yearly mine development (sustaining capital):** US\$4.0 million per year or US\$8.54/t of processed material at 1,300 t/d plant operating capacity;
- **Other sustaining capital items:** US\$2.0 million per year or US\$4.27/t of processed material at 1,300 t/d plant operating capacity;
- **Other yearly debt and obligations:** US\$7.5 million per year or US\$16.05/t of processed material at 1,300 t/d plant operating capacity (optional to put into the gold cut-off calculation); and
- **Metallurgical recoveries:** 91%. For the cut-off grade calculation, SRK mining engineers used 91% gold plant recoveries and in the cash flow, 90% was used.

Current estimated full project costs and calculated cut-off grade are shown in Table 16-5.

Table 16-5: Full Costs - Underground Cut-off Grade Calculation

Parameter	Amount	Unit
Mining cost	83.00	US\$/t of RoM
Process and tailings cost	23.00	US\$/t of RoM
G&A	23.07	US\$/t of RoM
Site Security	6.41	US\$/t of RoM
Total Cost	\$135.48	US\$/t
Gold price	1,250.00	US\$/oz
Average AU mill recovery	91	%
Smelting & Refining	24.00	US\$/oz
Royalty	4.4	% of NSR
Cut-off grade	3.77	g/t

Cost forecast based on increased production throughput for GCM in-house mining activities.
 Source: SRK, 2017

The current estimated full project costs less fixed cost and their associated calculated cut-off grade are shown in Table 16-6. SRK estimated that the mining cost would decrease to US\$63.00 per tonne of RoM excluding mine development based on costing database information and benchmarking to similar mines in the US, Mexico and Canada. These cut-off calculations are approximations and use pre-detailed costing. These costs have been estimated based on the assumptions that total life of mine throughputs will reach 1,600 t/d versus the current 1,000 t/d. The increase in production will benefit the fixed cost basis of the calculation.

Table 16-6: Adjusted Costs - Underground Cut-off Grade Calculation

Parameter	Amount	Unit
Mining cost	63.00	US\$/t of RoM
Process and tailings cost	23.00	US\$/t of RoM
G&A	23.07	US\$/t of RoM
Site Security	0	US\$/t of RoM
Total Cost	\$109.07	US\$/t
Gold price	1,250.00	US\$/oz
Average AU mill recovery	91	%
Smelting & Refining	24.00	US\$/oz
Royalty	4.4	% of NSR
Cut-off grade	3.05	g/t

Cost forecast based on increased production throughput
 Source: SRK, 2015

This updated cut-off of 3.05 g/t Au is used for mine planning purposes. Site security cost has been removed from the cut-off grade calculation as this is viewed as a fixed cost. SRK discussed this new cutoff with the site personnel and decided to elevate the cutoff to 3.5 g/t to ensure that any potential changes in higher mining costs would bring up the cutoff grade. SRK is of the opinion that for this level of study, this is appropriate.

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.

16.4 Design Criteria

The mine design for Providencia, Sandra K and Carla is based on detailed 3D wireframing. All material categories are used in the design (Measured, Indicated, and Inferred). Inferred material carries an inherent risk due to the uncertainties and lack of exploration drilling. The reader must be aware of this inherent risk.

A detailed geomechanical analysis was not completed for the Project. Zandor continues to apply the historically used spans in the stopes and states that they have not experienced ground control issues. Panel sizes used for design purposes are similar to existing mining practices at Segovia; however, SRK's mine plan only includes selected material above 3.5 g/t Au cut-off within the panels. In the future, a geomechanical analysis should be completed to confirm or update the mine plan assumptions.

The majority of the mine design uses the new proposed cut and fill mining methodology; however, existing mining areas and those areas mined early in the mine plan use the current primary and secondary room and pillar methodology.

16.4.1 Panel Design

For design purposes, a panel size of approximately 100 m in length and 100 m down-dip was used. Site personnel worked with SRK to outline the panels and to ensure they were located in non-mined areas. The panel polygons were used to cut the geology vein shapes. Each panel triangulation was then divided into 2.5 m high lifts or cuts. These shapes were used to report tonnes and grades for the panels, on a level by level basis. Dilution was applied to the vein using the 100 cm total dilution for many of the veins and 80 cm for certain areas as outlined in Section 16.1. Mining recovery estimates are discussed in the next few sections.

16.4.2 Development Design

Multiple access ramps have been included in the mine design. These ramps are located in waste in the hanging-wall. Though a ramp in the hanging-wall is not typical, the competent rock, small opening sizes, and use of backfill in future stopes will likely produce minimal mining induced stress. Ground support, splitsets and shotcrete, will be used in attack ramps. An approximate 20 m offset was used between the ramp and the mining panels. A geotechnical analysis should be completed to confirm the offset distance and location of the ramps. A staggered attack ramp pattern may be used if required.

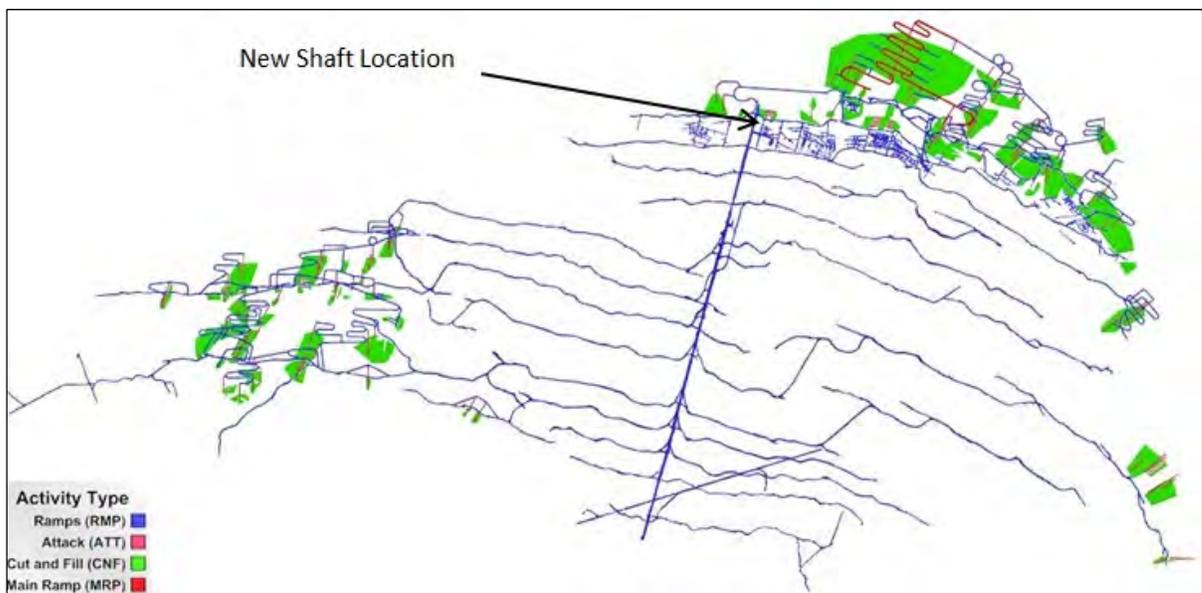
Main ramps were designed as 4 m wide by 3.5 m high openings. Secondary accesses leading from main ramps to the attack ramp were designed as 3 m wide by 3 m high openings. Attack ramps which

give access to individual levels in a panel were designed as 2.5 m wide by 2.5 m high. Maximum grade on ramps is 15%. In a few locations to minimize ramp distance attack ramp grades were increased to 20%.

In all large mining areas, multiple access routes were designed for egress by connecting various ramp systems together. Where possible the designed ramps were connected to the as-builts in multiple areas.

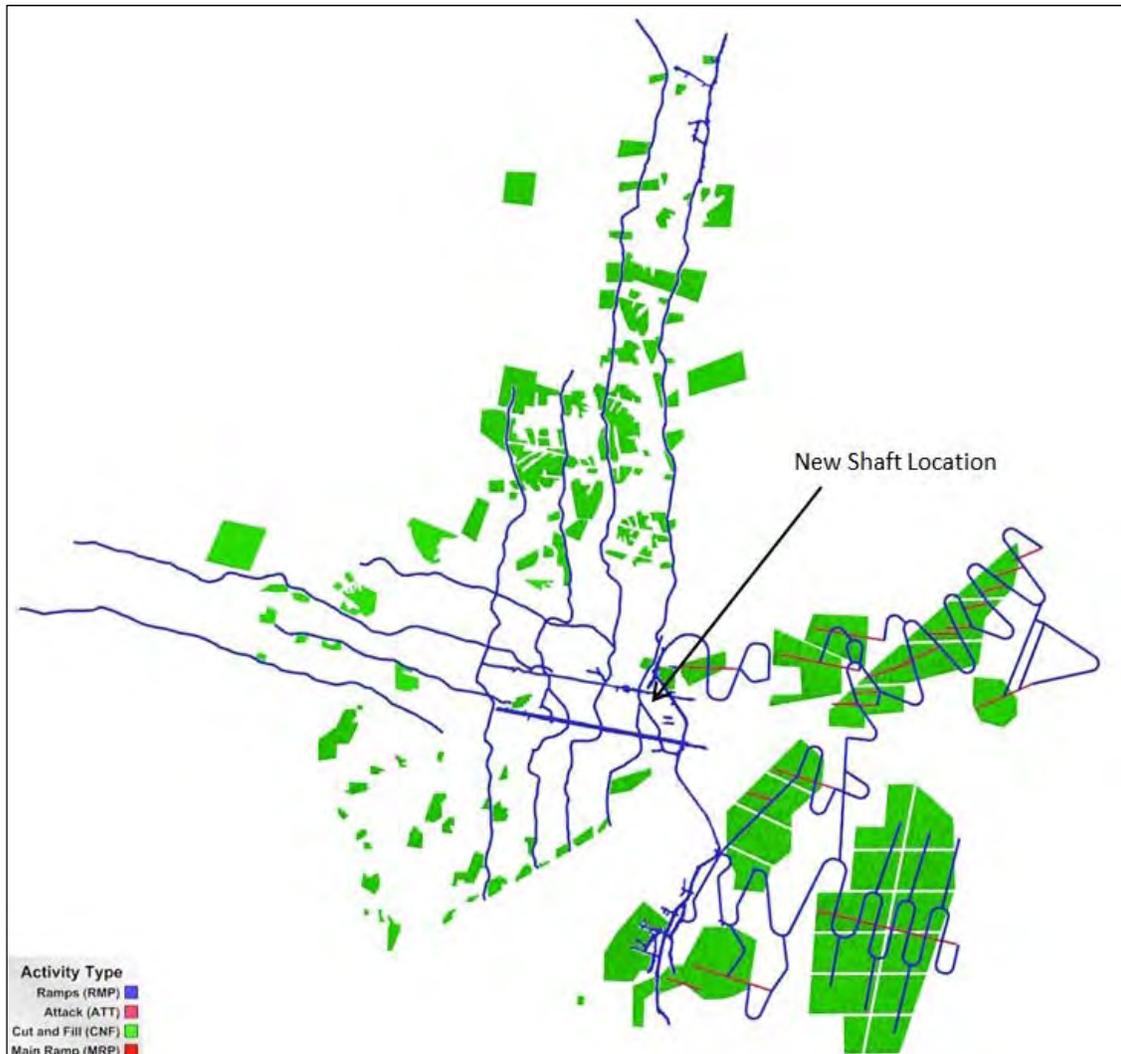
16.4.3 Mine Design Summary

Figure 16-9, Figure 16-10 and Figure 16-11 show the completed mine designs for Providencia, Sandra K and Carla generated in early 2017. The current design is very similar in shape and size. Designed mining panels are shown in green.



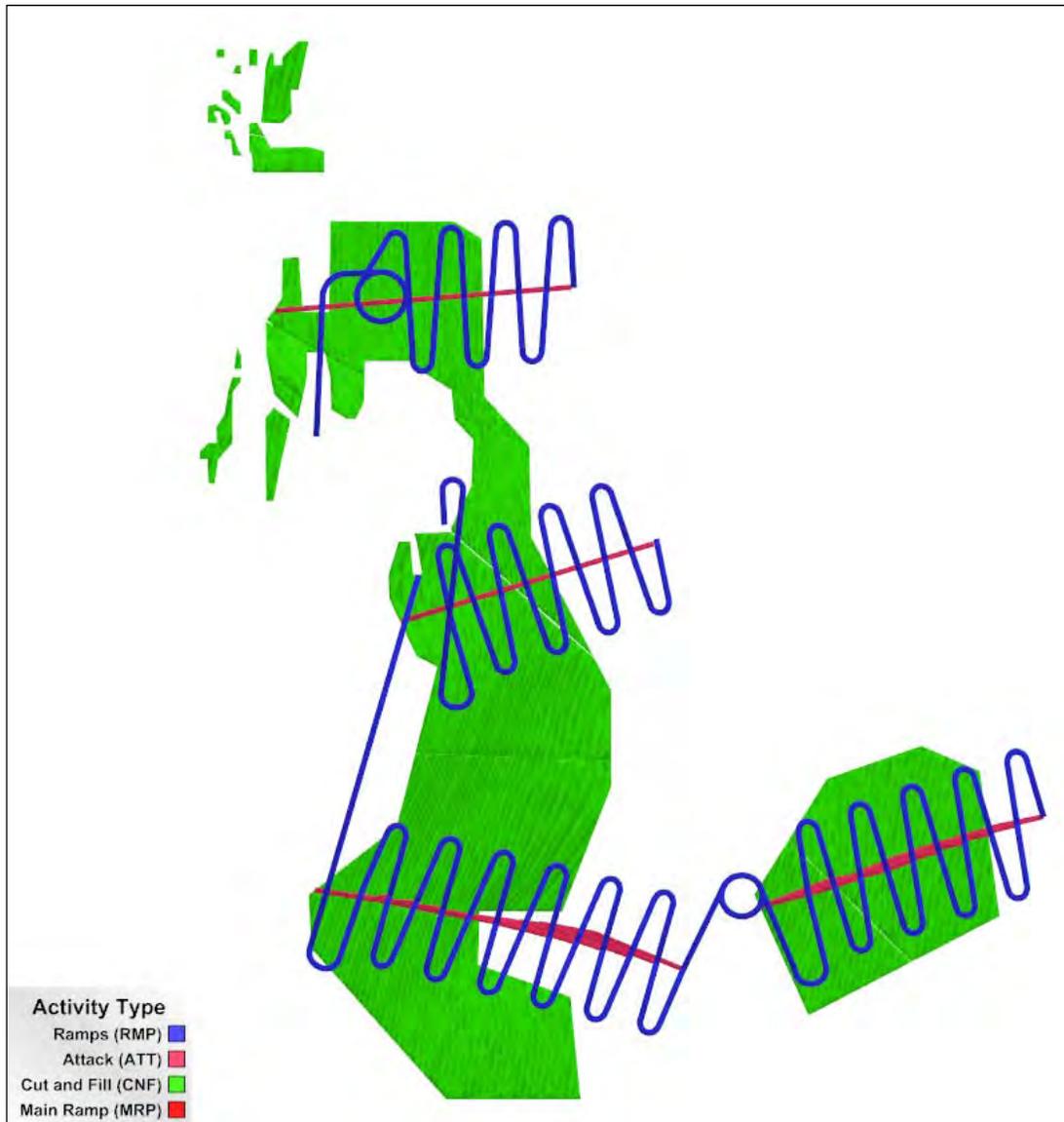
Source: SRK, 2016

Figure 16-9: Completed Providencia Mine Design (Plan View)



Source: SRK, 2016

Figure 16-10: Completed Sandra K Mine Design (Plan View)



Source: SRK, 2016

Figure 16-11: Completed Carla Mine Design (Plan View)

It is important to note that El Silencio and contract miners' tonnes and grades were estimated by SRK using grade tonnage curves and it is not as precise as for the other mining areas. The tonnes and grades stated for those areas are based on historical performance. SRK recommends further work to adequately validate these assumptions.

16.4.4 Shafts and Old Apique Systems

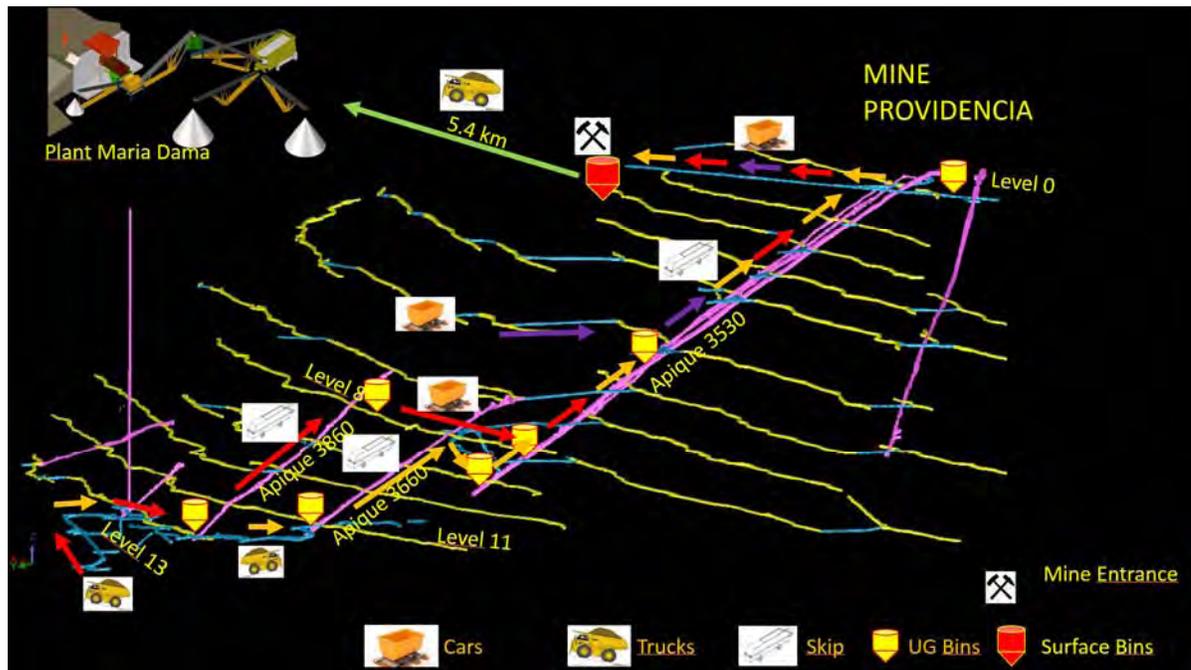
SRK has reviewed the current limitations of the Apique hoist systems and have the following comments:

- Providencia Apique system has a capacity of 600 t/d. This system is currently being used by the contract miners and Zandor. The new mine plan assumptions are based on a combined

production of 450 to 600 t/d (ore and waste). The current Apique system capacity will be sufficient to handle the proposed tonnage.

- Sandra K Apique system has a capacity of 550 t/d. This system is currently being used by Zandor. Contract miners are not currently mining in these areas. The new mine plan assumptions are based on a combined production of 600 t/d (ore and waste). The current Apique system capacity will not be enough to handle the proposed tonnage. The differences are small but initially, extra tonnes of waste will need to be hauled from the mine. SRK is in agreement with Zandor that a shaft or ramp needs to be built to properly handle the mine plan tonnage. Without the shaft, it is not possible to meet the revised mine plan. The capex in the cashflow plan includes an estimated total cost for this new infrastructure.
- El Silencio Mine has excellent potential to be fully mechanized. To be able to accomplish this mechanization, SRK is of the opinion that a shaft or a main decline should be installed. Currently, a new ventilation shaft is being constructed and additionally upgrades to double the Apique production is being worked on.

Figure 16-12 shows the Providencia ventilation shaft and material flow sheet.



Source: GCM, 2016

Figure 16-12: Providencia Mine Material Flow Sheet

Figure 16-13 shows the El Silencio Mine material flow sheet.



Source: GCM, 2016

Figure 16-13: El Silencio Mine Material Flow Sheet

16.5 Mine Production Schedule

Mine Planning

The mine currently produces a single mine plan covering the mining of all resources and material from areas within the mining lease including where no resource information is available (areas where no drilling exists which have been mined for decades). The mine plan covers both primary mining by the company and secondary mining by contractors.

For primary mining, the mine plan commences by breaking the unmined sections of the vein into a series of panels. The design of each panel demonstrates a continuation of the current extraction strategy of placing haulage levels spaced 30 vertical meters apart with the area between these haulage levels denoted as the panels. The height of each panel is determined by the dip of the vein and allows for an employee of reasonable height to walk through the mine without crouching. In the existing mining areas, this equates to a typical minimum mining height of 1.2 m. As the seam dip increases towards vertical, the minimum mining height decreases. The difference between the seam thickness and the minimum mining height is considered to be planned dilution. However, an additional dilution skin of 0.10 m on either side of the vein is taken into account to minimize ore losses.

The average thickness and grade of the seam in the mineralized portion of each panel is determined using observations of the geology within the in-situ development, exploration drill data and extrapolation from known geological trends. The Company uses the panel area, average thickness and the assumed density of 2.7 t/m³, to calculate the tonnage of the mineralized vein and metal content within the panel, to which the planned dilution is added.

For secondary mining, no design work is undertaken. GCM calculates the required gold production requirements after primary mining has been scheduled and distributes the required gold ounces amongst the existing operations. Grades and tonnages are back calculated from the gold targets, though the nature of the contract mining means that this detail is largely redundant. The mining contractors determine which pillars they extract and when. No mining losses or dilution are considered for the mining as the contractors are paid per ounce delivered.

From this basic framework, the mine plan is constructed. Each primary mining panel is assigned to a year, and a yearly plan is created by totaling all the blocks per mine.

The mine plan only includes three elements, production tonnage mined, anticipated grade of RoM and ounces of gold contained. Maps are produced for primary mining at all the Assets, outlining the proposed panels and the year of mining.

The size of the panels varies considerably from 15t to over 13,000 t of payable material. A typical panel, however, will contain around 7,500 t. SRK considers this approach suitable for both long-term and short-term planning, as the small scale of the panels and the detailed mine designs for the individual mining blocks means reliable short-term planning can take place.

Mine planning within the Company operations is currently in a transitional period. SRK has assisted the site to develop 3D mine plans using Maptek Vulcan software and Minemax iGantt scheduler. Additionally, steps have been initiated to improve the mine planning at the individual mines. The mine has been split into smaller, more discrete mining blocks for planning, representing a single loading chute into the haulage level. This will provide greater predictability in scheduling locations and better reconciliation of production grades against the processing and block model.

SRK considers that the current mining plan process to be adequate and approaching international standards. The lack of a more detailed short-term plan relies on experienced crews and good front-line management to implement what is essentially a spreadsheet exercise.

Whilst the mine has been producing for many years using these planning systems, albeit using far larger panels, no reconciliation data was provided as to how well the production has complied with the previous mine plans. SRK supports the recent initiatives by the Company to introduce a more robust mine planning process, although the project is in its infancy and the targeted framework for future mine planning has yet to be finalized.

Another key concern regarding the mine planning process is the lack of planning and reconciliation of the secondary mining activities. As the pillar extraction sequence is determined by the individual contractors, the Company has no inventory of which pillars have been mined and which are still in place (the Company informed SRK that plans are in place for this to be remedied in the future). Aside from being a safety hazard, it adds considerable uncertainty to the achievability of the LoMP for secondary mining as there is reduced confidence in the amount of payable material in-situ available to be mined.

There are believed to be over 800 adits and shafts into the various veins worked by the Company making controlling access into the mine difficult. This creates the potential for unauthorized extraction of vein material from the mines without the Company knowledge. The Company is currently in discussions with existing contractors to identify possible methods of restricting access to the underground workings to those used for legitimate purposes.

Regarding the mine planning of the Segovia Assets, SRK recommends the following:

- The key capital items such as development of haulage levels and internal inclined shafts for materials handling be incorporated into the mine planning. Currently, there is no ability to determine when development of the new haulage levels is required to maintain constant production over the life of the mine.
- Introduce a short-term plan, detailing the work required from each work crew or mining block. Currently, there is very little consideration for what potential interactions may take place between activities. Scheduling each work crew/mining block as part of a short term, operational plan will improve predictability of mining and provide greater confidence for the planning team that the mine plan is being implemented as intended.
- A reconciliation process is to be introduced so the grades and tonnages mined from each mining block are compared with the planned data. This will allow better prediction of the modifying factors and hence more reliable planning going forward.
- An inspection of each pillar in the secondary mining zone should be undertaken to define which pillars remain in situ and which have been removed. This should be undertaken on a regular basis and reconciled against the secondary mining production.

The Company is in the process of developing and implementing policies and procedures to address SRK's recommendations above.

Completed mine designs for Providencia, Sandra K and Carla were reviewed and agreed upon with Zandor. Production schedules were then generated for these three mining areas using iGantt scheduling software. This allowed for scheduling material on a daily basis for the life of mine. Limits on numbers of crews, development meters, total mineralized material and waste tonnes were applied to each schedule. Several iterations of schedules were developed and the final schedules presented herein were agreed upon with Zandor personnel.

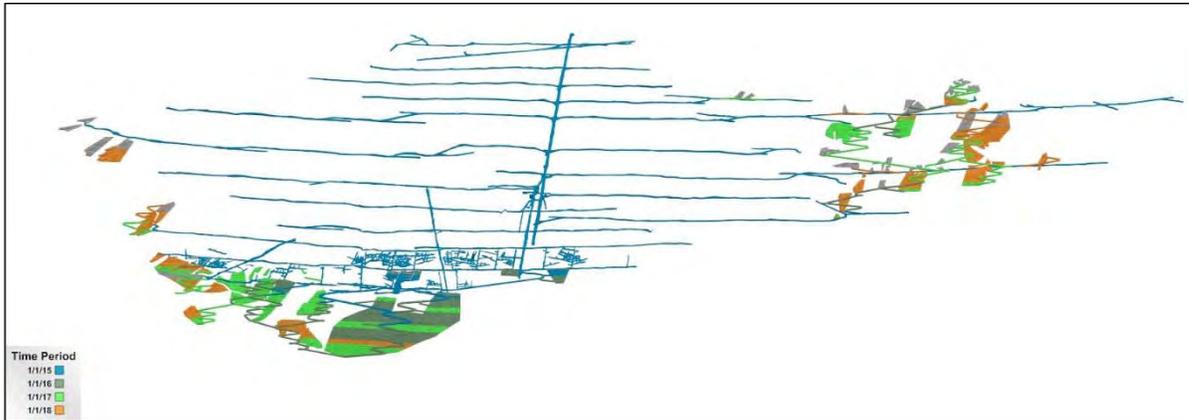
Production schedules for the El Silencio and contract miners' areas were generated by SRK but rely on estimates provided by Zandor.

The current bottleneck at the mine is related to the haulage and hoisting systems. Zandor is working on improving the current hoist and designing a new shaft from surface to the lower portion of the Providencia Mine.

The production schedules generated by SRK are based on the rate assumptions as provided by Gran Colombia. Gran Colombia operates 312 days/y so productivities were normalized to 365 days as was used in the iGantt schedules. The rates used in the schedule are for 365 days/y.

16.5.1 Mine Production

The Providencia Mine schedule was performed using iGantt mine planning tools. For some of the mines, SRK used grade tonnage curves with modifying factors to arrive at the correct mine plan. Figure 16-14 shows the 3D mine design and an example of the mine schedule currently performed at the site.



Source: SRK, 2016

Figure 16-14: Providencia Mine 3D Mine Design

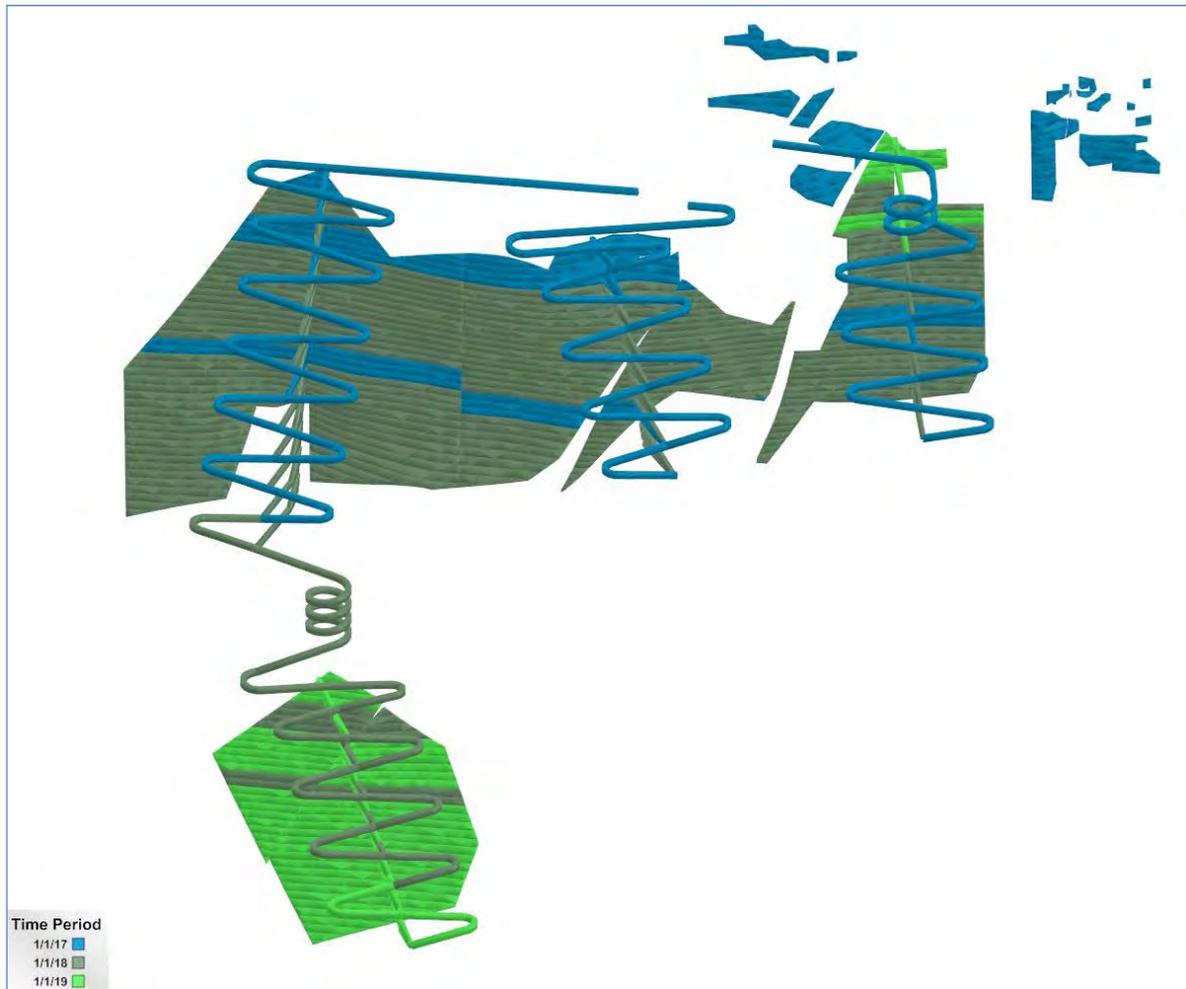
The Sandra K Mine schedule was performed using iGantt mine planning tools. Figure 16-15 shows the 3D mine design and an example of the mine schedule currently performed at the site.



Source: SRK, 2016

Figure 16-15: Sandra K Mine 3D Mine Design

The Carla Mine schedule was performed using iGantt mine planning tools. Figure 16-16 shows the 3D mine design and an example of the mine schedule currently performed at the site.



Source: SRK, 2016

Figure 16-16: Carla Mine 3D Mine Design

The El Silencio Mine schedule was performed using grade tonnage curves for the current resources with historical metrics and rates. SRK notes that the El Silencio mining area needs additional work to match the same level of design as the other mining areas. El Silencio is the largest of all the operations but lacks the detailed survey information which the company has been working to update.

Grade Control

Grade control is performed by taking channel samples every 2 meters. The channel samples are shipped to an internal laboratory. GCM has constructed a new assay laboratory which employs all the standards used by other mining companies. Some of these samples are shipped to SGS for additional tests. Grade control is performed by a group of samplers employed by the company. Samples are cut using a saw to ensure that samples are being selected from the correct parts of the vein. Once the assays are received, mine geologists calculate the tonnes and grades for each panel. Appropriate dilution is applied and capping is also used. Mineralized and waste area polygons are defined and given to surveyors to flag which areas are economical and which areas are not.

16.5.2 Life of Mine Plan

To define the life of mine plan, SRK and GCM worked together to define the parameters to be used for the PEA life of mine plan. SRK assisted Segovia in the generation of the plans for the past three years and SRK used a combination of Minemax iGantt scheduler and Vulcan software. For this PEA, SRK generated tonnes and grades from blocks of 100 m by 100 m in 2D and assigned the detailed 3D development schedule performed from the past detailed mine plan iterations. SRK is of the opinion that the differences in the mine plan presented in this PEA versus the detailed budget work is less than 10%. The main difference is the addition of the additional modeled areas in the El Silencio Mine, which was never modeled before and the addition of the Las Verticales area. All other areas stay very close to the budget mine plan.

It is important to note that the largest contributor of revenue is from the contractors who sell Segovia's mined material to the company for an agreed price per recovered gold ounce.

Table 16-7 shows the Segovia LoM Mine production schedule by mine owner and contractors commencing July 1, 2017.

Table 16-7: Segovia LoM Mine Production Schedule

	2017 (H2)	2018	2019	2020	2021	2022	2023	2024	2025	2026
Providencia										
RoM Tonnes (t)	20,280	50,830	49,920	-	-	-	-	-	-	-
Head Grade (g/t)	26.09	29.51	19.00	-	-	-	-	-	-	-
Contained Gold (oz)	17,014	48,219	30,494	-	-	-	-	-	-	-
Sandra K										
RoM Tonnes (t)	3,250	14,040	34,600	53,900	71,200	75,600	75,600	66,800	55,200	28,940
Head Grade (g/t)	2.50	3.61	6.00	6.00	5.38	5.20	5.20	5.20	5.20	3.44
Contained Gold (oz)	261	1,630	6,674	10,398	12,305	12,639	12,639	11,168	9,229	3,196
Carla										
RoM Tonnes (t)	-	-	-	-	-	-	-	60,473	65,971	5,498
Head Grade (g/t)	-	-	-	-	-	-	-	8.03	8.03	8.03
Contained Gold (oz)	-	-	-	-	-	-	-	15,614	17,034	1,419
El Silencio										
RoM Tonnes (t)	31,070	105,300	139,920	180,000	207,360	242,520	249,600	249,600	241,900	127,560
Head Grade (g/t)	3.52	3.31	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.55
Contained Gold (oz)	3,519	11,198	26,091	33,565	38,667	45,224	46,544	46,544	45,108	22,775
Vetas Verticales										
RoM Tonnes (t)	-	-	-	-	-	-	10,500	85,200	148,200	105,600
Head Grade (g/t)	-	-	-	-	-	-	3.50	3.50	3.50	3.50
Contained Gold (oz)	-	-	-	-	-	-	1,182	9,587	16,677	11,883
Selective Mining (Contractor + Zandor)										
RoM Tonnes (t)	104,073	197,476	207,632	194,848	184,795	177,170	152,462	-	-	-
Head Grade (g/t)	18.43	17.02	16.16	15.18	14.84	12.88	9.34	-	-	-
Contained Gold (oz)	61,663	108,052	107,886	95,110	88,186	73,388	45,762	-	-	-
Total										
RoM Tonnes (t)	158,673	367,646	432,072	428,748	463,355	495,290	488,162	462,073	511,271	267,598
Head Grade (g/t)	16.16	14.31	12.32	10.09	9.34	8.24	6.76	5.58	5.36	4.56
Contained Gold (oz)	82,457	169,099	171,147	139,073	139,158	131,251	106,127	82,914	88,047	39,274

Source: SRK/GCM, 2017

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.

16.5.3 Modifying Factors

The modifying factors applied to mining of the Segovia Assets are said to be based on historical data, however, no reconciliation process has been identified to use as a basis for these figures.

Planned dilution in each panel is a function of the mineralized vein thickness and the minimum mining height. The dilution is calculated for each level individually. The weighted average for each mine is provided in Table 16-8. As the mineralized vein is almost always smaller than the minimum mining height for primary mining, and hand loading (and sorting) is used for secondary mining, operational dilution is considered to be negligible. Additionally, the cut and fill areas have a different dilution.

Table 16-8: Average Planned Dilution used in LoMP in Meters

Mine	Primary Mining (m)	Secondary Mining (m)	Cut and Fill (m)
Providencia	0.2	0.1	1.0
Sandra K	0.2	0.1	1.0
El Silencio	0.2	0.1	0.8
Carla	0.2	0.1	1.0
Vetas Verticales	n/a	n/a	1.0

Source: SRK, 2017

To estimate mining losses during primary mining, SRK has undertaken a brief analysis on the survey pickup of mining blocks from each of the three currently operating mines. The analysis compared the area contained in the regional pillar (rib, sill and geotechnical), operational pillars and within an individual mining block. The areas selected for evaluation were considered to be higher Resource extraction than usual.

The analysis showed that the regional pillars were on average 33% of each mining block. Of the remaining area available for production, 72% was extracted. Whereas a 48% overall recovery is low, these figures relate to historic mining and do not necessarily relate to how the Company plan on mining the deposit in the future. A substantial increase in percentage mining recovery represents a major opportunity for the Project.

The present assumption is that primary mining will result in 20% mining losses through pillars. However, SRK considers that additional losses are most likely required for regional pillars. The Company is planning geo-technical evaluations this year which should determine the requirements for regional pillars and the most likely recovery from secondary mining.

The Company LoMP assumes that due to the relatively high dilution and the selective nature of the mining method applied, operational mining losses are negligible.

16.6 Waste and Stockpile Design

Waste Rock Storage Facility

Waste piles are located within 1 to 2 km from the portal location of each mine. The waste dump design is very simple in nature and historically the overall slope angles are 23 degrees. No issues were noted during the site visit. SRK did not design any waste piles because a good percentage of the waste material is used for other construction purposes within the region.

Ore Stockpiles

There are small ore stockpiles near the portal, but the majority of the tonnes are placed directly into silos which are then loaded into 24-tonne road trucks and shipped to the processing plant.

16.7 Equipment Requirement and Operational Tasks

16.7.1 General Requirements and Fleet Selection

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. GCM 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 GCM 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, producing approximately 70% of production from secondary mining:

- Providencia Mine – Masora.
- 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).
- El Silencio Mine – Navar.

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 and a new assay facility is being constructed at the plant site to assist with this process.

Currently, GCM pays US\$450/oz of recovered gold to the two largest contractor miners (Navar and Masora) and an average of approximately US\$600/oz of recovered gold to the other smaller contractors. This rate is then discounted proportionally to cover the royalty payable by the Company on the gold sale (approximately 4%) which results in a final contract mining labor cost of approximately 40% of gold revenue. The contractors are responsible for supplying and maintaining all required equipment.

GCM directly employs a team, currently comprised of approximately 43 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.

Whilst the 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.

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;
- Limitations on control over additional material being mined from the Company operations and sold separately to local mills, without reimbursement to GCM¹;
- 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; and
- Difficulty in determining Resource grade and tonnage as there is no survey of mined pillars;
- 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 with the contractors operating within its mines.

16.8 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.

16.8.1 Water Data Sources

The underground dewatering systems for Providencia and Sandra K are relatively well documented in reports produced in 2017 entitled *Sistema de Bombeo* (System of Pumps) produced by the Company.

¹ SRK is not suggesting this currently takes place at any of Zandor's operations but is highlighting the potential risk.

SRK assumes these reports were prepared in response to the recommendations provided in the Data Gap Report completed in April 2017 (SRK, 2017b). The reports document tank capacities, pump specifications, cross sectional diagrams showing levels and dewatering infrastructure, and plan-view maps. The underground mine pumping system for El Silencio appears to be well understood based on a cross sectional diagram provided by the Company, and photos of pump documentation. However, the information for El Silencio has not been provided to SRK in the form of a complete report, as with Providencia.

The Company has provided mine discharge data from the El Silencio and Providencia mines for the majority of 2016.

- The data for El Silencio is for 2016 only, while the data for Providencia spans 3 years. While it is not clear if these records capture all of the mine discharges, it appears that groundwater inflows to the El Silencio Mine are on the order of 60 L/s. The range of mine discharge flow rates from El Silencio in 2016 ranged from 38 to 76 L/s.
- The Providencia Mine has produced an annual average daily discharge rate between 80 and 133 L/s over the 3-year period between January 2014 and December 2016, with an average rate of roughly 100 L/s. In general, mine discharge water appears to exhibit a circum-neutral pH.
- Rates of discharge from Carla were not provided. SRK was unable to decipher where water is discharged to at surface, and how much might be used for process water or discharged to surface water bodies.

There have been some unverified citations from The Company that suggest the total discharge rate from all of the Segovia mines is approximately 190 L/s; the combination of Providencia (~100 L/s) and El Silencio (~ 60 L/s) accounts for ~85% of that total.

Mine water effluent chemistry data from both El Silencio and Providencia have been provided in spreadsheet format. It appears that samples were collected and analyzed twice a year since 2011. 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, sulfate.

16.8.2 Surface Water

No information related to surface water impacts to the mine was provided, but the mine facilities do not appear to be impacted by excess surface water runoff. No diversion was evident around the three TSFs or dry stack facility, which indicate that run-on from the surrounding hillsides may be mixing with the tailings water. The mine does not appear to have a formal design to address removal of surface water from the mine facilities. Further discussion of surface water management is described in Section 18.

16.8.3 Groundwater

The available groundwater data are limited to the mine discharge rates and the water chemistry data discussed in Section 16.8.1. The flow data are discharge rates from the respective mines, and these therefore provides an indication of mine inflows. There do not appear to be any data available to indicate what the water level and hydraulic head values are outside of the mine workings. Because the mine has been in operation for such a long time, it is likely that a large cone of drawdown exists around each of the mines, and that the drawdown cones have combined to create a large drawdown

cone across the mining district. However, there are no data to confirm this assumption. Alternatively, because the area receives so much rain, it is possible that the hydraulic heads are high outside of the mine due to the combination of high recharge rates and low permeability rock. The latter scenario represents some risk to the mine in the event a high-permeability structure is encountered and the structure contains a high amount of stored water or is connected to a river or stream at the surface. Monitoring data outside of the mine workings would help resolve this uncertainty and reduce the risk of flooding.

16.8.4 Dewatering System

The mines allow 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 surface using a network of tanks located at strategic locations, hoses and tubing ranging from 2-inches to 12-inches in diameter, and numerous pumps. The tanks are excavations mined for the purpose of holding water. Some of the tanks, for instance on Level 8 of the Providencia Mine, are sealed mine workings that can contain large volumes. The tank on Level 8 has a capacity of 5000 m³. The dewatering systems appear to be well understood by site personnel and are reasonably well documented, particularly in the case of the Providencia Mine. Management of mine dewatering flows is described in Section 18.

16.9 Mine Ventilation

16.9.1 El Silencio Ventilation

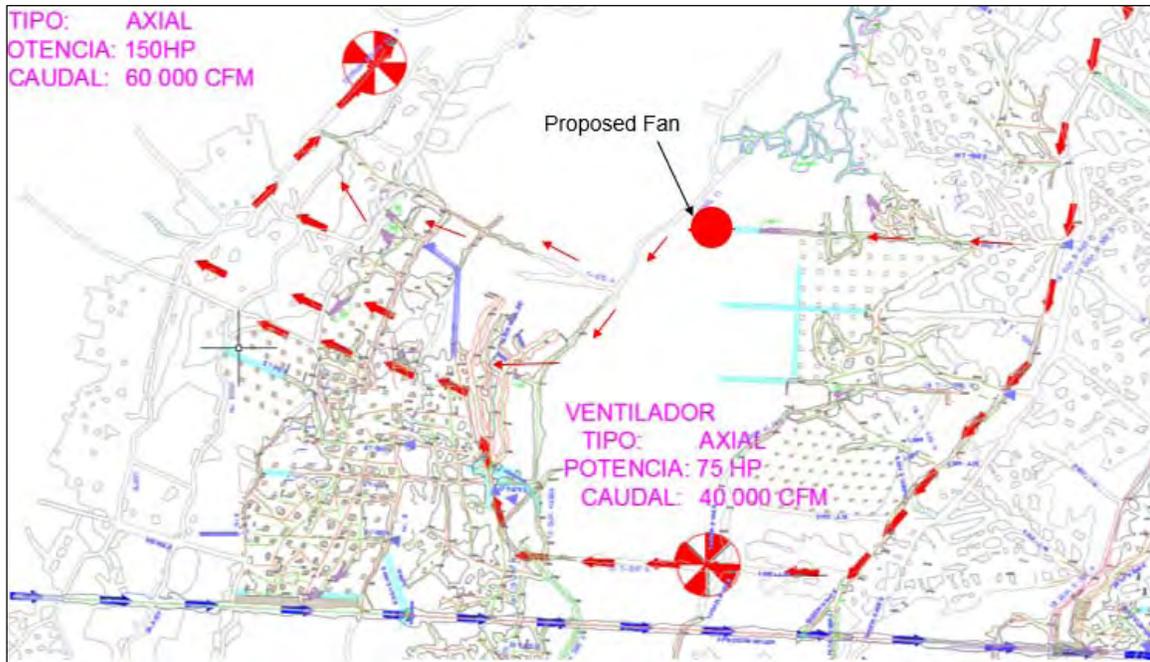
For the El Silencio Mine, the results of the ventilation analyses is developed into two sections: immediate upgrades, and long-term upgrades. Immediate upgrades are held to minor modification that can produce significant changes to the ventilation system without the expenditure of significant capital. Long-term solutions involve the expenditure of significant capital through the addition of shafts to surface and large surface fan installations. Although the long-term ventilation system will need to be redefined as the mine plan for the lower areas is more fully developed, the infrastructure outlined in this section will provide an initial basis for the project evaluation.

Short Term Ventilation System Modifications

Short term or immediate items would be able to be accomplished relatively quickly and with only a minor expenditure of capital. The following is a list of upgradeable items:

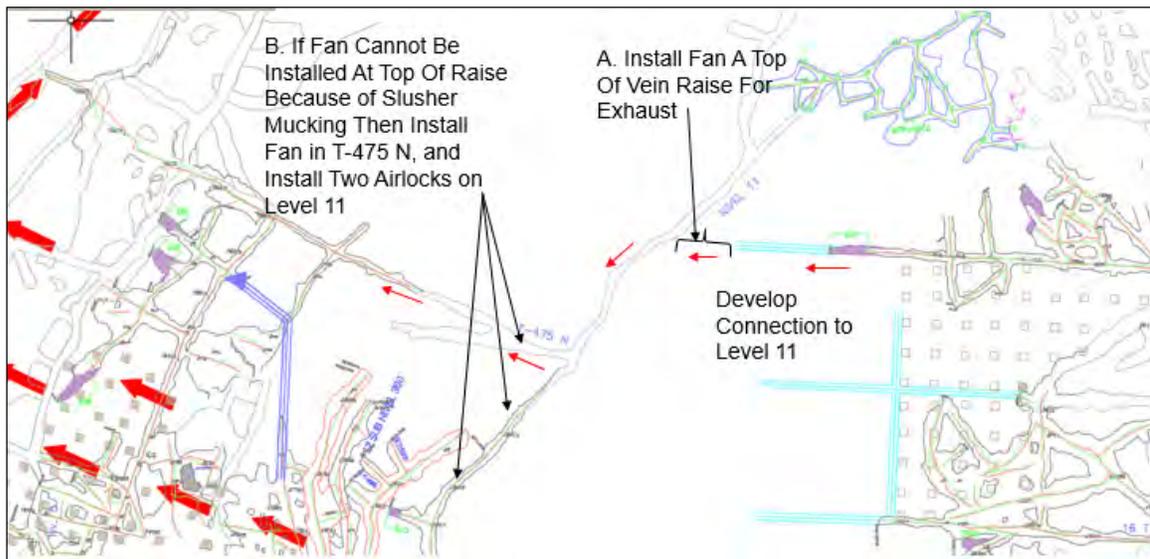
- Level 5 fan should be modified for two fans in parallel (sealed to the bulkheads) to provide more airflow moving through the upper exhaust) or a new single fan could be used. The existing fan in use is designed for high-pressure operation and should be changed out for use in this low-pressure application.
- Replace Level 12/14 exhaust fan bulkhead to increase ventilation pressure and provide 12 to 15 m³/s (air velocity restriction).
- Establish a second parallel exhaust route with an exhaust fan in addition to the Level 12/14 exhaust raise as shown in Figure 16-17 and Figure 16-18.
- Use of Fans. The exhaust fans should be installed to overcome the discrete high-pressure loss airways. The pressure loss is used in the airway so that the differential pressure between

the Apique and exhaust is minimized. The key will be to balance the fans so that the Level 5 fan does not draw more or less airflow than the lower fans can supply.



Source: SRK, 2017

Figure 16-17: Proposed Level 11 Exhaust Fan

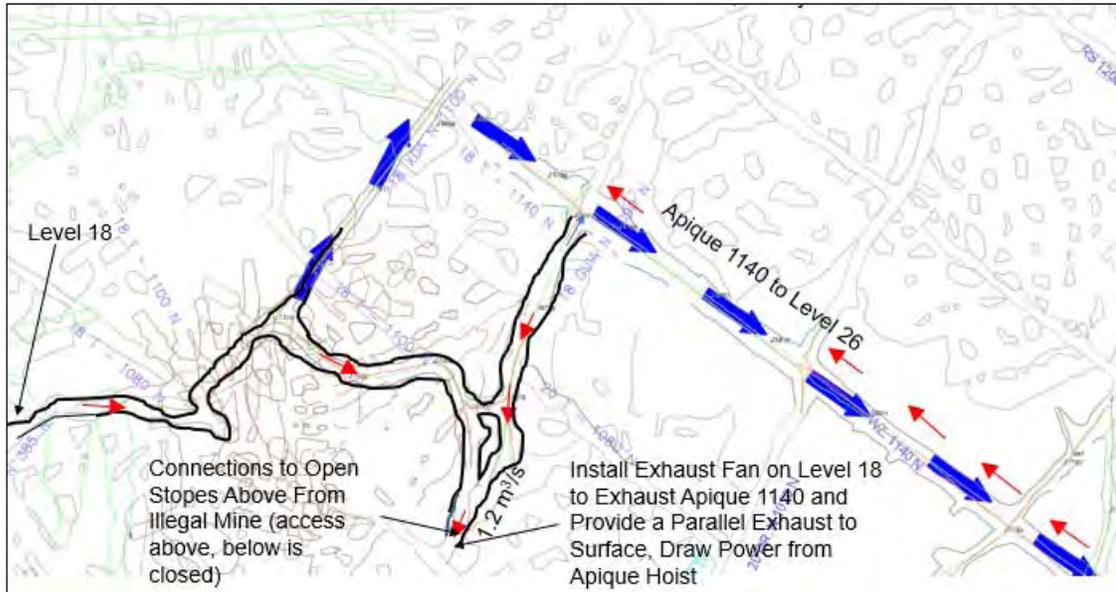


Source: SRK, 2017

Figure 16-18: Level 11 Connection and Alternative Fan Locations

Instead of in-taking fresh air from an adjacent Antioqueña Mine (an artisanal mine operation, which are common in this property), perhaps a fan could be installed to exhaust through it from the 1140

Apique on Level 18 as shown in Figure 16-19. Whether the connection to the Antioqueña Mine is configured as a fresh air or exhaust connection, it should be utilized. In order to maximize the benefit of the connection, a fan will need to be used. The area is at the top of an exhaust system, if the leakage is increased and stays as fresh air, then less fresh air will reach the lower areas of the mine because much of it will short circuit.



Source: SRK, 2017

Figure 16-19: Proposed Fan Installed on Level 18 Antioqueña Mine Access

A set of ventilation models were developed to examine how the ventilation system would change with the addition of different upgrades. A comparison of fresh and exhaust fan installations are shown in Table 16-9 and summaries of the different scenarios are shown in Table 16-10 and Table 16-11.

Table 16-9: Comparison of Fresh Air and Exhaust Fan Installations

Fresh Air Fan	Exhaust Fan
Fresh air would be provided to a point at the intersection of the Apique 1140 and the ramp	Likely to Cause the Personnel Apique to Downcast Again
Air would flow from this point to the lower contractor levels	It would act in parallel with the existing exhaust fan on the same side of the Pique Bolivia
Air would feed directly into the ramp, and the Personnel Apique would likely continue to upcast	Air from the lower areas (Level 38) would upcast to this exhaust point
The Apique 1140 would need to be isolated from all intersecting levels	The miners in the Antioqueña Mine would not like the exhausted hot/humid air
The quality of the airflow from the Antioqueña Mine cannot be controlled, blasting fumes or smoke from a fire could contaminate the mine without warning.	The connection is already at the top of the exhaust system and the exhaust system is constrained (it is the bottleneck, not the fresh air system)
The resistance of the Antioqueña Mine is not known and likely will not be known. The fans used for this application need to be flexible and adjustable. It can start out on a low setting and then be re-pitched as the system proves itself. If we are able to supply or exhaust 10m ³ /s from this area, this will provide a significant impact.	

Source: SRK, 2017

The modeling process started with a fan placed on the “Antioqueña Mine” access on Level 18. Then additional pieces/modifications were added to the system as follows:

- Antioqueña Mine access fresh air fan (10 m³/s and 20 m³/s)
- ↓
- With Upgraded/rebuilt Level 12/14 Exhaust Fan Bulkhead
- ↓
- With new Main Surface Fan (40 m³/s)
- ↓
- With new connection to Level 11
- ↓
- With new fan in Level 11 connection (only 30 Pa)

Table 16-10: Summary of Ventilation Scenarios with Antioqueña Access Fan Providing Fresh Air

Ventilation Case	Main Surface Fan		12/14 Exhaust Fan		Antioqueña Access Fan		New Level 11 Fan		Personnel Apigue	Apique Bolivia
	m ³ /s	Pa	m ³ /s	Pa	m ³ /s	Pa	m ³ /s	Pa	m ³ /s	m ³ /s
Existing System	16.2	80	11.7	30	n/a	n/a	n/a	n/a	Upcast/ Exhaust 2.8	Downcast/ Intake 11.2
With Antioqueña Access Fan 10 m ³ /s	16.4	80	12.3	30	10	295	n/a	n/a	Upcast/ Exhaust 7.6	Downcast/ Intake 7.7
With Antioqueña Access Fan 20 m ³ /s	16.6	80	12.7	30	20	1186	n/a	n/a	Upcast/ Exhaust 10.1	Upcast/ Exhaust 0.1
With Antioqueña Access Fan 10 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead	16.5	80	17.2	60	10	293	n/a	n/a	Upcast/ Exhaust 6.2	Downcast/ Intake 5.2
With Antioqueña Access Fan 20 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead	16.6	80	17.7	60	20	1185	n/a	n/a	Upcast/ Exhaust 10.3	Downcast/ Intake 0.4
With Antioqueña Access Fan 10 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan	40	477	18.0	60	10	287	n/a	n/a	Downcast/ Intake 1.6	Downcast/ Intake 21.9
With Antioqueña Access Fan 20 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan	40	476	18.2	60	20	1178	n/a	n/a	Upcast/ Exhaust 4.8	Downcast/ Intake 18.0
With Antioqueña Access Fan 10 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan, new Level 11 connection	40	478	17.9	60	10	287	3.2 Natural Air Split	No Fan	Downcast/ Intake 3.4	Downcast/ Intake 20.1
With Antioqueña Access Fan 20 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan, new Level 11 connection	40	475	18.0	60	20	1178	3.7 Natural Air Split	No Fan	Upcast/ Exhaust 4.2	Downcast/ Intake 17.5
With Antioqueña Access Fan 10 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan, new Level 11 connection	40	475	17.3	60	10	286	9.7	30	Downcast/ Intake 4.7	Downcast/ Intake 18.7
With Antioqueña Access Fan 20 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan, new Level 11 connection	40	471	17.5	60	20	1176	10.0	30	Upcast/ Exhaust 3.0	Downcast/ Intake 16.3

Source: SRK, 2017

Table 16-11: Summary of Ventilation Scenarios with Antioqueña Access Fan as an Exhaust to the Mine

Ventilation Case	Main Surface Fan		12/14 Exhaust Fan		Antioqueña Access Fan		New Level 11 Fan		Personnel Apique	Apique Bolivia
	m ³ /s	Pa	m ³ /s	Pa	m ³ /s	Pa	m ³ /s	Pa	m ³ /s	m ³ /s
Existing System	16.2	80	11.5	30	n/a	n/a	Upcast/Exhaust 11.2	n/a	Downcast/Intake 2.8	Upcast/Exhaust 11.2
With Antioqueña Access Fan 10 m ³ /s	16.0	80	11	30	10	317.2	Downcast/Intake 14.2	n/a	Downcast/Intake 6.0	Downcast/Intake 14.2
With Antioqueña Access Fan 20 m ³ /s	15.6	80	9.7	30	20	1,222.8	Downcast/Intake 18.5	n/a	Downcast/Intake 11.5	Downcast/Intake 18.5
With Antioqueña Access Fan 10 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead	16.1	80	16.0	60	10	320.0	Downcast/Intake 7.7	n/a	Downcast/Intake 12.6	Downcast/Intake 7.7
With Antioqueña Access Fan 20 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead	15.7	80	14.9	60	20	1,227.2	Downcast/Intake 13.0	n/a	Downcast/Intake 17.0	Downcast/Intake 13.0
With Antioqueña Access Fan 10 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan	40	489.9	17.2	60	10	333.2	Downcast/Intake 30.3	n/a	Downcast/Intake 13.7	Downcast/Intake 30.3
With Antioqueña Access Fan 20 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan	40	505.3	16.5	60	20	1,249.5	Downcast/Intake 34.3	n/a	Downcast/Intake 19.8	Downcast/Intake 34.3
With Antioqueña Access Fan 10 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan, new Level 11 connection	40	494.1	17.3	60	10	336.4	Downcast/Intake 29.2	No Fan	Downcast/Intake 14.7	Downcast/Intake 29.2
With Antioqueña Access Fan 20 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan, new Level 11 connection	40	501.2	16.9	60	20	1,247.8	Downcast/Intake 34.6	No Fan	Downcast/Intake 19.4	Downcast/Intake 34.6
With Antioqueña Access Fan 10 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan, new Level 11 connection	40	489.5	16.0	60	10	341.4	Downcast/Intake 27.9	30	Downcast/Intake 16.0	Downcast/Intake 27.9
With Antioqueña Access Fan 20 m ³ /s, with rebuilt Level 12/14 exhaust fan bulkhead, new surface fan, new Level 11 connection	40	501.2	15.1	60	20	1,254.8	Downcast/Intake 33.3	30	Downcast/Intake 20.8	Downcast/Intake 33.3

Source: SRK, 2017

Each component can be changed independently, but depending upon the component the effectiveness of the modification will not be achieved if done in isolation. Changing the main fan alone will result in significant leakage from the Apique Bolivia without drawing any more airflow from the working area of the mine. Only adding the “Antioqueña Mine” access fan (as an intake) will reduce the airflow entering the Apique Bolivia. However, the combination of each component will allow the ventilation throughout the mine to increase without excessive leakage. From the modeling, the exhausting Antioqueña Mine case provides significantly more airflow to the ventilation system than by incorporating the Antioqueña Mine as a fresh air source.

General base costing data for the upgrades are shown below:

- Antioqueña Mine Access Fan 20 m³/s, 112-60-1800-A-1 US\$21,216;
- Antioqueña Mine Access Fan 10 m³/s, 90-35-1800-A-2 US\$14,824;
- Upgraded Level 12/14 Fan Bulkhead (minimal cost);
- Level 5 Exhaust Fan, 140-60-1200-A-2 US\$34,431;
- Level 11 Connection has no Cost; and
- New Level 11 Exhaust, 90-35-1800-A-2 Fan US\$14,824.

The total calculated airflow requirement is approximately 62.8 m³/s as shown in Table 16-12. Although the airflow through the ventilation system will not reach the level required with the current equipment load and personnel distribution as calculated, it will bring the ventilation system much closer.

Table 16-12: Airflow Calculation for Existing Mine

Equipment	Power (kW)	Number	Dilution Rate	Airflow (m ³ / s)
LHD	84	2	0.09 (m ³ /s/kW)	15.1
Truck	65	2	0.09 (m ³ /s/kW)	11.7
Miners		120	0.05 (m ³ /s/person)	6.0
Contractors		600	0.05 (m ³ /s/person)	30.0
Total				62.8

Source: SRK 2017

Long Term Ventilation System Infrastructure

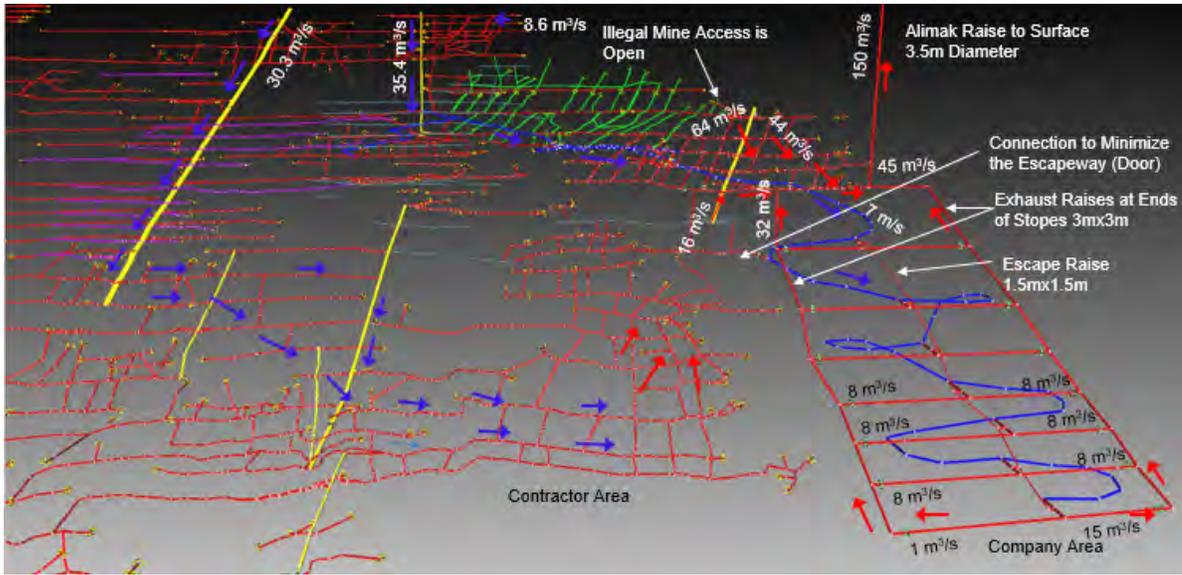
For the long term, the ventilation system will need to have a significant upgrade. The addition of more equipment to support the cut and fill or mechanized mining areas will require significantly more infrastructure. Based on a preliminary review of the equipment and personnel load approximately 113.6 m³/s will be required as shown in Table 16-13. Additional airflow may be necessary for dedicated transfers and alternative or multiple working areas.

Table 16-13: Airflow Calculation for Future Mine Production Cut/Fill

Equipment	Power (kW)	Number	Dilution Rate	Airflow (m ³ / s)
LHD	84	4	0.09 (m ³ /s/kW)	30.2
Truck	65	3	0.09 (m ³ /s/kW)	17.6
Truck	157	2	0.09 (m ³ /s/kW)	28.3
Miners		150	0.05 (m ³ /s/person)	7.5
Contractors		600	0.05 (m ³ /s/person)	30.0
Total				113.6

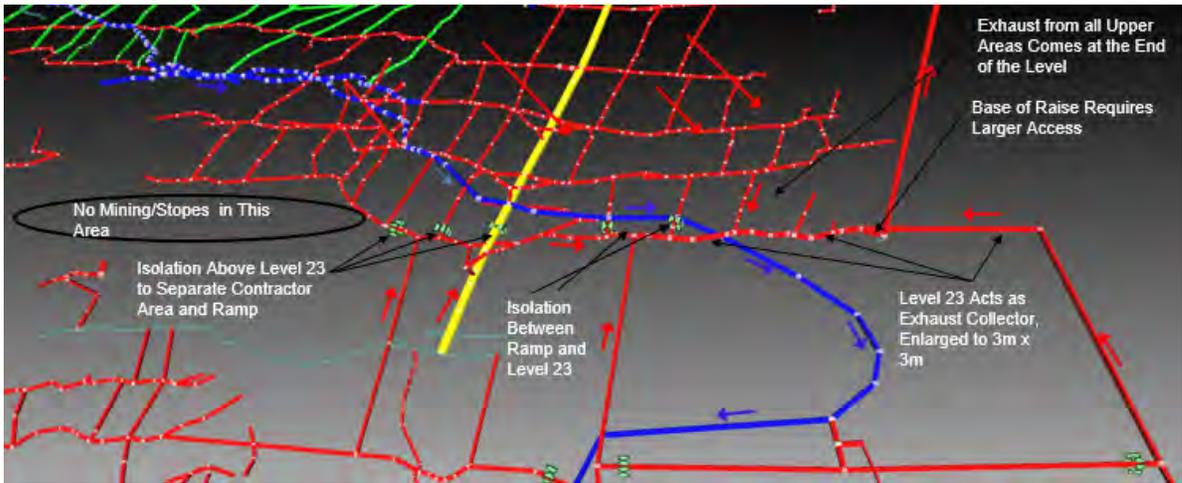
Source: SRK, 2017

The general assumed layout for the future mining area is shown in Figure 16-20 and Figure 16-21. A total exhaust airflow of 150 m³/s was modeled for the full ventilation system. This allows for mining by contractors in the lower area, continued upper area mining, and full-mechanized mining in the new area. To achieve this airflow distribution an Alimak raise to surface of approximately 3.5 m diameter was assumed.



Source: SRK, 2017

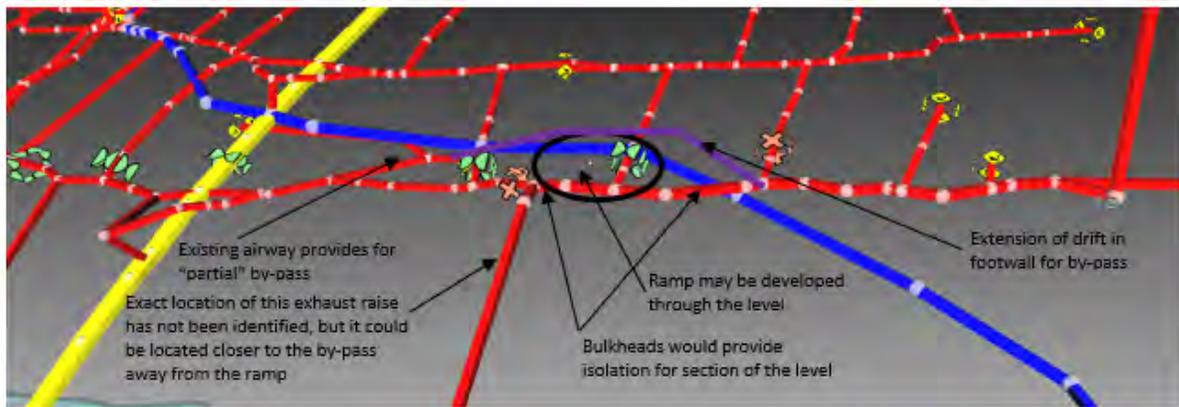
Figure 16-20: Future Airflow Distribution



Source: SRK, 2017

Figure 16-21: Top of Cut/Fill Mining Horizon

The interaction between Level 23 and the ramp needs to be further refined. At some point, the ramp joins the level as shown in Figure 16-21, how this occurs may complicate the access at the bottom of the exhaust raise. Currently it is assumed that the ramp is developed slightly offset from the level rather than being developed along the level for a short distance. If the ramp intersects the level, then some type of bypass will need to be developed as shown Figure 16-22. An overcast could be used, but based on the differential pressure and the design and implementation of the overcast in the Providencia Mine, a developed by-pass would be the preferred long-term solution. A by-pass may be developed in the footwall (a section of the by-pass already exists in the footwall and will need to be extended).



Source: SRK, 2017

Figure 16-22: Level 23 By-pass

The design of the lower mechanized (cut and fill) area has not been finalized at this point. The layout for the area needs to be developed to both minimize leakage and to continue the ventilation of the contractor mining areas. The existing ventilation system ties both of the areas together so that when blasting occurs in one it affects the other. The future ventilation system fully separates the two areas such that their fresh air sources are separated while they maintain a common exhaust. Leakage through the old workings will be a continued problem. This will work well for providing an exhaust for the contractor area up to Level 23. However, the workings above Level 23 will need to be isolated from the exhaust drift with the exception of one or two regulated exhaust points. The regulated exhaust points will allow for a few mining areas to be independently ventilated in the upper areas around the Apique 1140 area.

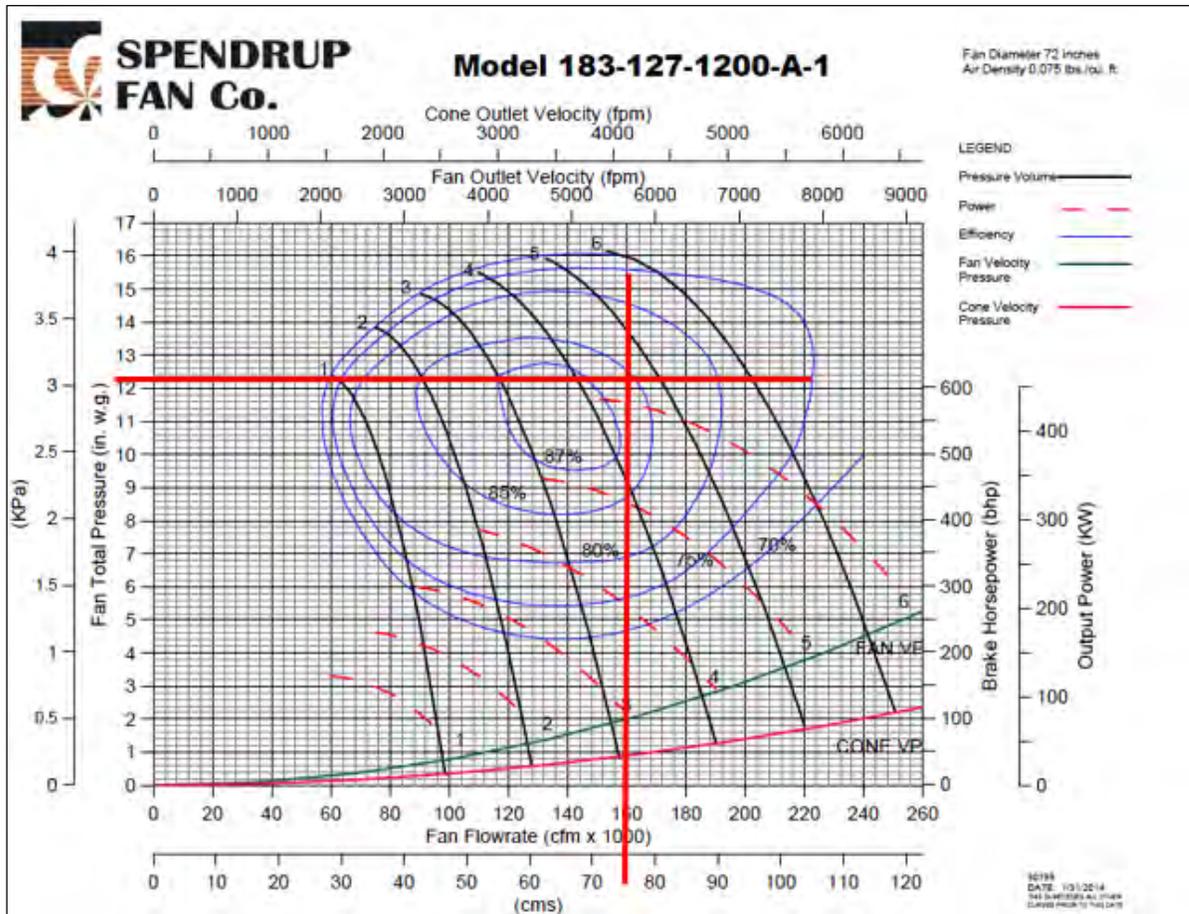
The one unknown variable with this system is the airflow that may be injected into the ventilation system through the Antioqueña Mine access. When the exhaust fan on the new Alimak is operational then the Antioqueña Mine access will need to be a fresh air source (even if it was an exhaust previously). The Antioqueña Mine access point can be regulated. The effect of the different levels of regulation on the pressure seen by the new exhaust fan is a difference of approximately 200 Pa.

- Exhaust Fan Duty with 49 m³/s Regulated through Antioqueña Mine Access
 - 150 m³/s at a collar total pressure of 2.8 kPa
- Exhaust Fan Duty with 20 m³/s Regulated through Antioqueña Mine Access
 - 150 m³/s at a collar total pressure of 2.9 kPa
- Exhaust Fan Duty with 10 m³/s Regulated through Antioqueña Mine Access
 - 150 m³/s at a collar total pressure of 3.0 kPa

If 10 to 20 m³/s is drawn through the Antioqueña Mine, then the air velocity at the surface access to the Apique Bolivia will be excessive. Turning the fan around (reversing) at Level 5 can boost the airflow in parallel with the Apique Bolivia to reduce the air velocity through the Apique Bolivia portal area. However, this will not affect the performance of the new exhaust fan.

Figure 16-23 shows a fan performance curve that was specified for the Providencia Mine. A fan like this could be used to achieve the required fan duty for the new El Silencio fan system (parallel

operation). However, larger motors would be required (350 kW). Although the fan shown in Figure 16-23 is for a Spendrup fan, a similar result could be had with fans from other manufacturers.



Source: SRK, 2017

Figure 16-23: Example Fan Curve of Preliminary Providencia Mine Exhaust Fan (used for El Silencio)

If a Howden Fan is used then the cost will be approximately US\$84,590 for parallel fans, US\$48,000 for two VFDs, and US\$120,000 for surface ductwork.

Current Ventilation System Updates

Since the time of the site visit, there have been several upgrades made to the ventilation system and future ventilation plan as reported by site engineers:

- The single surface main exhaust fan was replaced with two parallel Joy 48-26-1770 fans configured in parallel. Site engineers have measured approximately 56 m³/s exhausting the mine.
- The recommended connection on Level 12, access 460, was developed with a fan installed in parallel with the existing fans; however, the projected benefit did not materialize and so the fan was removed and the access closed.

- The Antioqueña Mine (accessed on Level 18) has been examined by site engineers and its incorporation into the ventilation system of the El Silencio Mine has been identified as possible. The final configuration of the Antioqueña Mine into the El Silencio ventilation system will be dependent upon a risk assessment by site engineers.
- The future ventilation shaft was originally evaluated with a circular dimension (3.5 m diameter); however, this has been revised to a rectangular dimension (3.5 m square). Several additional ramps have been enlarged - Ramp 1 from 3 × 3 m to 3.5 × 3.5 m, and North Zone ramp to 4 × 3.5 m. The exhaust from the lower mining zones (contractor zone and Ramp 2) will be revised because of revisions to the mine plan.

The full effects of the additions to the ventilation system will be confirmed as the future ventilation plans are developed. The dimensions of the exhaust raise to surface and full airflow requirement will need to be confirmed based on the revised mine plans.

16.9.2 Sandra K Ventilation

The Sandra K Mine currently has only one access (in the future, there will be a raise developed to surface). Fresh air enters the mine through the portal with exhaust air leaving the mine through a flexible duct system.

Short Term Ventilation System Modifications

The short-term ventilation system modifications include changes to the Level 0 duct and lower area duct systems as shown in Figure 16-24. These modifications represent the maximum airflow that can be achieved for the ventilation system with only one access.

- Replacement of existing 0.5 m diameter circular duct with 305 m of 0.75 m diameter equivalent oval duct – This provides less resistance giving increased airflow at a lower pressure, or maximum airflow at a higher pressure with a new fan;
- New Level 0 Exhaust Fan – The fan must be matched to the new oval duct to maximize the airflow for the system;
- New Portal Duct Configuration – Duct is hooked around the portal to exhaust to atmosphere, not cut inside the portal;
- Two 0.5 m ducts provide airflow to Level 2 from the lower areas – The two ducts will provide additional airflow through the lower areas; and
- Bulkhead and isolation on Level 2 – This will result in shorter ducts, which will provide less resistance and greater airflows.



Source: SRK, 2017

Figure 16-24: Sandra K Ventilation System with Upgraded Duct

The estimated equipment costs for the ventilation system upgrade are outlined below;

- New oval duct, 305 m length 0.75 m diameter equivalent oval duct (US\$26/meter, local procurement);
- New Level 0 auxiliary fan, 6.4 m³/s @ 2.9 kPa, 30 kW at 65% efficiency (US\$16,980) (Spendrup 63-45-3600-A-3);
- New lower level duct, 300m 0.5 m duct in lower levels, parallel (US\$10.5/meter, cost from Colorado);
- Level 2 bulkhead (locally constructed); and
- New fan for additional lower level duct (US\$16,980) (Spendrup 63-45-3600-A-3) (or reused existing Level 0 fan).

Current Ventilation System Updates

Since the time of the site visit, the site engineers have developed a modified ventilation plan to enhance the ventilation in the mine. The plan will be implemented in October 2017 and will seek to improve the ventilation in both the North and South areas. The ventilation raise extending from Level 3 to surface in the North mining zone will be developed in 2018. These plans have been developed by site engineers and should be evaluated as the project progresses.

16.9.3 Providencia Ventilation

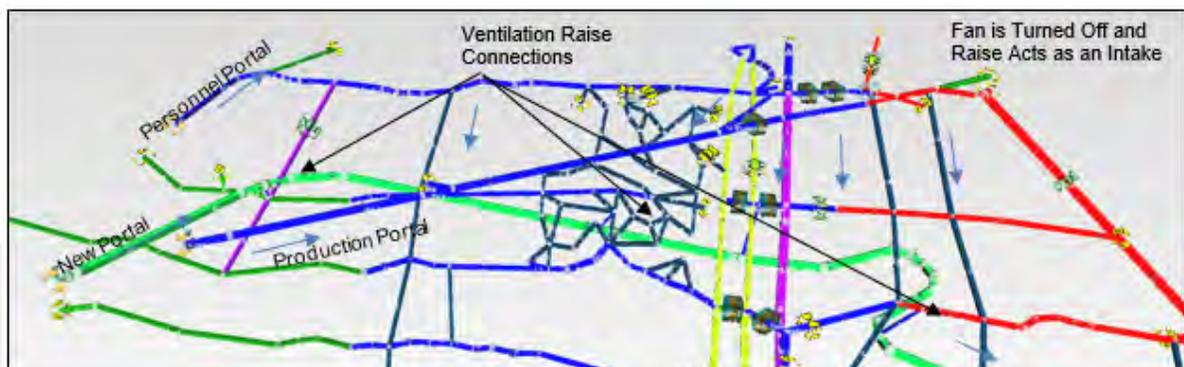
There are currently two scenarios under consideration for the future ventilation of the Providencia Mine. Scenario 1 uses a newly constructed ramp that is developed from surface to Level 11 to provide additional ventilation to the mine. Scenario 2 makes use of a pipe conveyor system from Level 11 to the top of the apique system with the development of a new access portal. SRK engineers previously

conducted an audit of the ventilation system in September 2016 and used the results from the audit to complete a study of the two scenarios for this report.

One point of commonality between both scenarios is a shaft that was developed and was being mucked out at the time of the site visit. Once the shaft was completed in April, a small fan was installed at the shaft bottom access to initiate the flow through ventilation system. By installing the fan in a bulkhead on Level 12, an airflow of approximately 25 m³/s (as reported by site engineers) exhausts the mine. This represents the first step to providing a flow through ventilation system, although at an airflow significantly lower than either of the design points. Temperature conditions in the area around the base of the shaft also reflected improvement according to site engineers, although there was only a marginal improvement with regards to the temperatures in the auxiliary ventilated mining areas. The exhaust capacity will be further increased by temporarily installing one of the purchased 350 hp exhaust fans on Level 12.

Scenario 1 – Ramp System

In Scenario 1 a proposed ramp is constructed that extends from the surface (new portal) to Level 11. Airflow to the mine is drawn through each of the three portals (current production portal, personnel access portal, and the new access ramp portal) as shown in Figure 16-25. The new access ramp will be connected at different levels by 1.5-m x 1.5-m raises that will extend from the ramp up to the mine. These raises are fairly short and will be used during construction to provide ventilation to the ramp development face. As the ramp is developed, only the raise closest to the face will remain open, the previously developed raises will be temporarily closed. Once the ramp is finished all of the raises may be opened so that the ramp will act as a fresh air plenum for the mine.



Source: SRK, 2017

Figure 16-25: Scenario 1 Upper Mine Area

There are some potential concerns with Scenario 1; high air velocity in the existing portals, and the configuration of the current exhaust fan/raise. A velocity in a haulage ramp is recommended to be less than 6 m/s (1,200 fpm) to prevent excessive pressure loss and provide a comfortable work environment. The air velocity through the portals will be significant prior to the full development of the access ramp. It may be necessary to open one raise between the mine and the ramp near the apique system to decrease the air velocity entering the mine through the existing portals. The existing exhaust fan could be reversed and it would force approximately 10 m³/s of air into the mine, bypassing the existing portals. A recommendation was made to remove the grills at the base of the raise to reduce

pressure and increase airflow. Once this is accomplished, the airflow and fan pressure should be re-measured so that an accurate projection of this benefit can be quantified.

The airflow entering both of the existing portals would flow down into the mine through both the apique system, and all of the parallel mine workings (old stopes). The current fans on Level 7, Level 8, and Level 11 could be turned off because of the significant quantity of air flowing through the system.

At the base of the new ramp there is an ore bin that will be used to load the trucks heading to surface. A small raise will need to be developed between the new ramp and the top of the ore bin to provide ventilation for the trucks as shown in Figure 16-26. This raise was assumed to be 1.5-m x 1.5-m. Adequate ventilation (5 to 10 m³/s) was shown with just the incorporation of the raise; a fan was not required.



Source: SRK, 2017

Figure 16-26: Scenario 1 Lower Ramp Load Out

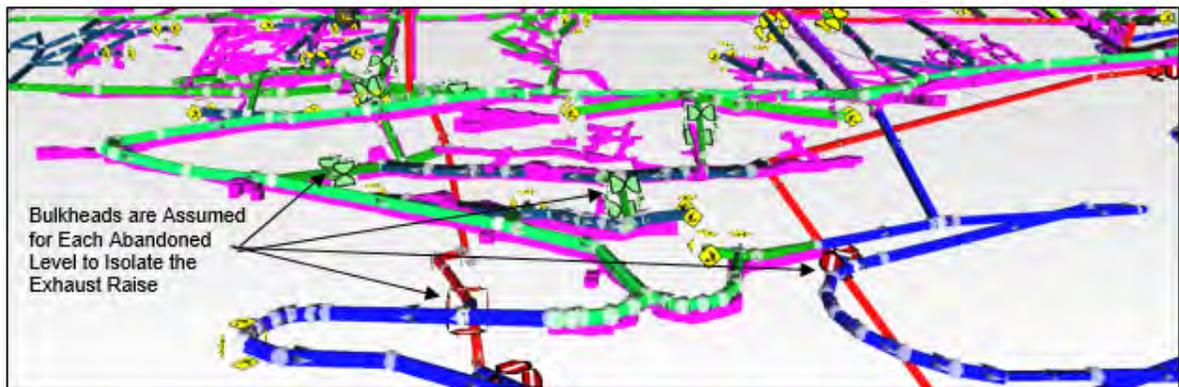
Two ramps were assumed to be developed below Level 12, from which the cut/fill mining would occur as shown in Figure 16-27. It further assumed that there would be two active production levels in each ramp. Each ramp would be developed around a central exhaust raise constructed in the footwall. The raise would pierce the level at the mid-point of the level and the airflow would be regulated. As air from the ramp enters the level, it would be drawn to the ends of the level through two auxiliary ventilation systems (one to the east and one to the west). As the airflow moves back to the level mid-point it would then discharge into the exhaust raise. The exhaust raise was assumed to have a dimension of 2.4-m diameter, but it was further assumed to incorporate a minimal escape ladder way. To account for the ladder way a higher friction factor was assumed. This will be an important design feature and will need to be updated in the model as the design progresses. Every effort needs to be made to minimize the impact of the escape ladder way on the resistance of the exhaust raise. It may be prudent to use a slightly larger raise dimension.



Source: SRK, 2017

Figure 16-27: Scenario 1 Base of Exhaust Shaft Connections

The exhaust for each of the two ramps would continue up to approximately Level 13, where a plenum drift will merge the airflow to the base of the main exhaust raise. There is an “old” ore pass that can be used as a parallel route for the airflow between Level 13 and Level 12. The dimensions of the ramp in the mining area were assumed at 3.5 m x 3.5 m, and the raises were assumed to be developed at 2.4 m diameter. Appropriate shock losses were assumed for each raise segment to account for it being non-continuous segments. Approximately 30 m³/s of air was modeled at the top of each of the two ramp systems. As shown in Figure 16-28, the construction of bulkheads between the old levels and the exhaust raise will be critical with this design. Using resistances similar to others measured in the mine a leakage factor of approximately 50% was identified. If the efficiency of the proposed bulkheads can be increased, then the leakage can be significantly lowered.



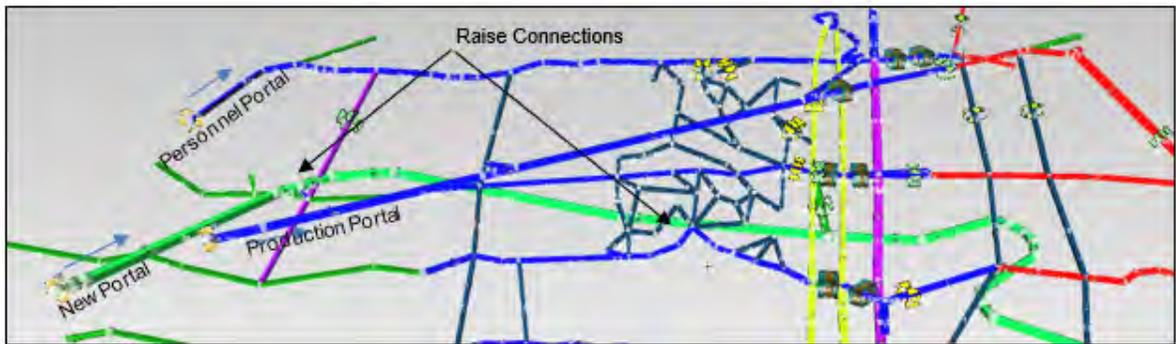
Source: SRK, 2017

Figure 16-28: Scenario 1 Raise Infrastructure

Scenario 2 – Pipe Conveyor

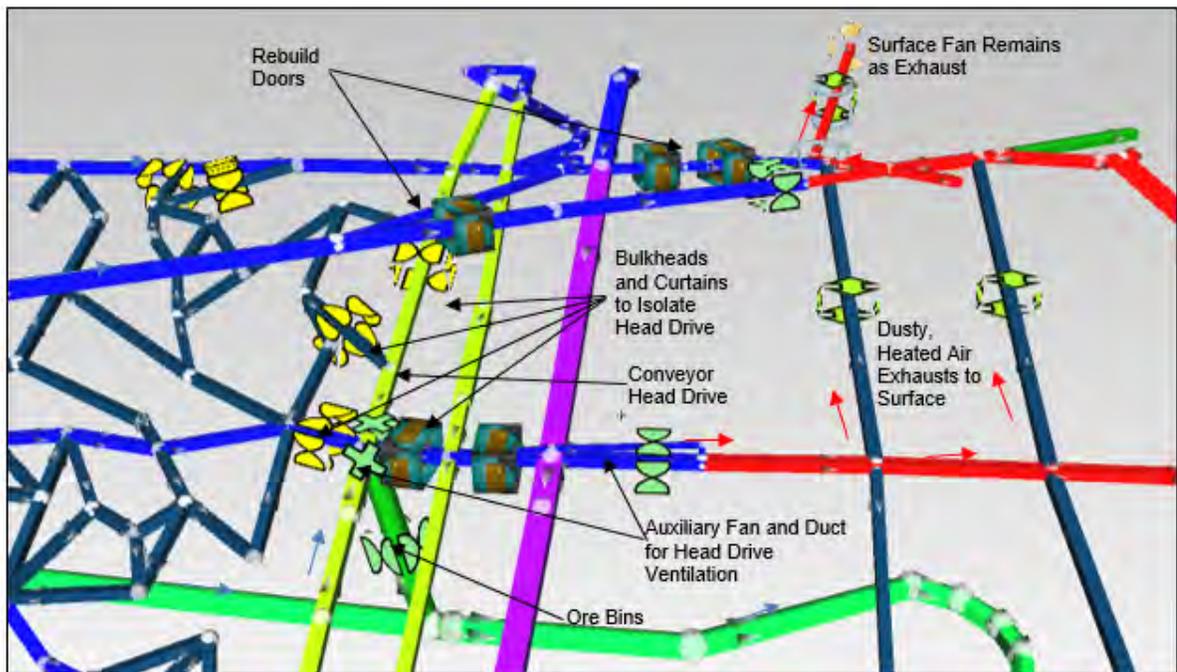
This option utilizes a pipe conveyor in one of the apiques and a new access ramp extending from surface to a loading pocket below the apique as shown in Figure 16-29. The new access ramp does not extend to the bottom of the mine. This system has the added complication of the requirement for

separate ventilation of the upper conveyor drive. This scenario requires no changes to be made to the existing exhaust fan/raise and its capacity as an exhaust. This option does require installing curtains/bulkheads around the head drive, and installing an auxiliary ventilation system (fan and duct) to exhaust airflow from the head drive to the upper west side workings from where the airflow can be exhausted as shown in Figure 16-30. This will require only a minor modification to the existing infrastructure. However, by losing the current exhaust fan/raise as a potential fresh air source, the air velocity through the existing portal will be elevated. If the raises between the new access ramp and the mine were enlarged to approximately 2 m x 2 m then additional airflow may be drawn through the new access ramp which would decrease the air velocity through the existing portals. It should be noted that the 10 m³/s allocated for the head drive ventilation (and leakage) is in addition to the airflow being drawn through the mine to the new exhaust shaft.



Source: SRK, 2017

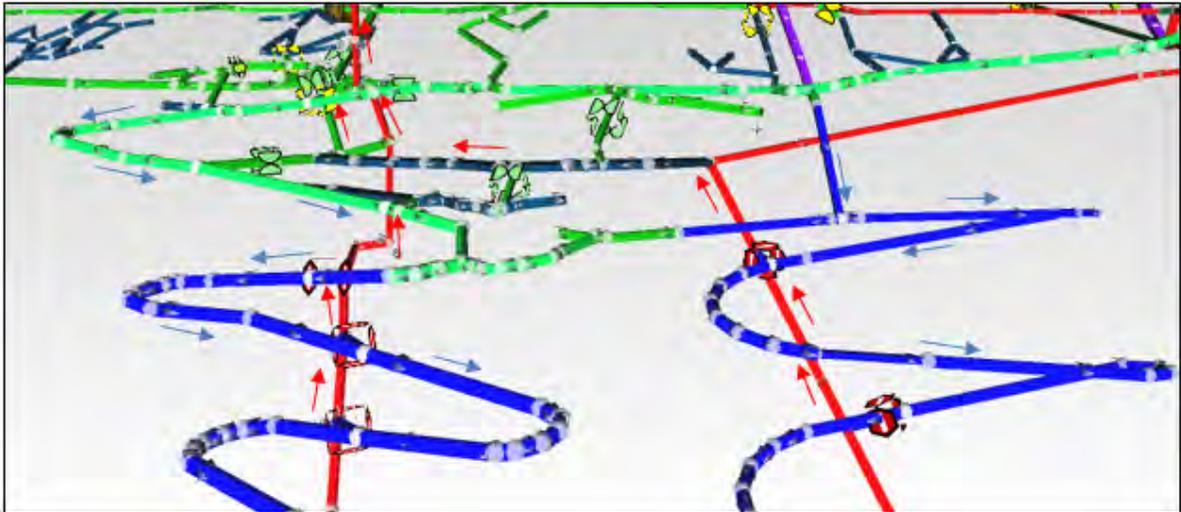
Figure 16-29: Scenario 2 Upper Apique System



Source: SRK, 2017

Figure 16-30: Scenario 2 Conveyor Layout and Exhaust Duct

The ventilation of the two ramps remains the same as described in Scenario 1. The direction of airflow is shown in Figure 16-31 with blue arrows representing fresh air and red representing exhaust air. The total airflow allocation for the exhaust shaft is decreased by the airflow requirement for one truck because of the incorporation of the conveyor and the exhaust through the existing exhaust raise in the upper mine.



Source: SRK, 2017

Figure 16-31: Scenario 2 Base of Exhaust Shaft

Airflow Requirement

The overall airflow requirement for each scenario is based on an assumed equipment list and is calculated in Table 16-14 and Table 16-15. The equipment list provides for both the stope ventilation and the haulage fleet. It is assumed that the stope haulage fleet operates independently of the upper or main haulage fleet. This is a significant consideration when considering the impact of the conveyor haulage option in Scenario 2. The airflow requirements for each vehicle were based on the vehicle motor power (kW). SRK mine ventilation engineers recommend a factor of 0.09 m³/s per kW of engine power to ensure safe working conditions in areas with diesel equipment. Although this number may in some cases be higher than the manufacturer's suggested airflow requirement, SRK engineers recommends the use of this number in order to ensure sufficient dilution of airborne contaminants and reduction of heat. Providing airflow for the dilution of diesel exhaust fumes is only the first step in the design process, it provides a "minimum" airflow quantity. The model is used to then distribute the airflow and determine the leakage rates. Based on the equipment load approximately 41.5 m³/s is required at a minimum for the mining area equipment. Once leakage is considered and redundant ventilation splits are considered for operational flexibility this value could be elevated to 60 m³/s.

Table 16-14: Scenario 1 Airflow Basic Calculation

Category	Quantity	Power		Dilution (Equipment)		Dilution (Personnel)		Total Airflow	
		(hp)	(kW)	(m ³ /min/hp)	(m ³ /s/kw)	(m ³ /m/person)	(m ³ /s/person)	(m ³ /s)	(kcfm)
Personnel									
Total Number of Workers Underground	120					3	0.05	6	12.7
Equipment									
Jumbo (DD210)	1	54	40	4	0.09			3.6	7.7
Volqueta (YM 470 T) Dumper	2	86.5	65	4	0.09			11.6	24.6
Cargador (LH 203) (LHD)	1	112	84	4	0.09			7.5	15.9
Cargador (MTI LT) Diesel (LHD)	1	55	41	4	0.09			3.7	7.8
Camion MTI Modelo DT-1804 (Production Truck)	2	210	157	4	0.09			28.2	59.7
Cargador (LH 203) (LHD)	2	112	84	4	0.09			15.0	31.8
Total								69.7	147.5

Source: SRK, 2017

Table 16-15: Scenario 2 Airflow Basic Calculation

Category	Quantity	Power		Dilution (Equipment)		Dilution (Personnel)		Total Airflow	
		(hp)	(kW)	(m ³ /min/hp)	(m ³ /s/kw)	(m ³ /m/person)	(m ³ /s/person)	(m ³ /s)	(kcfm)
Personnel									
Total Number of Workers Underground	120					3	0.05	6	12.7
Equipment									
Jumbo (DD210)	1	54	40	4	0.09			3.6	7.7
Volqueta (YM 470 T) Dumper	2	86.5	65	4	0.09			11.6	24.6
Cargador (LH 203) (LHD)	1	112	84	4	0.09			7.5	15.9
Cargador (MTI LT) Diesel (LHD)	1	55	41	4	0.09			3.7	7.8
Camion MTI Modelo DT-1804 (Production Truck)	1	210	157	4	0.09			14.1	29.9
Cargador (LH 203) (LHD)	2	112	84	4	0.09			15.0	31.8
Total								55.6	117.7

Source: SRK, 2017

Based on the equipment load and the ventilation modeling, in order to support the equipment and to provide two mining levels in each of the two ramps, the following fan operating points are required:

- **Scenario 1** - 85 m³/s at 2.87 kPa; and
- **Scenario 2** - 70 m³/s at 2.08 kPa.

The fan pressures given above are “total” pressures and are given at the exhaust shaft collar. An additional pressure drop will need to be added based upon the size of the surface exhaust duct which will depend upon the size of the fan selected (single or parallel fan configuration). The fan will need to be specified at a density of approximately 1.084 kg/m³. This density is based upon measurements taken by SRK engineers during the site visit.

The difference between the required 69.7 m³/s (diesel dilution) and 85 m³/s (fan requirement) results from leakage. Because this leakage occurs below the 11 Level around the exhaust shaft, the leakage can be used to offset the airflow requirement for contractor personnel. The approximate 15 m³/s can be used to support 300 additional workers (contractors).

In order to tailor the fan to the specific requirements experienced in the mine (equipment, operational considerations) the fan motors should be equipped with variable frequency controls (VFD) so that the rotational speed of the blades can be easily adjusted to achieve a required duty point, potentially

reduce the power consumption, and allow for a smooth gradual start. The mine currently has a power transformer located next to the exhaust raise site. It is 480 VAC (60 Hz) 500 kW capacity. This would be the electrical source for the exhaust fan system.

Main Exhaust Fan Layout Analysis

Removing sharp angles at the fan installation has a significant impact on fan performance. A poorly designed fan arrangement produces turbulent conditions at the fan inlet and significant pressure losses between the shaft collar and the fan. Field tests have found instances where the pressure losses between the shaft collar and fan can account for as much as 30 percent of the fan pressure. In some cases, a poorly designed fan installation can result in fan blade fatigue failures due to poor airflow distribution at the fan. There is also an economic factor when considering the fan arrangement. Poor fan installation design will result in reduced fan efficiency which in turn results in increased power costs.

Aerodynamic design of the shaft collar and ductwork to the fan should be carefully considered. A well designed fan arrangement reduces turbulence and evenly distributes the airflow velocity profile immediately before the fan intake. The shaft collar typically terminates in a sharp 90° bend. This sharp bend creates excessive shock losses. To reduce the shock loss at the top of the shaft collar, the 90° edge should be rounded to a radius of approximately 1.2 m. This rounding of the shaft collar is called shaft collar roll-out. Studies have shown that construction of a shaft collar roll-out can reduce shaft collar pressure loss coefficients from 1.0 to 0.43 in comparison to sharp edged abrupt shaft collars.

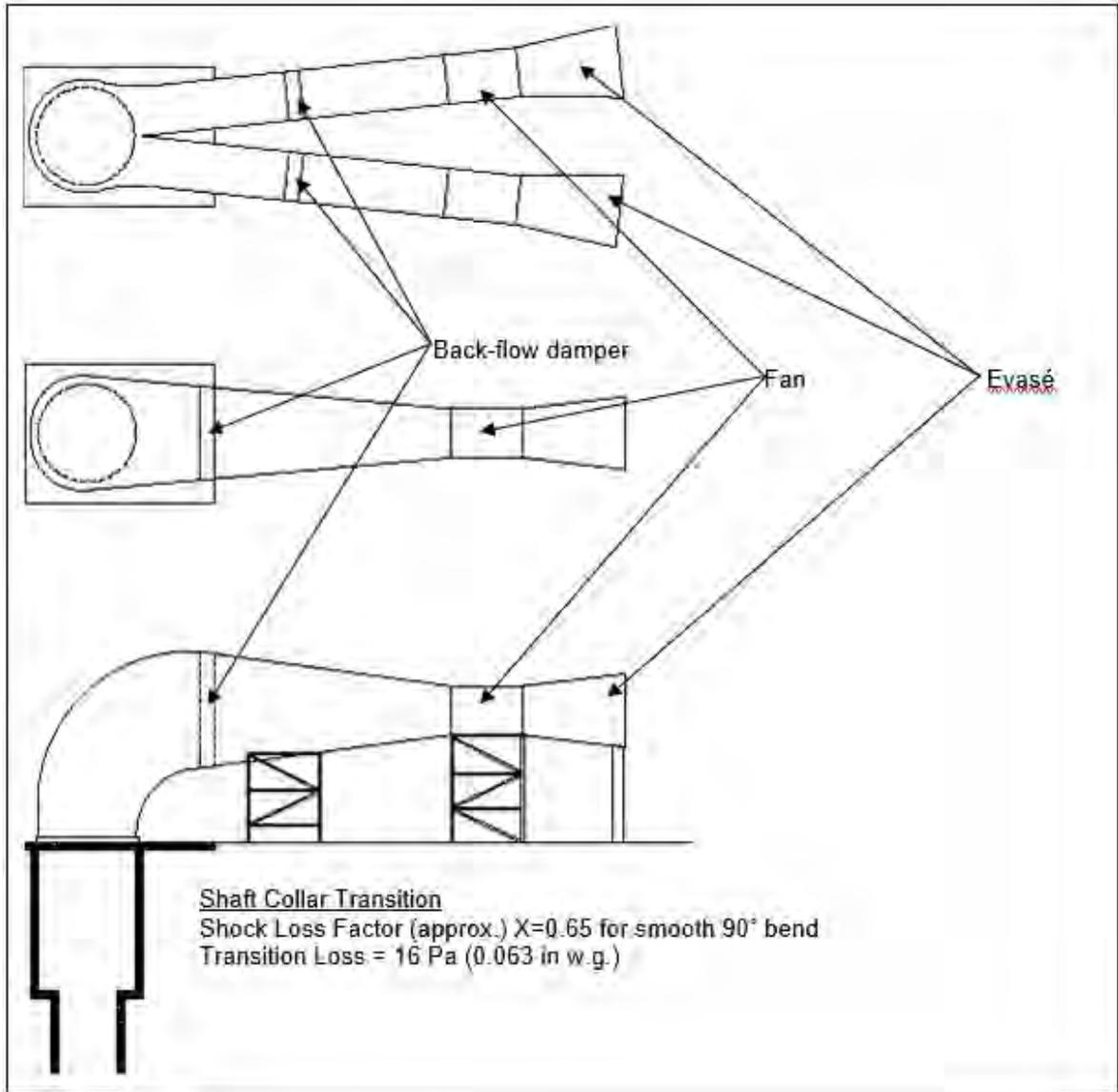
A few more guiding principles with regards to fan arrangements are that the maximum airflow velocity remains below 12.7 meters per second (m/s) or 2,500 feet per min (ft/min) and a duct length of at least two to three fan diameters is installed just before the inlet to the fan. This circular cross section should ideally transition very gradually to the fan diameter, immediately following any backflow damper. The airflow velocity should remain below 12.7 m/s so that turbulence is at reasonable level. Initial estimates of fan airflow and operating pressure have been made for the Segovia Mine. Assuming a fan airflow of 80.2 m³/s (170,000 cfm), the airflow velocity in the top 4 m (13.3 ft) diameter section of the shaft would be 6.4 m/s (1,260 fpm). This is well below the maximum recommended velocity.

Assuming that a fan with a diameter of approximately 1.8 meters (6 ft) is going to be installed, a straight section of duct between 3.6 meters (12 ft) to 5.4 meters (18 ft) should be installed before the fan inlet (following the backflow damper) to meet the two to three fan diameter duct length recommendation. This allows airflow distribution to become more uniform before reaching the fan blades which prevents an uneven load on the fan. It is also recommended that if two parallel fans are installed, the centerlines for each fan should be offset at an angle of approximately 12 degrees. SRK recommends implementation of these guidelines for any new main fan installation to improve fan efficiency and reliability.

Also, the fan, if it is an exhaust fan, should have an evasé to reduce shock losses associated with the fan discharge where the high velocity exhaust air enters still atmosphere. The evasé length should be at least twice the fan diameter and have angle that opens at approximately 15 degrees radially from the end of the fan housing to atmosphere. If the fan is an intake fan, it should be fitted with an inlet bell to reduce shock losses at the fan inlet.

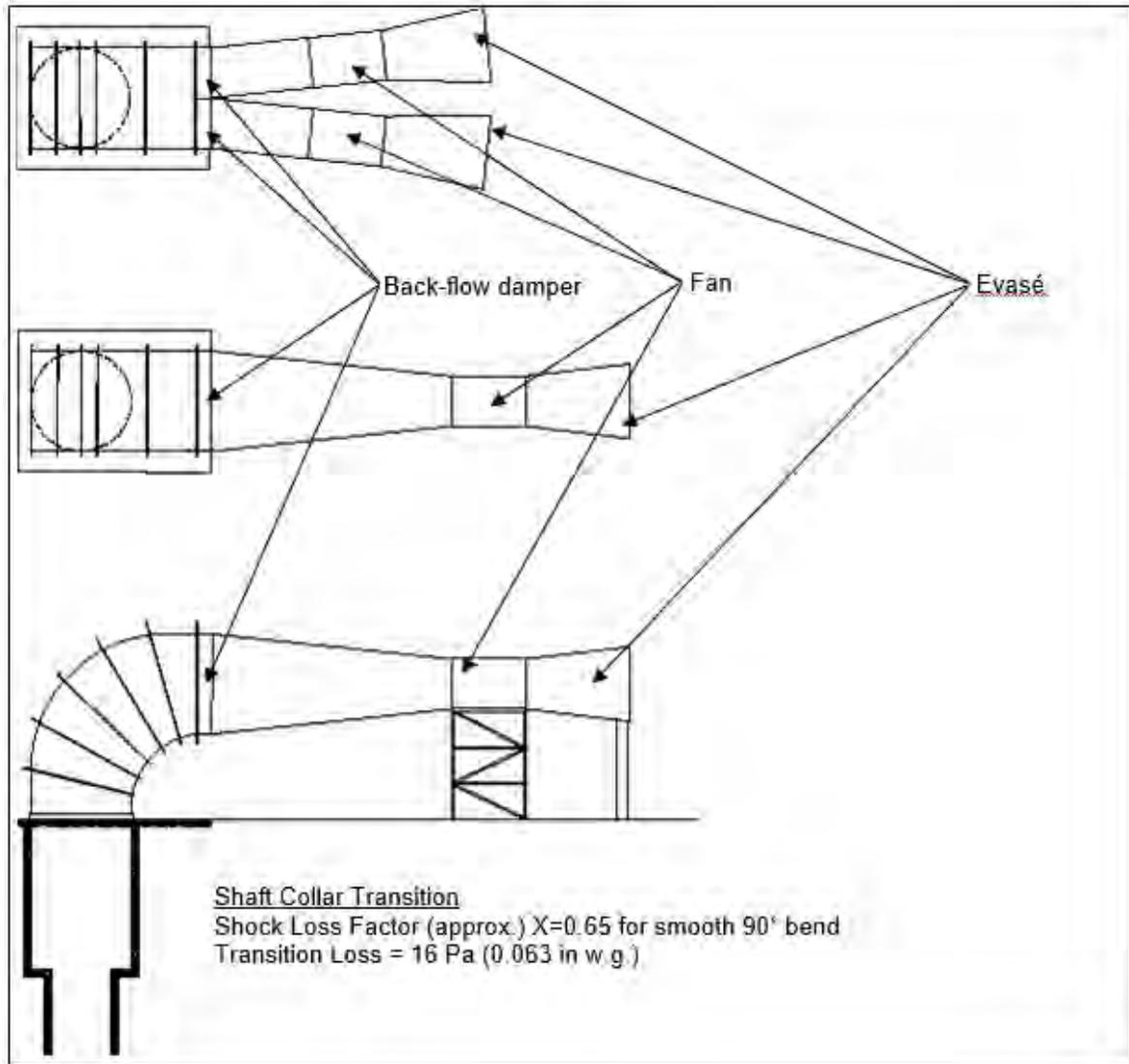
Figure 16-32 through Figure 16-34 shows three example fan arrangements for both a single fan and a two parallel fan installation. Note that Figure 16-32 and Figure 16-33 show a smooth round transition

that has a smooth connection to the shaft collar. Figure 16-34 shows a box housing with a concrete roll-out or rounded shaft collar. All pressure losses noted in the figures assumes an airflow quantity of 80.2 m³/s (170,000 cfm). Also, assuming the same airflow, if a simple square box housing is constructed which has a larger cross section than the top of the shaft (not pictured), a pressure loss at the shaft collar transition of up to 90 Pascal (Pa) or 0.350 in w.g. could be realized. This is much greater than the pressure losses shown in Figure 16-32 through Figure 16-34.



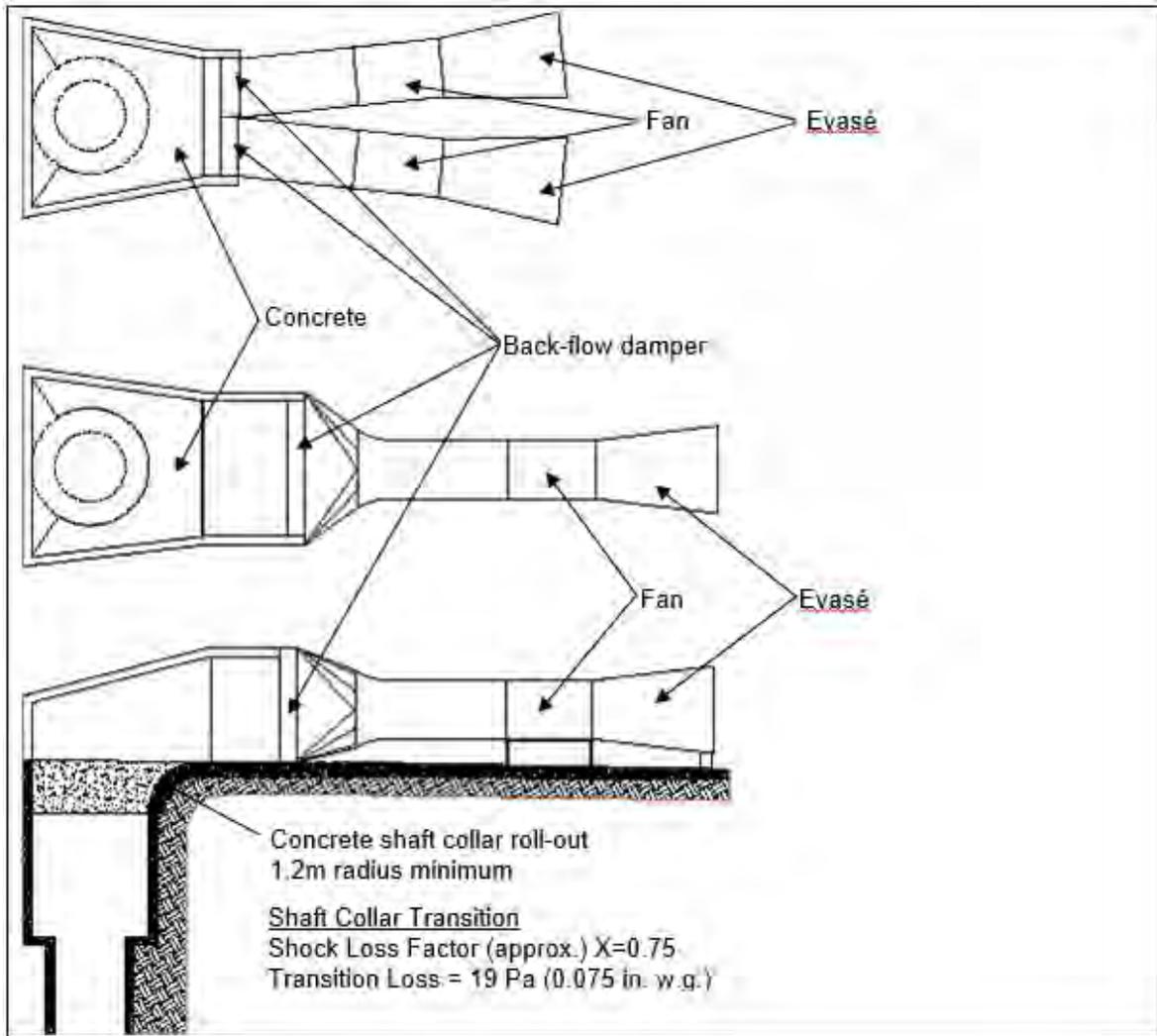
Source: SRK, 2017

Figure 16-32: Smooth 90° Transition Concrete Construction



Source: SRK, 2017

Figure 16-33: Smooth 90° Transition Steel Construction



Source: SRK, 2017

Figure 16-34: Masonry Box Housing with Concrete Shaft Collar Roll-Out

In order to provide a simplified and lower cost shaft collar arrangement, the option described in Figure 16-34 is suggested for the installation at the Providencia Mine.

Another option would be to construct a vertical fan arrangement. However, if the fan ever requires advanced servicing such as bearing replacement or blade adjustment then it must be entirely removed from the structure which will necessitate a crane or other heavy equipment. Due to the location of the proposed fan installation a vertical installation would not be recommended.

The second design point is whether a single fan capable of supplying the entire fan duty should be used, or if the required fan duty point should be supplied by two fans operating in parallel. Although a fan installation incorporating a single exhaust fan offers a more simplified solution in that there is only a single fan to maintain, there is no backup provision in case of a fan outage (maintenance, bearing issues, or motor problems). Developing a fan installation with two parallel fans provides a significant amount of safety. Two approaches can be taken; two fans each with the capability of providing the

entire fan duty, or two fans operating together to provide the required fan duty. While having a second backup fan that can provide the full fan duty will provide the highest level of redundancy, this type of installation may not be required. The second approach utilizing two smaller fans together to achieve the full fan duty does provide a significant improvement over a single fan installation. Although each fan in the parallel fan installation will be responsible for 50% of the total airflow requirement, when one fan is turned off (maintenance, or operational problem) the remaining fan will operate at approximately 70% of the total airflow requirement because it will be operating much lower on its characteristic curve. With 70% of the airflow delivered through the mine, production activities may only be slightly impacted. For this fan, installation it is suggested that two smaller fans be used in parallel to achieve the required fan duty.

Fan Costing

There are two ventilation scenarios that have been provided to different fan venders. Several items can easily be sourced locally which would significantly reduce the cost of the fan system. The ductwork is one area where costs could be cut by using a local fabricator. A combination of masonry shaft house (collar enclosure) and steel distribution ducts to the fans would provide significant savings. However, in order to properly plan for these ducts, the basic fan sizes need to be established, which is initially done when contacting the venders for budget prices. Budget prices for the fan systems are shown in Table 16-16 and Table 16-17.

Table 16-16: Summary of Fan Costs (AFS)

Manufacturer	Parallel Fan Installation		Single Fan Installation	
	Component	Cost (US\$)	Component	Cost (US\$)
AFS	Two Fans	70,000	Single Fan	257,000
AFS	Entire Duct	95,000	Entire Duct	105,000
AFS	Elec./VFDs	120,000	Elec./VFDs	110,000
AFS	Commissioning	35,000	Commissioning	35,000
AFS Total		320,000		507,000

Source: SRK, 2017

Table 16-17: Summary of Fan Costs (Spendrup)

Manufacturer	Parallel Fan Installation		Single Fan Installation	
	Component	Cost (US\$)	Component	Cost (US\$)
Spendrup	Two Fans	89,414	Single Fan	106,545
Spendrup	Entire Duct	145,339	Entire Duct	135,894
Spendrup	Elec./VFDs	146,702	Elec./VFDs	73,351
Spendrup	Commissioning		Commissioning	
Spendrup Total		381,455		315,790

Source: SRK, 2017

The shaft hood (collar house) specified in the Spendrup quote is estimated at US\$105,261. If the mine were to construct this on-site then a significant saving would be encountered. The initial “Wye” that connects the shaft hood (collar house) to the individual fan ducts is estimated by Spendrup at US\$18,750. This would represent some additional savings if it were to be manufactured on site, or in Colombia. The cost of the Spendrup fan without the shaft hood (collar house) would be approximately US\$276,194. At the very least, the fan connection ducts, discharge diffuser, and backflow dampers should be procured from the fan manufacturer. The manufacturing time required for Spendrup is approximately 18 to 20 weeks, and for AFS approximately 16 to 20 weeks would be required.

The manufacturing time required for Howden is approximately 14 to 18 weeks for the parallel fans, and approximately 22 to 24 weeks for the single fan. Budget prices for Howden, TLT, and Pauls fan systems are shown in Table 16-18 through Table 16-20.

Table 16-18: Summary of Fan Costs (Howden)

Manufacturer	Parallel Fan Installation		Single Fan Installation	
	Component	Cost (US\$)	Component	Cost (US\$)
Howden	Two Fans	65,516	Single Fan	241,525
Howden	Entire Duct	120,000	Entire Duct	100,000
Howden	Elec./VFDs	48,000	Elec./VFDs	36,000
Howden	Commissioning		Commissioning	
Howden Total		233,516		377,525

Source: SRK, 2017

Table 16-19: Summary of Fan Costs (TLT)

Manufacturer	Parallel Fan Installation		Single Fan Installation	
	Component	Cost (US\$)	Component	Cost (US\$)
TLT	Two Fans	Included	Single Fan	Included
TLT	Entire Duct	Included	Entire Duct	Included
TLT	Elec./VFDs	Included	Elec./VFDs	Included
TLT	Commissioning		Commissioning	
TLT Total		456,500		242,500

Source: SRK, 2017

Table 16-20: Summary of Fan Costs (Pauls Fans)

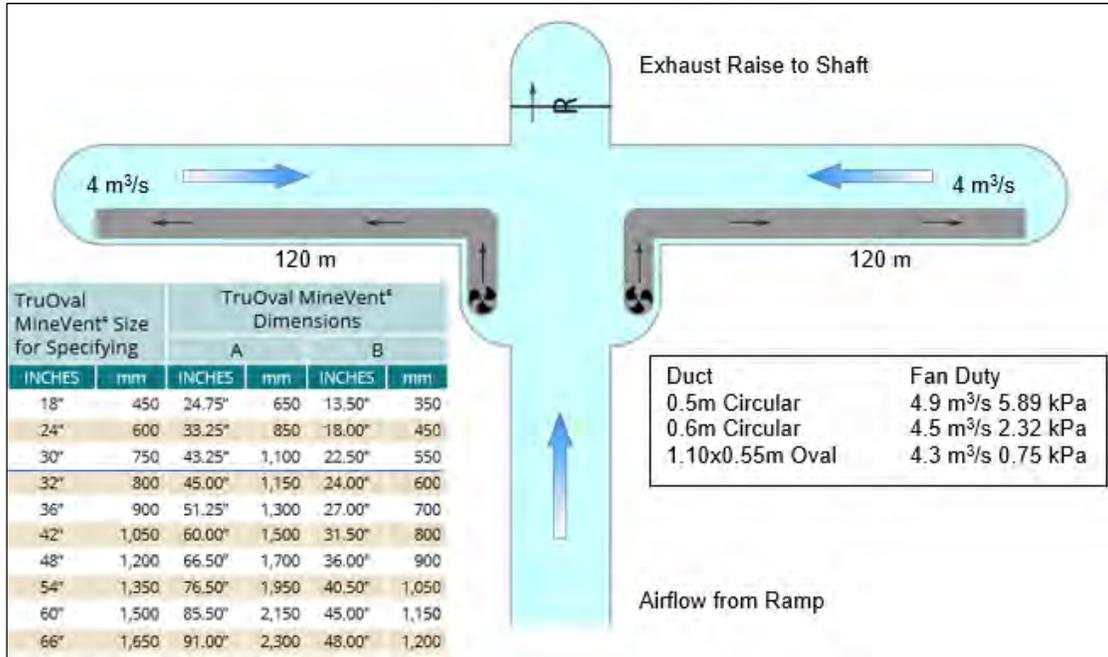
Manufacturer	Parallel Fan Installation		Single Fan Installation	
	Component	Cost (US\$)	Component	Cost (US\$)
Pauls Fans	Two Fans	Included	Single Fan	Included
Pauls Fans	Entire Duct	Included	Entire Duct	Included
Pauls Fans	Elec./VFDs	Included	Elec./VFDs	Included
Pauls Fans	Commissioning	Included	Commissioning	Included
Pauls Fans Total		860,000		560,000

Source: SRK, 2017

The manufacturing time required for Pauls Fans is approximately 7 weeks. The remaining item that is not quoted is the installation of a foundation for the fan system. Because of the size of these fans, the motor will be mounted within the fan housing. This will eliminate the need for a separate fan motor housing and foundation. Alignment issues will be eliminated. However, the strength/thickness of the fan foundation will be suggested by the fan manufacturer.

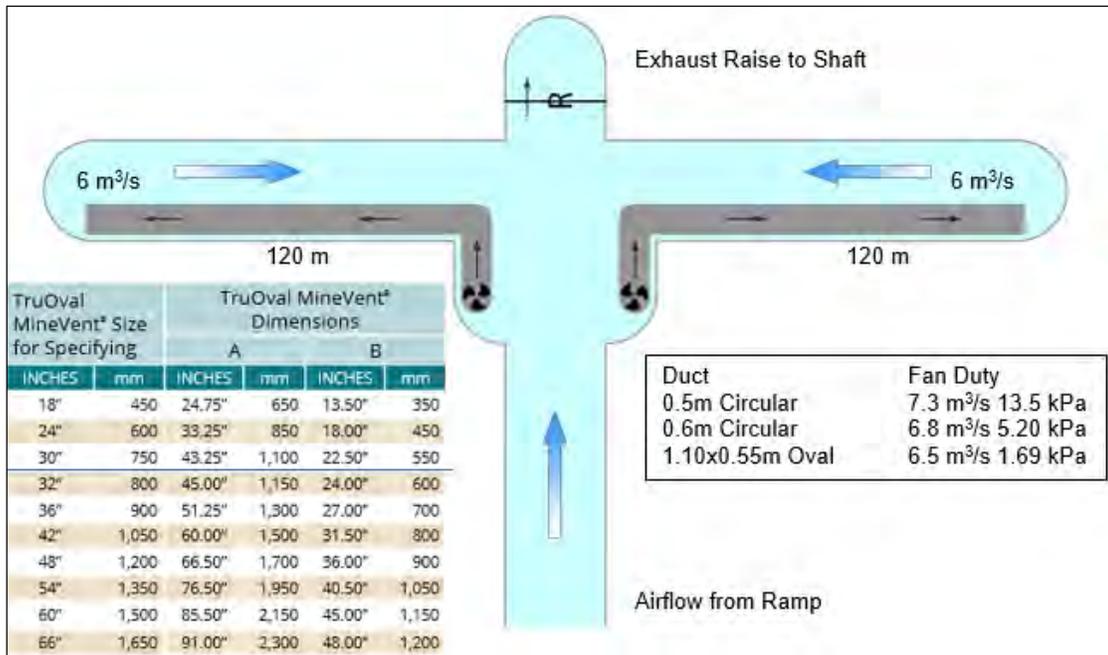
Auxiliary Ventilation Systems

Two different options are required for face ventilation; approximately 4 m³/s, and 6 m³/s. Because of the small size of the airways, stope drifts, or access drifts the size of the duct needs to be limited to 24 inches (0.6m). One way to maximize the duct while keeping to the size limit is to use an oval duct. This way the duct intrusion into the airway will remain at the smaller dimension. For 4 m³/s a circular duct dimension of 24 inches (0.6m) can be used and still achieve a reasonable fan operating pressure as shown in Figure 16-35. For 6 m³/s an oval duct with dimensions of 43 inches (1.1 m) x 22.5 inches 0.55 m can be used and achieve a reasonable fan operating pressure as shown in Figure 16-36.



Source: SRK, 2017

Figure 16-35: General auxiliary ventilation layout and fan sizing for 4 m³/s



Source: SRK, 2017

Figure 16-36: General auxiliary ventilation layout and fan sizing for 6 m³/s

The same fan can be used for either operating condition. Budget costs were procured from both Spendrup Fan Company and AFS and were in the range of US\$8,000 to US\$11,000 each.

Current Ventilation System Updates

Since the site visit, the mine plan has been revised by site engineers with respect to the ventilation of the stopes and the usage of the exhaust shaft to surface. The ventilation of the stopes has been modified to incorporate internal raises isolated from the stope backfill by gabions. This will affect the design of the auxiliary ventilation systems used to ventilate the active stopes. The exhaust shaft to surface was originally incorporated into the ventilation system as a dedicated exhaust raise with a surface exhaust fan. The mine design has been revised to re-configure the shaft for both ventilation and materials hoisting. The design of the surface exhaust fan installation (collar arrangement) has not been redesigned for the materials hoisting capability; however, the existing collar design and shaft bottom need to be redesigned to support the new materials hoisting concept.

16.10 Mine Plan Resource

Table 16-21 summarizes the mine plan resource material for the Segovia Complex as of July 1, 2017.

Table 16-21: Summary of Mine Plan Resource Material for Segovia

Company	Mine	Type	Classification	Tonnes(000)	Au g/t	Au t/oz (000)
Zandor	Providencia	Mechanized	Measured	69	20.7	45.9
			Indicated	52	28.9	48.3
			Inferred			
	Sandra K	Mechanized	Measured			
			Indicated	203	6.8	44.3
			Inferred	271	4.3	37.1
	Carla	Mechanized	Measured			-
			Indicated	53	7.6	12.9
			Inferred	79	8.3	21.1
	El Silencio	Mechanized	Measured			-
			Indicated	1,289	5.8	240.4
			Inferred	486	5.1	78.9
	Sandra K	Selective	Measured			-
			Indicated	26	11.0	9.0
			Inferred			-
	Carla	Selective	Measured			-
			Indicated	16	10.6	5.4
			Inferred			-
	Vetas Verticales	Mechanized	Measured			-
			Indicated			-
			Inferred	350	3.5	39.4
Zandor Subtotal		Measured	69	20.7	45.9	
		Indicated	1,638	6.8	360.3	
		Inferred	1,186	4.6	176.5	

Table 16-21 (Cont'd): Summary of Mine Plan Resource Material for Segovia

Company	Mine	Type	Classification	Tonnes(000)	Au g/t	Au t/oz (000)
Pequena Minería	Providencia	Selective	Measured	2	25.3	1.6
			Indicated	20	19.8	13.0
			Inferred	92	33.9	100.0
	El Silencio	Selective	Measured			-
			Indicated	284	27.3	248.9
			Inferred	81	27.4	71.5
	La Vega Gold*	Selective	Measured			-
			Indicated			-
			Inferred			-
			Toll Milling	663	4.5	95.9
	Plaza 7		Measured			-
			Indicated	35	30.0	33.8
			Inferred			-
			Toll Milling			-
	PM Subtotal		Measured	2	25.3	1.6
			Indicated	339	27.1	295.7
		Inferred	173	30.9	171.5	
		Toll Milling	663	4.5	95.9	
Zandor + PM	Total		Measured	71	20.8	47.5
			Indicated	1,978	10.3	656.0
			Inferred	1,359	8.0	348.0
			Toll Milling	663	4.5	95.9

- (1) Mine plan resource material was generated from a mine design, mine plan schedule and cash flow.
- (2) The effective date is July 1, 2017.
- (3) Topography from July 1, 2017 was used.
- (4) Silver credits is based on plant historical data that dates back decades.
- (5) Small errors due to rounding may be found in this table.
- (6) *La Vega Gold tolling material does not come from any resource classification material but this contract has been in place for many years and will continue forward.
- (7) Dilution varies from 20% to 120%.

Source: SRK, 2017

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.

17 Recovery Methods

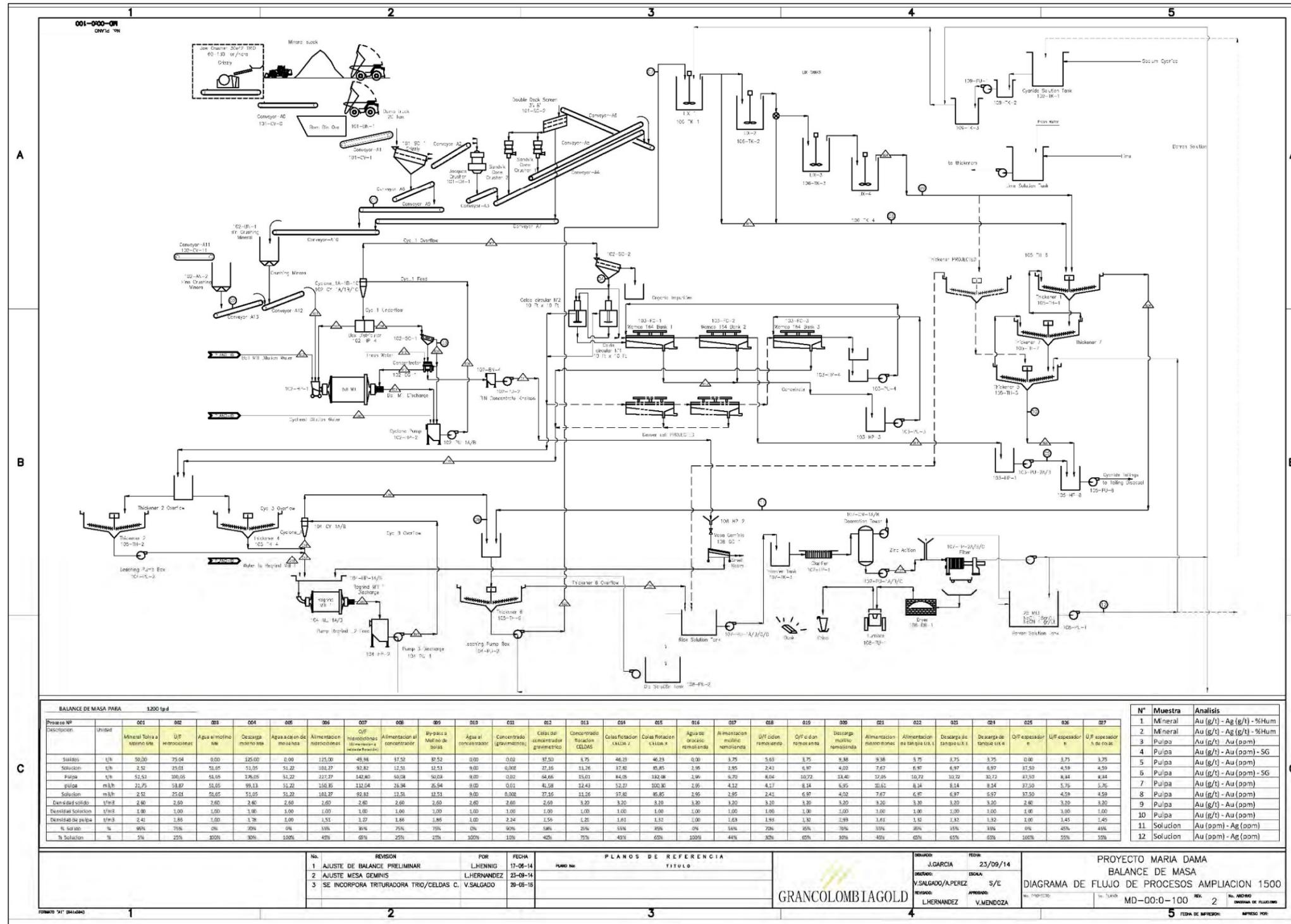
17.1 Process Description

Maria Dama process plant has a current operating capacity of up to 1,300 t/d, but with further investment can be expanded to 1,500 t/d. GCM processes ore from the Providencia, El Silencio and Sandra K mines at its 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. The process flowsheet and material balance are shown in Figure 17-1 and a list of major equipment is shown in Table 17-1. Each unit operation is briefly discussed in this section.

Table 17-1: Segovia Process Plant Major Equipment List

Equipment	Quantity	Size	HP	Manufacture
Crushing Circuit				
Primary Jaw Crusher	1	30 inch x 42 inch	150	Trio
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	150	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	5 + 3	10 inch		Cavex
Centrifugal Gravity Concentrator	1	XD20		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		10 inch		Krebs
Concentrate Cyanidation				
Flotation Concentrate Thickener	2	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	3	24 ft x 10 ft	5	
Merrill -Crowe				
Clarifier	1			
De-aeration Tower	1			
Precipitate Filter	2	30 inch x 30 inch x 30 plate		
Precipitate Filter	1	36 inch x 36 inch x 30 plate		
Gold Room				
Gravity Concentrate Gemini Table	1			
Furnace	1	38 inch x 59 inch		

Source: Gran Colombia, 2016



Source: Gran Colombia, 2014
 Figure 17-1: The Maria Dama Process Plant Flowsheet

17.1.1 Crushing Circuit

Ore from GCM's mining operations is crushed to minus 15 mm in a three-stage crushing circuit that includes a 30 inch x 42 inch primary jaw crusher, which discharges to a run-of-mine (RoM) ore bin. Primary crushed ore is screened at 15 mm and the screen oversize is conveyed to a 3 ft secondary cone crusher (Jaques), which is operated in open circuit. Discharge from the secondary cone crusher is conveyed to two Sandvik CH-430 tertiary cone crushers (one standby), which are operated in closed circuit with a vibrating screen. The final -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.

Ore delivered to the Maria Dama process plant by the mining contractors is already crushed before it arrives and is dumped into a receiving bin. 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 and Gravity Concentration Circuit

GCM and contractor ores are conveyed to a single conveyor belt feeding the grinding circuit, which consists of a 15.5 ft x 23 ft ball mill operated in closed circuit with 20 inch cyclones, to produce a final grind of 65% passing 75 μm in the cyclone overflow, which is advanced to the flotation circuit. A portion of the cyclone underflow is diverted to the gravity concentration circuit, which consists of a single XD-20 Knelson centrifugal concentrator, which is operated in closed circuit with the grinding circuit. 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. It is noted that Grand Colombia is currently installing a second Knelson concentrator, which should serve to increase the capacity of the gravity circuit.

17.1.3 Flotation and Concentrate Regrind Circuit

The cyclone overflow from the grinding circuit is advanced to the flotation circuit where it is first conditioned with the required flotation reagents and then subjected to one stage of rougher flotation in three 10 ft diameter x 10 ft high flotation tank cells followed by one stage of scavenger flotation in a bank of four 30 m³ WEMCO flotation cells to recover the contained gold values. A total rougher + scavenger flotation retention time of 30 minutes is provided. The 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 7.5 mass % of the original plant feed is thickened to about 55% solids and reground to about 90% minus 50 μm prior to being advanced to the cyanidation circuit.

17.1.4 Cyanidation and Counter-Current-Decantation (CCD) Circuit

The reground flotation concentrate is processed through a conventional cyanidation circuit consisting of four agitated leach tanks operated in series to provide a total leach retention time of about 72 hours. The cyanide concentration is adjusted to 900 ppm NaCN in the first leach tank and is allowed to naturally attenuate to about 350 ppm NaCN in the last leach tank. The pH of the leach slurry is maintained at about 10.5 with lime.

Discharge from the fourth agitated leach tank flows to the CCD circuit, which consists of three 24 ft diameter thickeners, and serves to wash the pregnant leach solution (PLS) from the leach residue. The PLS from the first thickener overflow is advanced to the Merrill-Crowe gold recovery circuit and the thickener underflow from the third thickener is discharged to the tailing storage facility (TSF).

17.1.5 Merrill Crowe Circuit and Refinery

The PLS is processed in the Merrill Crowe circuit to recover the solubilized gold and silver values from solution. This is accomplished by clarifying the PLS to remove any remaining suspended solids, de-aerating the solution to <1 ppm dissolved oxygen and then precipitating the gold and silver values by addition of zinc dust. 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: 31%
- Soda ash: 20%
- Silica: 9%

Approximately 650 kg of flux is blended with 600 kg of precipitate and smelted in a gas-fired furnace to produce a final doré product. The gravity concentrate produced from the Gemini table located in the refinery is also directly smelted using the same flux formula, but in the ratio of one part gravity concentrate to two parts flux.

17.2 Tailing Storage Facility

Final tailings from the process plant, which are the combined scavenger flotation tailing plus cyanidation leach tailing, are intended to be pumped to one of three different small tailing holding ponds. After a holding pond is filled to capacity, it is intended that it be allowed to drain, while tailings deposition into one of the two remaining ponds commences. After the deposited tailings have been sufficiently drained, they are intended to be excavated with a backhoe and hauled to a remote “dry stack” tailing storage facility

SRK has observed that the tailings management protocol is not consistently adhered to and that untreated tailings are regularly discharged directly into a creek located downstream from the process plant. GCM has stated that they are taking steps to remediate this issue, however, SRK has not verified the extent to which proper tailing disposal protocols have been implemented.

17.3 Production Performance

17.3.1 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, 2014

17.3.2 Current Plant Production

Annual plant production for the period 2014 to 2016 is summarized in Table 17-3. During this period ore tonnes processed increased from 237,740 t, at an average gold grade of 10.64 g/t Au in 2014 to 284,896 t in 2016 at an average gold grade of 13.77 g/t Au. Overall gold recovery was relatively constant at about 90%. Reported gold recovery is based on plant head assays and 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
Ore Tonnes	237,740	211,049	284,896
Average (t/d)	651	578	780
Ore Grade (Au g/t)	10.64	14.32	13.77
Au Contained (oz)	81,349	97,189	126,144
Mill Circuit Inventory Change (Au oz) ⁽¹⁾	1,915	4,678	12,400
Au Recovery (%)	89.2	90.4	90.1
Other (Au oz) ⁽²⁾	-	355	240
Au Produced (oz)	74,506	92,894	126,261

⁽¹⁾ Gold production includes additional ounces recovered from the mill circuit during the period. Tonnes milled, head grade and mill recovery statistics do not include any data related to these additional gold ounces produced from the Company-operated properties.

⁽²⁾ Represent gold produced for the Company from ore milled by a contract mining cooperative within the Company's mining title and shipped directly to the refinery. Tonnes milled, head grade and mill recovery statistics do not include any data related to these gold ounces produced.

Source: GCM, 2017

17.4 Process Plant Consumables Usage

Reagent and grinding media consumption for 2015 and 2016 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)
Flotation Reagents			
Copper Sulfate	Mineral activator	37	27
Aerofroth 65	Frother	22	33
A-131	Collector	15	17
Isopropyl Xanthate	Collector		35
Aero 404	Collector	18	22
Thickening Circuit			
Super floc A-100	Flocculant	0.14	2.4
Hengfloc	Flocculant	0.59	1.9
Cyanidation Circuit			
Sodium Cyanide	Lixiviant	836	657
Lime	pH control	400	730
Merrill-Crowe			
Zinc Dust	Precipitant	73	64
Refinery			
Borax	Flux	57	59
Soda Ash	Flux	18	22
Sodium Nitrate	Flux	49	44
Silica	Flux	78	51
Grinding Balls			
3.5 inch	Primary	47	252
3 inch	Primary	1,282	1,205
1 inch	Regrind	55	100

Source: GCM, 2016

17.5 Process Plant Operating Costs

Process Plant Operating Costs for 2015 and 2016 are summarized in Table 17-5. During 2015 plant operating costs averaged US\$25.23/t ore processed, which was equivalent to US\$57.34/ Au oz produced. During 2016, the process plant operating cost averaged US\$29.52/t processed and was equivalent to US\$66.58/Au oz produced. Labor, electrical power, and reagents/consumables are the major cost drivers and represent over 50% of the process plant operating costs.

Table 17-5: Maria Dama Process Plant Operating Costs (2015 and 2016)

Cost Area	2015			2016		
	US\$ (000s)	US\$/t	US\$/Au Oz	US\$ (000s)	US\$/t	US\$/Au Oz
Labor	1,095	5.19	11.79	1,549	5.44	12.27
Laboratory	228	1.08	2.45	136	0.48	1.08
Electrical Power	1,024	4.85	11.02	1,389	4.88	11.00
Reagents and Consumables	1,284	6.08	13.82	1,600	5.62	12.67
Freight	594	2.81	6.39	1,539	5.40	12.19
Maintenance	655	3.10	7.05	1,282	4.50	10.15
Other	448	2.12	4.82	911	3.20	7.22
Total	\$5,328	\$25.23	\$57.34	\$8,406	\$29.52	\$66.58
Ore Tonnes	211,049			284,896		
Au Ounces Produced	92,894			126,262		

Source: GCM, 2017

17.6 Process Plant Capital Costs

Planned process plant capital expenditures are summarized in Table 17-6 for 2017 and 2018. Capital expenditures for 2017 total US\$1.96 million and include US\$234,393 capex carry-over from 2016. Planned capital expenditures for 2018 total US\$3.83 million.

Table 17-6: Planned Process Plant Capital Expenditures (2017 -2018)

Project	Year	US\$
2016 Carry-Over to 2017		
Thickener PV - 13 m	2017	124,071
Melting furnace	2017	21,411
Plant lighting	2017	4,310
Gravity concentrator	2017	45,787
Leach agitator replacement	2017	47,585
Lime preparation system	2017	8,470
Total 2016 carry-over	2017	234,393
2017 Capex		
Lime slaking system	2017	34,483
Repair outdoor flooring	2017	17,241
New filter presses	2017	237,414
Instrumentation upgrades	2017	208,621
Tailings pump	2017	158,618
Jaw crusher (20" x 36")	2017	41,379
Vibrating screen at crusher	2017	37,414
Studies	2017	12,069
Reagent tank repairs	2017	32,759
Building roof and floor replacement	2017	13,793
Process piping replacement	2017	17,586
Crusher building replacement	2017	53,103
Tailing storage facility (1st phase)	2017	608,190
Refurbish agitators in leach tanks 2 and 3	2017	133,620
Electrical upgrades at crusher	2017	51,724
Building ceiling replacement	2017	30,345
Computers	2017	12,069
Care and Maintenance of Pampa Verde equipment	2017	22,276
2017 Capex + 2016 Carry-Over		1,957,097

Source: SRK

Table 17-6 (Cont'd): Planned Process Plant Capital Expenditures (2017 -2018)

Project	Year	US\$
2018 Capex		
New offices (General)	2018	15,000
Consultants and studies	2018	85,000
Training	2018	25,861
Surface water piping	2018	76,000
Refinery upgrades	2018	31,034
Water recirculation system	2018	10,345
Reagent system upgrades	2018	10,334
Ball storage area	2018	32,759
New shower and dressing facility	2018	49,138
Tailing filter presses	2018	1,200,000
Electrical upgrades	2018	110,000
Motor replacement	2018	50,000
Tailings pumps (2nd line)	2018	130,000
Electrical upgrades at crusher	2018	30,000
Engineering coarse feed system at crusher	2018	30,000
Fine crushing upgrades	2018	60,000
Install third regrind mill	2018	190,000
Regrind mill building	2018	80,000
PLS pump replacement	2018	50,000
PLS tank replacement	2018	80,000
Replace compressed air piping	2018	80,000
Tailings detoxification system	2018	150,000
Tailing storage facility (2nd phase)	2018	1,200,000
Care and maintenance for Pampa Verde equipment	2018	25,000
Flocculant preparation system	2018	27,000
Total 2018 Capex		3,827,471
Total planned Capex (2017 & 2018)		5,784,568

Source: GCM, 2017

17.7 Pampa Verde Plant

In 2013 GCM had planned to construct a 2,500 t/d process plant as part of the Pampa Verde project. The details of this project were presented by SRK Consulting (UK) in a technical report entitled “NI43-101 Technical Report on a Preliminary Economic Assessment on Segovia and Carla Operations, Department of Antioquia, Colombia”, February 2014. Based on the current mine plan, the planned construction of the Pampa Verde process plant will not be required.

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 Medellin. Figure 18-1 shows the general location.



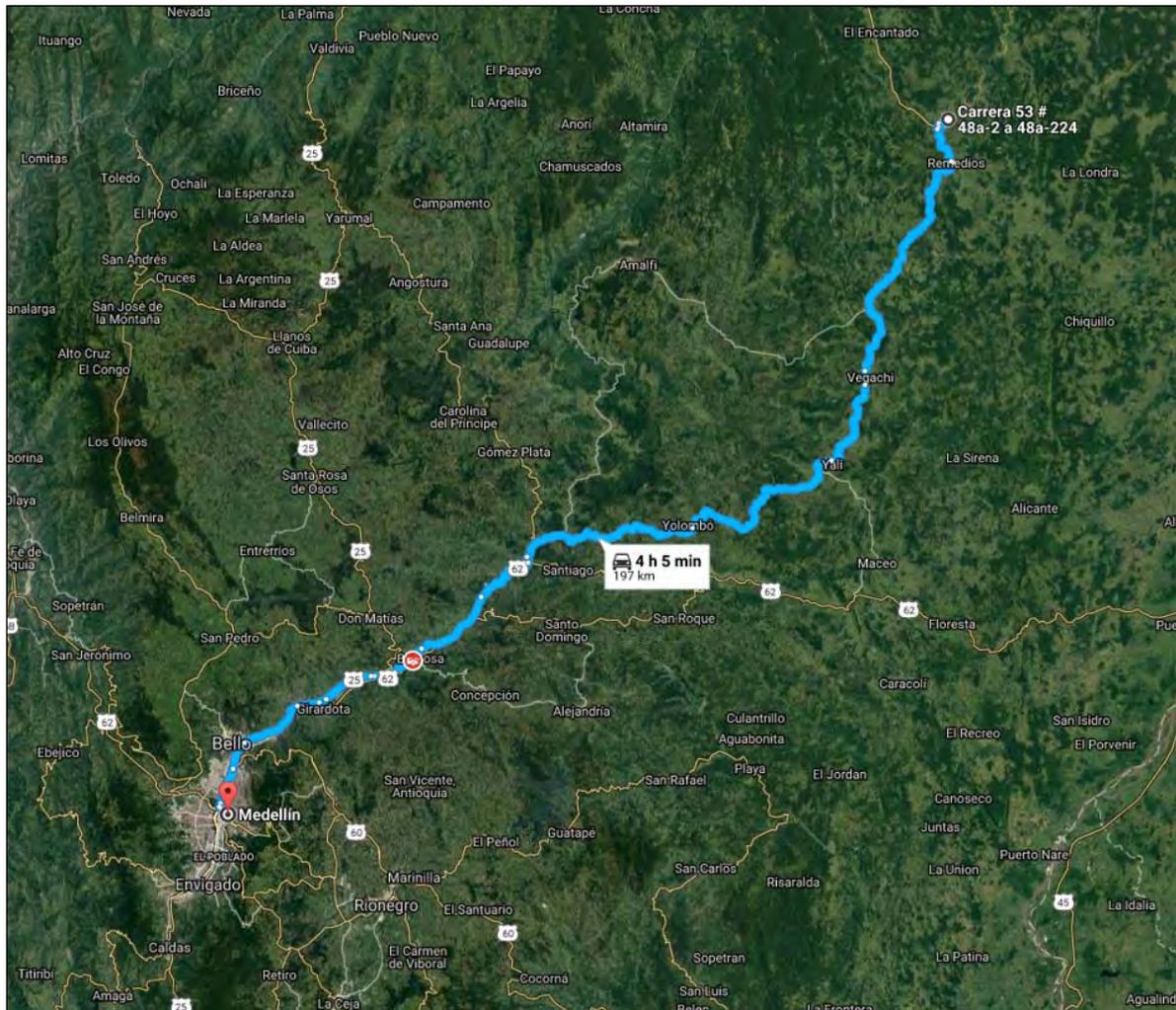
Source: SRK-Google Maps, 2017

Figure 18-1: General Location

Medellin (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 1800's. 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.

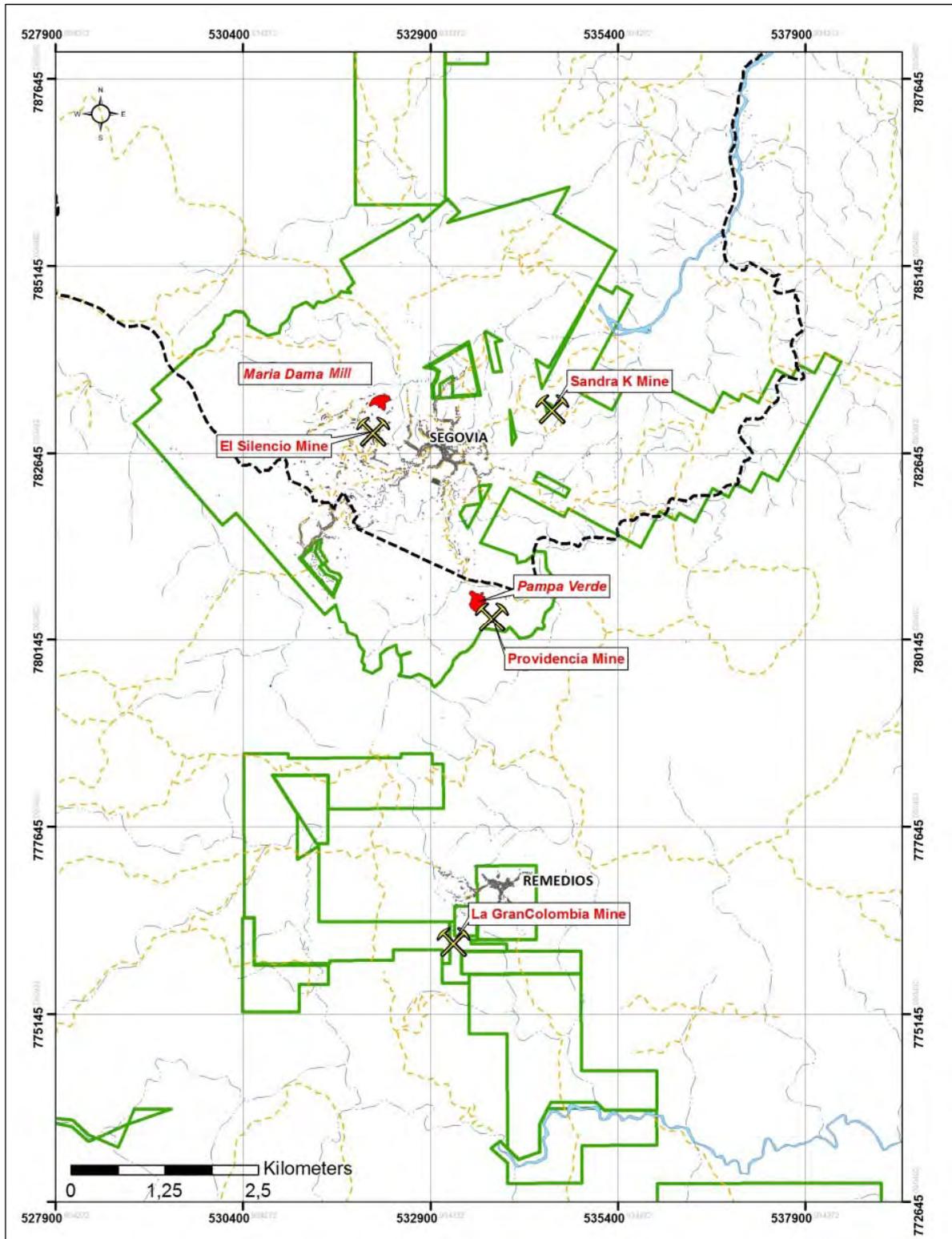
Access to the Segovia/Remedios area is four hours by paved highway from Medellin. The route can be seen in Figure 18-2. From the communities to the mine access is by dirt road and as the mines are under the communities the distance is quite short.



Source: SRK-Google Maps, 2017

Figure 18-2: Project Access

The 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 Project has an administrative office facility in Segovia. Additionally, there are small administration buildings at the mine portal areas. All plant related support facilities are in place at the Maria Dama plant location. Maintenance facilities for the processing operation are located at the mill.

18.1.3 Fuel Supply and Storage

Fuel is supplied by local vendors who contract supply from Medellín. They supply the fuel directly to the mine.

18.1.4 Power Supply and Distribution

Power is supplied through the local utility. The power supply is provided from the national grid and supplied to the company substation at the mill location and mine locations. The company has backup generation available to support the main lines if needed. The company does not have detailed records on power outages. The power early in the production live was very unreliable, but has improved over time but backup generation is still required.

18.1.5 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 should not present a significant challenge to the project.

Water for processing, estimated at approximately 100 m³/hr has historically been abstracted from streams in the vicinity of the processing areas.

18.1.6 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 of transportation on the Colombian road system.

18.2 Tailings Management Area

SRK understands that a potential new TSF is being considered for tailings disposal. However, no design information is available at this time.

18.3 Water Management

18.3.1 Surface Water Management

Water supply for mining activities has historically not presented 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.

Management of wastewater within and around the waste management facilities and the plant area is considered one of the most challenging aspects to the project. Currently, tailings are discharged to three unlined TSFs and allowed to dewater using risers through the embankments before being re-handled to a dry stack facility for permanent storage. No tailings water is reclaimed back to the mill.

Lack of information implies that surface water run-on is not considered a factor to the mining facilities, although the locations of the TSFs suggest that natural runoff would enter the TSF and mix with TSF water prior to discharge below the impoundments. No structures were identified to isolate tailings from run-off generated by the surrounding hillsides. As this water may be impacted by artesian mining activities in the vicinity, identifying impacts related to mine water management from the project will be problematic but must be done.

18.3.2 Groundwater

The mines passively collect groundwater as described previously in Section 16.8.3 and allow it to drain to the bottom levels of the mine where sumps are used to capture and settle the water. Water is progressively pumped to surface using a network of tanks located at strategic locations, hoses and tubing ranging from 2-inches to 12-inches in diameter, and numerous pumps.

SRK was unable to decipher where water is discharged to at surface, and how much might be used for process water or discharged to surface water bodies. As described previously in Section 16.8.1, the Company suggests that the total discharge rate from all of the Segovia mines is approximately 190 L/s.

From a hydrogeologic standpoint, there is no groundwater data from outside the mine workings to indicate where the water table is located, what the distribution of hydraulic pressures are, or what the rock permeability is. Furthermore, it is unclear what sort of measures are in place to advance pilot or probe holes in advance of the mine face to explore for high water pressure zones that might bring excessive water into the mine. Based on reports from SRK staff that have visited the site, a subset of the fault zones appear to transmit non-trivial amounts of water into the mine, and flow increases when it is raining at the surface. The indication is that the mine workings are well-connected to the surface features.

19 Market Studies and Contracts

19.1 Market Studies

No specific market study has been conducted to support this PEA. Metal prices are based on recent historic market conditions.

19.2 Contracts and Status

Segovia holds contracts that govern the sales of its precious metal production. These contracts are revised on a yearly basis and are tied to the gold price.

20 Environmental Studies, Permitting and Social or Community Impact

The following is an update of the 2014 PEA completed by SRK for Zander Capital S.A. based on additional information provided by Gran Colombia Gold (Erwin Wolff, Environmental Manager), and a site visit conducted by SRK environmental specialist and QP, Mr. Mark Willow, from November 28 – 30, 2016. This update discusses reasonably available information on environmental, permitting and social or community factors related to the Segovia Project, and is organized, to the extent practicable, according to the outline of Item 20 of Form 43-101F1 Technical Report.

20.1 Environmental Studies

20.1.1 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 Data

The Segovia Project predates the regulatory requirements to prepare an environmental impact assessment as part of the 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. After this date GCM delivered documentation to the environmental authority (Corantioquia) to update its mining operation and its respective PMA. Since August 1, 2017, the authority has all the requested information and is in the process of its review and evaluation. The last PMA update was approved in 2012, 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.

20.1.3 Geochemistry

Limited data and information are available to allow an assessment of the project risks related to environmental geochemistry. The observations and recommendations provided here are based primarily on the SRK 2014 Technical Report.

Water Management

There is no mine water balance, and dewatering records are not maintained, and therefore sources and destinations of contact water and other water types are not well documented. Untreated mine effluents have contributed to contamination of local surface water courses. Until a detailed assessment is conducted, including possible treatment measures, there is a risk the operation will further contaminate surrounding surface watercourses, which may evoke action from the regulatory authority.

Surface water runoff is likely to represent a significant water management challenge to the project considering the difficulties in distinguishing between the impacts from the artisanal mining activities and those of the project.

Insufficient work has been undertaken on groundwater hydrogeology and surface water to establish the true level of risk associated with groundwater. A detailed evaluation, including a groundwater model, would provide information that would assist in forecasts of post closure mine water discharge and possible treatment criteria.

The water issues detailed in SRK (2014) relating to untreated mine effluents contributing to contamination of local surface water, as well as changes in the groundwater due to dewatering activities carried out and to be carried out at the Project, could have a significant effect on the communities located near the Project.

Tailings

Limited data and information are available pertaining to the geochemistry of tailings. However, general conclusions can be drawn based on the geochemistry of the orebody and the process methodology. The sulfidic nature of the orebody combined with a host rock of limited neutralizing capacity create a reasonable probability that tailings are reactive and acid generating. Until detailed data are collected on the acid generating potential of the tailings, the conservative assumption will be to assume acid generating tailings with appropriate management.

A critical driver of environmental impacts from tailings is whether contact water will be contained. The current and predicted future quality of contact water needs to be determined. Two components of potential chemical loading need to be estimated: 1) loading to surface water due to TSF runoff, and loading to groundwater through seepage from 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/m², 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.

Water re-use / recycling is recommended to the extent feasible, and recent information indicates that it is being implemented. A zero discharge policy should be applied so that water recycling is maximized and water treatment and release is minimized. According to GCM, direct discharges to surface water drainages has been discontinued as of July 2017, and all process water is recirculated to the plant. In

addition, the underdrains from the tailings dewatering cells will also be redirected to the process plant following the installation of a treatment circuit. **SRK has not verified this claim and will investigate and provide recommendations for prevention and mitigation.** These efforts will help reduce operating cost, prevent potential for environmental damage and liabilities, and enhance the company reputation with local population and investors.

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 (in fact all potentially toxic elements) in the process stream and tailings must be well characterized so their fate is understood and managed as needed.

SRK considers that the plan to perform limited metallurgical testwork represents a project risk in terms of overall metallurgical performance (metal recoveries) and environmental geochemistry of tailings.

Waste Rock

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. There is no indication that geochemical characterization has been conducted for current or future waste rock.

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.

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. This program should have at a minimum static testing with acid-base accounting, multi-element analysis, and mineralogical evaluations. Depending on the results of the static testing, more advanced kinetic tests involving laboratory leach tests might be warranted. Kinetic testing can also be done using field plots or barrels. Depending on the availability of material for sampling, the tests can be run on in situ mining wastes or on drill core.

Future geochemical characterization programs would greatly benefit from some additions to the drill core assay program. Namely, the addition of sulfur (or sulfide), environmentally important metals / metalloids (identified in the upcoming characterization program), and perhaps acid neutralizing minerals (e.g., carbonate) might be worthwhile additions to selected drill core intervals.

SRK (2014) reported that a geochemical characterization program would be planned after approval of the Environmental Management Plan. If this has occurred, SRK recommends a review of the program for conformance with the regulatory framework and best practices.

Mine Water

Increased water re-use / recycling is recommended to the extent possible; noting that dewatering water from El Silencio is currently being routed to the Maria Dama plant. While groundwater inflow to the mines may not be a critical issue, a good 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. Of critical importance is the possibility of mine water discharging to surface water or groundwater and potentially impacting users. There are reports that dewatering effluent carries elevated natural concentrations of metals. The water quality of dewatering effluent must be well characterized in the event that treatment is needed before it is used or discharged. A forecast of closure water quality is needed.

Off-site Impacts

Untreated mine effluents are contributing to contamination of local surface water courses. Until treatment measures are implemented there is a risk the Segovia operation will continue to contaminate surrounding surface watercourses and may experience action from the regulatory authority, including discharge fees.

All mining wastes releasing uncontained runoff could be contributing to offsite impacts, and mitigation measures should be implemented.

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.

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 are metals such as cadmium, lead, zinc and iron and microbiological parameters including coliforms.

The largest uncertainty regarding closure costs is associated with the potential need for long term treatment of water from the post-closure mine workings.

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.

Water treatment

Presently there is insufficient information from which to produce an estimate of water treatment obligations. Studies will need to be completed to produce data on the quality and quantity of water that

will be generated from the various sources and that might require treatment. At a minimum, the possible sources that should be evaluated include:

- Process water;
- Tailings contact water;
- Waste rock contact water;
- Dewatering effluent; and
- Other site contact water.

The geochemical characterization programs for tailings, waste rock, and mine water will be the primary sources of data on water quality that will originate from these areas and may require treatment. Metallurgical test programs should be designed to provide appropriate environmental geochemistry data for tailings supernatant water and contact water.

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. Gran Colombia estimates that around 200 tonnes of waste rock are produced monthly, and that the surface facility needs are on the order of 1,000 tonnes/month; resulting in a monthly deficit of 800 tonnes, which is typically sourced from various other surface locations (borrow areas). SRK is unaware of any geochemical or geotechnical testing of the waste rock for use as construction material, so the potential impact associated with acid rock drainage and metal leaching (ARD/ML) cannot be assessed at this time.

20.2.2 Tailings

The Maria Dama plant at Segovia is fed with mill feed which is milled and processed using underground dewatering water and fresh make-up water from ponds on the surface. The cyanide (CN) leach circuit starts at concentrations of 900 parts per million (ppm) CN, and ends with concentrations around 350 ppm CN. The intent of Gran Colombia is to install a hydrogen peroxide (H₂O₂) destruction unit on the tail end of the leach circuit to further reduce CN concentrations, though this equipment has not yet been installed. As such, tailings are delivered to the unlined settling ponds (impoundments) at ±350 ppm CN, where they are allowed to drain and dewater. The underdrain water is currently released directly to area streams. According to GCM, by the end of 2017, the system for the treatment of these effluents will be constructed and commissioned in order to reuse them in the Maria Dama process plant. Excess treated water will continue to be discharged in accordance with standards established in resolution 631 of 2015. Future investigation of this commitment will be necessary.

Once sufficiently dewatered to allow mechanical handling, the tailings are excavated and transported via truck to several final disposal locations. It is currently estimated that between 50 and 60 trucks loaded with cyanide-bearing tailings pass through the town of Segovia each day, though Gran Colombia is currently working on a by-pass route to avoid the town altogether, which, according to the company, went in to effect in April 2017, and GCM trucks no longer pass through Segovia and of the urban area of La Cruzada. SRK has not been able to confirm this action.

Use of the primary tailings disposal location, Pomarosa (which was subdivided into three sections; Carcava 1, Carcava 2 and Carcava 3), has been effectively discontinued under order from Corantioquia (the Regional Environmental Authority), though limited deposition in Carcava 3 has been allowed. Zandor Capital first requested a Forestry Permit for this area in January 2014. Corantioquia immediately requested that the Company submit an additional environmental study about the change in land use, which was provided in September 2014. According to Gran Colombia, no action on the original Zander Capital request has been taken, and Corantioquia has unofficially asked that the permit process be reinitiated. Apparently, the occurrence of a native forest and sensitive plant species in Carcava 1 and Carcava 2 precluded their use for tailings disposal. Both the Channel Occupation and Water Discharge permits were issued for Carcava 3 to allow for limited deposition. Because of this restriction, the Company needed expedited authorization to begin deposition of tailings in the Shaft Area Disposal Facility. According to Gran Colombia, this facility does not require Channel Occupation permits, since there are no permanent streams in the drainage; nor has a Forestry permit been required, since there was no need to remove forest species greater than 10 cm in trunk diameter. Gran Colombia is still in the process of obtaining the Water Discharge Permit for this disposal location.

During periods when the on-site tailings settling ponds are at capacity, and sufficient storage has not been excavated to allow for additional deposition of tailings from the Maria Dama process plant, the tailings at Segovia are discharged directly to the environment, in the same manner as the neighboring artisanal mining operations. This practice is not officially sanctioned by the environmental authority, and the Company has been subjected to annual assessments of environmental discharge fees since 2010. According to GCM, this practice was discontinued in April 2017. [SRK has not verified this claim and will investigate and provide recommendations for prevention and mitigation.](#)

Additional nearby tailings storage is planned at El Chocho. While Gran Colombia legally controls the lands associated with the El Chocho TSF, the site is heavily occupied by artisanal miners. Negotiations with these miners has delayed the construction and use of El Chocho for tailings disposal. According to Gran Colombia, permitting at El Chocho is essentially complete. The site does not require an Environmental License (document, *Certificación Corantioquia El Chocho*), and has received approvals of the Channel Occupation Permit (document, *Permiso Ocupación Cauce El Chocho*), Water Discharge Permit (document, *ZF7-12-9 Vertimientos El Chocho*), and the Forestry Logging Permit (document, *Prorroga Aprovechamiento El Chocho 2016*).

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 supports the current non-hazardous classification, though SRK did not perform a comprehensive audit of all testing data.

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.

20.2.4 Water Management

Operational water for the Maria Dama plant at Segovia is provided through a combination of underground mine dewatering water, and several freshwater surface storage ponds. In addition, GCM claims that, by the fourth quarter of 2017, the underdrain water from the tailings dewatering cells will be treated and reused in the process plant. Infrastructure for management of surface water appears to be limited and excess operational waters are allowed to discharge directly to the environment, though this practice is said to have been discontinued in July 2017.

Even with the high precipitation experienced by the site, only nominal 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 plans to follow up in 2018 to confirm this commitment.

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 GCM 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.

NGOs 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 maximum permissible limits for discharges to surface water.

Currently, the Decree 1594 of 1984 is under review, which will modify the maximum concentrations, allowed in industrial effluents. The draft #5 document is being used as a guideline for this project. The Regional Environmental Authority 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 5 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: SO₂, NO₂, CO, TSP, PM₁₀, O₃, 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 2,571.95 hectares (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 departmental 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 Remedios. The Company is currently attempting to combine Concession Contract 6038 (710.2053 ha) and Concession Contract 6048 (226.24 ha) in Segovia. Both are 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. 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.

The PMA for the Segovia Project was submitted to Corantioquia by the previous owners, Frontino Gold Mines 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. The authority has all the information and is currently under evaluation. Additional baseline studies and potential environmental impact assessments were included in the 2012 PMA. In 2016, Gran Colombia submitted a more recent update for the PMA (2016 PMA).

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 primary permitting of the El Chocho TSF is pending final approval of additional technical information being developed by GCM. The secondary permits for the El Chocho TSF have already 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). While disposal of tailings has begun in Phase 1 area of the El Chocho TSF, construction timelines for Phase 2 may be affected by the presence of illegal artisanal miners in the development area. The Company is reportedly dealing with the artisanal miners through legal and contractual means.

A tailings filtration process, to be installed at the Maria Dama plant and included in the design of the new Pampa Verde plant, is being considered as an alternative to the El Chocho TSF to enable the company to dry-stack tailings on surface in a designated area called Chocho 2. This area has a saprolitic base layer which will prevent seepage and drainage channels and bunds will be constructed to contain the stacked tailings on top of geofabric.

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.

Corantioquia has issued invoices for environmental charges to the former owner of the Segovia operation, Frontino Gold Mines, 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. Although the amount of such charges cannot currently be quantified as discussions are underway with the authorities as to what amount may be payable in the future by the Company, an estimated provision of US\$1.5 million has been included in the capital expenditure plan related to the charges. The actual amount of these charges may differ materially from this estimated provision.

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 2012 PMA (to be superseded by the pending approval of the 2016 PMA). 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 reforestation activities in about 8 Ha (5 Ha around Pampa Verde and 3 in Finca Pocune). This activity is 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. If 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

Gran Colombia 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.

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 (Echavarría 2014).

The situation at Segovia is much the same, with ASM alongside the formal concession operation. As an added twist, 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. 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 and environmental 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.

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 disposed. The Tailing Management Areas (TMAs) and other water management ponds will be closed and all disturbed areas will be reclaimed, with the exception of roads needed for 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 as outlined above, and focus primarily on the concurrent closure of the dry-stack tailings disposal facilities. 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.

While SRK recognizes that a formal closure plan is not legally required at this stage of the operation, the development of such a plan would support the calculation of a detailed closure cost and would help identify the potential closure risks that Gran Columbia 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. A requirement for long-term post-closure water treatment would significantly increase this estimate.

21 Capital and Operating Costs

As part of the Segovia valuation exercise, SRK and the Project's technical team prepared estimates of both capital and operating costs associated with the mineable resource production schedule. This Section of the report presents and details these estimates of Capital Expenditure and Operating Expenditure. All estimates are based on monthly inputs of physicals and all financial data is second quarter 2017, all currency is in U.S. dollars (US\$), unless otherwise stated.

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 running the mine site until the end of the projected production schedule. The estimate of capital was broken down into the following main areas:

- Underground Development;
- Providencia (Mining Area);
- Sandra K (Mining Area);
- Carla (Mining Area);
- El Silencio (Mining Area);
- Contract Miners;
- Maria Dama Plant;
- Assay Laboratory;
- Maintenance;
- Environment;
- I.T.;
- Health and Safety;
- Security;
- Administration;
- Geological Exploration and Infill Drilling; and
- 44 kV Transmission Line.

The capital cost estimates developed for this study comprise the costs associated with the engineering, procurement, construction and commissioning required for all items. The cost estimate was based on historic costs and budgetary estimates prepared by Segovia and reviewed by SRK, all estimates were prepared under a first principles basis. The work indicates that the project will require a sustaining capital of US\$207.4 million throughout the LOMP. Table 21-1 summarizes the sustaining capital estimate.

Table 21-1: Segovia Capital Estimate Summary

Description	LoM Sustaining Capex (US\$000s)
Development	92,402
Providencia	6,227
Sandra K	8,835
Carla	3,297
El Silencio	26,117
Las Verticales	4,000
Contract Miners Sustaining	3,088
Maria Dama Plant	19,167
Assay Lab	918
Equipment and Infrastructure Maintenance	10,013
Environment	1,554
IT	577
Health & Safety	2,108
Security	1,227
Administration	607
Geological Exploration & Infill	26,320
44 kV Transmission Line	902
Total Capital	\$207,357

Source: GCM/SRK, 2017

21.1.1 Basis for the Capital Cost Estimates

The cost associated with mining area access development was based on the preparation of the mineable resource production schedule that included a design of meters of development. Historic costs indicate that about 80% of all waste production is associated with capitalized development, these tons of capitalized development waste were combined with the following unit costs to result in the cost estimate:

- Providencia:
 - Variable: US\$40.00/t; and
 - Fixed: US\$96,000/month.
- Sandra K:
 - Variable: US\$35.00/t; and
 - Fixed: US\$74,400/month.
- Carla:
 - Variable: US\$34.88/t.
- El Silencio:
 - Variable: US\$35.00/t; and
 - Fixed: US\$74,400/month.
- Las Verticales:
 - Variable: US\$30.00/t.

These unit costs are based on either historic costs, which is the case for Providencia, Sandra K and El Silencio, or projected estimates, which is the case for Carla and Las Verticales.

The costs directly associated with each mining area, including Providencia, Sandra K, Carla and El Silencio are budgetary estimates to cover the following items:

- Waste Development for Infrastructure;
- Water Pumping;
- Electricity Infrastructure;
- Compressed Air Infrastructure;
- Ventilation;
- Mine Equipment;
- Decline Development;
- Mine Skips;
- Mine Geology; and
- Mining Area Sustaining.

In support of the mining operations from contracted miners, Segovia will contribute to the maintenance cost associated with these operations, which is included in the capital estimate as Contract Miners Sustaining. This estimate is based on historic costs incurred at the site.

The Maria Dama Plant sustaining capital is a budgetary estimate from Segovia that will be used to maintain the process equipment and are based on historic costs.

Management estimated that it will require infill drilling to convert the mineable resources into reserves and geological exploration to find additional resources, these costs are budgetary estimates from Segovia and are termed Geological Exploration and Infill Drilling.

Segovia is currently finishing the installation of a 44 kV transmission line, which is projected to end in December 2017, these costs are related to contracted services.

All other costs are budgetary estimates based on historic site-specific figures and were calculated as monthly provisions to cover the following:

- Equipment and Infrastructure Maintenance;
- Environment (Concurrent Reclamation and Impact Mitigation);
- I.T.;
- Health & Safety;
- Site Security;
- Site Administration;
- Engineering; and
- Pre-Approved Capex.

No contingencies or closure costs were considered in the capital cost estimate.

21.2 Operating Cost Estimates

SRK and Segovia prepared the estimate of operating costs for the mineable resources 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 21-2.

Table 21-2: Segovia Operating Costs Summary

Description	LoM (US\$000s)	LoM (US\$/t-Mill Feed)	LoM (US\$/oz-Au)
Stoping	504,571	123.82	485.43
Process	114,728	28.15	110.38
Site G&A	70,800	17.37	68.11
Total Operating	\$690,098	\$169.35	\$663.92

Source: GCM/SRK, 2017

21.2.1 Basis for the Operating Cost Estimate

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 mine operates 312 days per year under a daily schedule of two shifts of ten hours.

All of 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 unit costs were used to estimate the LoM operating costs for Providencia, Sandra K and El Silencio. Carla and Vetás Verticales operating costs are based on budgetary estimates from the Segovia technical team. The following unit costs were used to calculate the Segovia operating costs:

- Providencia:
 - RoM Stopping Variable: US\$70.10/t;
 - RoM Stopping Fixed: US\$567,600/month;
 - Production Waste Stopping Variable: US\$40.00/t; and
 - Production Waste Stopping Fixed US\$24,000/month.
- Sandra K:
 - RoM Stopping Variable: US\$44.11/t;
 - RoM Stopping Fixed: US\$158,400/month;
 - Production Waste Stopping Variable: US\$35.00/t; and
 - Production Waste Stopping Fixed US\$18,600/month.
- Carla:
 - RoM Stopping Variable: US\$74.70/t; and
 - Production Waste Stopping Variable: US\$34.88/t.
- El Silencio:
 - RoM Stopping Variable: US\$53.12/t;

- RoM Stopping Fixed: US\$566,000/month;
- Production Waste Stopping Variable: US\$35.00/t; and
- Production Waste Stopping Fixed US\$18,600/month.
- Las Verticales:
 - RoM Stopping Variable: US\$30.00/t; and
 - Production Waste Stopping Variable: US\$30.00/t.

The mine production is also supported by contract miner operations, these are paid for as cost per recovered (Mine and Plant Recovery) gold ounces, which LoM average is estimated at US\$500/recovered Au-oz.

Processing costs were modeled as a fixed cost of US\$220,000/ month and a variable cost of US\$22.00/t-feed. These costs are based on site-specific historic figures. GMC has proposed an initiative to install a water treatment plant at the Maria Dama plant to further eliminate harmful effluent discharges. The proposed water treatment facility would result in somewhat higher plant operating costs, which have not yet been quantified and are not currently captured in the economic model.

Site G&A costs were modeled as a fixed cost of US\$250,000/month and are based on site-specific historic figures.

22 Economic Analysis

The financial results presented here are based on monthly inputs from the production schedule prepared by SRK. All financial data is second quarter 2017 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 to the CIIGSA refinery in Medellin. The costs and discounts associated with the sales of the products are based on this agreement. This study was prepared under the assumption that the project will sell doré containing both gold and silver.

Assumed prices are based on recent historic metal prices. Table 22-1 presents the prices used in the cashflow model, which were also used for mineable resources calculations. SRK included silver in this analysis even though it is not reported in the project mineral resource estimate. However, 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.

Table 22-1: Segovia Price Assumptions

Description	Value	Unit
Gold	1,250	US\$/oz
Silver	18.00	US\$/oz

Source: GCM, 2017

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	25.00	US\$/oz-Au
Payable Silver	85%	
Impurities Penalties	0.00	US\$/oz-doré
Transportation & Insurance	200,000	US\$/year

Source: GCM, 2017

The doré production is shipped to a local refinery in Medellin, Colombia. The products are transported by third-party helicopter to the buyers at an estimated cost of US\$200,000/year.

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 2,039 t/d (365 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 deposit, while Table 22-4 presents the overall summary of the LoM production.

Table 22-3: Segovia Yearly Mine Production Assumptions

	LoM	2017 (H2)	2018	2019	2020	2021	2022	2023	2024	2025	2026
Providencia											
Ore Tonnes (t)	121,030	20,280	50,830	49,920	-	-	-	-	-	-	-
Head Grade (g/t)	24.60	26.09	29.51	19.00	-	-	-	-	-	-	-
Contained Gold (oz)	95,727	17,014	48,219	30,494	-	-	-	-	-	-	-
Sandra K											
Ore Tonnes (t)	479,130	3,250	14,040	34,600	53,900	71,200	75,600	75,600	66,800	55,200	28,940
Head Grade (g/t)	5.20	2.50	3.61	6.00	6.00	5.38	5.20	5.20	5.20	5.20	3.44
Contained Gold (oz)	80,139	261	1,630	6,674	10,398	12,305	12,639	12,639	11,168	9,229	3,196
Carla											
Ore Tonnes (t)	131,942	-	-	-	-	-	-	-	60,473	65,971	5,498
Head Grade (g/t)	8.03	-	-	-	-	-	-	-	8.03	8.03	8.03
Contained Gold (oz)	34,067	-	-	-	-	-	-	-	15,614	17,034	1,419
El Silencio											
Ore Tonnes (t)	1,774,830	31,070	105,300	139,920	180,000	207,360	242,520	249,600	249,600	241,900	127,560
Head Grade (g/t)	5.59	3.52	3.31	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.55
Contained Gold (oz)	319,235	3,519	11,198	26,091	33,565	38,667	45,224	46,544	46,544	45,108	22,775
Las Verticales											
Ore Tonnes (t)	349,500	-	-	-	-	-	-	10,500	85,200	148,200	105,600
Head Grade (g/t)	3.50	-	-	-	-	-	-	3.50	3.50	3.50	3.50
Contained Gold (oz)	39,329	-	-	-	-	-	-	1,182	9,587	16,677	11,883
Total Selective Mining (Contractor + Zandor)											
Ore Tonnes (t)	1,218,456	104,073	197,476	207,632	194,848	184,795	177,170	152,462	-	-	-
Head Grade (g/t)	14.81	18.43	17.02	16.16	15.18	14.84	12.88	9.34	-	-	-
Contained Gold (oz)	580,047	61,663	108,052	107,886	95,110	88,186	73,388	45,762	-	-	-
TOTAL											
Ore Tonnes (t)	4,074,888	158,673	367,646	432,072	428,748	463,355	495,290	488,162	462,073	511,271	267,598
Head Grade (g/t)	8.77	16.16	14.31	12.32	10.09	9.34	8.24	6.76	5.58	5.36	4.56
Contained Gold (oz)	1,148,547	82,457	169,099	171,147	139,073	139,158	131,251	106,127	82,914	88,047	39,274

Source: SRK, 2017

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 22-4: Segovia LoM Mine Production Assumptions

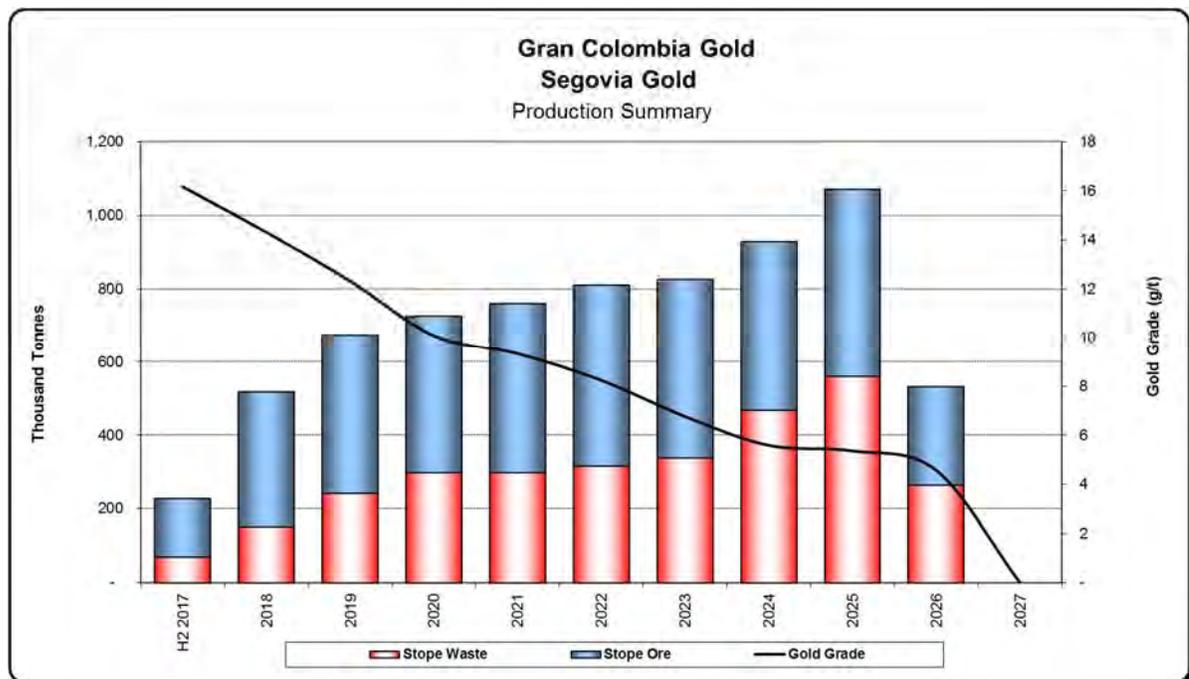
Description	Value	Units
Mine Production		
Underground RoM	4,075	kt
Underground Waste	2,998	kt
Total Material	7,073	kt
Avg. Daily Capacity ⁽¹⁾	2,039	t/d
Development Ratio	0.61	w:o
RoM Grade		
Gold	8.77	g/t
Silver ⁽²⁾	14.55	g/t
Contained Metal		
Gold	1,148.5	koz
Silver ⁽²⁾	1,906	koz

(1) Based on 3,469 total days in LoM

(2) SRK included silver in this analysis even though it is not reported in the project mineral resource estimate. However, 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.

Source: SRK, 2017

Figure 22-1 presents the mine production profile that demonstrates a rising RoM production, which is projected to increase from 640 t/d to a maximum of 1,500 t/d, with a somewhat steady stope waste extraction and a declining gold head grade.



Source: SRK, 2017

Figure 22-1: Segovia Mine Production Profile

The average mill feed is 1,175 t/d (based on a total of 3,469 days over the LoM) over the LoM. The combined process feed rate is currently at 869 t/d and is projected to be ramped up to a maximum

capacity of 1,400 t/d. The combined mill feed has an average head grade of 8.77 g/t Au and 14.55 g/t Ag. The processing circuit is designed to recover doré containing both gold and silver. Table 22-5 presents the projected LoM combined plant production.

Table 22-5: Segovia LoM Mill Production Assumptions

Description	Value	units
RoM Milled	4,075	kt
Avg. Daily Capacity ⁽¹⁾	1,175	t/d
Doré		
Gold Content	1,039.4	koz
Silver Content ⁽²⁾	1,143.4	koz
Recovery		
Gold	91	%
Silver ⁽²⁾	60	%
Doré Yield	2,182.8	koz

⁽¹⁾ Based on 3,469 total days in LoM

⁽²⁾ SRK included silver in this analysis even though it is not reported in the project mineral resource estimate. However, 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.

Source: SRK, 2017

22.3 Taxes, Royalties and Other Interests

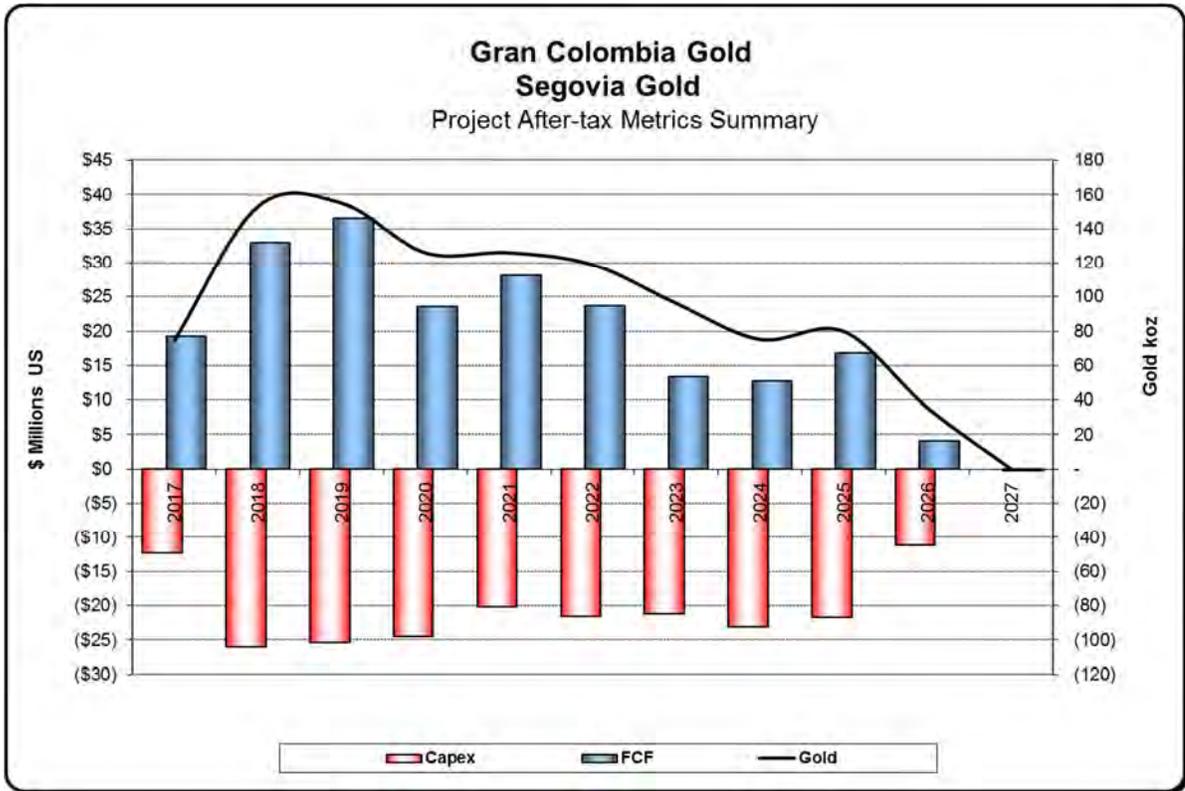
The analysis of the Segovia Project includes an effective corporate income tax rate total of 40% in 2017; 37% in 2018; and declining to 33% thereafter, resulting in a LoM average rate of 34.5% for income taxes on taxable income. A depreciation schedule was calculated by SRK assuming a ten-year straight-line depreciation.

Taxable income is discounted by future and installed asset depreciation. The Project currently holds US\$27.4 million of undepreciated assets that are projected to be completely depreciated by December 2017. A portion of the project operating costs are non-deductible, these are roughly US\$88,000 per month.

Royalties are also deductible 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\$178.8 million, based on a 5% discount rate. The operation is projected to have no negative cash flow periods. Most of the revenue is made until 2022, after which the revenue generation is significantly impacted by the much lower metal grades coming from the mine. 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, 2017

Figure 22-2: Segovia After-Tax Free Cash Flow, Capital and Metal Production

Indicative economic results are presented in Table 22-6. The Project is principally a gold operation, with gold representing some 99% of the total projected revenue. The remainder of the revenue is related to silver, which contributes to the remaining 1% of the revenue. The table evidences that gold is responsible for the clear majority of the revenue generation and 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 22-6: Segovia Indicative Economic Results

Description	Value	Units
Market Prices		
Gold	1,250	US\$/oz
Estimate of Cash Flow (all values in \$000s)		
Concentrate Net Return		\$/oz-Au
Gold Sales	\$1,299,292	\$1,250.00
Silver Sales ⁽¹⁾	\$14,313	\$13.77
Total Revenue	\$1,313,605	\$1,263.77
Smelting and Refining Charges	(\$25,986)	(\$25.00)
Freight & Impurities	(\$2,000)	(\$1.92)
Gross Revenue	\$1,285,619	
Royalties	(\$46,239)	(\$44.48)
Net Revenue	\$1,239,380	
Operating Costs		
Underground Mining	(\$504,571)	(\$485.43)
Processing	(\$114,728)	(\$110.38)
Site G&A	(\$70,800)	(\$68.11)
Total Operating	(\$690,098)	(\$663.92)
Operating Margin (EBITDA)	\$549,282	
Initial Capital	\$0	
LoM Sustaining Capital	(\$207,357)	
Working Capital	\$1,025	
Income Tax	(\$132,403)	
After Tax Free Cash Flow	\$210,546	
NPV at 5%	\$178,040	

⁽¹⁾ SRK included silver in this analysis even though it is not reported in the project mineral resource estimate. However, 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.

Source: SRK, 2017

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 22-7 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 GCM.

Table 22-7: Segovia LoM Annual Production and Revenues

Period	RoM (kt)	Plant Feed (kt)	Doré. (koz) ⁽¹⁾	Free Cash Flow (US\$000s)	Discounted Cash Flow (US\$000s)
2017	158.67	158.67	141.79	19,174	19,174
2018	367.65	367.65	290.77	31,718	30,207
2019	432.07	432.07	294.29	36,285	32,912
2020	428.75	428.75	239.14	23,761	20,526
2021	463.36	463.36	239.28	27,952	22,996
2022	495.29	495.29	225.69	23,573	18,470
2023	488.16	488.16	182.48	13,584	10,137
2024	462.07	462.07	142.57	12,880	9,153
2025	511.27	511.27	151.40	16,704	11,306
2026	267.60	267.60	67.53	4,623	2,980
2027	0.00	0.00	0.00	292	180
Total	4,075	4,075	1,975	210,546	178,040

⁽¹⁾SRK included silver in this analysis even though it is not reported in the project mineral resource estimate. However, 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.

Source: SRK, 2017

Considering the silver by-product credit, the estimated cash cost, including direct and indirect production costs, is US\$722/Au-oz, while All-in Sustaining Costs (AISC), including sustaining capital, is estimated at US\$921/Au-oz. Table 22-8 presents the composition of the Segovia cash costs.

Table 22-8: Segovia Cash Costs

Cash Costs	US\$000's
Direct Cash Cost	
Mining Cost	\$504,571
Process Cost	\$114,728
Site G&A Cost	\$70,800
Smelting & Refining Charges ⁽¹⁾	\$25,986
Freight	\$2,000
Silver By-Product Credits ⁽²⁾	(\$14,313)
Direct Cash Costs	\$703,771
US\$/t-Mill Feed	\$172.71
US\$/Au-oz	\$677.07
Indirect Cash Cost	
Royalties	\$46,239
Indirect Cash Costs	\$46,239
US\$/t-Mill Feed	\$11.35
US\$/Au-oz	\$44.48
Total Direct + Indirect Cash Costs	\$750,010
US\$/t-Mill Feed	\$184.06
US\$/Au-oz	\$721.56
Sustaining Capital Cash Cost (US\$/Au-oz)	\$199.49
All-in Sustaining Costs (US\$/Au-oz)	\$921.05

⁽¹⁾ SRK's standard Cash Cost reporting methodology for NI 43-101 reports includes smelting/refining costs; whereas GCM's cash cost definition for reporting treats these costs as a reduction of the realized gold price and excludes them from its reported total cash cost per ounce.

⁽²⁾ SRK included silver in this analysis even though it is not reported in the project mineral resource estimate. However, 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.

Source: SRK, 2017

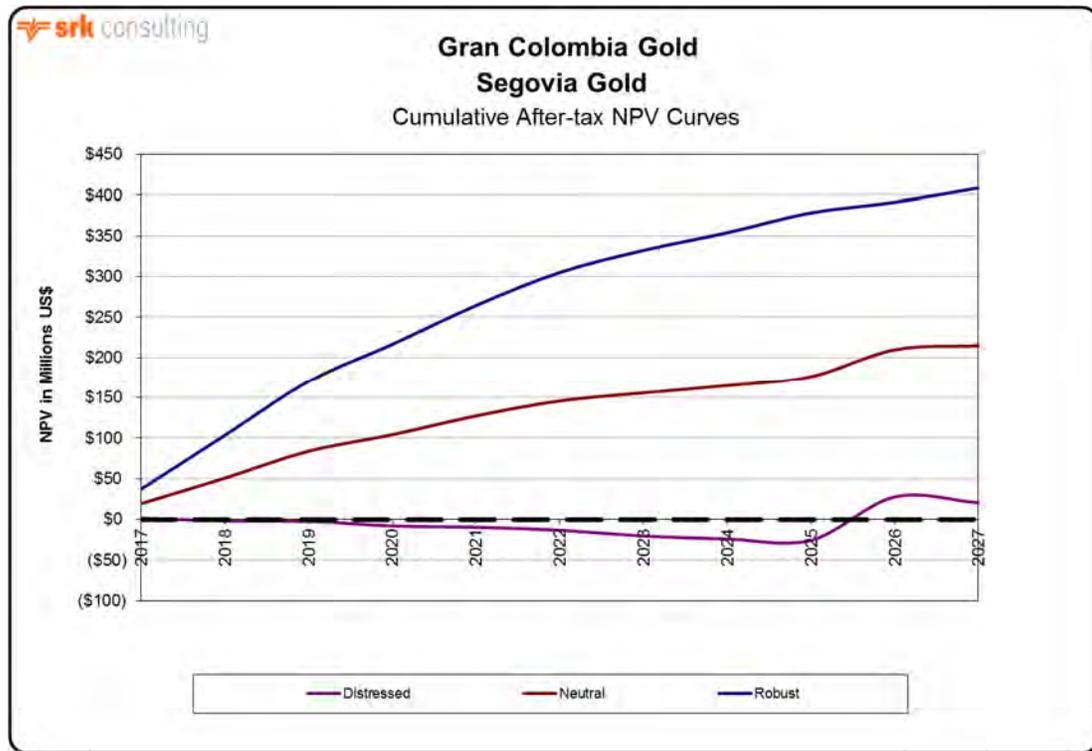
The PEA is preliminary in nature in that it includes Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the PEA will be realized. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

22.5 Sensitivity Analysis

Sensitivity to discount rates and different metal price scenarios were conducted. The results are presented in Figure 22-3 and Figure 22-4.

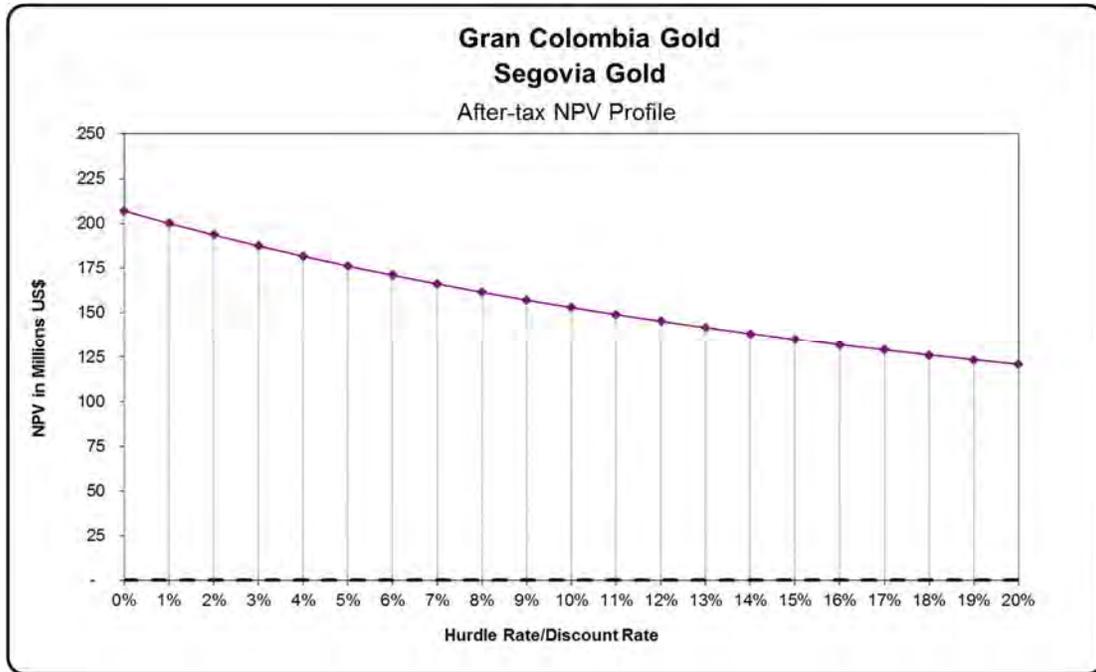
Figure 22-5 presents the behavior of the accumulated after-tax net present value, where:

- Distressed metal prices are 20% lower than neutral prices (US\$1,000/oz Au);
- Neutral metal prices as presented in this section (US\$1,250/oz Au); and
- Robust metal prices are 20% higher than neutral prices (US\$1,500/oz Au).



Source: SRK, 2017

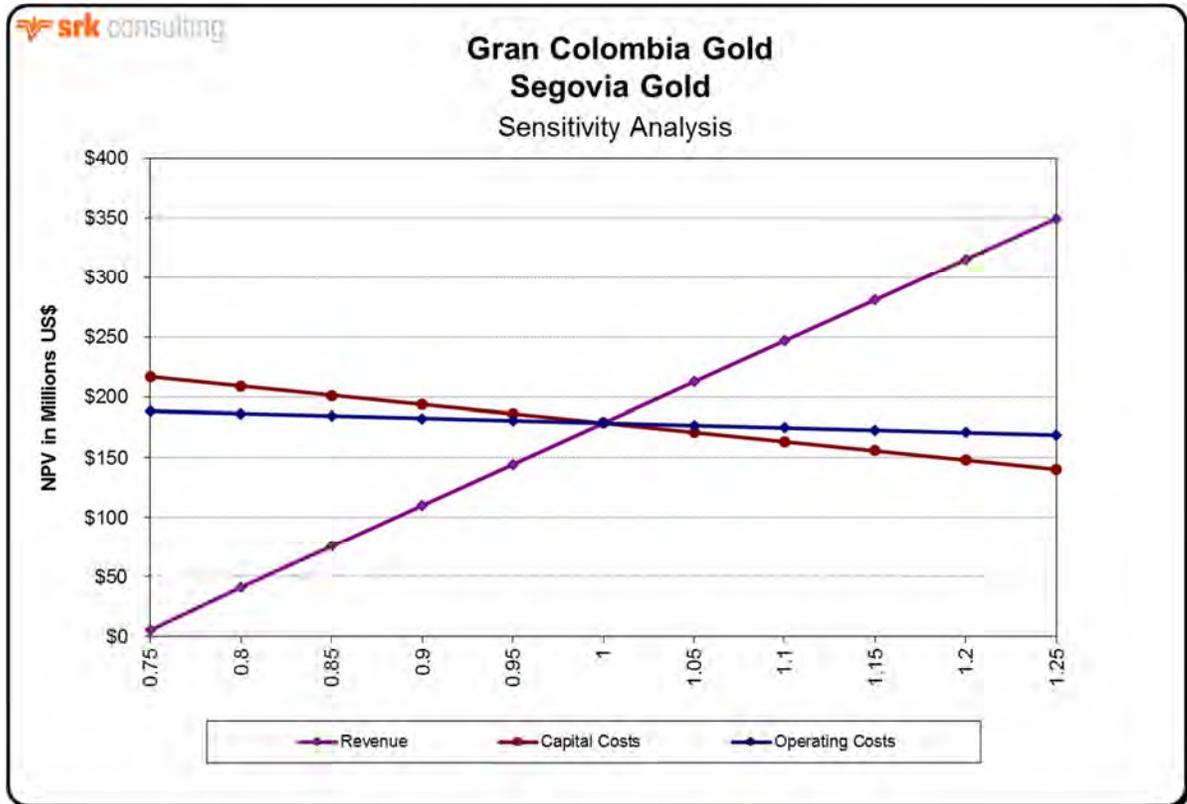
Figure 22-3: Segovia Cumulative NPV Curves



Source: SRK, 2017

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.



Source: SRK, 2017

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.

24 Other Relevant Data and Information

SRK is not aware of any other relevant data or information available at this time which is not disclosed in this report.

25 Interpretation and Conclusions

25.1 Property Description and Ownership

The Company currently own sufficient ground to operate and explore all the currently defined Mineral Resources. Potential exists down dip to the northwest at Providencia and to the North at Sandra K, where mineralization is known to extend onto neighboring licenses to extend the Mineral Resources, if agreements can be reached.

25.2 Geology and Mineralization

SRK used the 3D solids (and interval selections) created in Leapfrog to code the drillholes to differentiate between mineralization and waste, and undertook statistical and geostatistical analyses on the composited data, as constrained by the modelled wireframes. High-grade internal domains were used to reduce the risk of mixing and over smoothing of the highly skewed grade distribution. The 2017 estimate used hard boundaries between high and low grade domains in all cases.

25.3 Status of Exploration, Development and Operations

SRK completed a validation exercise on the electronic database provided, where potentially erroneous data exists in the database. SRK accounted for these data during the classification process. SRK reviewed all QA/QC information available 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.

SRK previously made a number 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 visited Segovia during 2016 to review the sampling protocols as part of on-going mine planning technical assistance and recommended the sampling method be changed from chip sampling the channels to cut channels using a diamond saw. 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.

Infill drilling along with the on-going validation work of the historical database, and surveying of the underground mine workings has resulted in an increase in the Mineral Resources at Segovia. 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 validation of the historical database at El Silencio has increased the volume of material available for estimation in the upper levels of the mine, and within additional known veins.

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.

25.4 Mineral Processing and Metallurgical Testing

GMC's Maria Dama process plant has been in production for many years and the metallurgical requirements for processing ore from the Providencia, Silencio and Sandra K Mines are well understood. As such, no new metallurgical studies have been conducted.

25.5 Mineral Resource Estimate

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 is sufficient for declaration of Indicated and Inferred classifications of resources. Key issues 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, which generally are supported by high resolution drilling or sampling data that feature consistently implemented and monitored QA/QC procedures. A routine channel sampling exercise of the existing veins in exposed levels will increase the confidence in the vein location and grades.
- 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.
- Indicated Mineral Resources in pillars have been limited to areas where a sufficient level of verification channel sampling has been completed by GCM, and a relatively high confidence in the accuracy of the pillar surveys is achieved. For Providencia, these areas largely represent the pillars where the co-operative miners have had limited access to. At Sandra K, while the accuracy in the pillar resources remains 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 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.
- SRK has not classified any of the resources at El Silencio in the Measured category due to uncertainties regarding the data supporting the Mineral Resource Estimate.
- SRK has defined the current Mineral Resource based on a cut-off grade 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.
- The lack of industry-standard "as-built" data delineating mined areas placed some limitations on the current estimate. 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.

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.

Other Factors

The current report discusses the current status of the Project and the operating mines. In addition to the updated Mineral Resources, SRK also opines as follows:

- The updated Mineral Resource Statement in this report is based on SRK proposed changes to the mining method to maximize extraction and improve safety as well as to add confidence to the mine plan by accounting for all material in the production schedule.
- Currently, a room and pillar type mining method is used at Providencia, Silencio and Sandra K areas, where the ramps are located within the mineralization and winzes, angled to follow the dip of the mineralized zone are used for moving material and providing access to various levels.
- For design purposes, new mining areas will use a proposed new cut and fill (C&F) methodology. Existing areas or areas mined early in the mine plan will use the current room and pillar method.
- Although Mineral Reserves are quoted for the Project at various times (i.e., 2010), there are currently no Mineral Reserves declared for the Project based on the current level of study. SRK highlights that there are current commercial operations at the site with an established production history since the Company has taken ownership.

25.6 Mineral Reserve Estimate

There are no Mineral Reserves estimated for this PEA report as the mine schedule includes Inferred Mineral Resources.

In addition, there are currently no Mineral Reserve estimates on the Segovia property that comply with CIM guidelines as follows:

- Underground surveying is lagging in locating areas of mining depletion, particularly in historic mined workings and current artisanal mines, both legal and illegal, in the Project area;
- Hydrological, hydrogeological and geochemical baseline characterization has not been established as of the time of this report;
- Geotechnical design parameters have not been fully incorporated into the mine design; and
- Tailings disposal and water management procedures are often in violation of currently approved western standards.

Provided GCM implement the work substantially as identified in the Recommendations section of this PEA report, then SRK would expect that the formal resource to reserve conversion process can proceed and reserves publicly reported.

25.7 Mining Methods

25.7.1 Geotechnical

Recently exploration holes have been logged for some of the geotechnical parameters required for mine design. Overall, very little geotechnical information exists in historic mining areas. Mine personnel have recently begun collecting basic geotechnical information within the lower levels that are being mined. This data requires thorough QA/QC review and is missing some geotechnical characterization parameters.

Only limited discontinuity information (e.g., orientation, length and spacing of discontinuity sets) and rock mass characterization data for each mine has been collected. Additional data should be collected within proposed future mining areas. The mine has geotechnical personnel dedicated to collecting data for design, but training should be conducted for proper geotechnical mapping and documentation procedures. This training will allow GCM geotechnical personnel to accurately classify rock mass conditions and make necessary adjustments to room and pillar sizes and ground support requirements during mining. Geotechnical mapping should be correlated to corehole data at a minimum of approximately five to ten locations within the existing workings.

Geotechnical core drilling through several future mining locations is limited. Additional geotechnical logging of core in these areas would provide a higher level of confidence in predicting the ground support and stope design requirements. A minimum of five to ten coreholes approximately 30 m in length would be needed to characterize the planned future mining areas. Encountering unexpectedly poor ground conditions may result in increased costs and delays to the development and production schedule, so the need to predict ground conditions is important.

SRK recommends contracting an in-country laboratory to perform additional UCS tests to better define the expected range of intact rock strengths. Based on the limited information available, the footwall and hangingwall intact rock strength is anticipated to be relatively high strength and is not likely to be a geotechnical concern. Having actual UCS data will allow more accurate estimations of drill penetration rates and explosive needs for contractors when bidding on the project.

25.7.2 Mining

Based on the review of the Company LoMP and limited technical work undertaken as part of the PEA, SRK concludes the following;

- The LoMP developed for the Zandor assets has been undertaken at a level of detail suitable for a preliminary economic assessment and SRK therefore considers there to be further potential for optimization of the plan. There is potential for additional material to be added to the Resource through further drilling in the existing mining areas and from additional veins identified by the Company to extend the mine life.
- The contained gold production profile for each mine has been levelled, resulting in a varying tonnage production schedule. However, by proper planning by the Company, the overall processed tonnages should be reasonably stable.
- The Secondary mining phase follows the Primary mining phase with an associated lower mill throughput.
- SRK notes that the individual mines are currently extracting material that is not included in the current Resource model and there is significant scope for the current Resources to be

expanded through additional drilling. As a result, whilst the five-year plan produced by GCM is considered generally achievable, SRK believes mining in areas of lower geological confidence will be required to account for the shortfall in the LoMP.

25.7.3 Mine Dewatering

The estimated total discharge rate from all of the Segovia mines is approximately 190 L/s; the combination of Providencia (~100 L/s) and El Silencio (~ 60 L/s) accounts for ~85% of that total. The mines allow 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 surface using a network of tanks located at strategic locations, hoses and tubing ranging from 2-inches to 12-inches in diameter, and numerous pumps. The dewatering systems appear to be functioning well and are reasonably well documented, particularly in the case of the Providencia Mine.

25.7.4 Mine Ventilation

For the El Silencio Mine, recommended immediate upgrades can produce significant changes to the ventilation system without the expenditure of significant capital. However, while the improved ventilation system will not reach the total calculated airflow requirement of approximately 62.8 m³/s with the current equipment load and personnel distribution as calculated, it will still bring the ventilation system flows much closer than current needs. On the other hand, the recommended long-term solution will require significant upgrades and capital expenditures through the addition of shafts to surface and large surface fan installations. The addition of more equipment to support the cut and fill or mechanized mining areas will require significantly more ventilation infrastructure. Based on a preliminary review of the equipment and personnel load approximately 113.6 m³/s will be required and additional airflow may be necessary for dedicated transfers and alternative or multiple working areas.

The Sandra K Mine currently has only one access (in the future, there will be a raise developed to surface). Fresh air enters the mine through the portal with exhaust air leaving the mine through a flexible duct system. SRK recommended minor short-term ventilation system modifications which include changes to the Level 0 duct and lower area duct systems but SRK has not yet proposed a long term solution.

For the Providencia Mine, there are currently two scenarios under consideration for the future ventilation. Scenario 1 uses a newly constructed ramp that is developed from surface to Level 11 to provide additional ventilation to the mine. The associated total calculated airflow requirement is approximately 69.7 m³/s. Scenario 2 makes use of a pipe conveyor system from Level 11 to the top of the apique system with the development of a new access portal. The associated total calculated airflow requirement is approximately 55.6 m³/s.

25.8 Recovery Methods

GCM processes ore from the Providencia, El Silencio and Sandra K mines at its Maria Dama process plant which includes unit process operations that are standard to the industry:

- Average plant throughput has increased from about 650 to 780 t/d over the period from 2014 to 2016;
- Overall gold recovery has been relatively constant at about 90% over the period from 2014 to 2016;

- Silver recovery is not monitored, but is a relatively minor contributor to overall project economics;
- During 2015 plant operating costs averaged US\$25.23/t ore processed, which was equivalent to US\$57.34/ Au oz produced. During 2016 the process plant operating cost averaged US\$29.52/t processed and was equivalent to US\$66.58/Au oz produced;
- Planned process plant capital expenditures for 2017 total US\$1.96 million. Most of the identified capital expenditures are for replacement and refurbishment of existing equipment and facilities;
- Planned capital expenditures for 2018 total US\$3.83 million;
- SRK has observed that the tailings management protocol is not consistently adhered to and that untreated tailings are regularly discharged directly into a creek located downstream from the process plant. GCM has stated that they are taking steps to remediate this issue, however, SRK has not verified the extent to which proper tailing disposal protocols have been implemented; and
- Based on the current mine plan, the planned construction of the 2,500 t/d Pampa Verde process plant will not be required.

25.9 Project Infrastructure

25.9.1 Infrastructure and Logistic Requirements

The Project is an active mining project with the majority of the infrastructure required for its ongoing operation already in place with respect to access, facilities, electrical power, fuel supply, water supply, and logistics. However, there are significant issues with site-wide water management operations and TSF design/capacity parameters.

25.9.2 Tailings Storage Facility

The mine currently stores wet tailings in one of 3 unlined storage ponds located just above the plant site. The tailings settle in the ponds and surface water decants from a temporary vertical PVC riser and through horizontal piping out of the face of the embankment. After the tailings have settled, they are excavated from the pond and transported by truck to a permanent stacked storage location. The tailings are contained in a valley by a temporary berm constructed with saprolite excavated from the area. The capacity of the current tailings storage area is unknown and likewise how long it can be used.

Additional engineering must be conducted to locate and design a proper tailings storage facility at a FS level. GCM has indicated that a geotechnical field and laboratory testing program was conducted by Knight Piésold and a tradeoff study comparing several design options was subsequently carried out by AMEC. SRK has not been provided with details or reports for these investigations. It is possible that the two studies contain sufficient information to prepare a FS level design.

25.9.3 Water Management

The underground dewatering systems at Providencia, El Silencio and Sandra K are relatively well documented and appear to be well understood. Clearly the mine is dry enough to allow mining with the current system that allows passive inflow of water into the mine, gravity drainage to the bottom, and pumping to surface with a network of pumps, hoses and pipes, and tanks excavated in the rock.

The documented flows out of the El Silencio and Providencia mines total about 160 L/s, while the estimated total for all of the Segovia mines has been cited at 190 L/s. The additional cumulative flow of 30 L/s comes from Sandra K, Carla and the Verticales project.

From a hydrogeologic standpoint, there are no groundwater data from outside of the mine workings to indicate where the water table is located, what the distribution of hydraulic pressures are, or what the rock permeability is. Furthermore, it is unclear what sort of measures are in place to advance pilot or probe holes in advance of the mine face to explore for high water pressure zones that might bring excessive water into the mine. Based on reports from SRK staff that have visited the site, a subset of the fault zones appear to transmit non-trivial amounts of water into the mine, and flow increases when it is raining at the surface. The indication is that the mine workings are well-connected to the surface features. Additional work outlined in Section 26 is recommended to shore up the hydrogeologic data gaps.

Very little documentation related to the infrastructure for water management at the site was provided. What anecdotal information is available suggests that water supply is not an issue for the project, but management of waste water within and around the TSFs will be challenging as no controls to manage water runoff or limit discharge from the site were identified. Without a mine water balance or flow monitoring this discharge cannot be quantified.

Water is not reclaimed from the TSFs and untreated decant water and occasionally untreated tailings are discharged to the drainages below the TSF. This practice is unacceptable and it will be essential for the Mine to address discharges of process water from the mine facilities.

25.10 Environmental Studies and Permitting

Environmental Studies and Permitting

The following interpretations and conclusions have been drawn with respect to the currently available information provided and reviewed 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 construction. The project currently operates under the 2012 PMA. The original PMA was approved in 2004 and renewed in 2008. In 2011, environmental rights and obligations were granted to Zandor Capital. In 2012, the mining operation and its environmental management was updated before Corantioquia. 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 of 2016, additional information was requested by Corantioquia. This supplemental information was delivered on August 1, 2017. The authority has all the information and is currently under evaluation. The Company submitted an updated PMA to reflect the current operation in 2016. The decision by the regulatory authority on this document is expected by the end of 2017.
- **Environmental and Social Management:** Environmental and social issues are currently managed in accordance with the approved PMA. The 2012 PMA represents an improvement in management practices, which are legally binding. Substantial financial resources and technical specialist support will be required to implement the environmental monitoring and

mitigation measures presented in the 2012 PMA update (Note: The 2016 PMA has not yet been approved).

- **Water Management:** Untreated mine effluents are 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.
- **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 GCM, there has historically been poor compliance with these standards. GCM has improved the auditing of compliance of the contract miners but health and safety risks may be associated with uncontrolled 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.
- **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 are no other known environmental issues that could materially impact GCM'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.

On the other hand, 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 GCM'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 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:

- **ARD/ML:** Insufficient data exist to understand the current and future acid rock drainage and metal leaching (ARD/ML) potential. A substantial data collection effort needs to be designed and implemented for tailings, waste rock, and mine workings.

- **Tailings:** Current and future tailings are the mining waste component that represent the greatest risk in terms of environmental geochemistry. The tailings must be subjected to a detailed 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 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.
- **Mine Water:** A water balance is needed, per Section 25.9.3, in order to understand the quantities and management requirements for contact water. Specifically pertinent to geochemistry will be mine water (e.g., dewatering effluent), and contact water associated with tailings and waste rock dumps.
- **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 after closure. A requirement for long-term post-closure water treatment would add significant cost to closure estimates.

25.11 Capital and Operating Costs

The work indicates that the project will require a sustaining capital of US\$207.4 million Table 25-1 summarizes the capital estimate.

Table 25-1: Segovia Capital Estimate Summary

Description	LoM Sustaining Capex (US\$000s)
Development	92,402
Providencia	6,227
Sandra K	8,835
Carla	3,297
El Silencio	26,117
Las Verticales	4,000
Contract Miners Sustaining	3,088
Maria Dama Plant	19,167
Assay Lab	918
Equipment and Infrastructure Maintenance	10,013
Environment	1,554
IT	577
Health & Safety	2,108
Security	1,227
Administration	607
Geological Exploration & Infill	26,320
44 kV Transmission Line	902
Total Capital	\$207,357

Source: GCM/SRK, 2017

SRK and Segovia prepared the operating costs estimate for the associated mineable resources production schedule. These costs were subdivided into the following categories:

- Mining Operating Expenditure;
- Processing Operating Expenditure; and
- G&A Operating Expenditure.

The resulting LoM cost estimate is presented in Table 25-2.

Table 25-2: Segovia Operating Costs Summary

Description	LoM (US\$000s)	LoM (US\$/t-Mill Feed)	LoM (US\$/oz-Au)
Stopping	504,571	123.82	485.43
Process	114,728	28.15	110.38
Site G&A	70,800	17.37	68.11
Total Operating	\$690,098	\$169.35	\$663.92

Source: GCM/SRK, 2017

Underground mining costs are the most relevant direct cost of the operation, corresponding to approximately 73% of the on-site operating costs. Smelting and refining charges are the most relevant of the off-site costs, as these make up approximately 93% of these costs.

25.12 Economic Analysis

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.

Segovia is a gold project, where the revenue contribution of each of these metals is 99%. Silver is considered by-products of the operation, where this metal contributes about 1% of the projected revenue.

Using the assumptions discussed in the previous sections, the Project is valued at an after-tax NPV 5% of US\$178.8 million. The Project is expected to produce an average of 116 koz/y Au when operating at full capacity (2018-2025) with annual production in the first five years averaging 127 koz/y. The Project's cash costs are estimated at US\$722/oz Au and its All-in Sustaining Costs (AISC) are estimated to be US\$921/Au-oz.

The Project is most sensitive to changes in metal prices. The impact of exchange rate fluctuations was not evaluated, as all costs were estimated directly in US\$.

Even under distressed (-20%) metal prices of US\$1,000/oz Au, the project is slightly above break even on an after-tax NPV 5% basis with the project breakeven point occurring when metal prices are reduced by about 26% to US\$950/oz Au.

26 Recommendations

26.1 Recommended Work Programs

26.1.1 Property Description and Ownership

The Company currently own sufficient ground to operate and explore all the currently defined Mineral Resources. SRK recommends that efforts should be made to reach agreements with neighboring license holders where current mineralization is known to extend.

26.1.2 Geology and Mineralization

See 26.1.5.

26.1.3 Status of Exploration, Development and Operations

See 26.1.5.

26.1.4 Mineral Processing and Metallurgical Testing

No recommendations are made for additional processing and metallurgical testing since the process plant has been in operation for decades and the plant feed characterization is well understood.

26.1.5 Mineral Resource Estimate

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 Operations 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 currently available (dewatered);
- Further work is required to better understand the potential economic viability for mining of the lower confidence material within pillars at Providencia and El Silencio;
- 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;
- GCM have identified areas for possible extension and infill drilling within the 2017 budget. SRK has reviewed the proposed program and agrees these areas provide near term targets; and
- 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.

Table 26-1 summarizes the costs for recommended work programs, and Table 26-2 summarizes the current approved 2017 exploration budgets.

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
Geology and Resource	Updated 3D survey depletion model	\$50,000
Total US\$		\$50,000

Source: SRK, 2017

Table 26-2: Summary of Current 2017 Segovia Project Exploration Budget

Discipline	Program Description	Cost (US\$)
2017 Drilling Program	Infill step-out and brownfield. Estimated 153 holes for 22,250 from surface and UG locations	4,000,000
Total US\$		\$4,000,000

Source: GCM, 2017

26.1.6 Mineral Reserve Estimate

There are currently no Mineral Reserve estimates on the Segovia property that comply with CIM guidelines.

26.1.7 Mining Methods

Geotechnical

GCM contracted Geomecánica del Perú to conduct a detailed geomechanical study at Providencia, El Silencio, Sandra K and Carla mines. This study has collected the characterization data, but no analysis of the data is available for this PFS level design. The study should address the following topics at a minimum:

- Natural conditions of mineralized structures;
- Predicted stability conditions of underground excavations;
- Dimensions of rooms and pillars for each mining area;
- Safety factors for pillar designs;
- Sizing of panels using the empirical stability chart:
 - Determining the Stability Number, N based on expected range of Q values; and
 - Calculation of Hydraulic Radius of open unsupported areas.
- Dimensions of sill pillars;
- Mine-scale stability analysis using numerical modeling;
- Stability analysis of blocky ground areas considering average discontinuity sets for different underground areas;
- Standup time for unsupported areas with anticipated rock qualities;
- Assessment of damage effects of blasting;
- Development of GSI geomechanical table for anticipated rock mass domains;
- Designs for ground support levels considering rock quality for:
 - Mechanically or grout anchored bolts and split sets;

- Support with mesh only;
- Support with mesh and straps;
- Support with timber cribs; and
- Support with shotcrete overlay.
- Pull tests should be performed to quantify the actual load carrying capacity of bolts and split sets in various ground conditions.

Mining

Based on the review of the Company's LoMP and limited technical work undertaken as part of the PEA, SRK recommends the following;

- The exploration program that is supported by this Technical Report is implemented with a view to upgrading the knowledge of the deposits in order to classify reserves in accordance with the CIM Code as part of future revisions to the mine plans;
- More investigation and analysis is undertaken into the costs of production from the various areas in order to get a better handle on cut-off grades;
- Better tracking and monitoring of the secondary mining activities in order to improve safety, accountability and reconciliation;
- More detailed short term underground mine planning be undertaken to optimize and implement the LoMP generated by the Company;
- Detailed development designs, ground support parameters, and production plans are still to be developed based on the results of the geo-mechanical analysis to be undertaken in the coming year; and
- Produce an updated underground mining and geotechnical study (US\$200,000 to US\$300,000).

26.1.8 Recovery Methods

The tailings management protocol is not consistently adhered to resulting in untreated tailings being regularly discharged directly into a creek located downstream from the process plant. It will be essential for GCM to address this issue in the near future by:

- Installing a tailings treatment facility to detoxify and neutralize the tailings prior to exiting the process plant;
- Construct a suitable tailing storage facility with sufficient capacity to properly store process plant tailings in an environmentally acceptable manner; and
- Testing and design work for the recommended cyanide destruction circuit is estimated at US\$50,000.

26.1.9 Project Infrastructure

Infrastructure and Logistics

No recommendations are necessary.

Tailings Storage Facility

Review of capacity and tailings dam design work to the required levels as related to the updated mine plans at an estimated cost of US\$100,000 if SRK can incorporate information from previous Knight Piésold and AMEC reports.

Water Management

Surface Water

Information related to water management and characterization at the site is very limited and the knowledge base supporting hydrology and water use at the site must be expanded for the site to meet industry acceptable standards. Several data gaps associated with surface water and water management were identified in the April 2017 gap analysis (SRK, 2017b), none of which were provided to SRK for this study. The following work is recommended to further that goal and the associated costs are presented in Table 26-3:

- 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 runoff relationship and establish baseline flows in the drainages impacted by the site.
- SRK has observed that GCM does currently monitor mine dewatering discharges but recommends that more effort is required to quantify the amount of mine dewatering flows recycled for use in the process and the amount discharged to the environment.
- An assessment of the water resources availability is required in order to establish when abstraction can take place and the regulatory and environmental consequences of abstraction.
- A drainage system design should be developed for the site based on sound hydrological principles and a defined storm event return period or magnitude of the design storm.
- 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.
- SRK understands that the Company is designing additional facilities to maximize the use of recycled water in the plant operations and from the tailings facility. A water use policy should be applied during the project construction and operation, such that water recycling is maximized and water treatment and release is minimized.
- The company has indicated that additional water management infrastructure has been or will be constructed in 2017, as well as new operating procedures related to mine water management. A QP site visit to confirm these improvements should be performed.

Table 26-3: Cost Estimate for Surface Water Management Recommendations

				Baseline Flow Monitoring	Baseline Analysis	Hydrologic Analysis	Water Balance Modeling	Reporting	
Project Role	PERSONNEL	Hourly Rate \$US	Total Hours	Total Cost	Estimated Hours				
	Principal Review	\$265	36	\$9,540	4	8	8	8	8
	Principal Engineer	\$200	436	\$87,200	16	20	40	240	120
	Senior Hydrologist	\$135	260	\$35,100	20	80	120	0	40
	Consultant Hydrologist	\$140	320	\$44,800	100	80	20	80	40
	Technical Review	\$165	78	\$12,870	10	20	40	0	8
	Drafting and Word Processing	\$105	96	\$10,080	8		8		80
TOTAL ESTIMATED LABOR COST				\$199,590	\$23,450	\$31,420	\$36,560	\$61,320	\$46,840
DIRECT JOB COSTS				Total Cost	Estimated Cost				
	Travel Expenses (Vehicle, Lodging, Meals, Airfare, Fuel)			\$6,000	\$6,000				
	Vendor Costs (flow monitoring installation)			\$35,000	\$35,000				
	Field Equipment & Instrumentation			\$15,000	\$15,000				
	Communication fee (10% of labor)			\$19,959	\$2,345	\$3,142	\$3,656	\$6,132	\$4,684
TOTAL ESTIMATED DIRECT COST				\$75,959	\$58,345	\$3,142	\$3,656	\$6,132	\$4,684
TOTAL ESTIMATED COST				\$275,549	\$81,795	\$34,562	\$40,216	\$67,452	\$51,524

Assumes installation of 2 small drainage weir structures adjacent to existing infrastructure, ongoing data collection by site environmental staff.
 Source: SRK, 2017

Groundwater and Dewatering

To advance the project to the PFS level, the Company needs to demonstrate a reasonable understanding of the surrounding hydrogeology. 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 to support a PFS document. The goal of the program is to develop a basic understanding of the head distribution (water levels) around the mine. From that, SRK will prepare a model, and calibrate to the existing conditions and mine inflows which will provide large-scale information on rock properties. With a well calibrated model based on field-derived data and measured mine inflows, a PFS-level benchmark will be achievable. The program will involve 4 work phases and a reporting phase as described below.

1. Data review, complete mine reconnaissance, documentation of mine inflows, estimation of direct vertical recharge into the mine, and development of a conceptual hydrogeologic model.
2. Drill coreholes into the hangingwall 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).

3. 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.
4. 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 PFS-level evaluation. Additionally, the model can be used to predict future inflows based on changing mine plans.
5. A fifth task consists of reporting and documentation for the PFS (43-101).

Table 26-4 shows the groundwater characterization scope and costs.

Table 26-4: Cost Estimate for Groundwater Management Recommendations

					Phase 1 Recon, Data Review, Initial Inflow Analysis	Phase 2 - underground core drilling and Shut-in Instrumentation	Phase 3 - Surface Well Drilling, Logistics and planning	Analysis and GW Flow Modeling	Reporting
Project Role	PERSONNEL	Hourly Rate \$US	Total Hours	Total Cost	Estimated Hours				
	Principal Hydrogeologist Review	\$205	164	\$33,620	4			120	40
	Principal Hydrogeologist	\$200	420	\$84,000	80	20	160	40	120
	Senior Hydrogeologist	\$150	536	\$80,400	4	80	252	200	
	Consultant Hydrologist	\$125	976	\$122,000	272	252	252	120	80
	Technical Review	\$190	14	\$2,660	4	2			8
	Drafting and Word Processing	\$105	88	\$9,240	8				80
TOTAL ESTIMATED LABOR COST				\$331,920	\$53,020	\$47,880	\$101,300	\$77,600	\$52,120
DIRECT JOB COSTS				Total Cost	Estimated Cost				
	Travel Expenses (Vehicle, Lodging, Meals, Airfare, Fuel)			\$35,640	\$6,000	\$7,200	\$8,040	\$7,200	\$7,200
	Vendor Costs (drilling)			\$848,000		\$168,000	\$680,000		
	Field Equipment & Instrumentation			\$25,000		\$25,000			
	Communication fee (10% of labor)			\$33,192	\$5,302	\$4,788	\$10,130	\$7,760	\$5,212
TOTAL ESTIMATED DIRECT COST				\$941,832	\$11,302	\$204,988	\$698,170	\$14,960	\$12,412
TOTAL ESTIMATED COST				\$1,273,752	\$64,322	\$252,868	\$799,470	\$92,560	\$64,532

Source: SRK, 2017

26.1.10 Environmental Studies and Permitting

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 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.
- As covered per Section 26.1.8, complete the testing program and installation of the H₂O₂ cyanide destruction circuit for the tail end of the mineral processing operation at the Maria Dama plant at Segovia. Discontinue the practice of discharging untreated tailings into the local drainage, which according to the Company, was initiated in July 2017, though SRK has been unable to confirm this new commitment.
- 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:
 - Capture and contain all underground mine dewatering water and treat, as necessary, prior to discharge;
 - 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); and
 - Capture and contain all seepage and effluent from the tailings settling basins and treat, as necessary, prior to discharge. SRK understands that the Company has committed to completing this by the end of 2017.
- Substantial financial resources and technical specialist support will be required to implement the environmental monitoring and mitigation measures presented in the approved 2012 PMA update (Note: The 2016 PMA update has not yet been approved). The original cost estimate of US\$3,500,000 (2012 dollar basis) is escalated in this report to US\$3,666,836 using a CostMine™ U.S. Mill Capital Cost Index escalation factor of 1.048 (Section C1, Table 5, April 2017).

Geochemistry

The observations and recommendations for geochemical issues 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:
 - 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; and
- Soils in and around the mine, to provide a baseline condition with respect to artisanal mining.
- As covered per Section 26.1.9, to support geochemical characterization activities with respect to 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.
- Estimated cost to carry out a program to characterize the current and future geochemical loadings to the environment is US\$255,000 and will involve:
 - Sampling and analysis of tailings and waste rock;
 - Design, coordination, and supervision of monitoring the well installation;
 - Quarterly monitoring well and surface water sampling for one year;
 - Data interpretation and reporting; and
 - Laboratory analytical costs.

26.1.11 Capital and Operating Costs

All production costs are based on currently incurred costs and possible gains of bringing the mines production scale from 640 t/d to 1,500 t/d have not been completely evaluated. It is recommended that a specific study about this optimization is undertaken as part of a future Prefeasibility Study.

26.1.12 Economic Analysis

It is recommended that exchange rate information is included in future evaluations to better estimate the impact of exchange rate fluctuations. The estimated cost is US\$4,500 to incorporate exchange rate functionality into the Project TEM.

26.2 Recommended Work Program Costs

Table 26-5 summarizes the costs for recommended work programs as discussed in Section 26.1 that, if executed, will bring the Project to a point that it will be ready for a PFS to be undertaken.

Table 26-5: Summary of Costs for Recommended Work

Discipline	Program Description	Cost (US\$)	No Further Work is Recommended Reason:
Property Description and Ownership	Expand Property License Areas	On-going	
Geology and Mineralization	N/A		Well Understood
Status of Exploration, Development and Operations	See Mineral Resource Estimate		
Mineral Processing and Metallurgical Testing	N/A		Well Understood
Mineral Resource Estimate	Ongoing Drilling/Channel Sampling and Modeling	\$4,050,000	
Mineral Reserve Estimate	Update		Do at PFS Stage
Mining Methods	Update Mining/Geotechnical Study	\$250,000	
Recovery Methods	Cyanide destruction circuit testing and design	\$50,000	
Project Infrastructure	Infrastructure		Well Understood
	TSF review and design	\$100,000	
	Hydrological/Hydrogeological site characterization	\$1,550,000	
Environmental Studies and Permitting	Implement the environmental monitoring and mitigation measures presented in the current 2012 PMA.	\$3,700,000	
	Geochemical Characterization Program	\$255,000	
Capital and Operating Costs	Update		Do at PFS Stage
Economic Analysis	Incorporate exchange rate functionality into technical-economic model	\$4,500	
Total		\$9,959,500	

Source: SRK, 2017

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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.
Hangingwall	The overlying side of an orebody or stope.
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
Ag	silver
Au	gold
AuEq	gold equivalent grade
°C	degrees Centigrade
CoG	cut-off grade
cm	centimeter
cm ²	square centimeter
cm ³	cubic centimeter
cfm	cubic feet per minute
°	degree (degrees)
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
ft	foot (feet)
ft ²	square foot (feet)
ft ³	cubic foot (feet)
g	gram
gal	gallon
g/L	gram per liter
gpm	gallons per minute
g/t	grams per tonne
ha	hectares
hp	horsepower
HTW	horizontal true width
ICP	induced couple plasma
ID2	inverse-distance squared
ID3	inverse-distance cubed
kg	kilograms
km	kilometer

Abbreviation	Unit or Term
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
kWh/t	kilowatt-hour per metric tonne
L	liter
L/sec	liters per second
L/sec/m	liters per second per meter
LoMP	Life-of-Mine Plan
m	meter
m ²	square meter
m ³	cubic meter
masl	meters above sea level
mg/L	milligrams/liter
mm	millimeter
mm ²	square millimeter
mm ³	cubic millimeter
Moz	million troy ounces
Mt	million tonnes
m.y.	million years
NI 43-101	Canadian National Instrument 43-101
oz	troy ounce
%	percent
ppb	parts per billion
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
RC	rotary circulation drilling
RoM	Run-of-Mine
RQD	Rock Quality Description
SEC	U.S. Securities & Exchange Commission
sec	second
SG	specific gravity
SPT	standard penetration testing
st	short ton (2,000 pounds)
t	tonne (metric ton) (2,204.6 pounds)
t/h	tonnes per hour
t/d	tonnes per day
t/y	tonnes per year
TSF	tailings storage facility
µm	micron or microns
V	volts
VFD	variable frequency drive
W	watt
XRD	x-ray diffraction
y	year

Appendices

Appendix A: Certificates of Qualified Persons

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 "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 (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 32 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 1.10.2, 20.1.3, and portions of Sections 25 and 26 summarized therefrom of this 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 28th Day of September, 2017.

"Signed / Sealed"

David Bird, MSc, PG, RM-SME

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CERTIFICATE OF QUALIFIED PERSON

I, David Hoekstra, BSc Civil Engineering, P.E, do hereby certify that:

1. I am Principal Consultant (Civil 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 "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 (the "Technical Report").
3. I graduated with a degree in Civil Engineering from Colorado State University in 1986. I am a Professional Engineer of the States of Alaska, Colorado, Montana, South Carolina, and Wyoming. I have worked as an Engineer for a total of 30 years since my graduation from university. My relevant experience includes the design and implementation of mine water management systems and storm water controls for numerous PEA, PFS, FS-level and operating 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 hydrology Sections 16.8.2, 18.3.1, and portions of Sections 25 and 26 summarized therefrom of this 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 28th Day of September, 2017.

"Signed / Sealed"

David Hoekstra, BSc Civil Engineering, P.E

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Europe
North America
South America

CERTIFICATE OF QUALIFIED PERSON

I, Eric Olin, MSc, MBA, RM-SME do hereby certify that:

1. I am a Principal Process Metallurgist of SRK Consulting (U.S.), Inc., 1125 Seventeenth Street, Suite 600, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia", with an Effective Date of August 7, 2017 (the "Technical Report").
3. I graduated with a Master of Science degree in Metallurgical Engineering from the Colorado School of Mines in 1976. I am a Registered Member of The Society for Mining, Metallurgy and Exploration, Inc. I have worked as a Metallurgist for a total of 39 years since my graduation from the Colorado School of Mines. My relevant experience includes extensive consulting, plant operations, process development, project management and research & development experience with base metals, precious metals, ferrous metals and industrial minerals. I have served as the plant superintendent for several gold and base metal mining operations. Additionally, I have been involved with numerous third-party due diligence audits, and 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 November 29, 2016 for two days.
6. I am responsible for mineral processing and metallurgy Sections 1.4, 1.8, 13, 17, and portions of Sections 25 and 26 summarized therefrom of this 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 28th Day of September, 2017.

"Signed / Sealed"

Eric Olin, MSc, MBA, RM-SME

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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 "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 (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 29 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 have not visited the Segovia property.
6. I am responsible for infrastructure Sections 1.9, 5, 18 except for 18.2, and portions of Sections 25 and 26 summarized therefrom of this 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 28th Day of September, 2017.

"Signed / Sealed"

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 "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 (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 March 15, 2015 for five days; May 29, 2016 for six days; November 27, 2016 for five days; and February 6, 2017 for four days.
6. I am responsible for background, geology and resource estimation Sections 1.1, 1.2, 1.3, 1.5, 4 except 4.5, 6, 7, 8, 9, 10, 11, 12, 14, 23, 24, and portions of Sections 25 and 26 summarized therefrom of this 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 compiled previous Mineral Resource Estimate for Segovia dated March 2, 2012 and Mineral Resource Estimate for Carla dated April 2, 2012. Additionally, acted as QP for the Mineral Resource Statements for the combined projects dated August 1, 2013 and March 15, 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 28th Day of September, 2017.

"Signed and Sealed"

Benjamin Parsons, MSc, MAusIMM

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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 "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 (the "Technical Report").
3. I graduated with a Bachelor's 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 March 15, 2015 for five days; May 29, 2016 for six days; and November 29, 2016 for two days.
6. I am responsible for mine design and mine planning Sections 1.6, 1.7.2, 1.7.4, 1.11, 1.12, 2, 3, 15, 16 except 16.2 and 16.8, 19, 21, 22, 27, 28 and portions of Sections 25 and 26 summarized therefrom of this 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 providing technical assistance and developing short-term mine plans, budgeting cost estimates, and mine design for the project. Additionally, acted as QP for the Mineral Reserve Statement for the combined projects dated March 15, 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 28th Day of September, 2017.

"Signed / Sealed"

Fernando Rodrigues, BS Mining, MBA,
MMSAQP [01405QP]

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CERTIFICATE OF QUALIFIED PERSON

I, John Tinucci, Ph.D., P.E., ISRM, do hereby certify that:

1. I am a Principal Geotechnical 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 "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 (the "Technical Report").
3. I graduated with a degree in B.S. in Civil Engineering from Colorado State University, in 1980. In addition, I have obtained a M.S. in Geotechnical Engineering from University of California, Berkeley, in 1983 and I have obtained a Ph.D. in Geotechnical Engineering, Rock Mechanics from the University of California-Berkeley in 1985. I am member of the American Rock Mechanics Association, a member of the International Society of Rock Mechanics, a member of the ASCE Geolnstitute, and a Registered Member of the Society for Mining, Metallurgy & Exploration. I have worked as a Mining and Geotechnical Engineer for a total of 31 years since my graduation from university. My relevant experience includes 34 years of professional experience. I have 15 years managerial experience leading project teams, managing P&L operations for 120 staff, and directed own company of 8 staff for 8 years. I have technical experience in mine design, prefeasibility studies, feasibility studies, geomechanical assessments, rock mass characterization, project management, numerical analyses, underground mine stability, subsidence, tunneling, ground support, slope design and stabilization, excavation remediation, induced seismicity and dynamic ground motion. My industry commodities experience includes salt, potash, coal, platinum/palladium, iron, molybdenum, gold, silver, zinc, diamonds, and copper. My mine design experience includes open pit, room and pillar, (single and multi-level), conventional drill-and-blast and mechanized cutting, longwall, steep narrow vein, cut and fill, block caving, sublevel caving and cut and fill longhole stoping and paste backfilling.
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 geotechnical Sections 1.7.1, 16.2 and 18.2, and portions of Sections 25 and 26 summarized therefrom of this 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 was to review and provide recommendations for the geotechnical memorandums on ground conditions associated with the proposed footwall decline at Providencia and geotechnical gaps analysis.
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 28th Day of September, 2017.

"Signed / Sealed

John Tinucci, Ph.D., P.E.

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CERTIFICATE OF QUALIFIED PERSON

I, Paul Williams, MS Eng., PG, SME -RM do hereby certify that:

1. I am Principal 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 "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 (the "Technical Report").
3. I graduated with a degree in Geological Engineering from Montana Tech in 1985. In addition, I obtained a Master's Degree in Civil Engineering from University of Massachusetts at Lowell in 1993. I am a Registered Member of the Society for Mining, Metallurgy, and Exploration (SME). I am a certified Professional Geologist (Wyoming PG-2538), and a certified Professional Hydrogeologist (98-HG-1500) with the American Institute of Hydrology. I have worked as a Hydrogeologist for a total of 29 years since my graduation from university. My relevant experience includes design and implementation of large-scale field projects to support dewatering studies, groundwater flow modelling in support of open pit and underground mine planning and mine dewatering, and management of the hydrogeology 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 hydrogeology Sections 1.7.3, 16.8 except 16.8.2, 18.3.2, and portions of Sections 25 and 26 summarized therefrom of this 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 28th Day of September, 2017.

"Signed / Sealed"

Paul Williams, MS Eng., PG, SME -RM [4054721]

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CERTIFICATE OF QUALIFIED PERSON

I, Mark Willow, CEM do hereby certify that:

1. I am Practice Leader of SRK Consulting (U.S.), Inc., 5250 Neil Road, Reno, Nevada 89511.
2. This certificate applies to the technical report titled "NI 43-101 Technical Report, Preliminary Economic Assessment, Segovia Project, Colombia" with an Effective Date of August 7, 2017 (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 and Colombia; open pit and underground coal mines in Russia; several large copper mines and processing facilities in Mexico; and a 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 several 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. 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;
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, 2016 for two days.
6. I am responsible for environmental studies, permitting and social or community impact Sections 1.10.1, 4.5, 20 except 20.1.3, and portions of Sections 25 and 26 summarized therefrom of this 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.

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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.

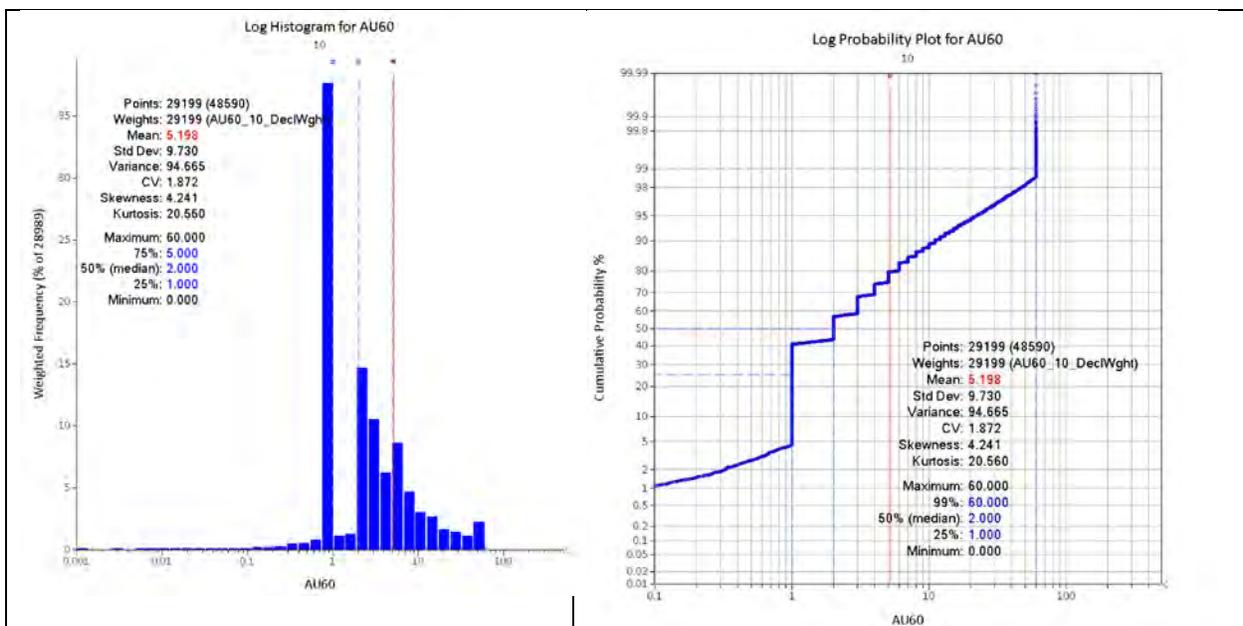
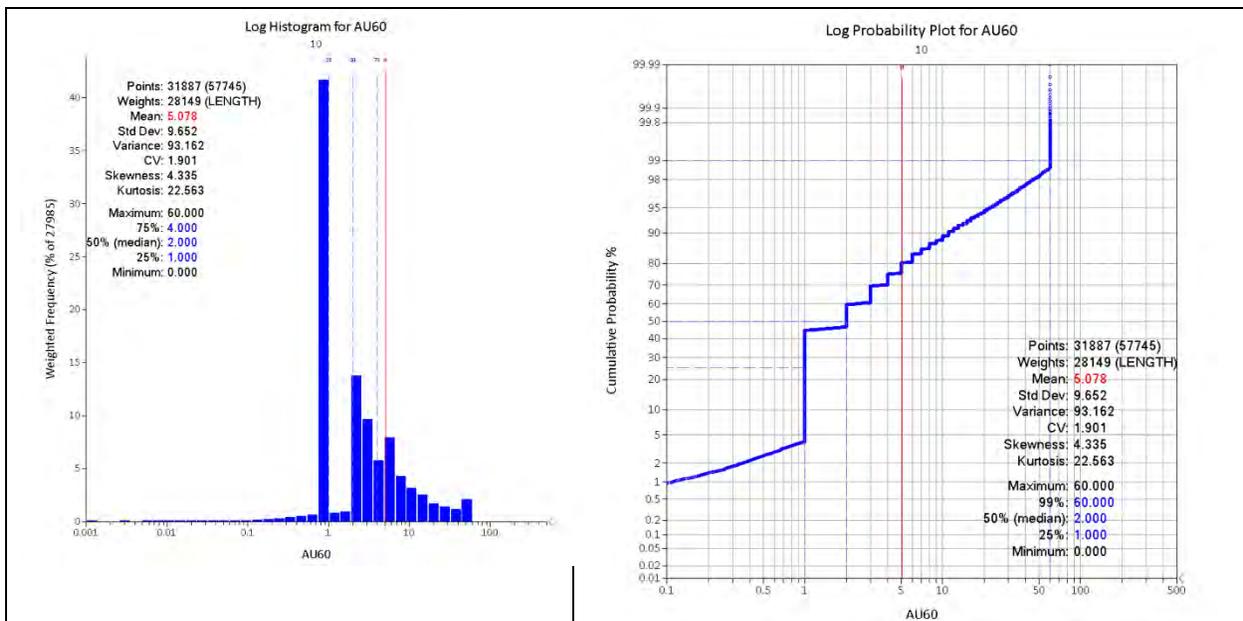
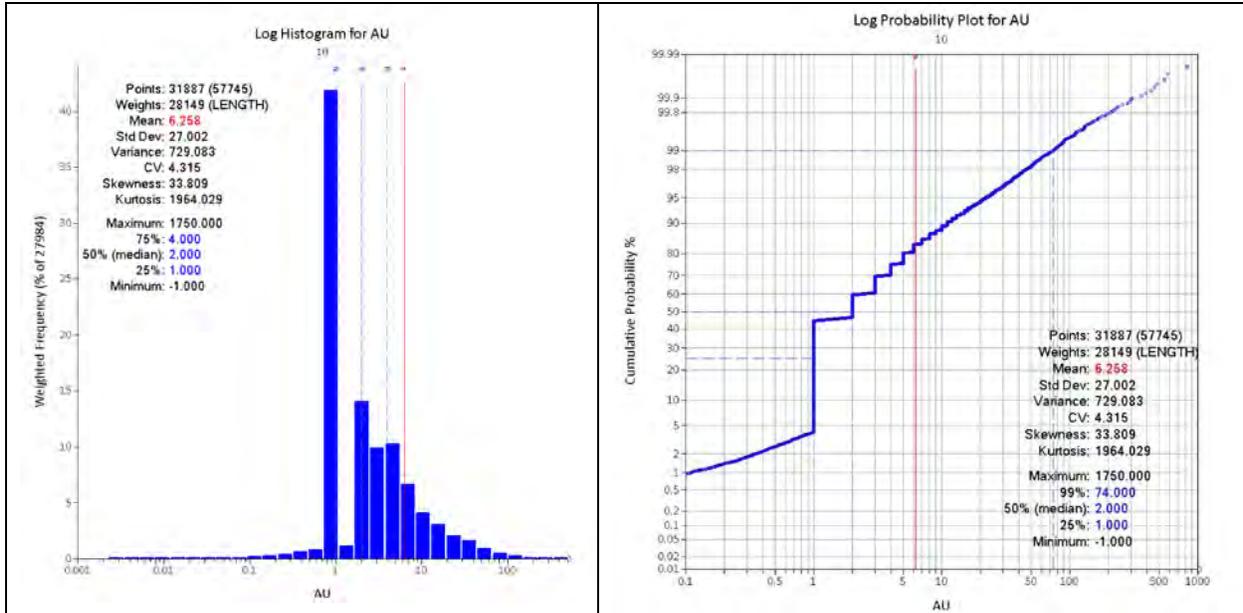
Dated this 28th Day of September, 2017.

"Signed / Sealed"

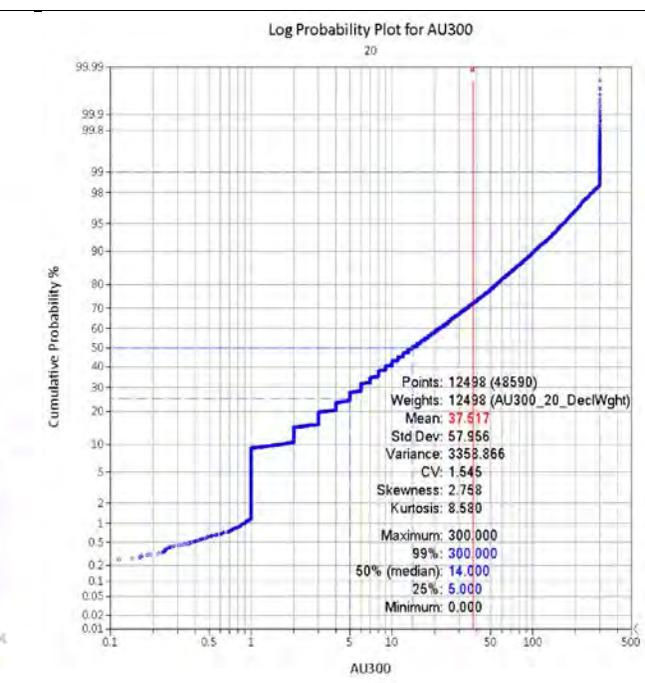
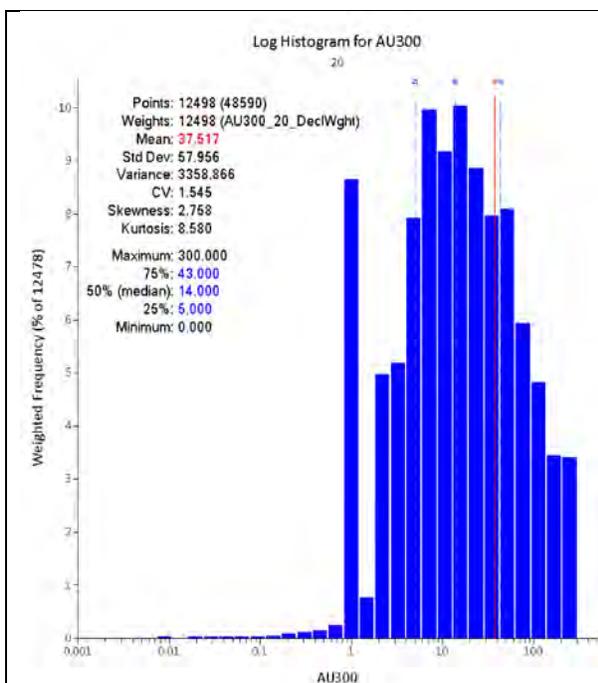
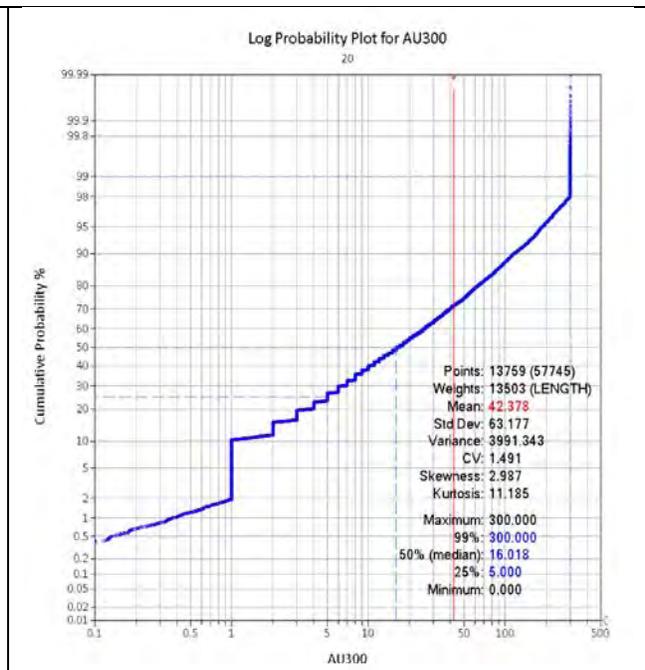
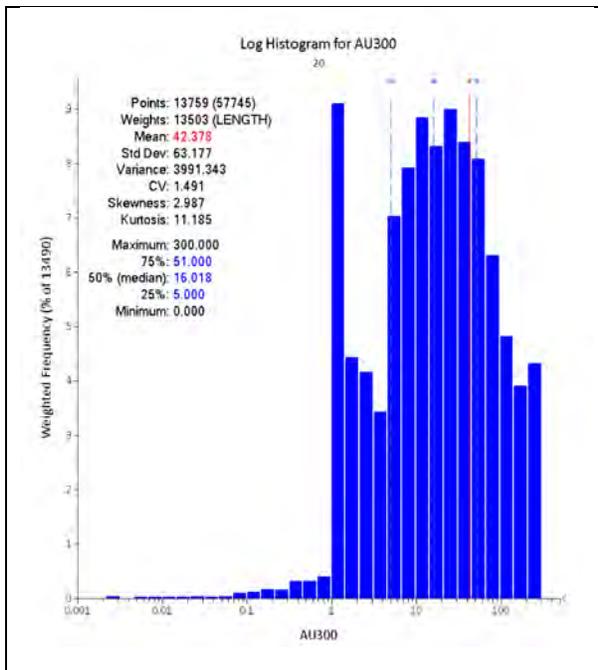
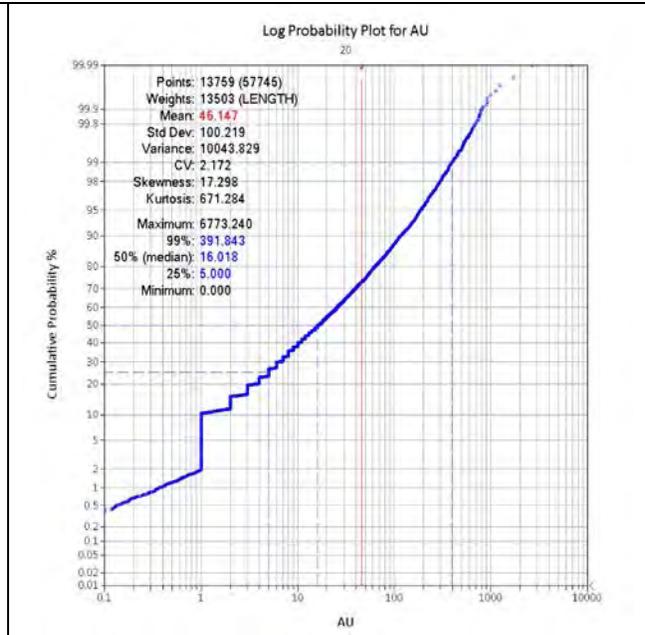
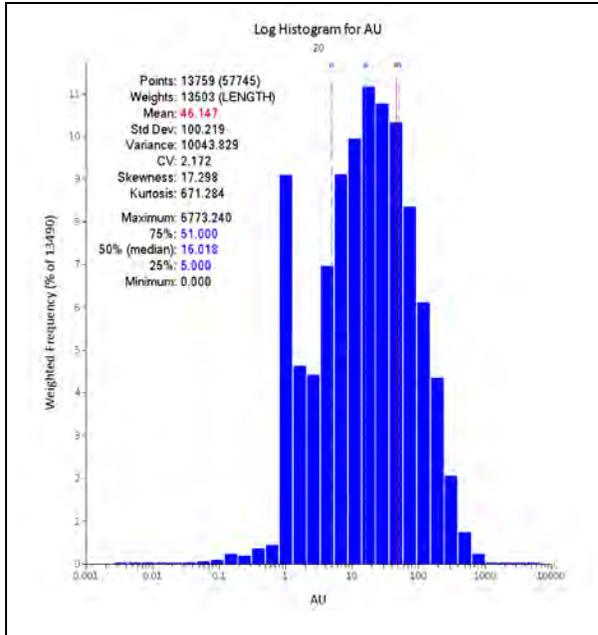
Mark Willow, CEM

Appendix B: Histograms

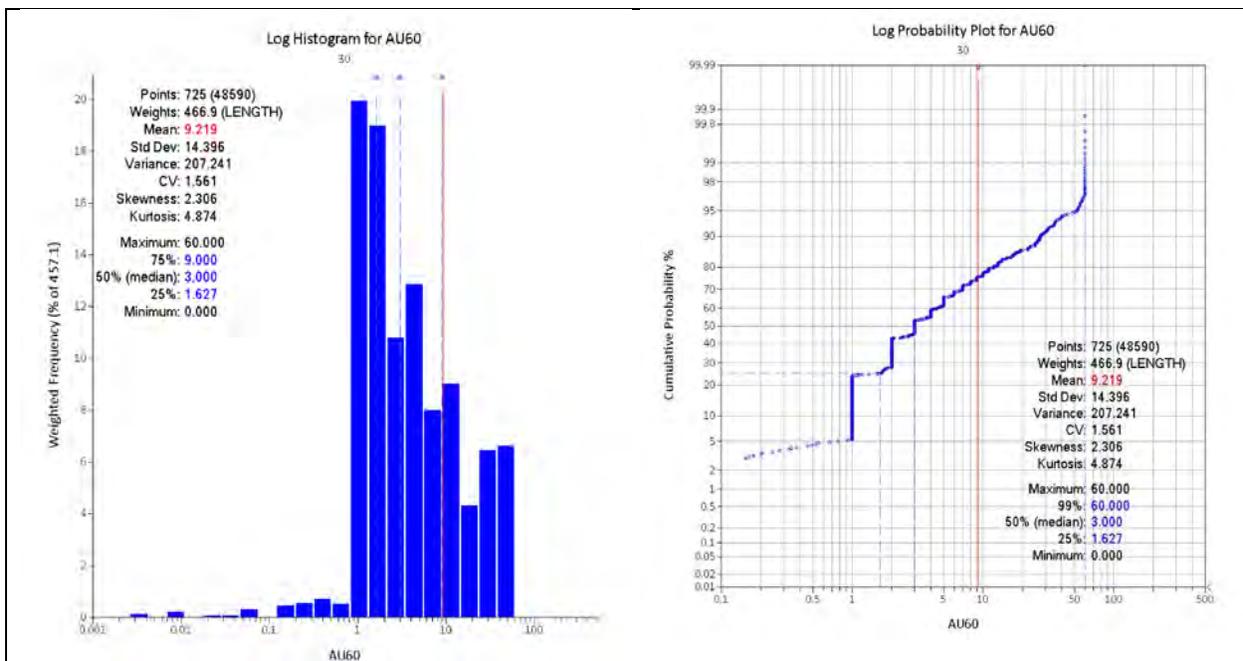
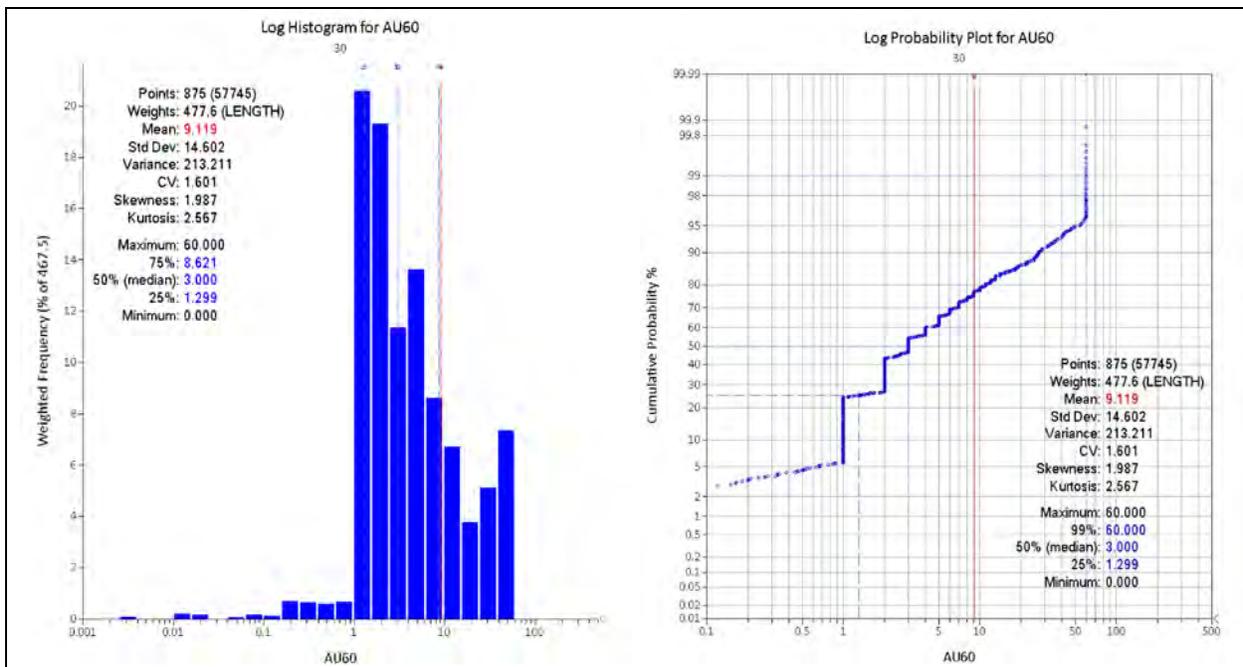
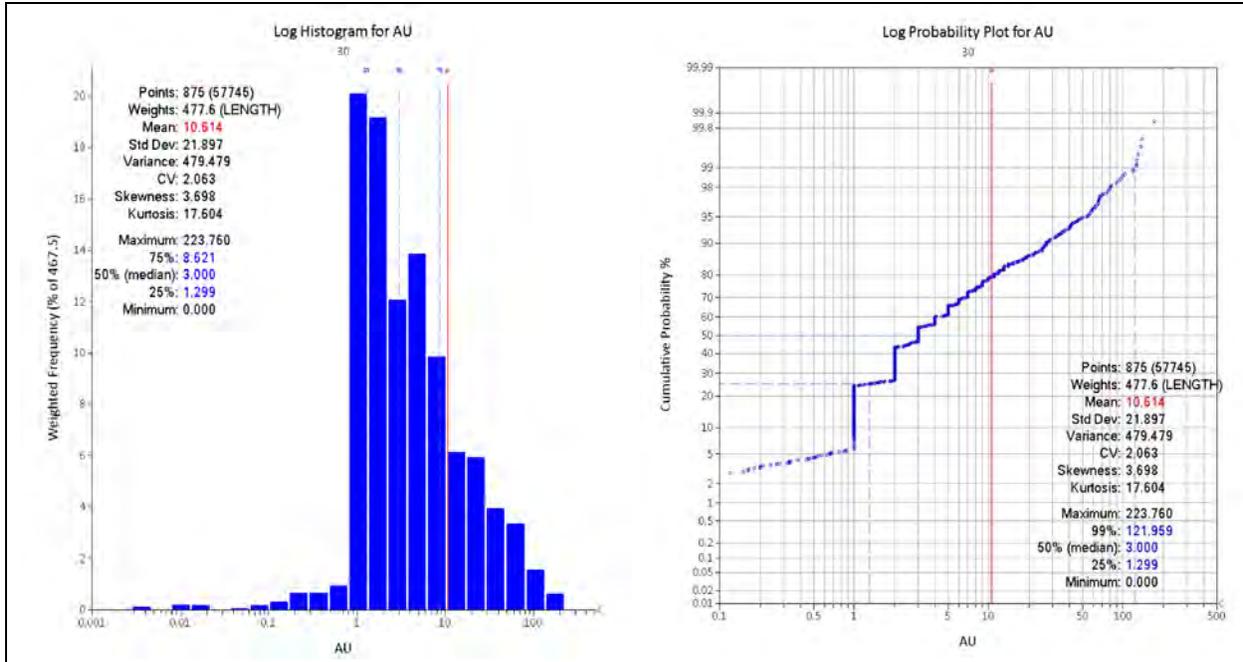
Appendix B1: Histograms – Providencia – Low Grade (HG10)



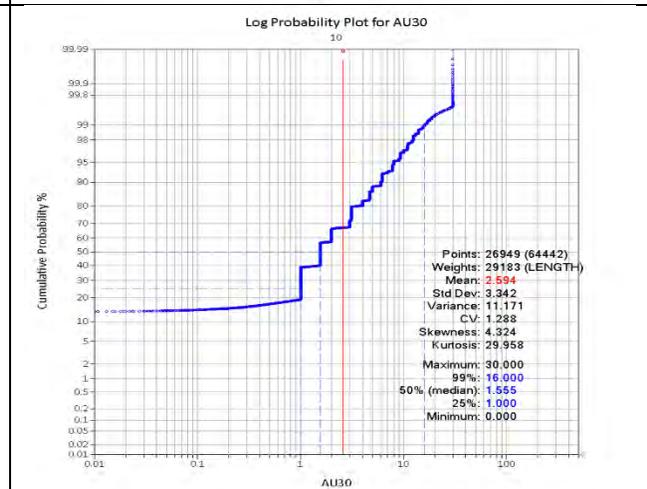
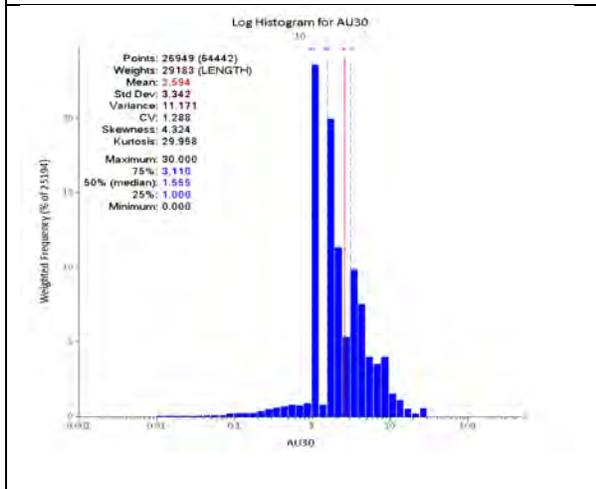
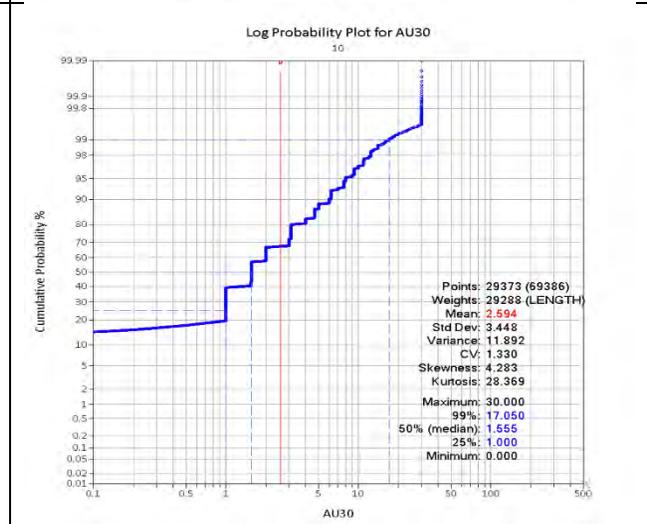
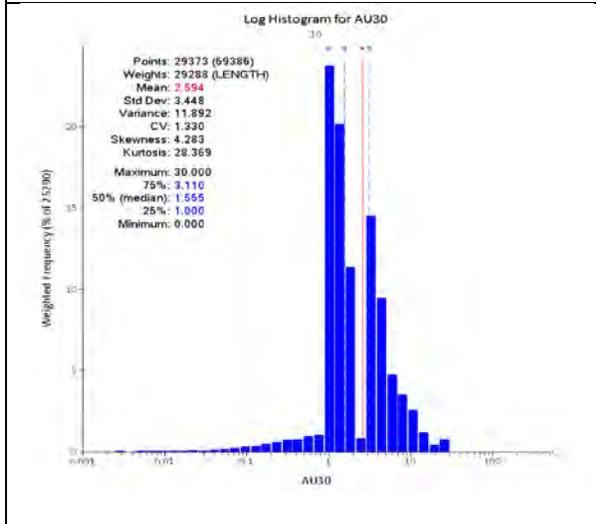
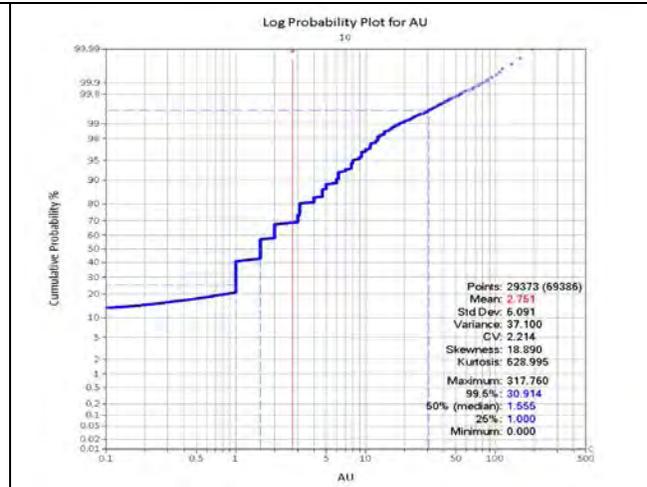
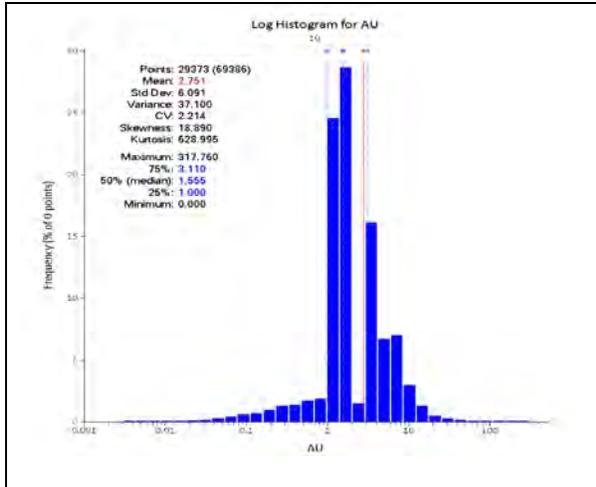
Appendix B2: Histograms – Providencia – High Grade (HG20)



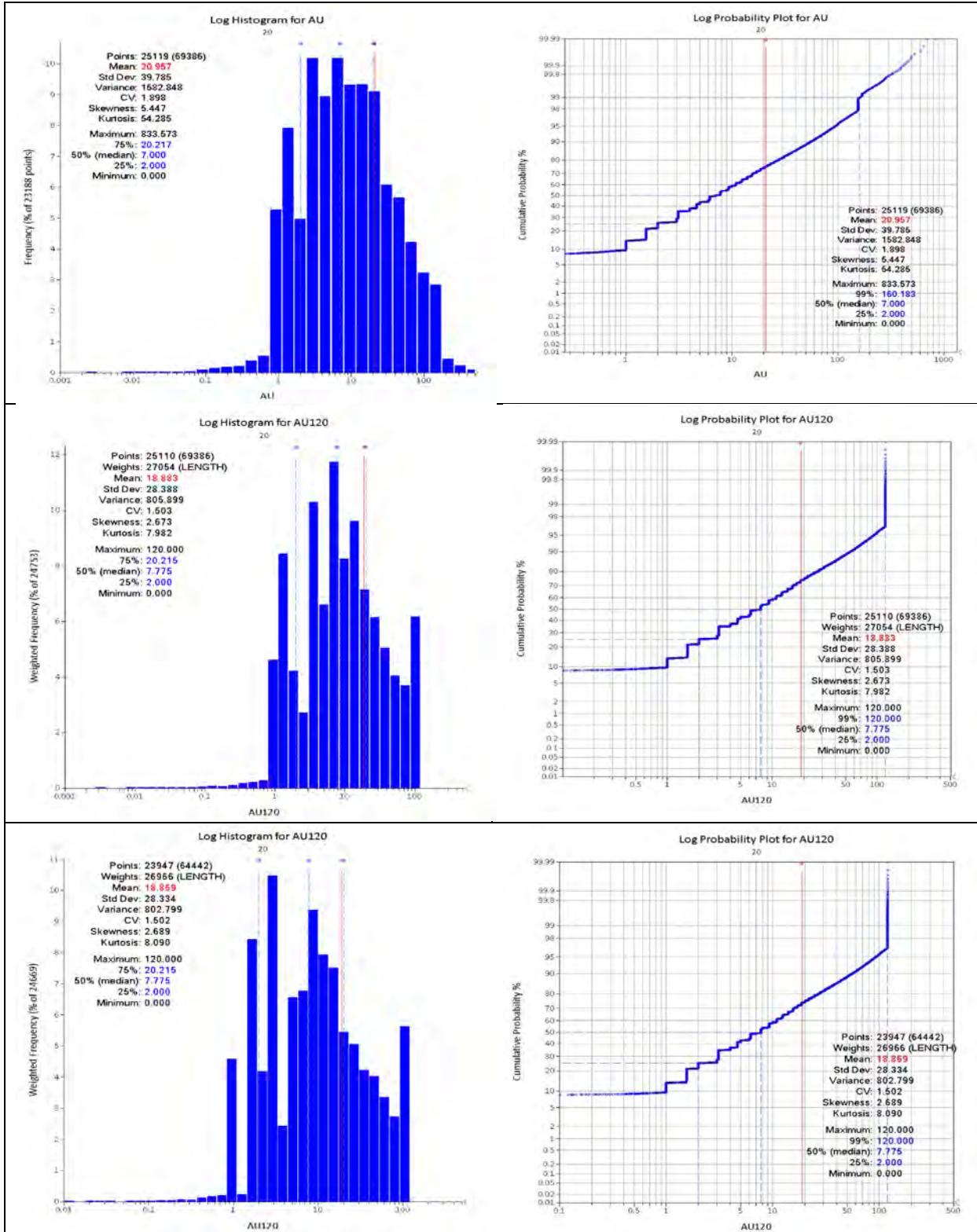
Appendix B3: Histograms – Providencia – Minor Veins (HG30)



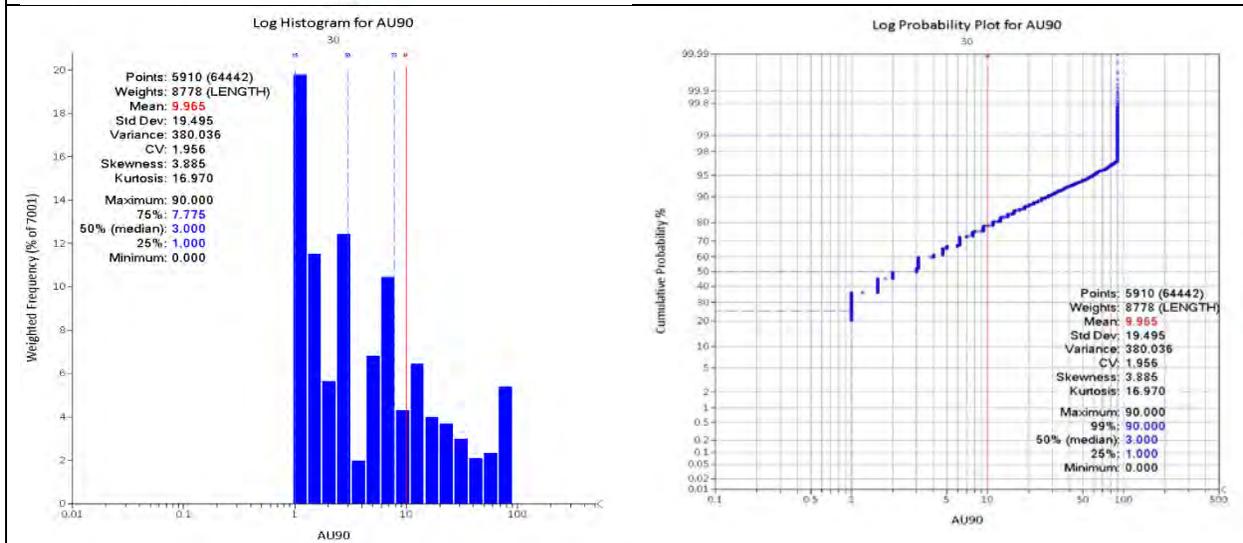
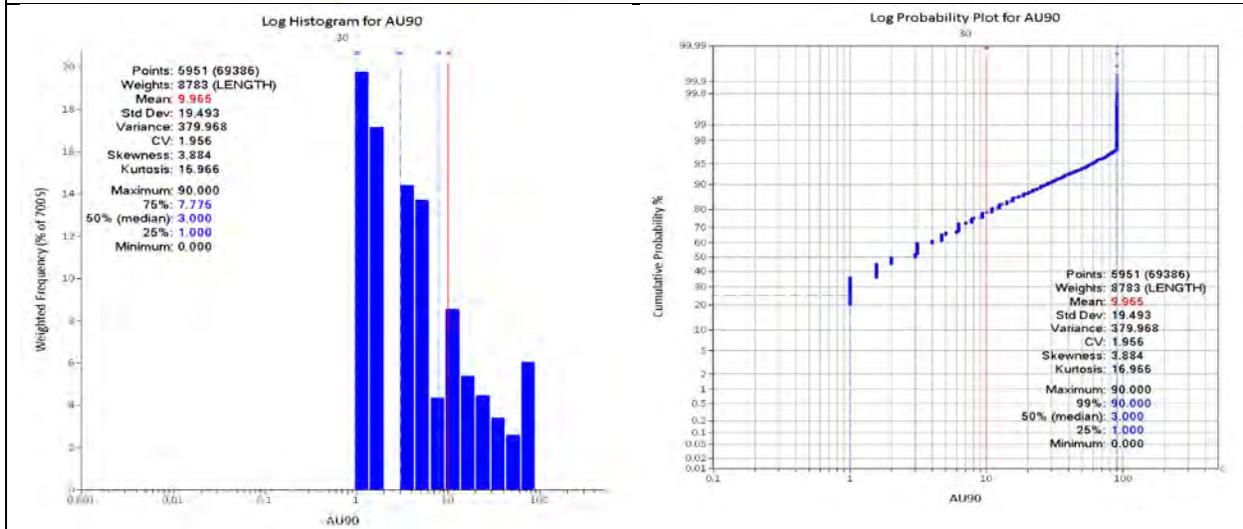
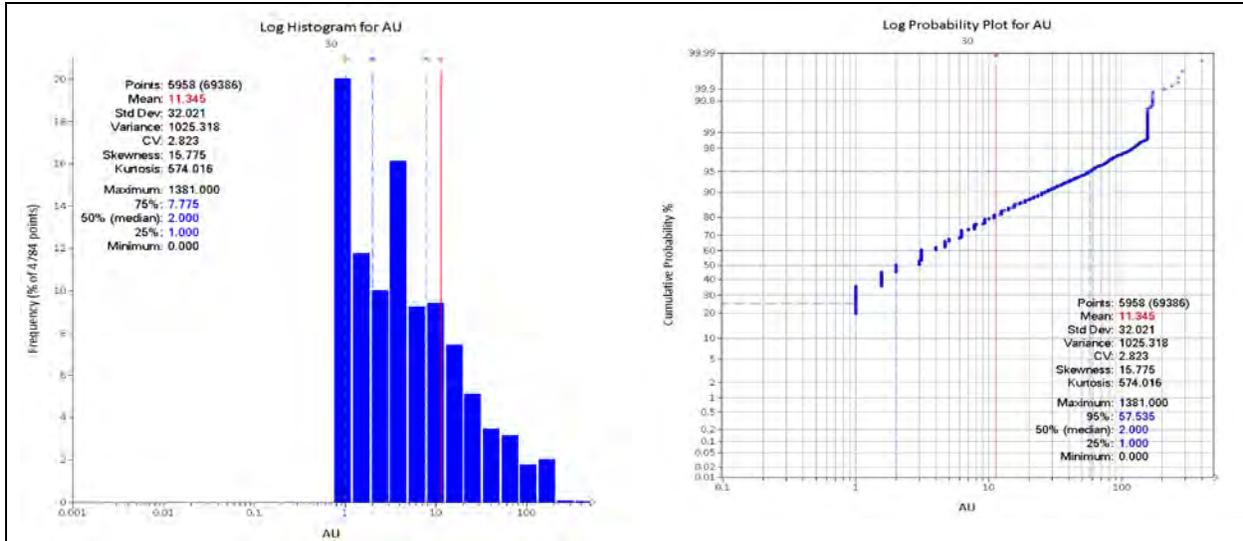
Appendix B4: Histograms – El Silencio (HG10)



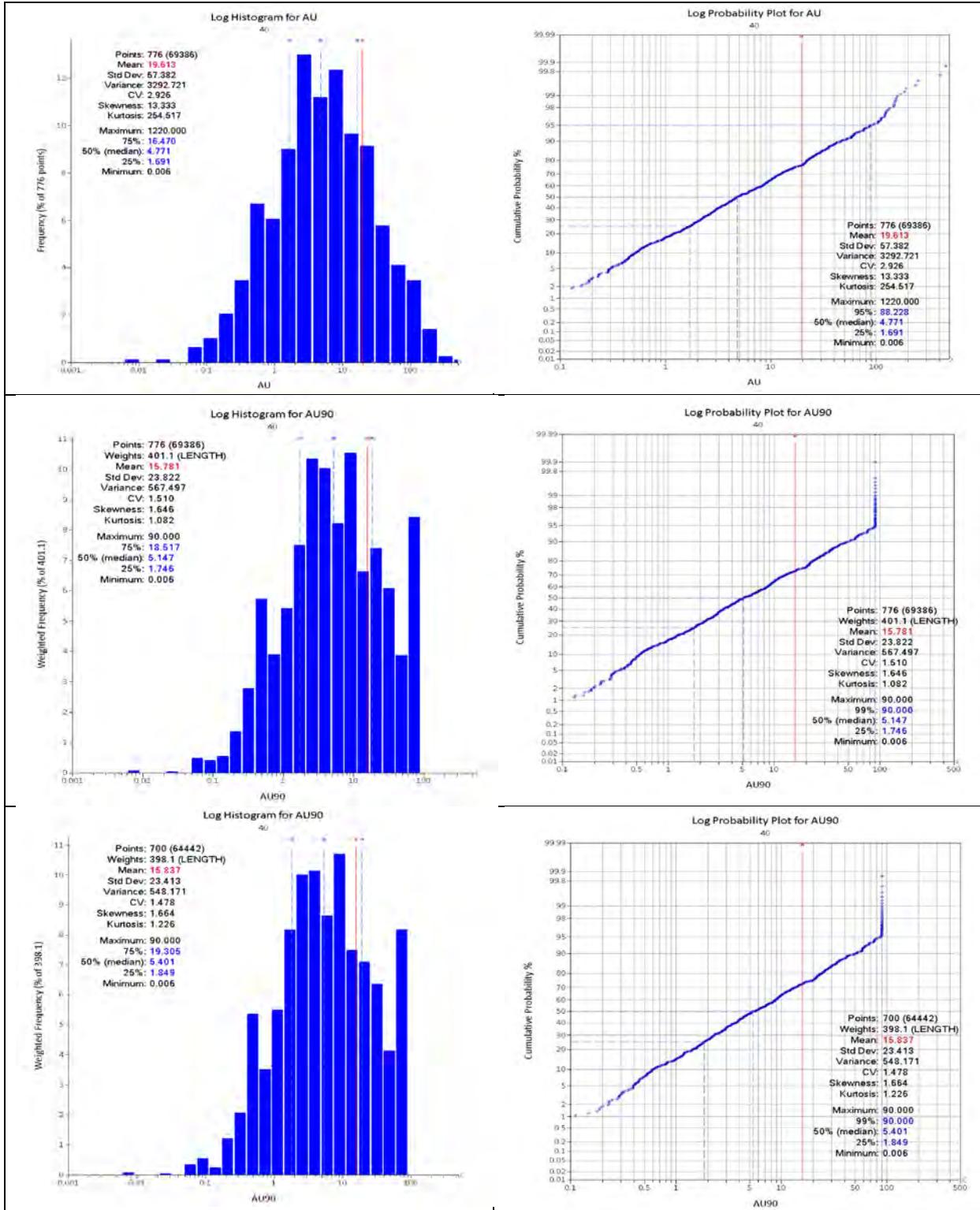
Appendix B5: Histograms – El Silencio (HG20)



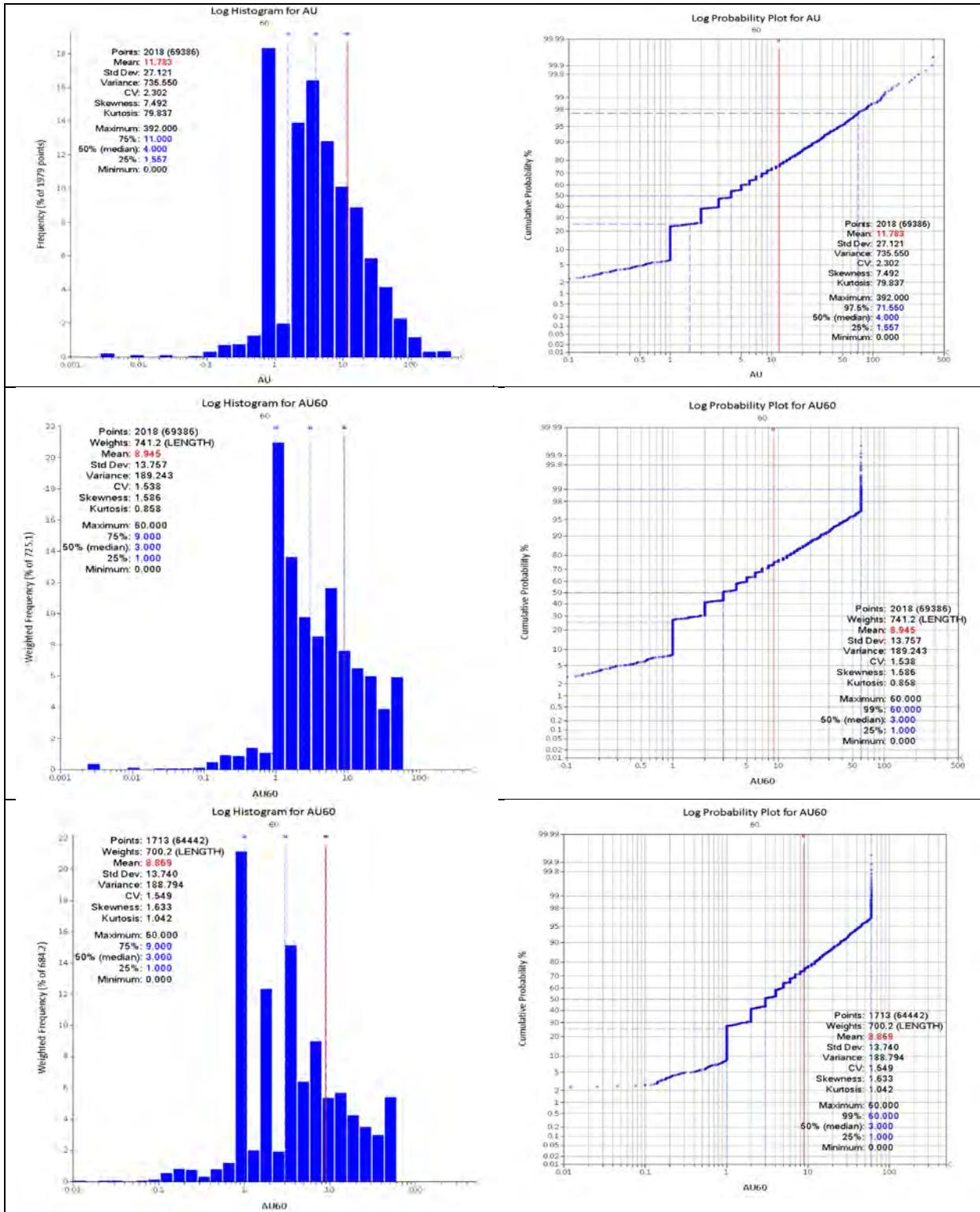
Appendix B6: Histograms – El Silencio (HG30)



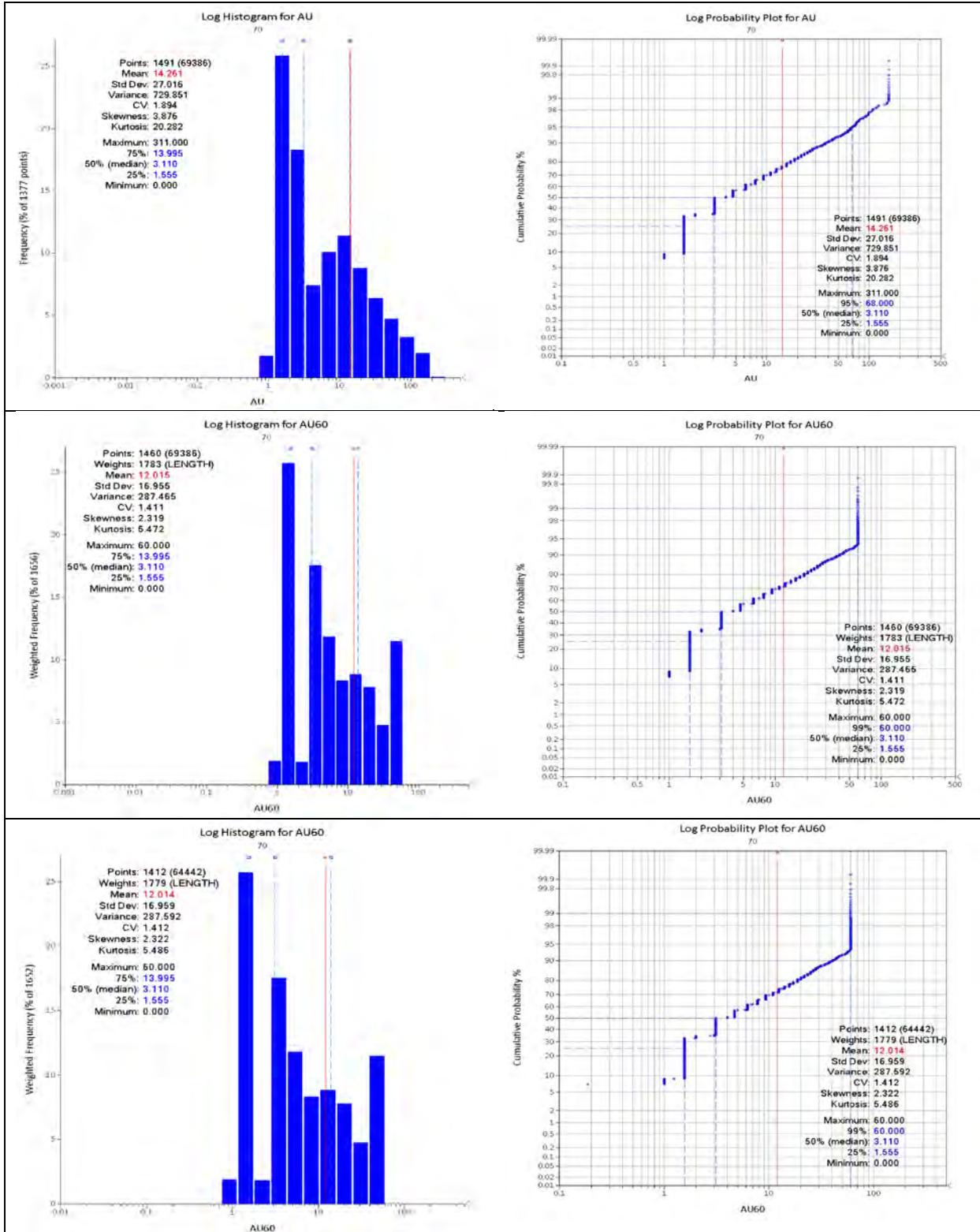
Appendix B7: Histograms – El Silencio (HG40)



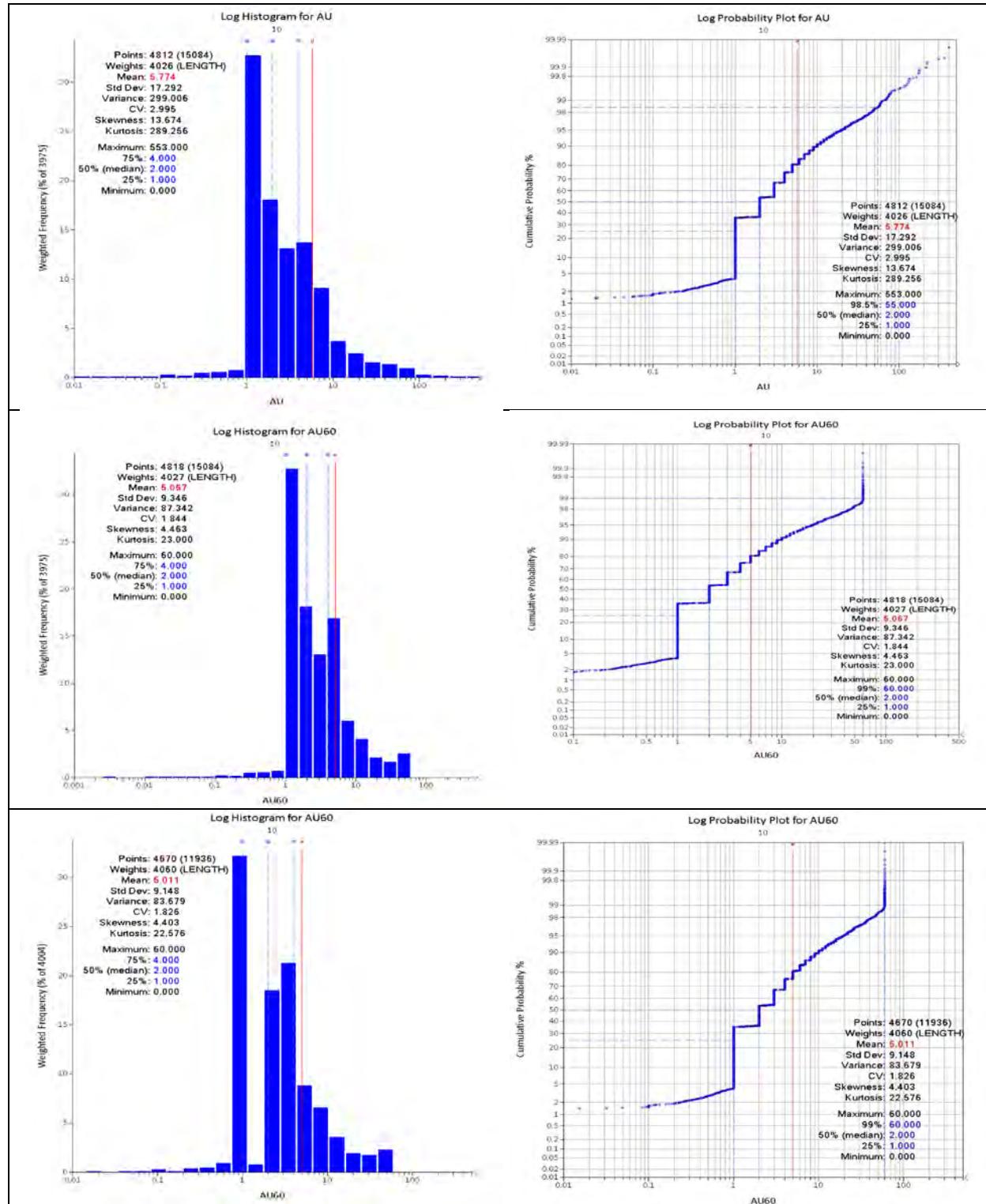
Appendix B8: Histograms – El Silencio (HG60)



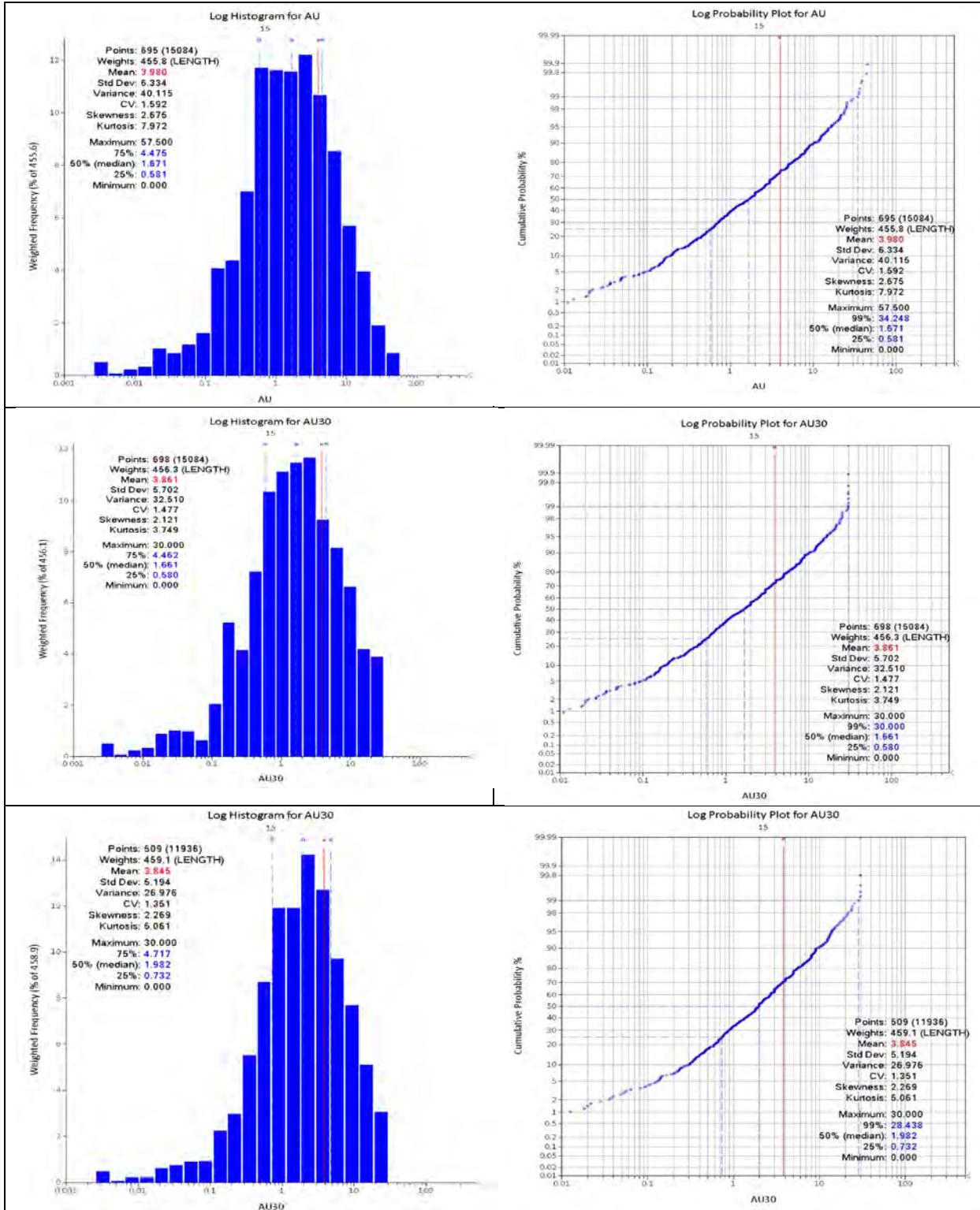
Appendix B9: Histograms – El Silencio (HG70)



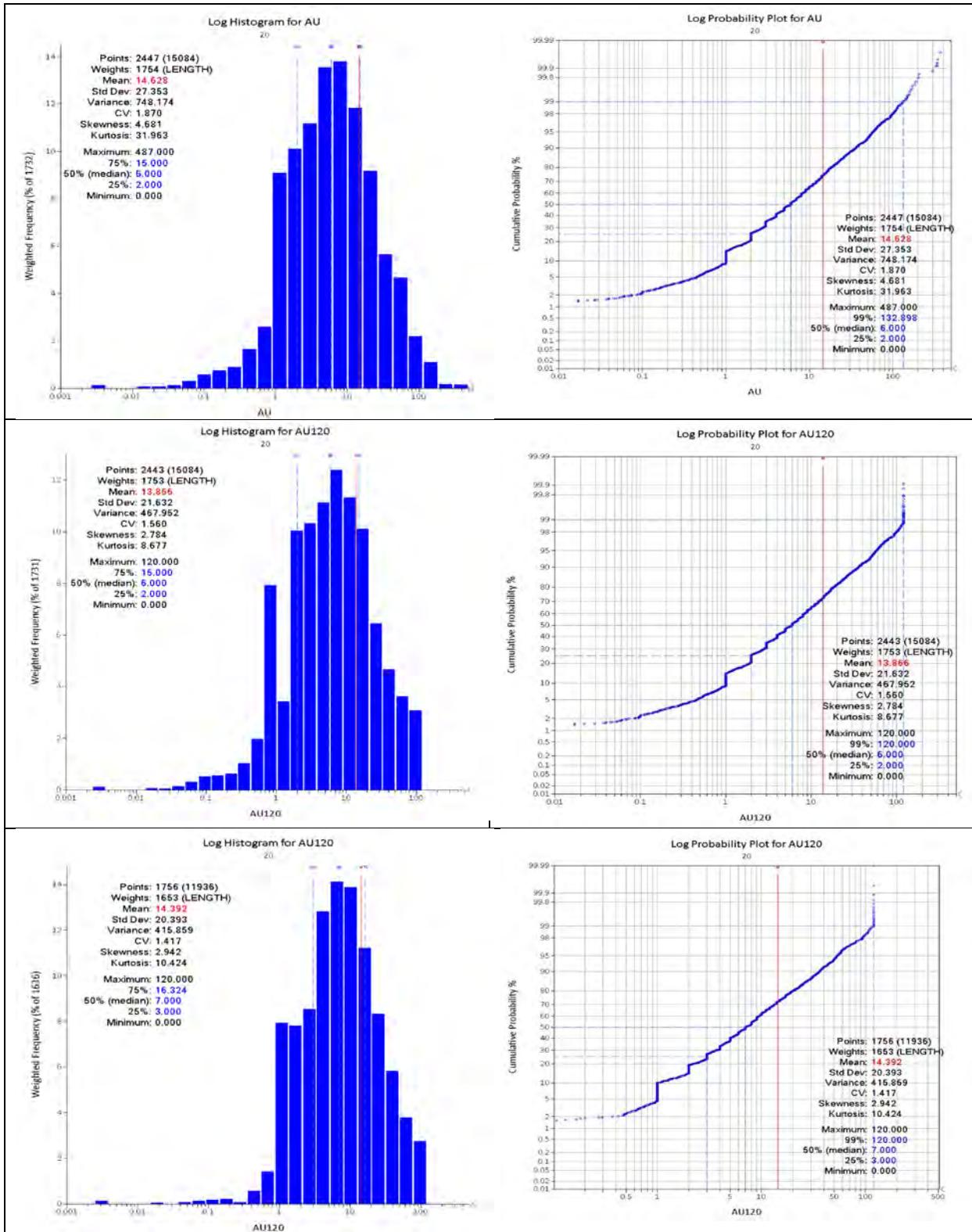
Appendix B10: Histograms – Sandra K (HG10)



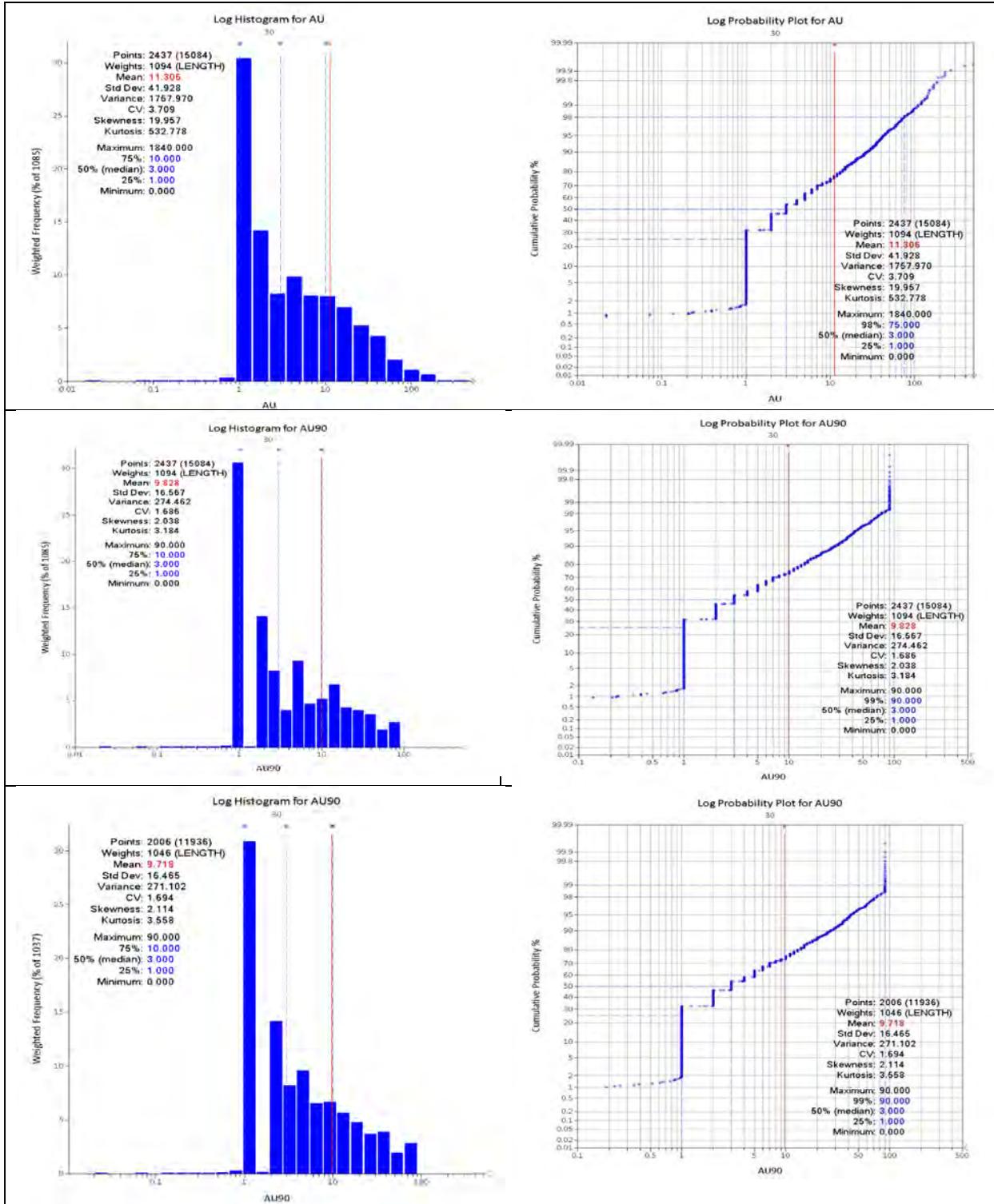
Appendix B11: Histograms – Sandra K (HG15)



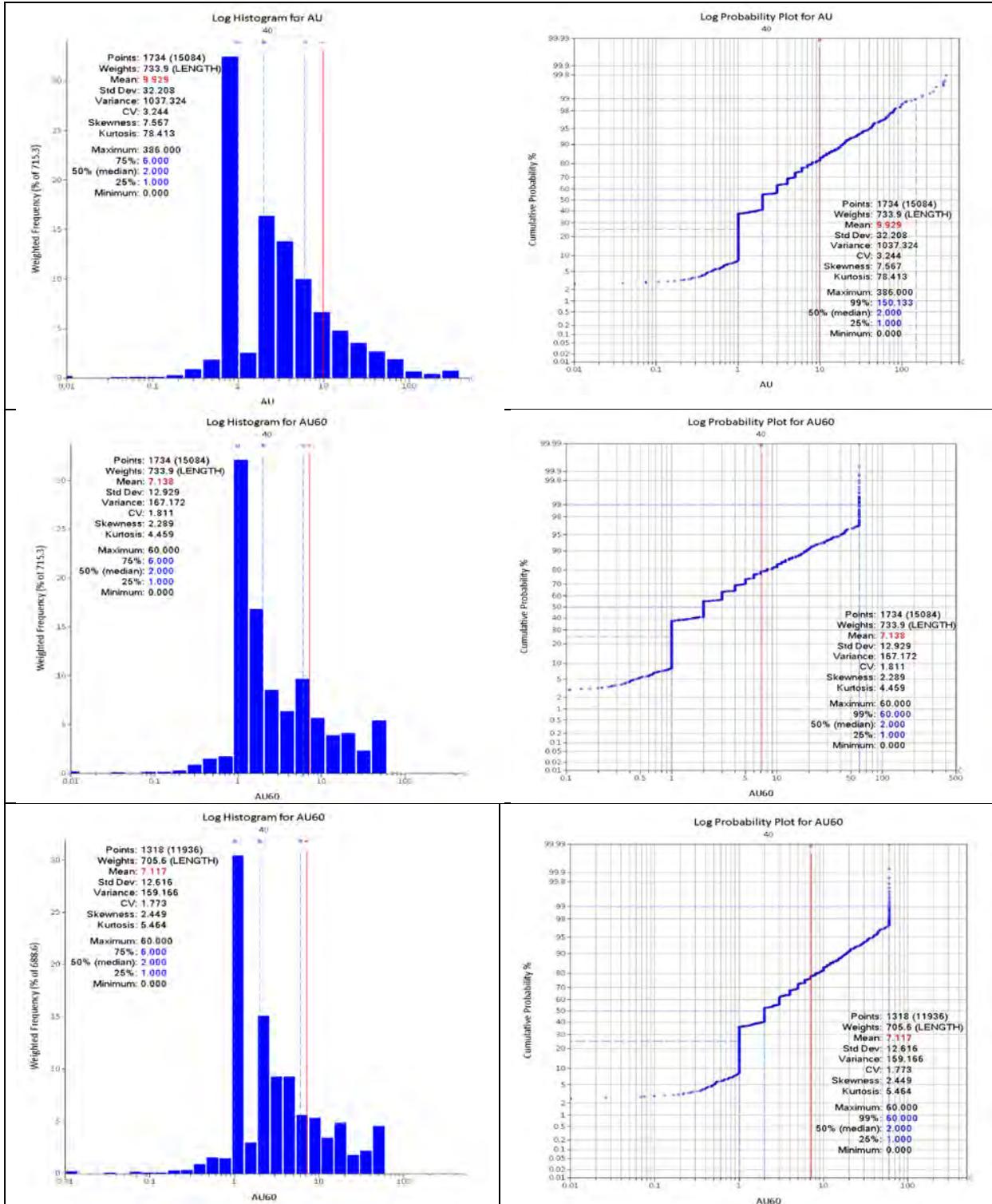
Appendix B12: Histograms – Sandra K (HG20)



Appendix B13: Histograms – Sandra K (HG30)



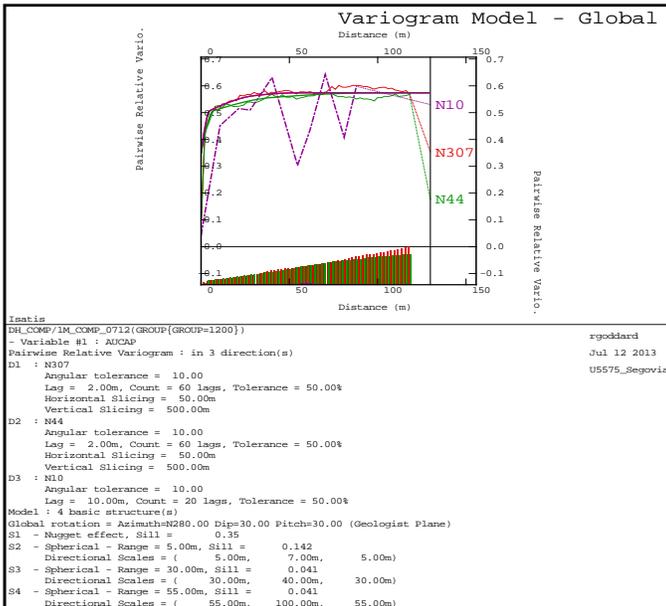
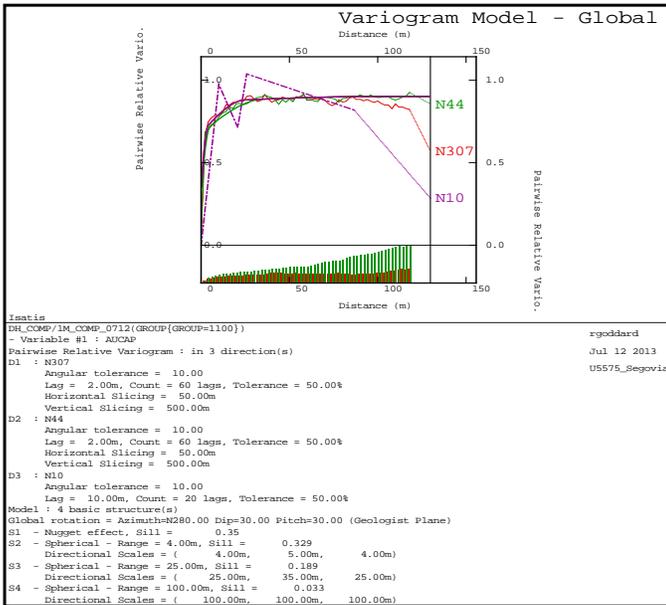
Appendix B14: Histograms – Sandra K (HG40)



Appendix C: Variograms

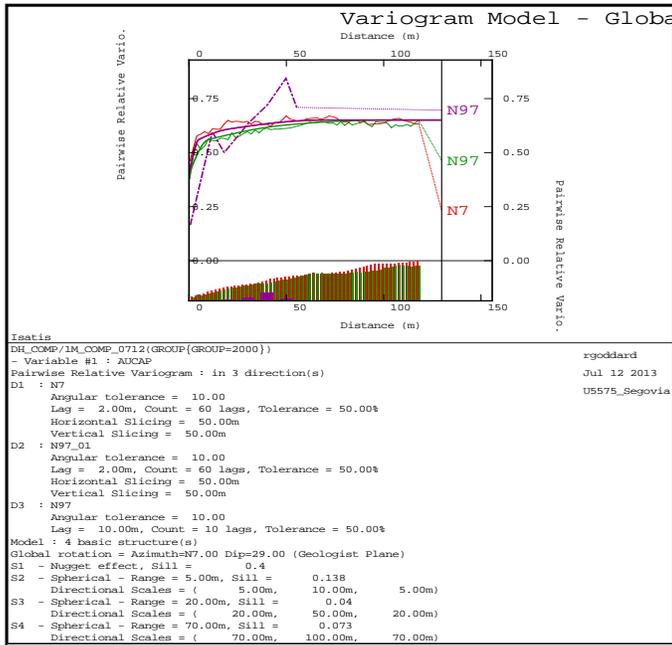
Providencia

Providencia high grade shoot and Providencia Vein (HG10)

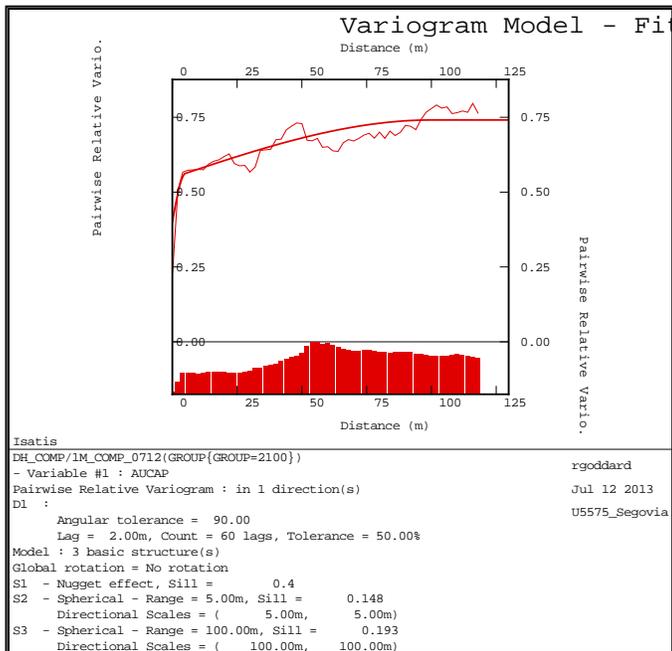


Sandra K

Sandra K Techo, Piso and Fault Block Vein (HG10 – 30)

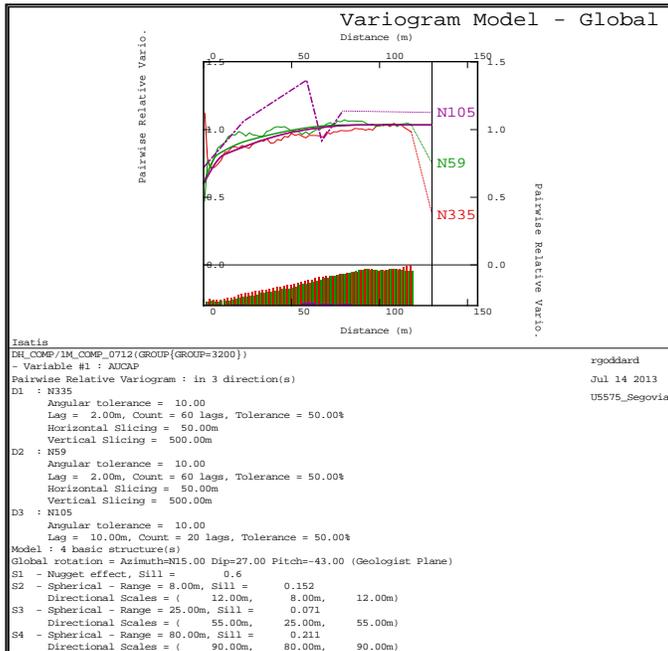
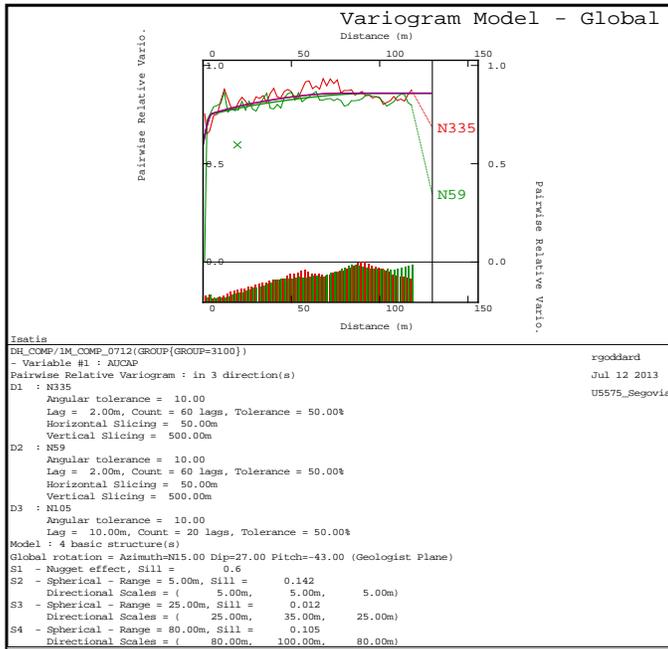


Sandra K Chumeca Vein (HG40)



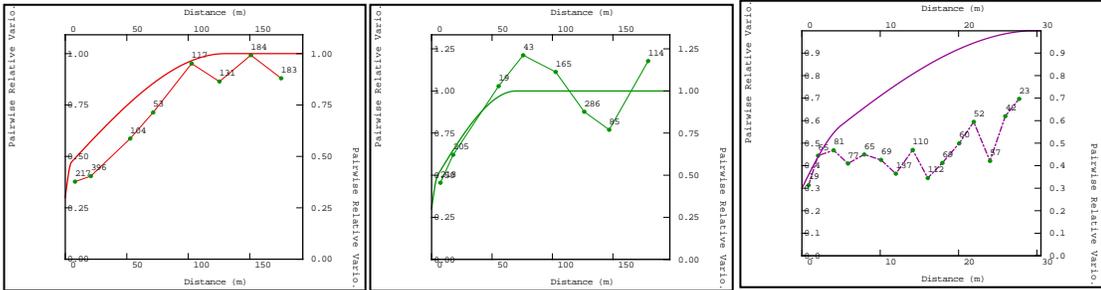
El Silencio

El Silencio high grade shoot (HG20) and El Silencio Vein (HG10)



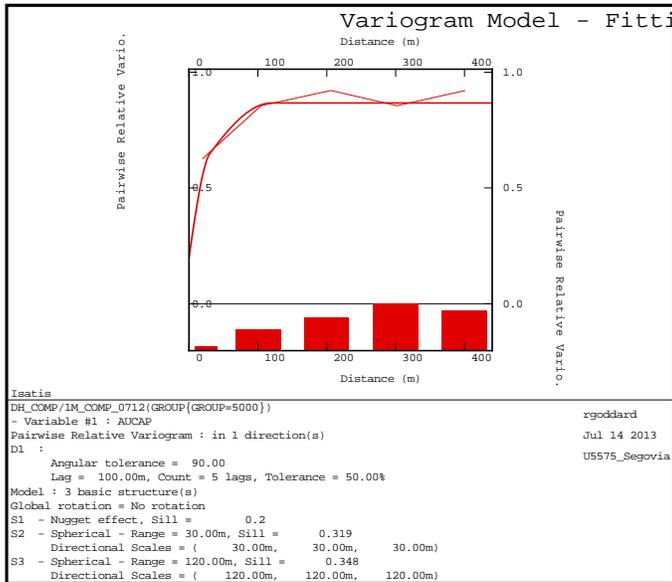
Carla

Carla Vein. Along strike, down dip and across strike showing left to right.



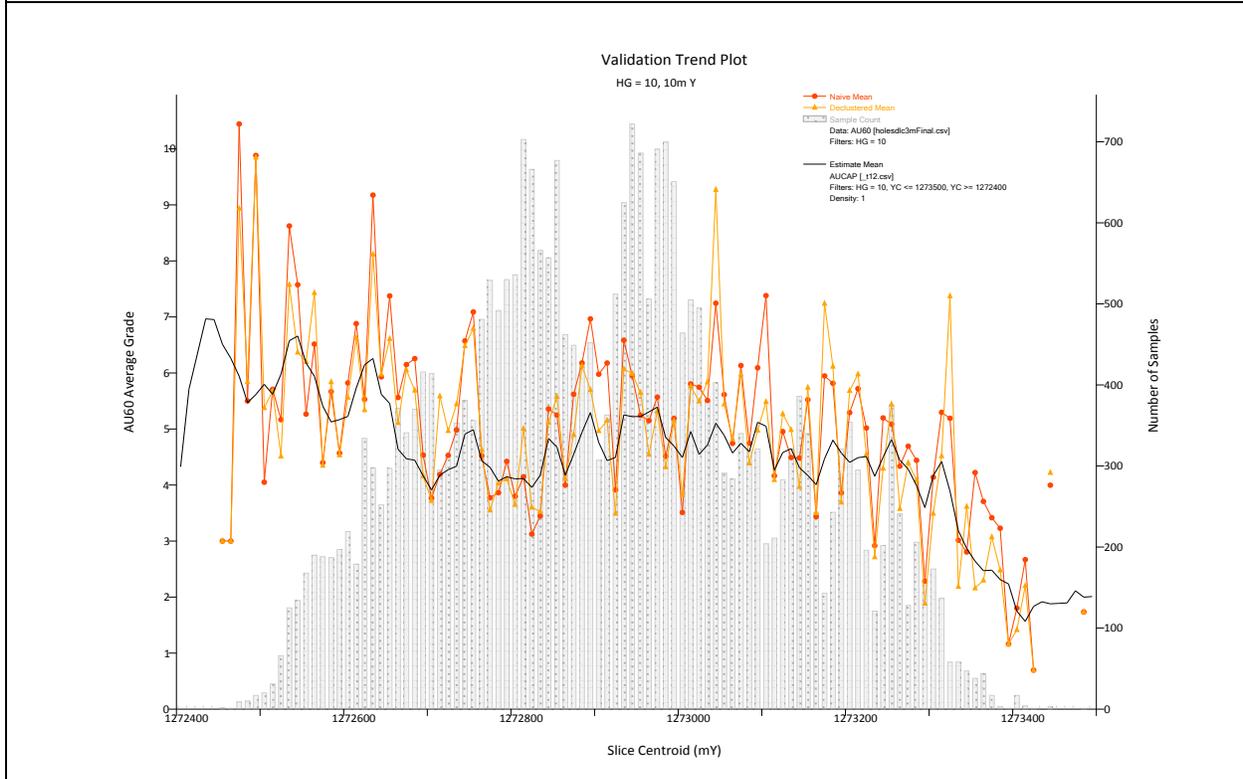
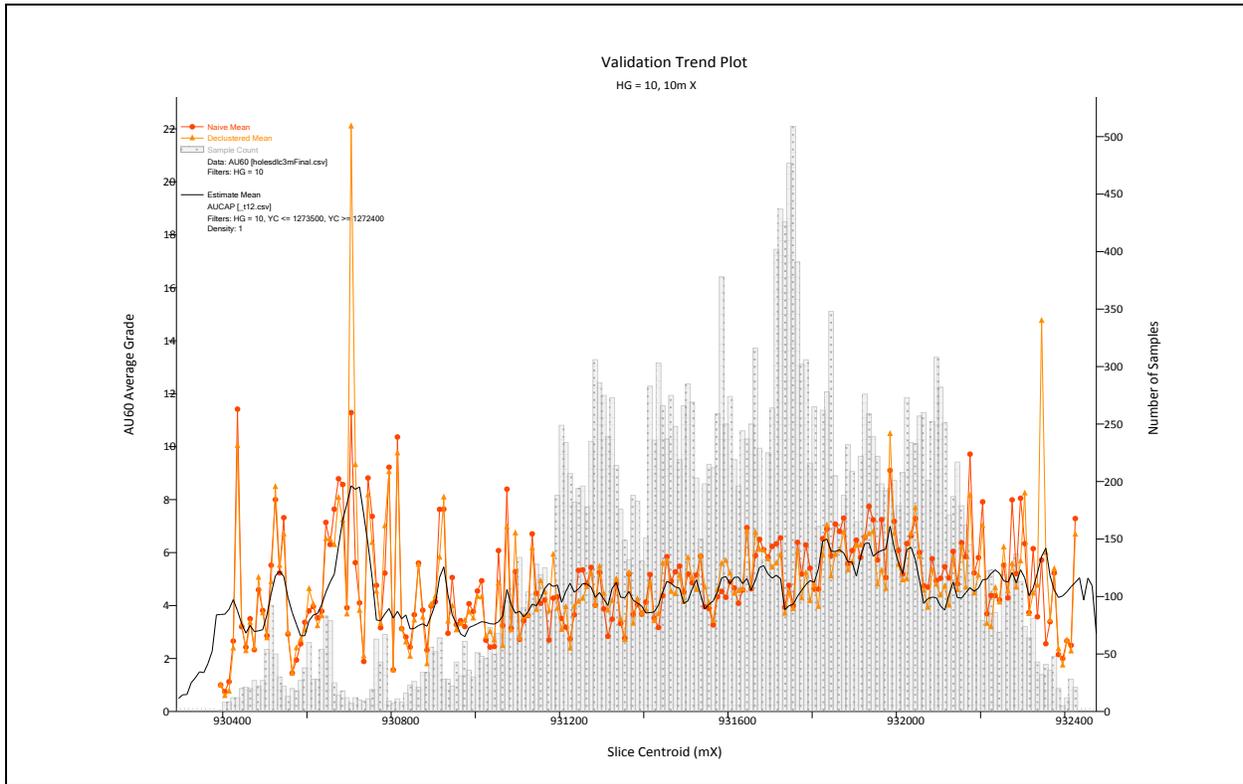
Las Verticales

Las Verticales Veins

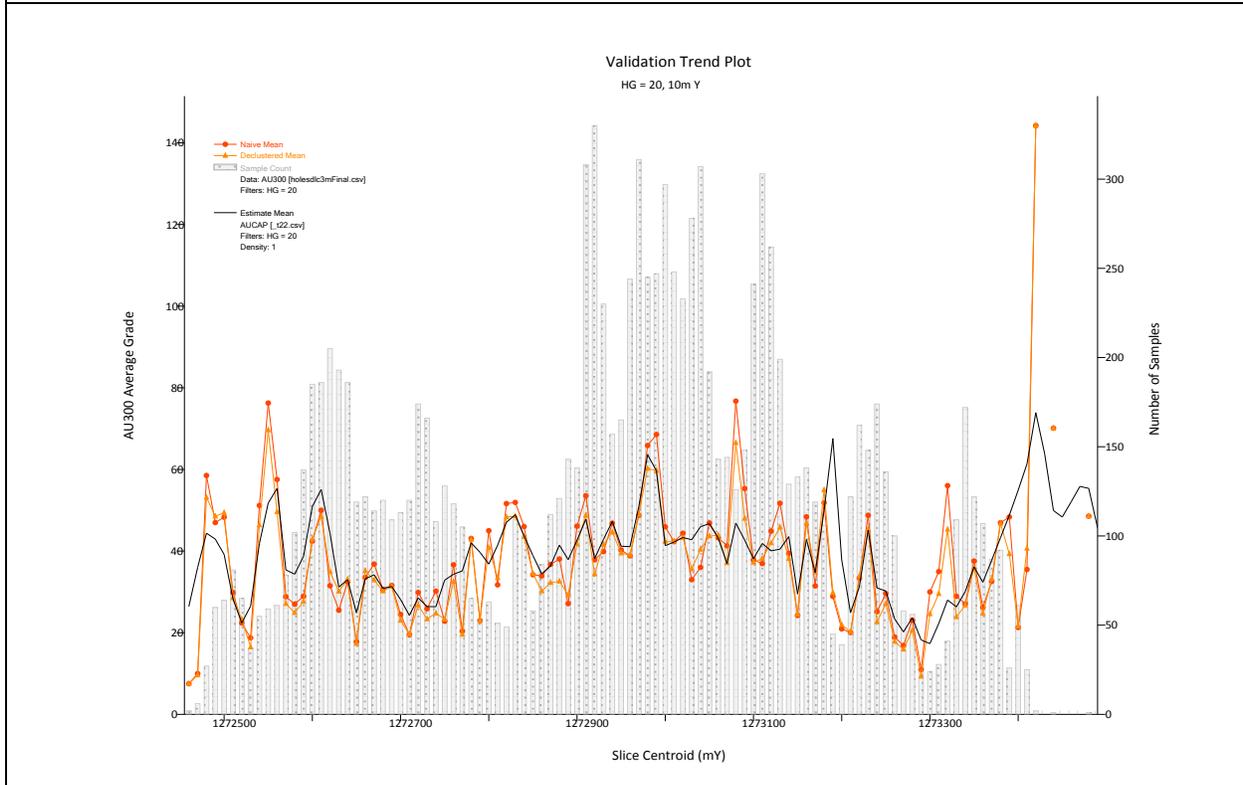
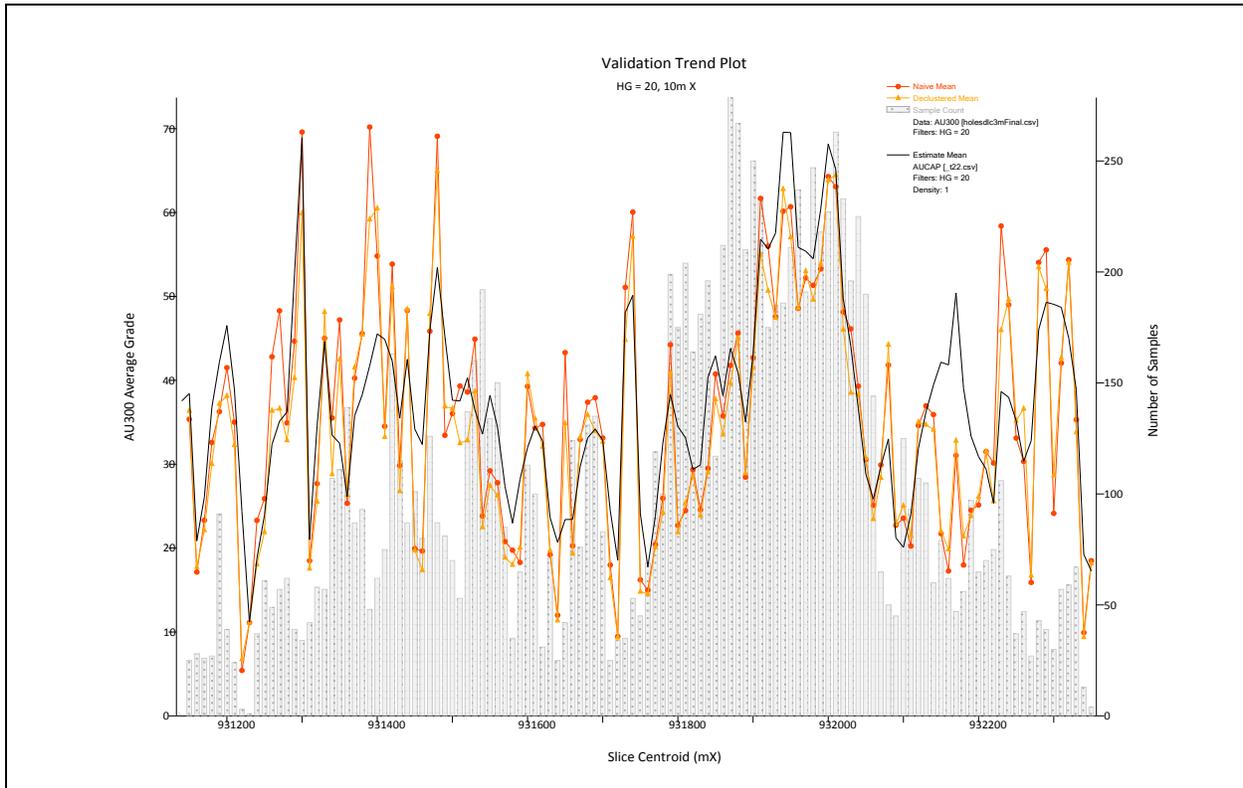


Appendix D: Swath Plots

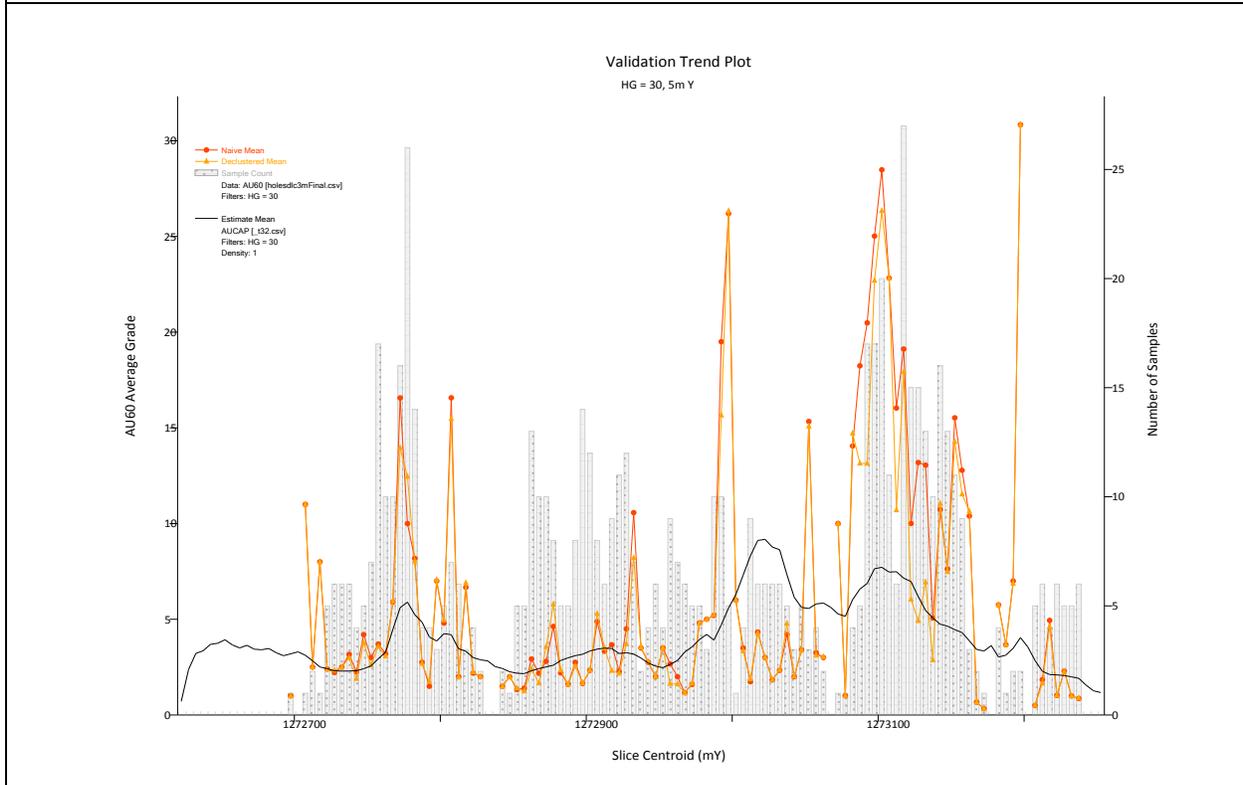
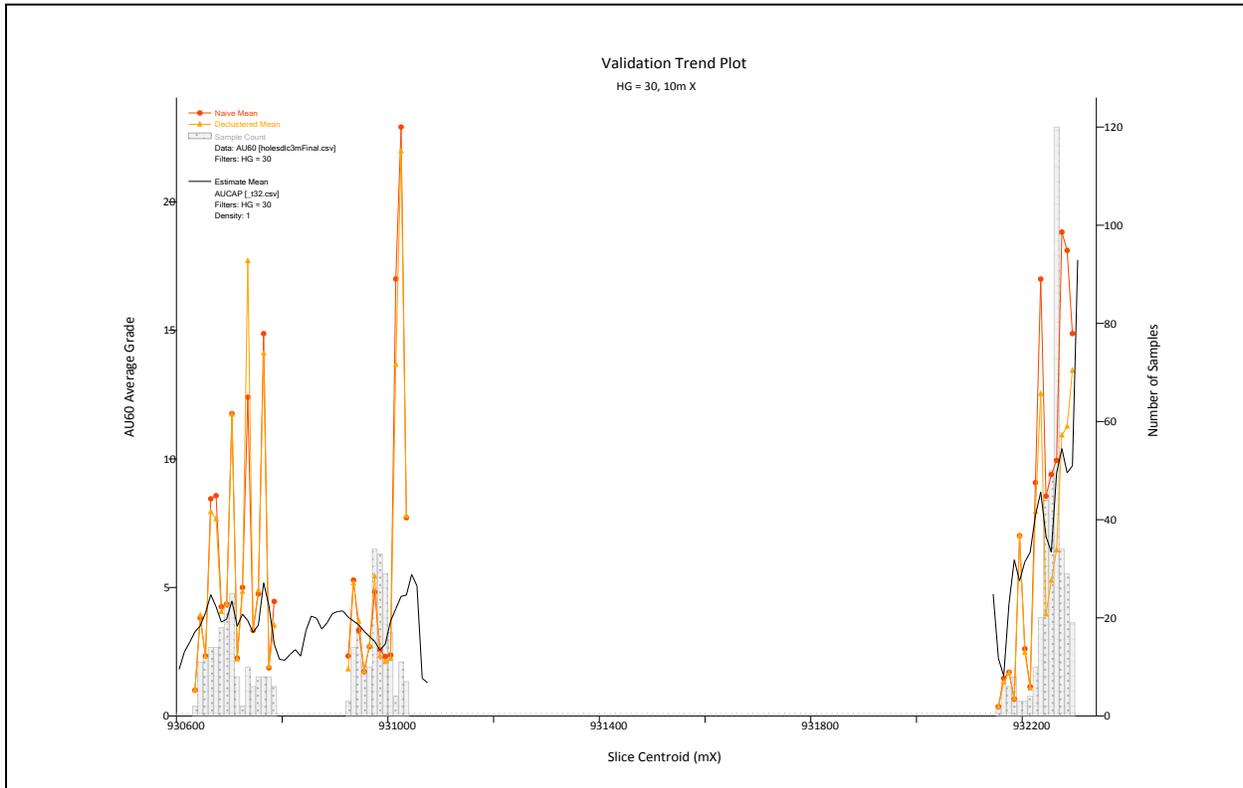
Appendix D1: Swath Plots Providencia HG10 (east-west and north-south)



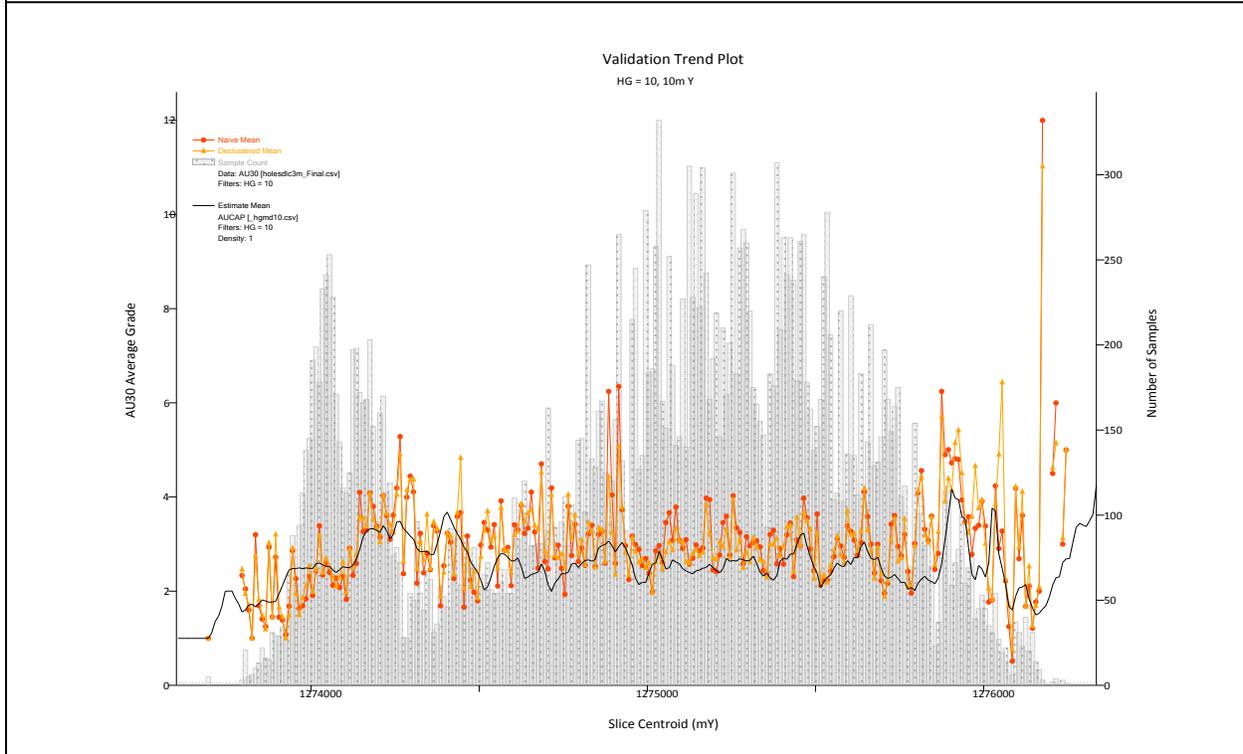
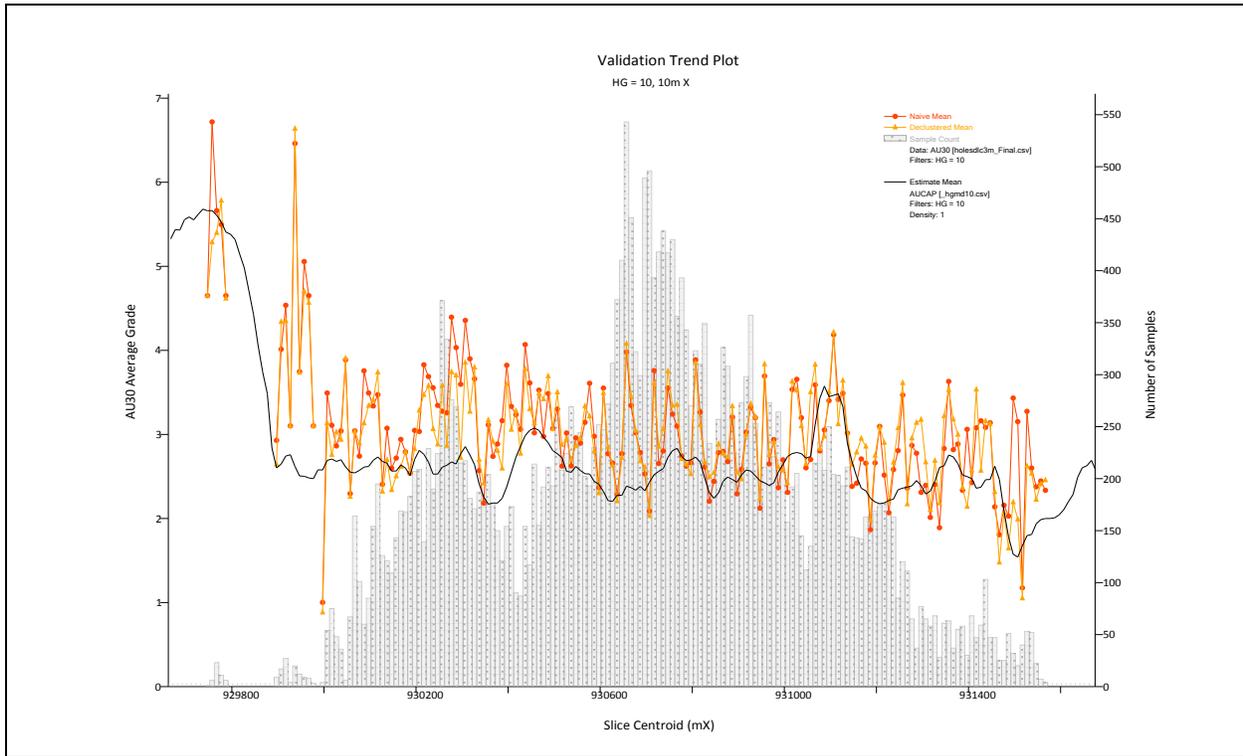
Appendix D2: Swath Plots Providencia HG20 (east-west and north-south)



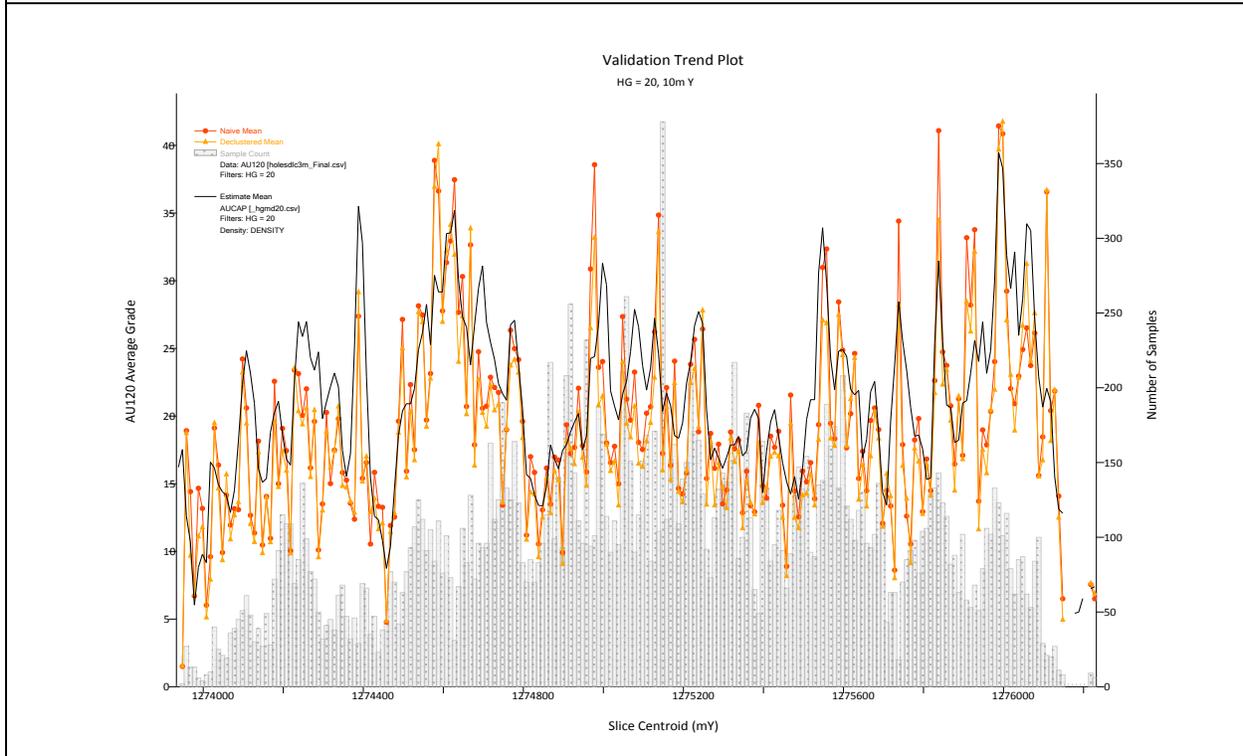
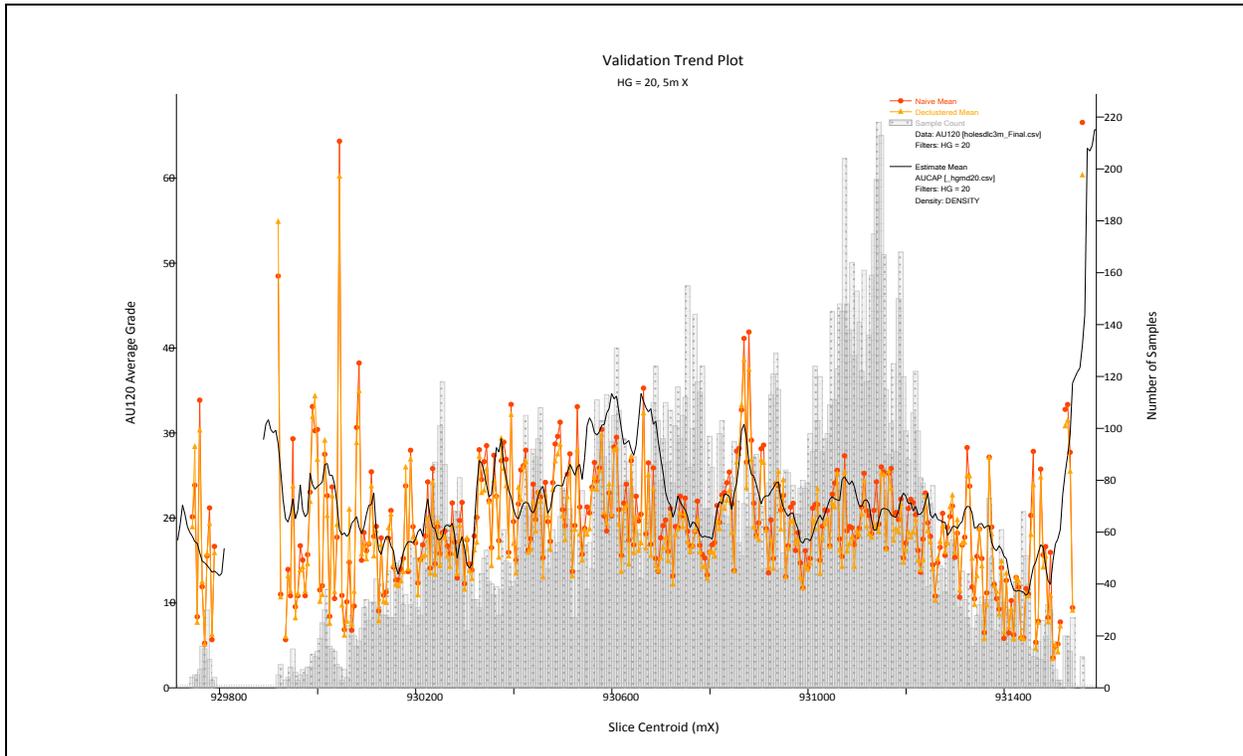
Appendix D3: Swath Plots Providencia HG30 (east-west and north-south)



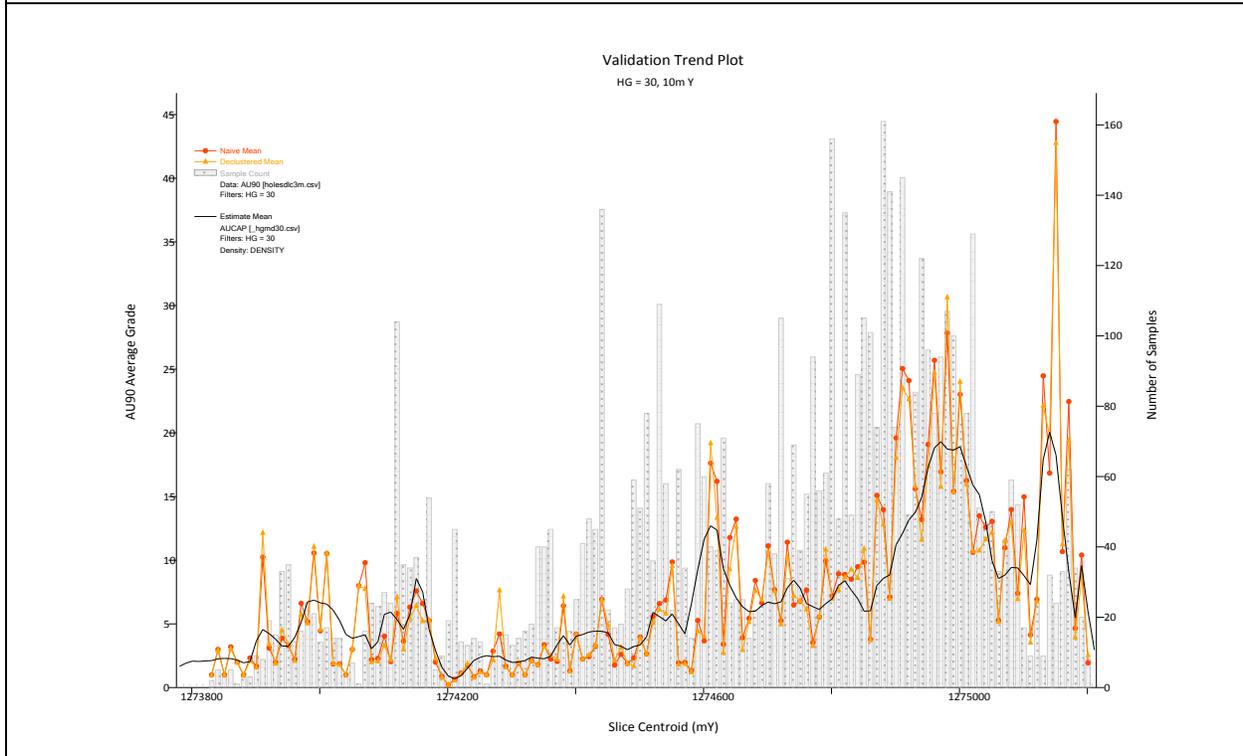
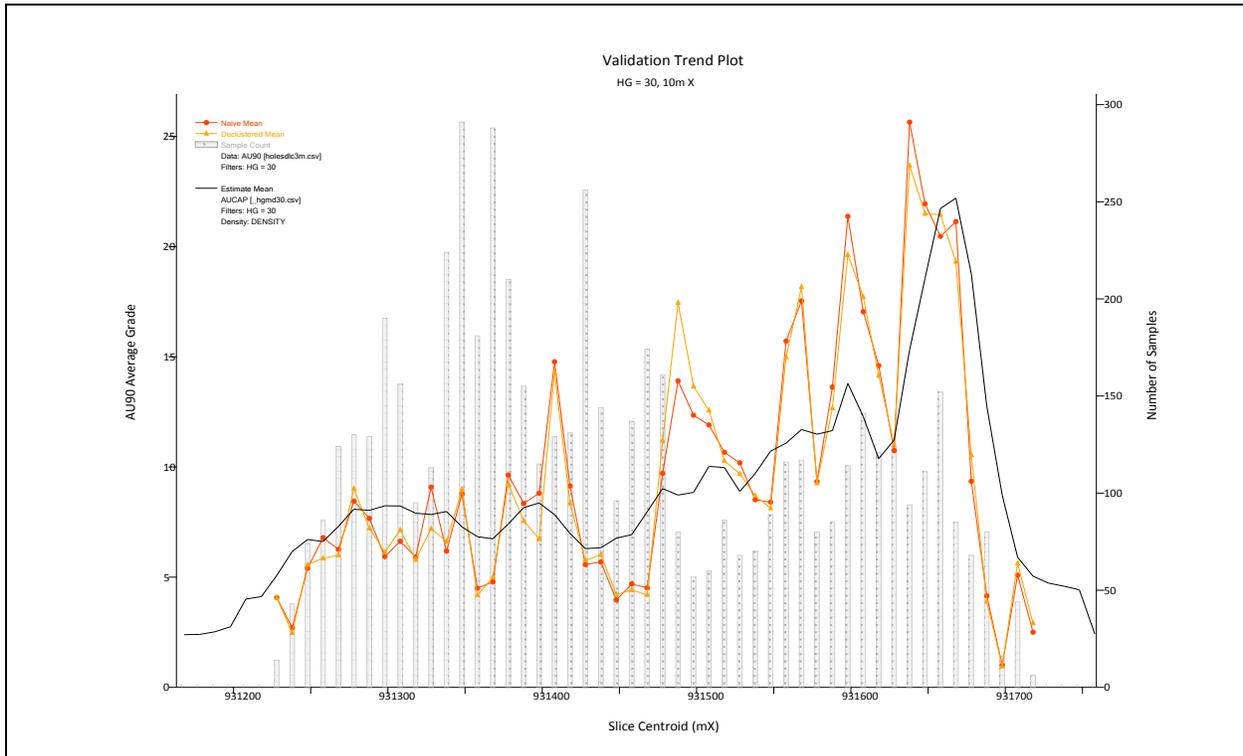
Appendix D4: Swath Plots El Silencio HG10 (east-west and north-south)



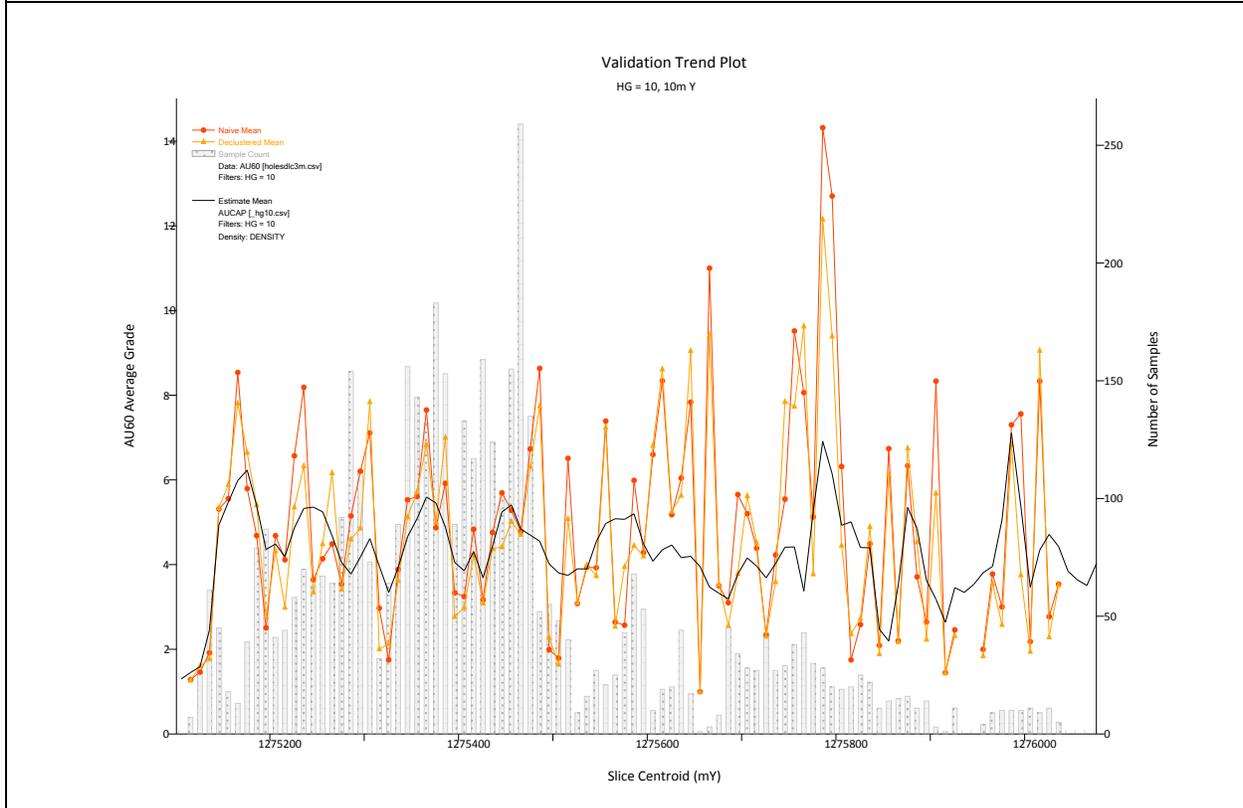
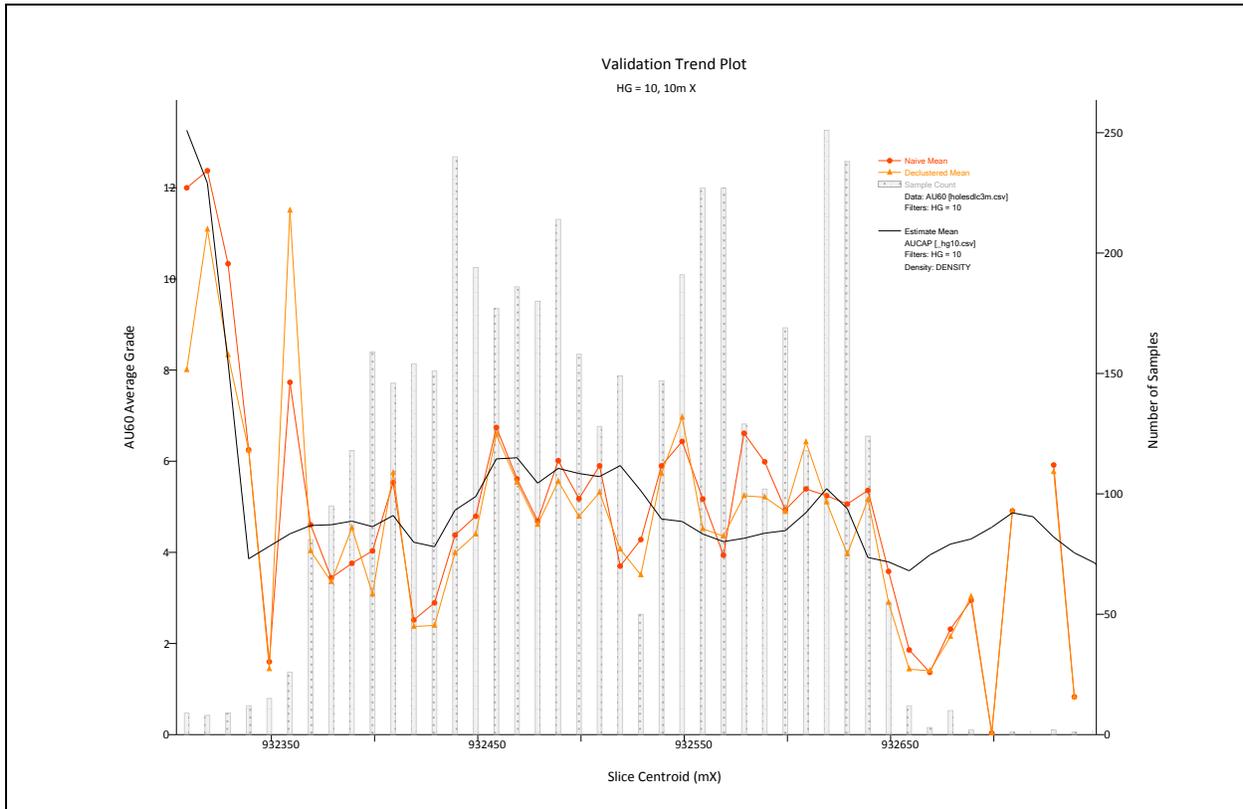
Appendix D5: Swath Plots El Silencio HG20 (east-west and north-south)



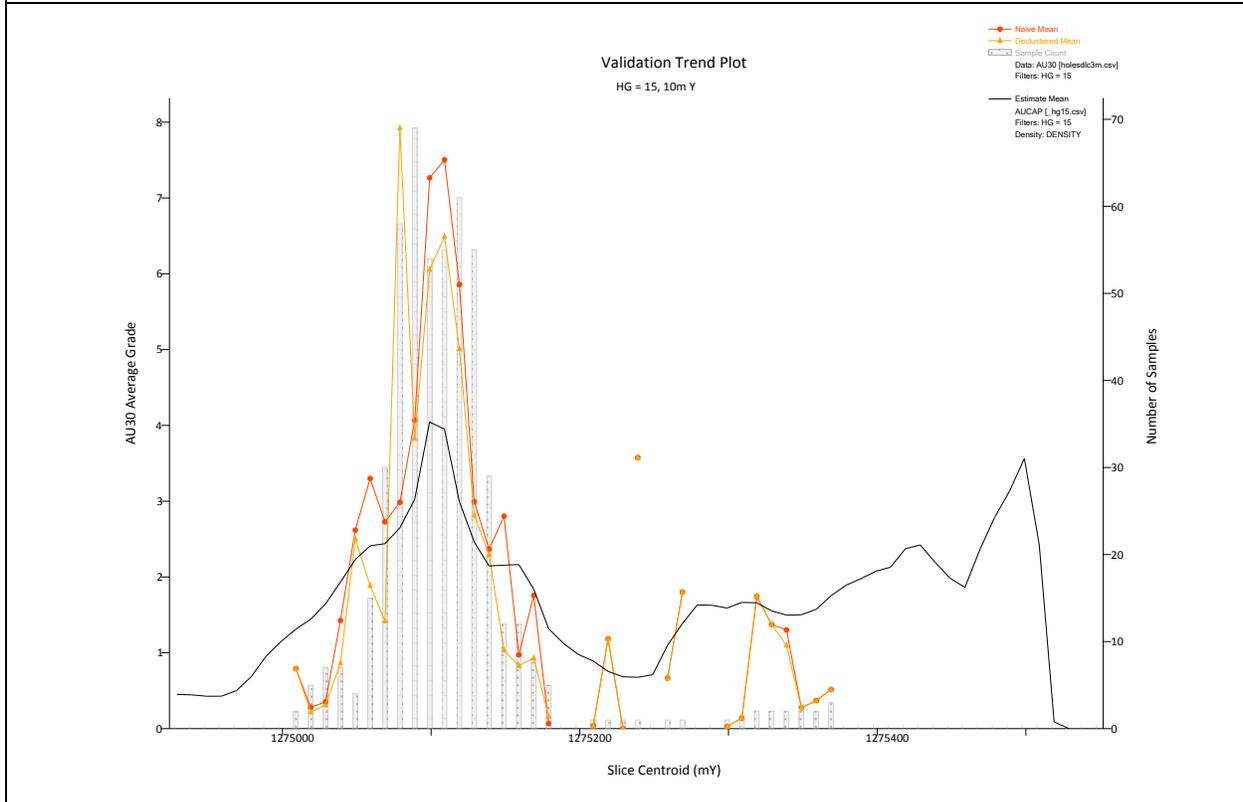
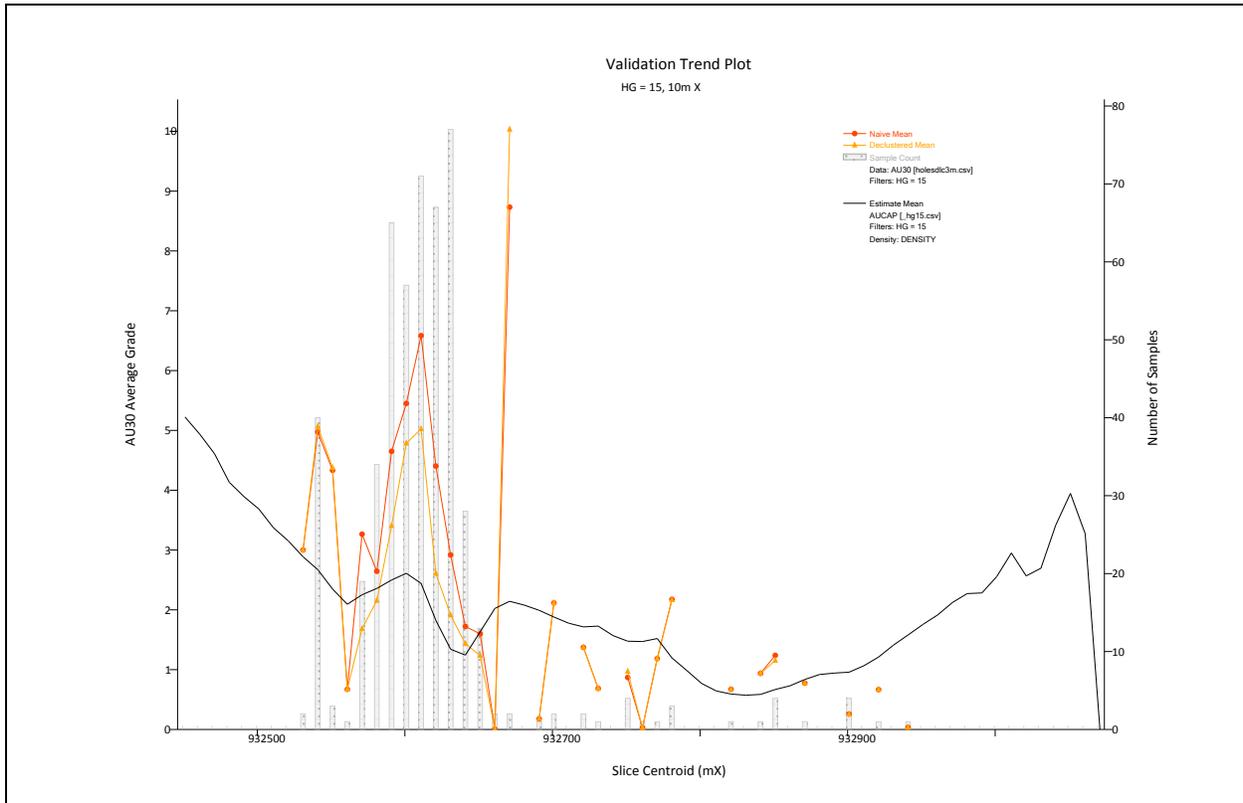
Appendix D5: Swath Plots El Silencio HG30 (east-west and north-south)



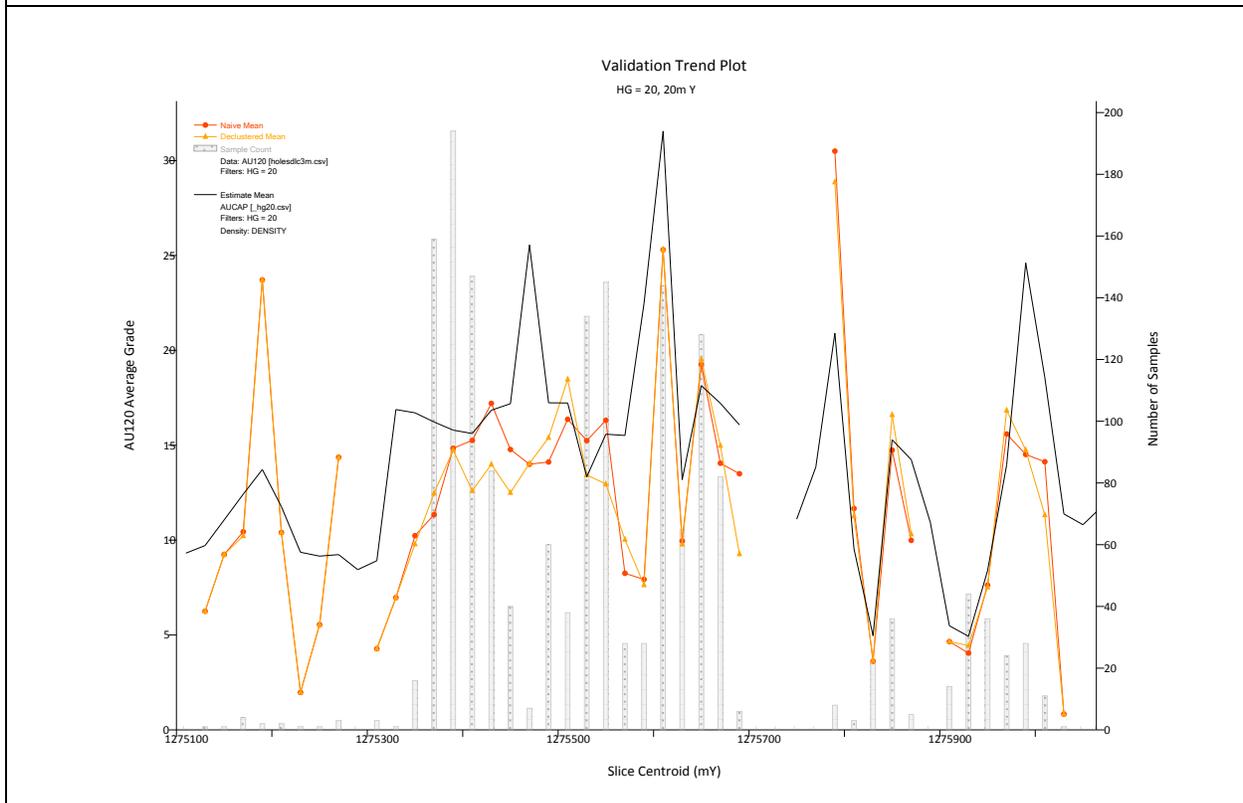
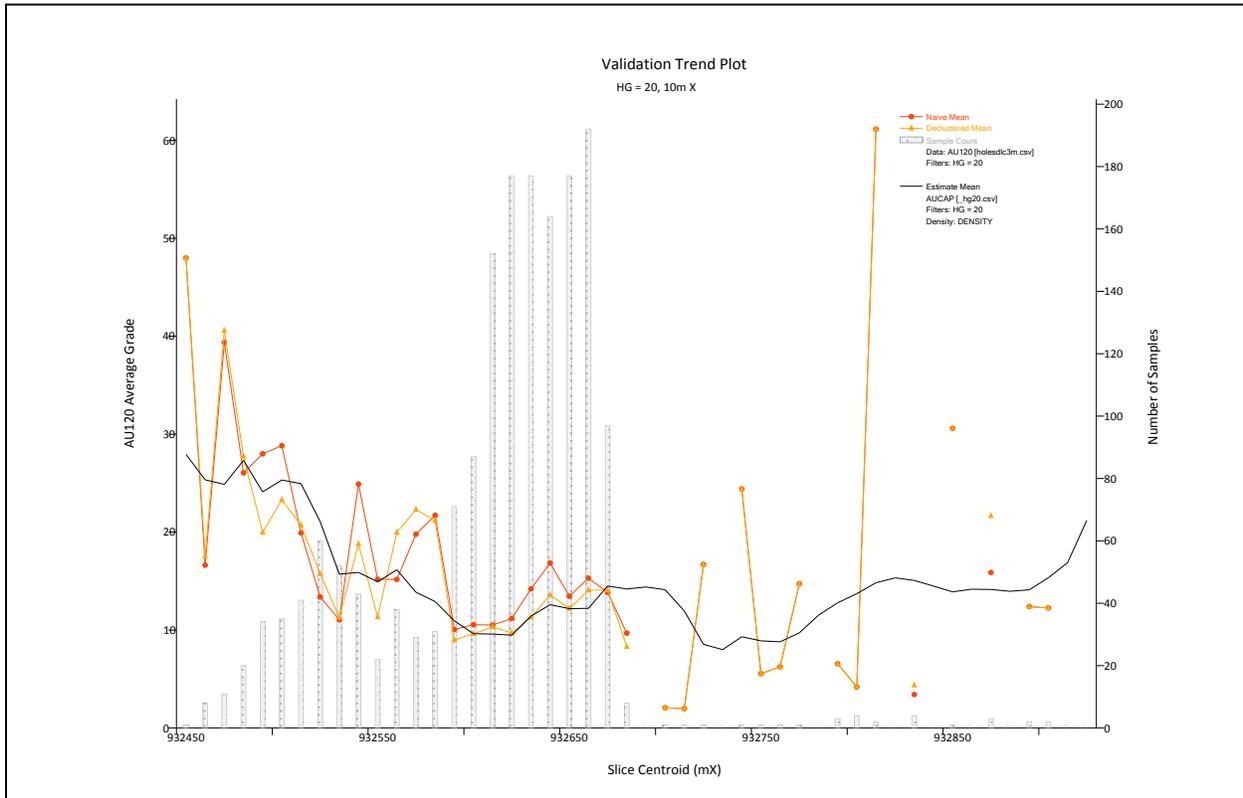
Appendix D6: Swath Plots Sandra K HG10 (east-west and north-south)



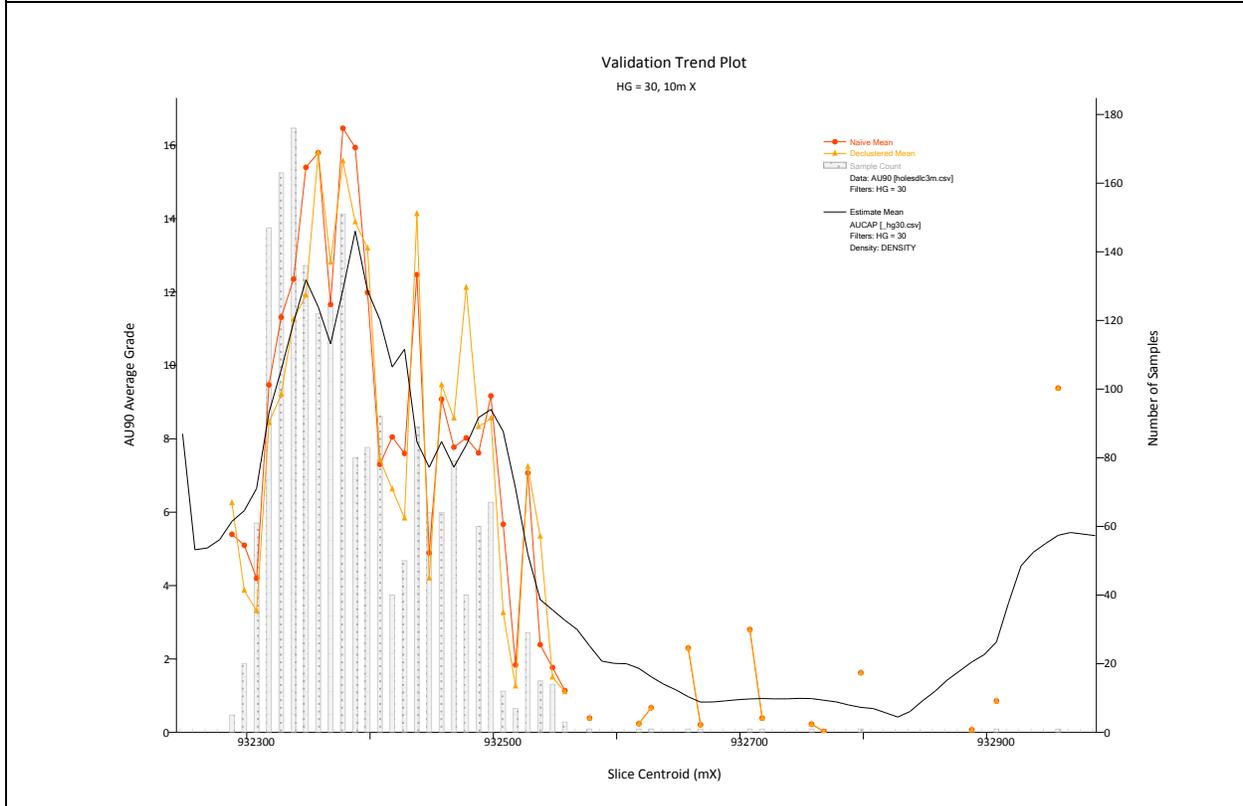
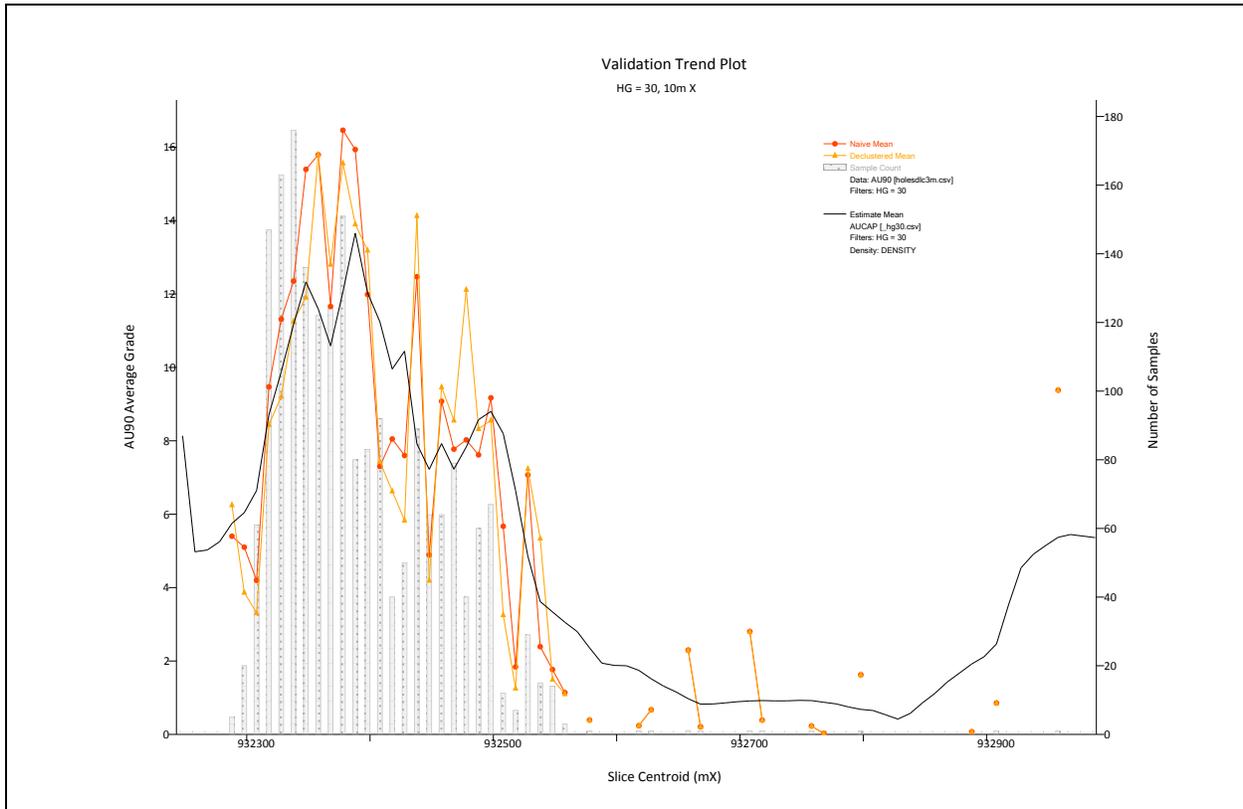
Appendix D7: Swath Plots Sandra K HG15 (east-west and north-south)



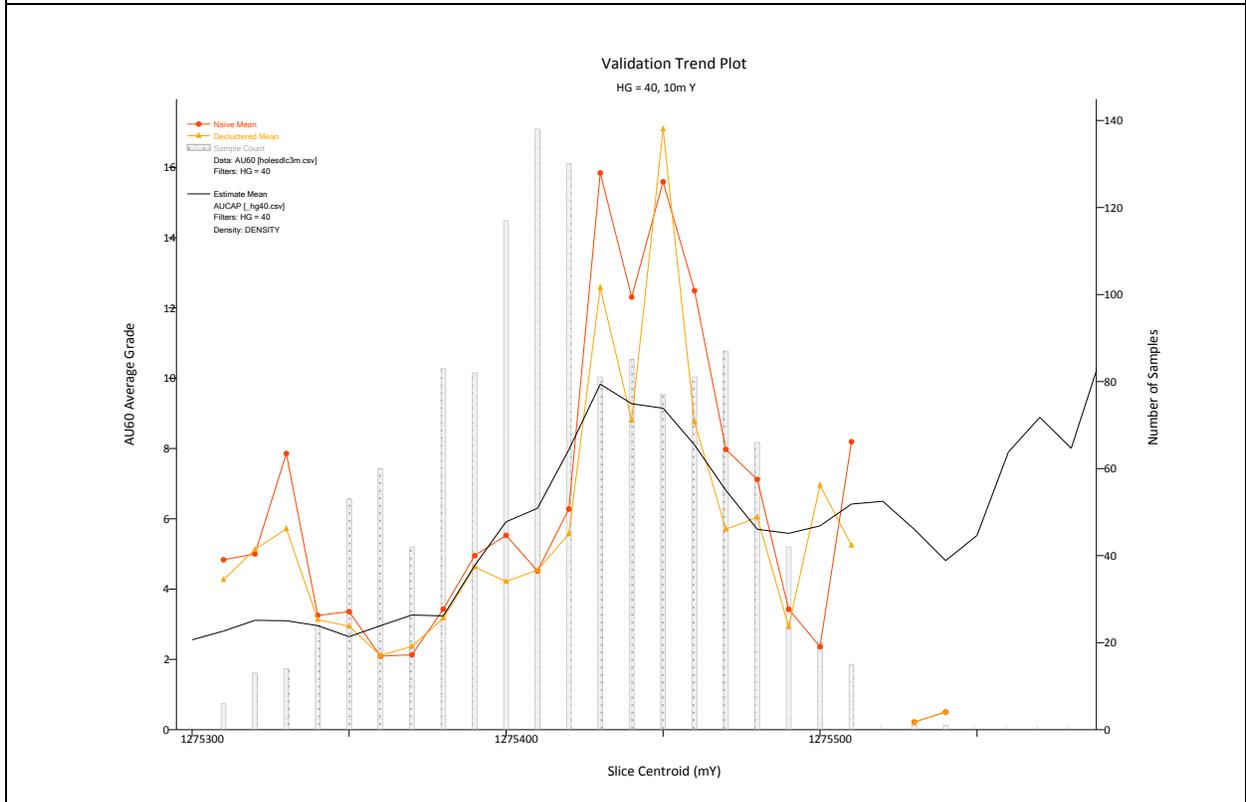
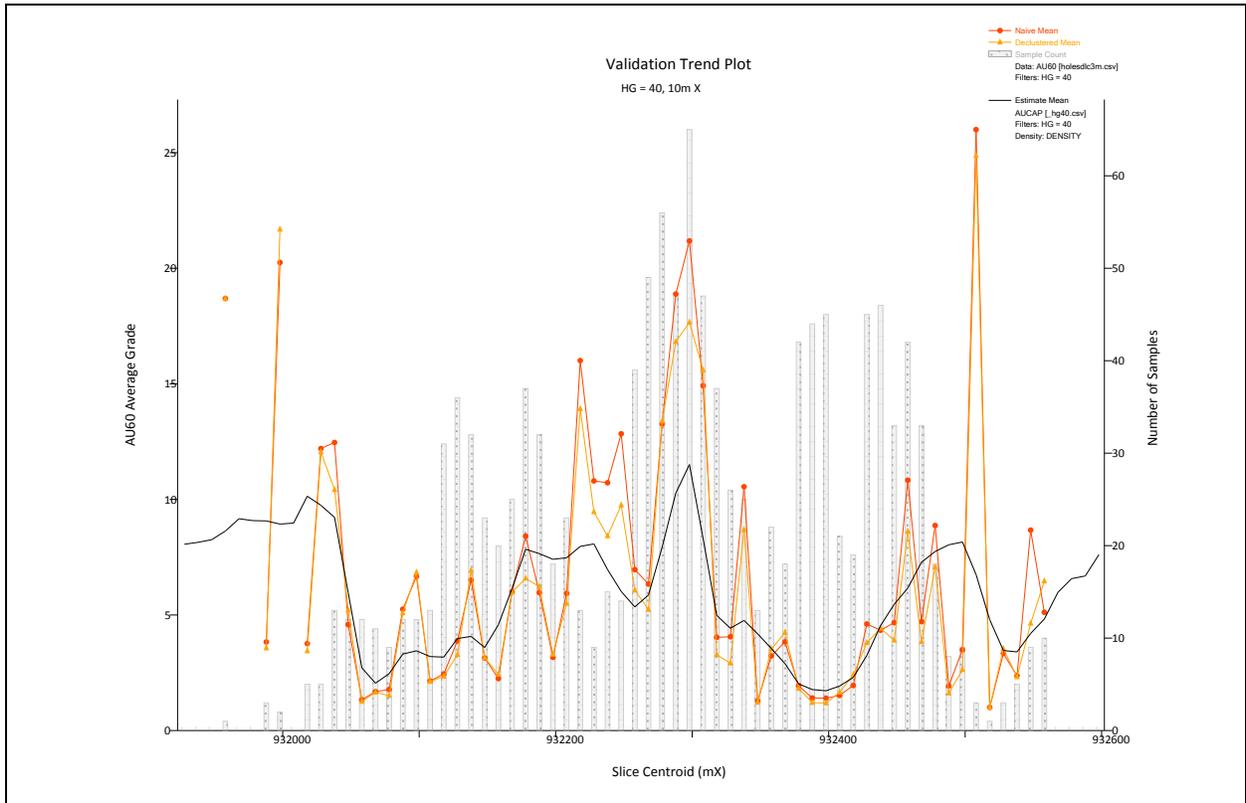
Appendix D8: Swath Plots Sandra K HG20 (east-west and north-south)



Appendix D9: Swath Plots Sandra K HG30 (east-west and north-south)



Appendix D10: Swath Plots Sandra K HG40 (east-west and north-south)



Appendix E: Technical Economic Model

BUSINESS UNIT		Segovia Gold												
OPERATION		Q4 2016 Costs & Prices												
Period		units / sensit.	Total or Avg.	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Project Timeline			(Start July, 2017)	1	2	3	4	5	6	7	8	9	10	11
Discount Factors	EOP @ 5%			1.0000	0.9524	0.9070	0.8638	0.8227	0.7835	0.7462	0.7107	0.6768	0.6446	0.6139
Market Prices														
Gold (US\$/oz)	1.00	\$/oz	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250
Silver (US\$/oz)	1.00	\$/oz	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00
Physicals Summary														
Total Ore Mined		kt	4,075	159	368	432	429	463	495	488	462	511	268	-
Total Waste Mined		kt	2,998	68	151	241	298	297	315	338	467	560	264	-
Total Material Mined		kt	7,073	227	518	673	726	760	810	826	929	1,071	532	-
Total Ore Tons Processed		kt	4,075	159	368	432	429	463	495	488	462	511	268	-
Processed Ore Gold Grade		g/t	8.77	16.16	14.31	12.32	10.09	9.34	8.24	6.76	5.58	5.36	4.56	-
Processed Ore Silver Grade		g/t	11.90	21.94	19.42	16.72	13.70	12.68	11.19	9.18	7.58	7.27	6.20	-
Contained Gold, Processed		koz	1,149	82	169	171	139	139	131	106	83	88	39	-
Contained Silver, Processed		koz	1,559	112	230	232	149	189	178	144	113	120	53	-
Average Gold Recovery, Doré		% recovery	90.5%	90.5%	90.5%	90.5%	90.5%	90.5%	90.5%	90.5%	90.5%	90.5%	90.5%	-
Average Silver Recovery, Doré		% recovery	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	-
Recovered Gold, Doré		koz	1,039	75	153	155	126	126	119	96	75	80	36	-
Recovered Silver, Doré		koz	935	67	138	139	113	113	107	86	68	72	32	-
Doré		koz	1,975	142	291	294	239	239	226	182	143	151	68	-
Cash Flow														
Gold Revenue	99%	\$000s	1,299,292	93,280	191,293	193,610	157,326	157,422	148,478	120,056	93,796	99,603	44,428	-
Silver Revenue	1%	\$000s	14,313	1,028	2,107	2,133	1,733	1,734	1,636	1,323	1,033	1,097	489	-
Gross Revenue		\$000s	1,313,605	94,307	193,400	195,742	159,059	159,156	150,114	121,378	94,829	100,701	44,918	-
Gold Revenue		\$000s	1,299,292	93,280	191,293	193,610	157,326	157,422	148,478	120,056	93,796	99,603	44,428	-
Gross Revenue After By-Product Credits		\$000s	1,299,292	93,280	191,293	193,610	157,326	157,422	148,478	120,056	93,796	99,603	44,428	-
Mining Cost		\$000s	(504,571)	(38,910)	(75,368)	(64,624)	(65,724)	(64,996)	(67,244)	(56,682)	(28,054)	(29,630)	(11,483)	-
Process Cost		\$000s	(114,728)	(4,811)	(10,728)	(12,146)	(12,072)	(12,834)	(13,536)	(13,380)	(12,806)	(13,888)	(8,527)	-
Site G&A Cost		\$000s	(70,800)	(4,200)	(8,400)	(8,400)	(8,400)	(8,400)	(8,400)	(8,400)	(5,400)	(5,400)	(5,400)	-
Smelting & Refining Charges		\$000s	(25,986)	(1,866)	(3,826)	(3,872)	(3,147)	(3,148)	(2,970)	(2,401)	(1,876)	(1,992)	(889)	-
Impurities Penalties		\$000s	-	-	-	-	-	-	-	-	-	-	-	-
Freight		\$000s	(2,000)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	-
By-Product Credits		\$000s	14,313	1,028	2,107	2,133	1,733	1,734	1,636	1,323	1,033	1,097	489	-
Direct Cash Costs		\$000s	(703,771)	(48,959)	(96,415)	(101,109)	(87,810)	(87,844)	(84,569)	(73,741)	(47,302)	(50,013)	(26,009)	-
Royalties		\$000s	(46,239)	(3,320)	(6,808)	(6,890)	(5,599)	(5,602)	(5,284)	(4,273)	(3,338)	(3,545)	(1,581)	-
Total Operating Expense		\$000s	(750,010)	(52,278)	(103,223)	(107,999)	(93,409)	(93,446)	(89,853)	(78,013)	(50,640)	(53,558)	(27,591)	-
Operating Margin		\$000s	549,282	41,001	88,070	85,610	63,917	63,976	58,625	42,043	43,156	46,046	16,838	-
Earnings & Cash Flow														
Earnings Before Taxes & Depreciation		\$000s	549,282	41,001	88,070	85,610	63,917	63,976	58,625	42,043	43,156	46,046	16,838	-
Depreciation Allowance		\$000s	(176,307)	(17,921)	(10,256)	(14,288)	(15,994)	(17,058)	(18,512)	(20,104)	(21,763)	(24,396)	(16,014)	-
Other Non-Cash Tax Adjustments		\$000s	-	-	-	-	-	-	-	-	-	-	-	-
Earnings Before Taxes		\$000s	372,976	23,080	77,814	71,322	47,923	46,918	40,113	21,939	21,393	21,650	824	-
Income Tax		\$000s	(132,403)	(9,482)	(29,180)	(23,883)	(16,161)	(15,830)	(13,584)	(7,586)	(7,406)	(7,491)	(1,799)	-
Net Income		\$000s	240,572	13,598	48,634	47,439	31,762	31,088	26,529	14,352	13,986	14,159	(975)	-
Non-Cash Add Back - Depreciation		\$000s	176,307	17,921	10,256	14,288	15,994	17,058	18,512	20,104	21,763	24,396	16,014	-
Working Capital		\$000s	1,025	-	(1,089)	(31)	493	(1)	121	386	184	(79)	749	292
Operating Cash Flow		\$000s	417,903	31,519	57,801	61,696	48,248	48,145	45,163	34,842	35,934	38,476	15,787	292
Capital														
CAPEX		\$000s	(207,357)	(12,345)	(26,084)	(25,411)	(24,487)	(20,194)	(21,590)	(21,258)	(23,054)	(21,772)	(11,164)	-
Total Capital		\$000s	(207,357)	(12,345)	(26,084)	(25,411)	(24,487)	(20,194)	(21,590)	(21,258)	(23,054)	(21,772)	(11,164)	-
Summary Metrics														
Before-Tax Metrics														
Free Cash flow		\$000s	342,949	28,656	60,898	60,168	39,923	43,781	37,157	21,171	20,286	24,195	6,423	292
Cumulative Cash Flow		\$000s		28,656	89,554	149,722	189,644	233,426	270,582	291,753	312,039	336,234	342,657	342,949
NPV @ 5.00%		\$000s	291,758	28,656	57,998	54,574	34,487	36,019	29,113	15,798	14,417	16,376	4,140	180
Cumulative NPV		\$000s		28,656	86,654	141,228	175,715	211,734	240,847	256,645	271,062	287,438	291,578	291,758
After-Tax Metrics														
Free Cash flow		\$000s	210,546	19,174	31,718	36,285	23,761	27,952	23,573	13,584	12,880	16,704	4,623	292
Cumulative Cash Flow		\$000s		19,174	50,892	87,176	110,938	138,889	162,462	176,047	188,926	205,630	210,253	210,546
NPV @ 5.00%		\$000s	178,040	19,174	30,207	32,912	20,526	22,996	18,470	10,137	9,153	11,306	2,980	180
Cumulative NPV		\$000s		19,174	49,381	82,293	102,819	125,814	144,284	154,421	163,575	174,880	177,861	178,040
Operating Metrics														
Mine Life		Years	9											
Average Mining Rate (Ore + Waste)		MTPA	1,071											
Average Processing Rate		MTPA	511											
Mining Cost		\$/t ore	\$ 123.82	\$ 245.22	\$ 205.00	\$ 181.97	\$ 153.29	\$ 140.27	\$ 123.36	\$ 103.82	\$ 60.71	\$ 57.95	\$ 42.91	\$ -
Processing Cost		\$/t ore	\$ 28.15	\$ 30.32	\$ 29.18	\$ 28.11	\$ 28.16	\$ 27.70	\$ 27.33	\$ 27.41	\$ 27.71	\$ 27.16	\$ 31.87	\$ -
G&A Cost		\$/t ore	\$ 17.37	\$ 18.50	\$ 16.21	\$ 12.48	\$ 11.57	\$ 11.05	\$ 10.37	\$ 10.17	\$ 5.81	\$ 5.04	\$ 10.15	\$ -
Metal Sales (Payable Metal)														
LOM Gold Sales		koz	1,039.4	74.6	153.0	154.9	125.9	125.9	118.8	96.0	75.0	79.7	35.5	-
1st 5 Years Avg. Gold Sales		koz / yr	126.9											
Direct+Indirect Cash Costs (incl. By-Product Credits)														
LOM Cash Costs / tAu-oz		\$/ Au-oz	\$ 721.56	\$ 700.56	\$ 674.51	\$ 697.28	\$ 742.16	\$ 742.00	\$ 756.45	\$ 812.26	\$ 674.87	\$ 672.14	\$ 776.26	\$ -