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NEXA RESOURCES S.A.

TECHNICAL REPORT ON THE CERRO LINDO MINE, DEPARTMENT OF ICA, PERU

NI 43-101 Report

Qualified Persons:

Rosmery J. Cárdenas Barzola, P.Eng.

Jason J. Cox, P.Eng.

Brenna J.Y. Scholey, P.Eng.

Luis Vasquez, M.Sc., P.Eng.

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Nexa Resources S.A.
Rúa Guaicuí, 20 – 14° Andar
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30380-380

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Lead Author

Rosmery J. Cárdenas Barzola
Jason J. Cox

(Signed)
(Signed)

Peer Reviewer

Luke Evans
Normand L. Lecuyer

(Signed)
(Signed)

Project Manager Approval

Rosmery J. Cárdenas Barzola

(Signed)

Project Director Approval

Jason J. Cox

(Signed)

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Roscoe Postle Associates Inc.

55 University Avenue, Suite 501
Toronto, ON M5J 2H7
Canada
Tel: +1 416 947 0907
Fax: +1 416 947 0395
mining@rpacan.com

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1 SUMMARY

EXECUTIVE SUMMARY

Roscoe Postle Associates Inc. (RPA) was retained by Nexa Resources S.A. (Nexa) to prepare an independent Technical Report on the Cerro Lindo Mine (Cerro Lindo or the Mine), located in the Department of Ica, Peru. The purpose of this report is to support the Mineral Resource and Mineral Reserve estimates for the Mine as of July 31, 2019. This Technical Report conforms to National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101). RPA visited the property from June 4 to 7 and June 18 to 20, 2019.

Nexa is a publicly traded company on the Toronto Stock Exchange (TSX) and the New York Stock Exchange (NYSE). It is a reporting issuer in all provinces and territories of Canada and is under the jurisdiction of the Ontario Securities Commission.

Nexa is a producer with a diversified portfolio of polymetallic mines (zinc, lead, copper, silver, and gold) and greenfield projects at various stages of development in Brazil and Peru. In Brazil, Nexa owns and operates two underground mines, Vazante (Zn and Pb) and Morro Agudo (Zn and Pb), the Aripuanã project (Zn, Pb, and Ag), which is currently under construction, and the Caçapava do Sul project (Zn, Pb, Cu, and Ag). It also operates two zinc smelters in Brazil (Três Marias and Juiz de Fora). In Peru, Nexa operates the El Porvenir (Zn-Pb-Cu-Ag-Au), Cerro Lindo (Zn-Cu-Pb-Ag), and Atacocha (Zn-Cu-Pb-Au-Ag) underground mines. The development projects in Peru include Magistral, Shalipayco, Florida Canyon (JV with Solitario), Hilarión, and Pukaqaqa. Nexa also operates a zinc smelter in Peru (Cajamarquilla).

Cerro Lindo is located in the Chavín District, Chincha Province, Ica Department of Peru, approximately 268 km southeast of Lima. The Mine is owned by Nexa Resources Peru S.A.A. (Nexa Peru), a wholly-owned subsidiary of Nexa. Cerro Lindo commenced operations in 2007 and comprises an underground zinc-lead-copper-silver mine, a conventional comminution flotation process plant, a coastal desalination plant, and associated infrastructure. The Mine produces separate zinc, lead, and copper concentrates with silver content. In 2018, the Mine produced 130,000 tonnes (t) of zinc, 38,000 t of copper, and

13,000 t of lead. As of July 2019, the Mine is scheduled to produce a total of approximately 50 million tonnes (Mt) over a mine life of eight years.

The Mineral Resource estimate for Cerro Lindo, as of July 31, 2019, is summarized in Table 1-1. The Mineral Resource estimate is prepared in accordance with Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM (2014) definitions).

TABLE 1-1 SUMMARY OF MINERAL RESOURCES – JULY 31, 2019
Nexa Resources S.A. – Cerro Lindo Mine

| Category | Tonnage (Mt) | Grade | | | | Contained Metal | | | |
|----------------------|-----------------|-------------|-------------|---------------|-----------------|-----------------|-----------------|-------------------|--------------------|
| | | Zinc (%) | Lead (%) | Copper (%) | Silver (g/t) | Zinc (000 t) | Lead (000 t) | Copper (000 t) | Silver (000 oz) |
| Measured | 3.10 | 2.58 | 0.33 | 0.69 | 27.87 | 79.8 | 10.2 | 21.4 | 2,776 |
| Indicated | 2.27 | 1.64 | 0.28 | 0.68 | 29.66 | 37.4 | 6.3 | 15.4 | 2,167 |
| Total M&I | 5.37 | 2.18 | 0.31 | 0.68 | 28.63 | 117.2 | 16.5 | 36.8 | 4,943 |
| Inferred | 5.14 | 2.43 | 0.53 | 0.53 | 43.12 | 125.1 | 27.1 | 27.1 | 7,123 |

Notes

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are reported on a 100% ownership basis.
3. Mineral Resources are estimated at a net smelter return (NSR) cut-off value of US\$32.91/t.
4. Mineral Resources are estimated using an average long term metal prices of Zn: US\$2,899.15/t (US\$1.31/lb); Pb: US\$2,304.47/t (US\$1.04/lb); Cu: US\$7,362.42/t (US\$3.34/lb); and Ag: US\$19.31/oz.
5. A minimum mining width of 5.0 m was used to create resource shapes.
6. Bulk density varies depending on mineralization domain.
7. Mineral Resources are exclusive of Mineral Reserves.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
9. Numbers may not add due to rounding.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

The Mineral Reserve estimate, as of July 31, 2019, is summarized in Table 1-2.

TABLE 1-2 SUMMARY OF MINERAL RESERVES – JULY 31, 2019
Nexa Resources S.A. – Cerro Lindo Mine

| Category | Tonnage (Mt) | Grade | | | | Contained Metal | | | |
|--------------|-----------------|-------------|-------------|---------------|-----------------|-----------------|-----------------|-------------------|--------------------|
| | | Zinc (%) | Lead (%) | Copper (%) | Silver (g/t) | Zinc (000 t) | Lead (000 t) | Copper (000 t) | Silver (000 oz) |
| Proven | 22.71 | 1.54 | 0.19 | 0.63 | 19.05 | 350.5 | 42.4 | 143.1 | 13,914 |
| Probable | 27.41 | 1.05 | 0.14 | 0.67 | 18.77 | 288.2 | 38.6 | 182.7 | 16,535 |
| Total | 50.12 | 1.27 | 0.16 | 0.65 | 18.90 | 638.7 | 81.0 | 325.8 | 30,449 |

Notes:

1. CIM (2014) definitions were followed for Mineral Reserves.
2. Mineral Reserves are reported on a 100% ownership basis.
3. Mineral Reserves are estimated at NSR cut-off values of US\$32.91/t processed and US\$40.00/t processed for sub-level open stoping (SLS) and cut and fill (CAF) respectively. A number of incremental stopes (down to US\$28/t NSR value) are included in the estimate.
4. Mineral Reserves are estimated using average long term metal prices of Zn: US\$2,521/t (US\$1.14/lb); Pb: US\$2,004/t (US\$0.91/lb); Cu: US\$6,402/t (US\$2.90/lb); Ag: US\$16.79/oz.
5. A minimum mining width of 5.0 m was used for both CAF and SLS stopes and 4.0 m for pillar recovery CAF stopes.
6. Bulk density varies depending on mineralization domain.
7. Numbers may not add due to rounding.

RPA is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

CONCLUSIONS

RPA offers the following conclusions by area:

GEOLOGY AND MINERAL RESOURCES

- Measured Mineral Resources are estimated to total 3.1 Mt at 2.58% Zn, 0.33% Pb, 0.69% Cu, and 27.87 g/t Ag. Indicated Mineral Resources are estimated to total 2.27 Mt at 1.64% Zn, 0.28% Pb, 0.68% Cu, and 29.66 g/t Ag. In addition, Inferred Mineral Resources are estimated to total 5.14 Mt at 2.43% Zn, 0.53% Pb, 0.53% Cu, and 43.12 g/t Ag.
- Cerro Lindo is a Kuroko-style volcanogenic massive sulphide (VMS) deposit that comprises a number of lens-shaped massive and semi-massive sulphide bodies.
- Three massive sulphide units and one semi-massive sulphide unit have been recognized.
- The control of mineralization is lithological, mineralogical, and structural. Most copper mineralization is located in a pyritic massive sulphide unit and most zinc mineralization is located in baritic massive sulphide units, with lesser disseminated mineralization as patches or stringers in the semi-massive sulphide and mineralized volcanic units.

- Protocols for drilling, sampling, analysis, verification, and security meet industry standard practices. The drill hole database was verified by RPA and is suitable for Mineral Resource estimation.
- The geological models are reasonably constructed using available geological information and are appropriate for Mineral Resource estimation.
- The assumptions, parameters, and methodology used for the Cerro Lindo Mineral Resource estimate are appropriate for the style of mineralization and proposed mining methods.

MINING AND MINERAL RESERVES

- The Mineral Reserve estimate is consistent with the CIM (2014) definitions as incorporated by reference into NI 43-101.
- Estimation procedures for the current mining method are well-established, and the outcomes are consistent with the design inputs.
- A new layout for drill drifts within the stopes involves slightly higher costs, however, has shown worthwhile improvements in dilution reduction and increased extraction for secondary stopes.
- Going forward, a greater proportion of the stopes will be on the edges of the orebodies, where past dilution and extraction results may be less indicative of future performance. Dilution from adjacent disseminated mineralization is likely to carry low grades, and edge stope results will not necessarily match up with those of more centrally located stopes.
- Sill pillar recovery through cut and fill (CAF) mining (comprising 10% of Mineral Reserves) represents a change in mining method for Cerro Lindo, and is likely to be less productive, higher cost, and requires high quality backfill placement.
- There may be opportunities to do better than planned in sill pillar recovery, through use of a longhole retreat sequence.
- There may be opportunities for additional disposal of tailings underground, by targeting voids left in areas of unstable ground.

PROCESSING

- Operating costs for the near future are forecast to remain in line with recent historical operating costs, which, in RPA's opinion, is reasonable.
- Based on recent processing plant performance, the forecast recoveries and concentrate qualities for the near future are reasonable. However, with Zn and Pb head grades at the end of the life of mine (LOM) being well below the historical ranges and consequently the lack of data on processing material with these head grades, there is a risk that actual recoveries may be lower than forecast.
- A small amount of transition or supergene ore has been identified in two stopes. Since large quantities of this ore fed to the concentrator negatively affect recoveries and

concentrate quality, the proportion of this ore allowed in the concentrator feed blend is limited. Currently, this material does not form part of the feed blend, and test work is being conducted to determine the most economical method of processing this ore.

- As mining has progressed, the distance that paste backfill is pumped has increased, and this has led to limitations in the amount of paste backfill that can be pumped to the furthest points in the mine. This in turn means that dry-stack tailings filtration is fully utilized. The paste backfill pumping and piping system is strained, and any breakdowns in the system result in throughput reductions in the processing plant, as there is no tailings surge capacity other than limited space in the tailings thickener. There is therefore a risk that processing capacity can be constrained by continued or worsening paste backfill system down-time. Nexa plans to install an additional belt filter for dry-stack tailings filtration, which will allow for additional tailings to be diverted to dry-stacking in the event that the paste backfill system is down, and will help to minimize the impact on the processing plant.

ENVIRONMENT

- No known environmental issues were identified from the site visit and documentation review. The Cerro Lindo Mine operation complies with applicable Peruvian permitting requirements. The approved permits address the authority's requirements for operation of the underground mine, tailings storage facilities (TSF), waste rock dumps, process plant, water usage, and effluents discharge. There is no discharge of industrial or domestic water to the environment at the mine site.
- There is a comprehensive Environmental Management Plan (EMP) in place, which includes a complete monitoring program for effluent discharges, gas emissions, air quality, non ionizing radiation, noise, surface water quality, groundwater quality, soil quality, terrestrial biology (vegetation and wildlife), and aquatic biology. Cerro Lindo reports the results of the monitoring program to the authorities according to the frequency stated in the approved resolutions and no compliance issues have been raised by the authorities.
- Regarding the tailings dry-stack storage facilities, some movement of the tailings relative to the foundation has been noted from the tailings monitoring data, however, phreatic levels in the tailings are very low and the range of movement is considered to be within normal parameters. It is noted that the likelihood of the mine site experiencing a severe seismic event is relatively high given the mine site proximity to a major tectonic plate subduction zone.
- Water management involves complete recirculation of water at the mine site where there is no fresh water withdrawal from natural water bodies and there is no discharge of industrial or treated sewage water to the environment. Fresh water is being supplied from a desalination plant located at the coast to meet site and process water make-up requirements. Water quality monitoring is carried out monthly at stations located along the Topará Creek at the mine site and in Jahuay beach at the discharge location from the desalination plant.
- A Mine Closure Plan has been developed for all the Mine components within the context of Peruvian legislation and is periodically updated.

- The social due diligence review indicates that, at present, Nexa's operations at the Cerro Lindo site in Peru are a positive contribution to sustainability and community well-being. Nexa has established and continues to implement its various Corporate policies, procedures, and practices in a manner consistent with relevant International Finance Corporation (IFC) Performance Standards. Nexa has, and continues to make, a positive contribution to the communities most affected by the Mine and has done a thorough job in collecting information to support its environmental effects assessment. Information regarding the outcomes of the complaints and grievances reports and site-specific health and safety practices was not provided at the time of this review, however, the corporate policies that guide these activities are clear and aligned with IFC Performance Standards.
- The water quality concerns outside of the mine site that communities express from time to time remain a risk for the operations at Cerro Lindo.

RECOMMENDATIONS

RPA offers the following recommendations:

GEOLOGY AND MINERAL RESOURCES

- Improve reconciliation processes by implementing a formal procedure and by forming a multi-disciplinary team to organize and analyze reconciliation results so that production data can be used to calibrate future resource and reserve models.
- Consider reducing the insertion of control samples from 20% to 15% for infill drilling.
- Take density measurements for pyritic oxidized sulphides (SOP), baritic oxidized sulphides (SOB), semi-massive sulphides (SSL), and leached massive sulphides (SLB) domains.
- Investigate building copper and zinc mineralization domains separately using geological controls (lithology and mineralogy) and grades and including channel samples. Incorporate high grade domains to control continuous high grade zones.
- Post-mineralization dike modelling should be improved to capture more of the logged intercepts and core angles, as well as contacts based on the underground mapping. Dikes are important to delimit internal waste and to guide the local interpolation strategy as some of them are behaving like faults by controlling the mineralization trends.
- Build a more detailed structural model and structural domains to customize local search anisotropies and directions. It appears that there are at least four main structural trends present (northwest-southeast dipping northeast, northwest-southeast dipping southwest, northeast-southwest dipping northwest, and west-northwest/east-southeast dipping northwest and plunging west-northwest) that should be investigated further. Some mineralization domains appear to have mineralization trending in various directions due to local faulting and folding and further sub-domaining may be warranted.
- Complete the 2020 exploration program, consisting of a 35,000 m drill program to explore new targets and continue with advanced exploration, including geological

mapping, and geochemical and geophysical surveys. The 2020 exploration program budget is approximately US\$5.5 million (US\$2.3 million will be spent on mine area exploration, and approximately US\$3.2 million will be expended on regional exploration).

MINING AND MINERAL RESERVES

- Continue to collect and analyze the stope performance data, and consider further segregation of the stope dataset, to assess differences in performance for edge stopes.
- Consider slashing the walls of the mucking drifts to establish a better mucking floor and improve breakage to the corners of the stopes.
- Investigate alternate mining methods for sill pillar recovery, including geotechnical review.

PROCESSING

- Investigate mitigating actions to ensure that the reliability and capacity of the paste backfill system does not constrain processing plant capacity. (Nexa plans to install an additional belt filter for dry-stack tailings filtration, which will allow for additional tailings to be diverted to dry-stacking in the event that the paste backfill system is down, and will help to minimize the impact on the processing plant.)
- Conduct test work to further assess the negative effects of transition and supergene ores on the flotation process and evaluate methods for maximizing recoveries from these ores. Test work that is currently in progress to evaluate economical alternatives for the treatment of this material should continue.

ENVIRONMENT

- Continue to implement the EMP, which monitors and manages potential environmental impacts resulting from the mine operations to inform future permit applications and the Mine Closure Plan.
- Continue identifying and comparing solutions for storing tailings for the remainder of the LOM.
- Evaluate the long term environmental impacts of allowing the tailings valley runoff to pond against and seep through the Pahuaypite waste rock dump.
- Continue with participatory monitoring of water quality and implement social commitments to help improve access to water and water quality in the area.
- Sourcing local employment may be difficult with expanded and continued operations as Nexa has already reported that sourcing local employees has, at times, been challenging. Continue with commitments in educating, training, recruitment, and diversity targeted to the local workforce.
- Improve social and employment policies and procedures by developing mechanisms to communicate the outcomes of the employee and community focused activities with

stakeholders and the public, particularly with a focus on access to water and perception about water quality.

ECONOMIC ANALYSIS

This section is not required as Nexa is a producing issuer, the property is currently in production, and there is no material expansion of current production.

TECHNICAL SUMMARY

PROPERTY DESCRIPTION AND LOCATION

The Mine is located in the Chavín District, Chinchá Province, Ica Department of Peru, approximately 268 km southeast of Lima and 60 km from the coast. The approximate coordinates of the Mine are 392,780m E and 8,554,165m N, using the UTM_WGS84 datum.

The current access from Lima is via the Panamericana Sur highway to Chinchá (180 km) and then via an unpaved dirt road (60 km) from Huamanpuquio up the river valley. The closest commercial airport is Jorge Chavez, at Callao.

LAND TENURE

The Mine property consists of 58 mineral concessions covering an area of approximately 36,656.60 ha, 10 mineral claims totalling 6,667.63 ha, and one beneficiation concession covering an area of 518.78 ha. All concessions are held by Nexa Peru, a wholly-owned subsidiary of Nexa. The titles of all mineral concessions have been granted and duly recorded in the Public Registry. The UTM coordinates of these mineral concessions, which determine their location within the official grid, have been recorded in the Mining Cadaster.

Nexa has 80.16% ownership in the Mine, with the remaining interest held by minority shareholders.

HISTORY

Artisanal-style mining of outcropping barite bodies for use by the oil industry began in the early 1960s. The Cerro Lindo deposit was discovered in 1967, during a colour anomaly reconnaissance program. Compañía Minera – Milpo S.A.A. (Milpo), a predecessor company

to Nexa Peru, acquired the property in 1984. From 1984 to 2011, Milpo carried out geological mapping, geophysical surveys, geochemical sampling, drilling, and trenching over the property. In 2002, a feasibility study was completed and construction started in 2006. The Mine commenced production in 2007.

Since 2007, the Mine has produced a total of approximately 60 Mt of ore.

GEOLOGY AND MINERALIZATION

The Cerro Lindo deposit is located in a 30 km by 10 km northwest trending belt of marine volcano-sedimentary rocks of the Middle Albian to Senonian (mid-Cretaceous) Huaranguillo Formation, belonging to the Casma Group, which is located within Tertiary intrusions of the Coastal Batholith. The Huaranguillo Formation fills the Canete volcano-sedimentary basin, one of the several similar basins that form the Casma Metallotect at the western side of the Andean Cordillera Occidental. In addition to Cerro Lindo, the Casma Metallotect hosts a number of important volcanogenic massive sulphide (VMS) deposits, including Tambogrande, Perubar, Potrobayo, Totoral, Maria Teresa, Aurora Augusta, and Palma

The Cerro Lindo deposit is a Kuroko-type VMS deposit. Mineralization is hosted in a pyroclastic unit composed of ash and lapilli-type polymictic tuffs of the Huaranguillo Formation. The deposit comprises lens-shaped, massive and stringer zones composed of pyrite, sphalerite, galena, chalcopyrite, and barite. The mineralization has characteristic zoning from zinc-rich to pyrite-rich and associated sericitic-pyritic alteration.

The mineralization has been divided into 18 mining production areas, which are termed OB-1, OB-2, OB-2B, OB-3-4, OB-5, OB-5B, OB-5C, OB-5D, OB-6, OB-6A, OB-6B, OB-6C, OB-7, OB-8A, OB-8B, OB-9, OB-10, and OB-11. The mineralized lenses exhibit an irregular elongated geometry, and their longest axis (nearly 500 m) has a northwest-southeast horizontal trend (azimuth 135°). The mineralized bodies are approximately 200 m thick and 100 m wide and generally dip to the southwest at 65° on average.

EXPLORATION STATUS

A total of 4,128 diamond drill holes for approximately 560,752 m have been completed at Cerro Lindo since 1995. Exploration has been carried out systematically since 2007. The 2019 exploration program includes 48,000 m of surface and underground diamond drilling to verify

targets identified by previous exploration and to extend known mineralization at the Mine. The currently ongoing underground mine program seeks to extend OB-3-4 and OB-12, and drilling is being started for extensions of OB-1, OB-8, and OB-9. Future exploration priorities include deeper stratigraphic levels extensions of known mineralized zones at Cerro Lindo, as well as Cerro Lindo Sureste, Pucasalla, Pucasalla Este, and Festejo prospects.

MINERAL RESOURCES

The Mineral Resource estimate for the Cerro Lindo Mine, as of July 31, 2019, using all data available as of April 30, 2019 was completed by Cerro Lindo staff and reviewed by RPA.

The Mineral Resource estimate as of July 31, 2019 was completed using Datamine Studio RM, Leapfrog Geo, and Isatis software. Wireframes for geology and mineralization were constructed in Leapfrog Geo based on geology sections, assay results, lithological information, and structural data. Assays were capped to various levels based on exploratory data analysis and then composited to 2.5 m lengths. Wireframes were filled with blocks and sub-celling at wireframe boundaries. Blocks were interpolated with grade using ordinary kriging (OK) and inverse distance cubed (ID³) interpolation algorithms. Block estimates were validated using industry standard validation techniques. Classification of blocks used distance-based and other criteria. The Mineral Resource estimate was reported within resource shapes generated in Deswik Stope Optimizer software, satisfying continuity criteria, and using an NSR cut-off values of US\$32.91/t on a block basis.

A summary of the Cerro Lindo underground Mineral Resources, exclusive of Mineral Reserves, for the Cerro Lindo deposit, is shown in Table 1-1. NSR cut-off values for the Mineral Resources were established using a zinc price of US\$1.31/lb, a lead price of US\$1.04/lb, a copper price of US\$3.34/lb, and a silver price of US\$19.31/oz.

RPA reviewed the Mineral Resource assumptions, input parameters, geological interpretation, and block modelling and reporting procedures, and is of the opinion that the Mineral Resource estimate is appropriate for the style of mineralization and that the block model is reasonable and acceptable to support the July 31, 2019 Mineral Resource estimate.

MINERAL RESERVES

Cerro Lindo operates at a rate of 7.3 million tonnes per annum (Mtpa), producing zinc, lead, and copper concentrates with silver content. Mining methods include sub-level stoping (SLS) for the majority of the Mineral Reserves, and some sill pillar recovery using CAF methods. Mineral Reserves, estimated as of July 31, 2019, are summarized in Table 1-2 and are supported by a LOM plan with a current mine life of eight years.

The Mineral Reserves have been estimated using variable NSR cut-off values of US\$32.9/t processed and US\$40.00/t processed for SLS and CAF, respectively. The total Proven and Probable Mineral Reserves are estimated to be approximately 50.12 Mt grading 1.27% Zn, 0.16% Pb, 0.65% Cu, and 18.90 g/t Au; and containing 638,700 t of Zn, 81,000 t of Pb, 325,800 t of Cu, and 30.449 million oz of Ag. In RPA's opinion the Mineral Reserve estimate is prepared in accordance with CIM (2014) definitions as incorporated by reference into NI 43-101.

RPA is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

MINING METHOD

Cerro Lindo has been operating since July 2007, recently at rates exceeding 7 Mtpa. The mine is mechanized, using rubber-tired equipment for all development and production operations. Mining is carried out in nine separate orebodies, using large longhole stoping methods, in a primary/secondary/tertiary sequence. Stopes are backfilled with a low-cement paste fill made from flotation tailings.

Mine access is through 15 portals servicing adits, drifts, and declines. The majority of the ore is delivered to grizzlies on the 1830 m level which serve a crusher installed on the 1820 m level. Crushed ore is delivered to the surface stockpile via an inclined conveyor through a portal at the 1940 m level. From the surface stockpile, ore is delivered to the concentrator via a system of inclined overland conveyors.

The primary mining method used at Cerro Lindo is SLS with paste backfill. Stopes are mined in a primary–secondary sequence, progressing from the centre of the orebodies to the outsides, and from bottom to top.

CAF mining methods will be used to extract sill pillars, remnants, and irregular shaped portions of the deposit. Although these methods have not previously been used at the Cerro Lindo Mine, they are commonly used in Peru, including at Nexa's Cerro de Pasco operations (Atacocha and El Porvenir). Paste backfill will be the primary backfill method used, with waste fill used, when appropriate.

The paste plant is located on the surface, near the exhaust ventilation portals. The paste plant is supplied with whole mill tailings by pipeline from the process plant. Total required paste delivery is 5,000 m³/day.

The mine ventilation circuit is complex, consisting of portals, main fans, airflows, and main interconnecting ramps and raises. Each orebody is ventilated by a quasi-parallel split serving that orebody alone.

The mine is accessed via ramps and declines; there is no shaft and associated infrastructure.

The mine plan for the remainder of the LOM is based on a daily production rate of 20,600 tonnes per day (tpd) for 354 days per year. The annual production rate is, therefore, 7.27 Mt.

MINERAL PROCESSING

The Cerro Lindo processing plant is located on a ridge adjacent to the mine and is at an altitude of 2,100 m above sea level (MASL) to 2,200 MASL. The plant commenced operations in 2007 with a processing capacity of 5,000 tpd, however, has since been expanded to a name-plate capacity of 20,800 tpd. Processing consists of conventional crushing, grinding, and flotation to produce separate zinc, lead, and copper concentrates with silver content. The tailings are thickened and filtered for use as backfill or trucked to the dry-stack tailings storage facility.

The concentrates produced at Cerro Lindo are relatively clean and high grade, and in general do not contain penalizable concentrations of deleterious elements. A small penalty does result from the combined content of Pb and Zn in the copper concentrate, which since 2016 has contained Pb + Zn in the approximate range of 4.8% to 5.6%. Silver in the feed is mostly recovered to the copper and lead concentrates, resulting in silver credits for these two concentrates.

The current LOM plan continues to 2026, with a peak processing rate of approximately 21,000 tpd. Analysis of historical production shows that recoveries of Cu, Pb, and Zn are related to their head grades, while Ag recoveries to the copper and lead concentrates tend to follow the Cu and Pb head grades. Average LOM planned head grades of Cu, Pb, and Ag for the next three years are similar to those experienced from 2016 to 2019 at 0.60%, 0.21%, and 0.64 oz/t respectively, while the planned head grades of Zn decrease steadily after 2020. Head grades of each of these metals are anticipated to decrease towards the end of the LOM, particularly those of Zn. Forecast recoveries and concentrate grades are initially in line with those of recent years, and then predicted to fall as head grades decrease. Apart from decreasing head grades, no fundamental changes to the concentrator feed are anticipated, and in RPA's opinion, based on recent processing plant performance, the forecast recoveries and concentrate qualities for the near future are reasonable. However, with Zn and Pb head grades at the end of the LOM being well below the historical ranges, there is a risk that actual recoveries may be lower than forecast due to the lack of data on processing material with these low head grades.

A small amount of transition or supergene ore has been identified in two stopes. Since large proportions of this ore in the feed to the concentrator negatively affect recoveries and concentrate quality, the proportion of this ore allowed in the concentrator feed blend is limited, and this is managed through mine planning and blending practices. Currently this material does not form part of the feed blend, and test work is underway to determine economical alternatives for processing the ore, e.g., by campaigning this material through the processing plant using conditions and reagents optimized specifically for this material.

PROJECT INFRASTRUCTURE

The operational and in place infrastructure at Cerro Lindo includes:

- An underground mine accessed by 15 portals and an extensive ramp system
- An underground crusher and conveying system to surface
- Surface ore stockpiles
- A 20,800 tpd capacity processing plant
- Two dry-stack TSFs
- Waste rock storage facility
- Power supply
- Access and site roads

- Maintenance shops
- Offices
- Camp facilities
- Warehousing and storage

Access to the mine site is via paved highway to Chinchá (180 km from Lima), followed by a 60 km unpaved road.

Electrical power is provided to the Mine via the national grid. Two 220 kilovolt (kV) transmission lines supply power from the substation. Secondary substations on site transform the voltage to 10 kV for distribution and 480 volts (V) to 120 V for use. Site power demand is approximately 37 mega watts (MW).

There is no fresh water withdrawal from natural water bodies at the Mine site, and the Mine obtains very little water from the underground mine workings. Approximately 40% of total demand is extracted from five local groundwater wells/boreholes. The remaining 60% of industrial fresh water is supplied from a desalination plant located on the coast.

Site facilities are distributed along the valley below the concentrator, where terrain permits. Facilities include offices, separate camps for contractors, hourly employees, and staff, warehousing and storage areas, maintenance shops, and the paste fill plant. Fuel storage is located on surface, with underground equipment fueled by service trucks.

ENVIRONMENTAL, PERMITTING AND SOCIAL CONSIDERATIONS

Tailings from the process plant are thickened and then further dewatered in either the paste plant to be deposited underground, or to the filter plant to the south of the processing plant to be filtered and subsequently placed in two dry-stack storage facilities, Pahuaypita 1 and Pahuaypita 2. As much as 90% of the process water from dewatered tailings is recycled with industrial fresh water being supplied from a desalination plant at the coast to meet site and process water make-up requirements. The mine site operates with a zero-water discharge commitment.

The most recent modification of the Environmental Impact Assessment (EIA) was approved by the Peruvian authorities in 2018 to grant authorization for a maximum production rate of

22,500 tpd. Cerro Lindo has an EMP, which addresses mitigation measures and monitoring programs for industrial and domestic effluent discharges, surface water quality and sediment, groundwater quality, surface flow, air quality (particulate matter and gas emissions), non ionizing radiation, noise, vibrations, soil quality, terrestrial and aquatic flora, terrestrial and aquatic fauna. The most recent update of the environment plan was presented in the 2018 EIA.

Nexa adheres to international standards to provide best practices for public reporting on economic, environmental, and social impacts in order to help Nexa and its shareholders and stakeholders understand their corporate contribution to sustainable development. Corporately, Nexa has made several commitments to improve community health and safety as well as the overall well-being of community members.

CAPITAL AND OPERATING COST ESTIMATES

Sustaining capital was estimated by Nexa, with the majority consisting of mine development and sustaining costs. Sustaining capital is summarized in Table 1-3.

TABLE 1-3 SUSTAINING CAPITAL COST ESTIMATE
Nexa Resources S.A. – Cerro Lindo Mine

| Area | Category | Sustaining Costs (US\$ millions) |
|---------------------------|---------------------|-------------------------------------|
| Mine | Primary Development | 48.3 |
| Plant & Infrastructure | Sustaining | 88.7 |
| | Other | 50.5 |
| Closure | | 36.2 |
| Total Capital Cost | | 187.5 |

Operating costs, averaging US\$225 million per year at full production, were estimated for mining, processing, and general and administration (G&A). Operating cost inputs such as labour rates, consumables, and supplies were based on Nexa operating data. A summary of operating costs is shown in Table 1-4.

TABLE 1-4 OPERATING COST ESTIMATE
Nexa Resources S.A. – Cerro Lindo Mine

| Parameter | Total LOM (US\$ millions) | Average Year (US\$ millions/yr) | LOM Unit Cost (US\$/t) |
|------------------|--------------------------------------|--|-----------------------------------|
| Mining | 830 | 122 | 8.28 |
| Processing | 565 | 83 | 11.28 |
| G&A | 138 | 20 | 2.76 |
| Total | 1,533 | 225 | 30.59 |

2 INTRODUCTION

Roscoe Postle Associates Inc. (RPA) was retained by Nexa Resources S.A. (Nexa) to prepare an independent Technical Report on the Cerro Lindo Mine (Cerro Lindo or the Mine), located in the Department of Ica, Peru. The purpose of this report is to support the Mineral Resource and Mineral Reserve estimates for the Mine as of July 31, 2019. This Technical Report conforms to National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

Nexa is a publicly traded company on the Toronto Stock Exchange (TSX) and the New York Stock Exchange (NYSE). It is a reporting issuer in all provinces and territories of Canada and is under the jurisdiction of the Ontario Securities Commission.

Nexa is a producer with a diversified portfolio of polymetallic mines (zinc, lead, copper, silver, and gold) and greenfield projects at various stages of development in Brazil and Peru. In Brazil, Nexa owns and operates two underground mines, Vazante (Zn and Pb) and Morro Agudo (Zn and Pb), the Aripuanã project (Zn, Pb, and Ag), which is currently under construction, and the Caçapava do Sul project (Zn, Pb, Cu, and Ag). It also operates two zinc smelters in Brazil (Três Marias and Juiz de Fora). In Peru, Nexa operates the El Porvenir (Zn-Pb-Cu-Ag-Au), Cerro Lindo (Zn-Cu-Pb-Ag), and Atacocha (Zn-Cu-Pb-Au-Ag) underground mines. The development projects in Peru include Magistral, Shalipayco, Florida Canyon (JV with Solitario), Hilarión, and Pukaqaqa. Nexa also operates a zinc smelter in Peru (Cajamarquilla).

SOURCES OF INFORMATION

A site visit was carried out to the Project by Jason J. Cox, P.Eng., Executive Vice President, Mine Engineering, Principal Mining Engineer with RPA, Rosmery J. Cárdenas Barzola, P.Eng., Principal Geologist with RPA, and Lance Engelbrecht, B.Sc., Principal Metallurgist with RPA, from June 4 to 7, 2019. Luis Vasquez, M.Sc., P.Eng., Senior Hydrotechnical Engineer with SLR Consulting (Canada) Ltd., visited the Mine site from June 18 to 20, 2019.

During the preparation of this report and the site visit, discussions were held with the following personnel from Nexa:

- Thiago Nantes Teixeira, Mineral Resources and Mineral Reserves Committee
- Priscila Artioli, Mineral Resources and Mineral Reserves Committee
- Jose Antonio Lopes, Corporate Resource Manager
- Jerry Huamam, Resource Manager, Nexa Peru
- Octavio Vargas Machuca, Resource Geologist at Cerro Lindo
- Talita Cristina de Oliveira Ferreira, Corporate Senior Resource Geologist
- Jhonatan Lopez Alvarez, Modeller Geologist at Cerro Lindo
- Thomas Lafayette, Database Administrator Manager
- Charlton Villantoy Fajardo, Database Administrator at Cerro Lindo
- Jean Paul Bueno, Geology Manager at Cerro Lindo
- Edwards Espinoza Jara, Mine Chief Geologist
- Hector Aspajo, Brownfield Exploration Manager at Cerro Lindo
- Fernando Madeira Perisse, Technical Services Manager
- Felipe Goes, Technical Services Manager
- Souto Padron Antonio, General Manager at Cerro Lindo
- Rui Carlos Sorrentino Carboni, Short Term Planner at Cerro Lindo
- Juan Manrique Maravi, Mine manager
- Jose Antonio Torres Usca, Short Term Planner at Cerro Lindo
- Ysrael Jaramillo Rosales, Mineral Processing Plant Engineer
- Bruno Pino, Manager, Metallurgical Laboratory
- Gustavo De La Torre, Plant Manager at Cerro Lindo
- Orlans Quispe, Metallurgical Laboratory Supervisor at Cerro Lindo
- Astrid Gómez, Environmental Manager at Cerro Lindo
- Lorena Roque, Community Relations Manager at Cerro Lindo

The Qualified Persons (QP) for this report are Jason J. Cox, P.Eng., Rosmery J. Cárdenas Barzola, P.Eng., Brenna J.Y. Scholey, P.Eng., RPA Principal Metallurgist, and Luis Vasquez, M.Sc., P.Eng. Mr. Cox is responsible for Sections 15, 16, 18, 19, 21, 22, and 24, and contributed to Sections 1, 2, and 25 to 27. Ms. Cárdenas is responsible for Sections 3 to 12, 14, and 23, and contributed to Sections 1, 2, and 25 to 27. Sections 13 and 17 were prepared by Lance Engelbrecht, B.Sc., under the supervision of Brenna J.Y. Scholey, P.Eng., who takes responsibility for these sections and relevant information in Sections 1, 2, and 25 to 27. Mr. Luiz Vasquez, M.Sc., P.Eng., is responsible for Section 20 and parts of Section 18 and contributed to Sections 1, and 25 to 27.

The documentation reviewed, and other sources of information, are listed at the end of this report in Section 27 References.

LIST OF ABBREVIATIONS

Units of measurement used in this report conform to the metric system. All currency in this report is US dollars (US\$) unless otherwise noted.

| | | | |
|--------------------|-----------------------------|-------------------|--------------------------------|
| μ | micron | kVA | kilovolt-amperes |
| μg | microgram | kW | kilowatt |
| a | annum | kWh | kilowatt-hour |
| A | ampere | L | litre |
| bbl | barrels | lb | pound |
| Btu | British thermal units | L/s | litres per second |
| °C | degree Celsius | m | metre |
| C\$ | Canadian dollars | M | mega (million); molar |
| cal | calorie | m ² | square metre |
| cfm | cubic feet per minute | m ³ | cubic metre |
| cm | centimetre | MASL | metres above sea level |
| cm ² | square centimetre | m ³ /h | cubic metres per hour |
| d | day | mi | mile |
| dia | diameter | min | minute |
| dmt | dry metric tonne | μm | micrometre |
| dwt | dead-weight ton | mm | millimetre |
| °F | degree Fahrenheit | mph | miles per hour |
| ft | foot | MVA | megavolt-amperes |
| ft ² | square foot | MW | megawatt |
| ft ³ | cubic foot | MWh | megawatt-hour |
| ft/s | foot per second | oz | Troy ounce (31.1035g) |
| g | gram | oz/st, opt | ounce per short ton |
| G | giga (billion) | ppb | part per billion |
| Gal | Imperial gallon | ppm | part per million |
| g/L | gram per litre | psia | pound per square inch absolute |
| Gpm | Imperial gallons per minute | psig | pound per square inch gauge |
| g/t | gram per tonne | RL | relative elevation |
| gr/ft ³ | grain per cubic foot | s | second |
| gr/m ³ | grain per cubic metre | st | short ton |
| ha | hectare | stpa | short ton per year |
| hp | horsepower | stpd | short ton per day |
| hr | hour | t | metric tonne |
| Hz | hertz | tpa | metric tonne per year |
| in. | inch | tpd | metric tonne per day |
| in ² | square inch | US\$ | United States dollar |
| J | joule | USg | United States gallon |
| k | kilo (thousand) | USgpm | US gallon per minute |
| kcal | kilocalorie | V | volt |
| kg | kilogram | W | watt |
| km | kilometre | wmt | wet metric tonne |
| km ² | square kilometre | wt% | weight percent |
| km/h | kilometre per hour | yd ³ | cubic yard |
| kPa | kilopascal | yr | year |

3 RELIANCE ON OTHER EXPERTS

This report has been prepared by RPA for Nexa. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to RPA at the time of preparation of this report.
- Assumptions, conditions, and qualifications as set forth in this report.

For the purpose of the Summary and Section 4 of this report, RPA has relied on ownership information provided in an internal legal opinion by Nexa Legal Counsel (Nexa, 2019). RPA has not researched property title or mineral rights for the Cerro Lindo Mine and expresses no opinion as to the ownership status of the property.

RPA has relied on Nexa for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from the Mine.

Except for the purposes legislated under provincial securities laws, any use of this report by any third party is at that party's sole risk.

4 PROPERTY DESCRIPTION AND LOCATION

The Mine is located in the Chavín District, Chincha Province, Ica Department of Peru, approximately 268 km southeast of Lima and 60 km from the coast (Figure 4-1). The Mine consists of 58 mineral concessions and 10 mineral claims that make up an irregularly shaped, contiguous block extending for a distance of approximately 2.8 km in an east-west direction and approximately 7.1 km in a north-south direction, located at approximately 392,780m E and 8,554,165m N, using the UTM_WGS84 datum.

LAND TENURE

Cerro Lindo is located in the districts of Chavin, Lunahuana, San Juan de Yanac, Grocio Prado, Pueblo Nuevo and Pacaran, provinces of Chincha and Cañete, departments of Lima and Ica in Peru. The property consists of 58 mineral concessions covering an area of approximately 36,656.60 ha, 10 mineral claims totalling 6,667.63 ha, and one beneficiation concession covering an area of 518.78 ha. A mineral claim is an application to obtain a mineral concession. The relevant tenure information, including the concession name and code number, registration date and number, available area, title holder, and concession status of each of the mineral concessions and mineral claims can be found in Table 4-1 and are shown in Figure 4-2. All concessions are held by Nexa Resources Peru S.A.A. (Nexa Peru), a wholly-owned subsidiary of Nexa. Nexa Peru holds an 80.16% interest in the property with the remaining 19.84% held by the public.

The titles of all mineral concessions listed in Table 4-1 have been granted and duly recorded, or are being updated, in the Public Registry. The UTM coordinates of these mineral concessions, which determine their location within the official grid, have been recorded in the Mining Cadaster.

TABLE 4-1 MINERAL CONCESSIONS AS OF OCTOBER 30, 2019
Nexa Resources S.A. – Cerro Lindo Mine

| No. | Code | Concession | Titular | Date | Status* | Area (ha) | Public Registry Record** |
|-----|-------------|------------------------------------|----------------------------|------------|------------------------|-----------|--------------------------|
| 1 | 10009257X02 | Febrero 1979 | Nexa Resources Peru S.A.A. | 13/02/1979 | D.M. Titulado D.L. 109 | 998.77 | P-02026393 |
| 2 | 10000049Y01 | Cerro Lindo | Nexa Resources Peru S.A.A. | 15/06/1967 | D.M. Titulado D.L. 109 | 998.77 | P-02018851 |
| 3 | 010210100 | Cerro Lindo 12 Cerro Lindo 12-B | Nexa Resources Peru S.A.A. | 10/11/2000 | D.M. Titulado D.L. 708 | 15.24 | P-13596017 |
| 4 | 010210100A | Fraccionado | Nexa Resources Peru S.A.A. | 10/11/2000 | D.M. Titulado D.L. 708 | 0.83 | P-13616219 |
| 5 | 010210200 | Cerro Lindo 13 | Nexa Resources Peru S.A.A. | 10/11/2000 | D.M. Titulado D.L. 708 | 10.54 | P-12695744 |
| 6 | 010377204 | Cerro Lindo 14 | Nexa Resources Peru S.A.A. | 07/12/2004 | D.M. Titulado D.L. 708 | 999.43 | P-12528871 |
| 7 | 010377104 | Cerro Lindo 15 | Nexa Resources Peru S.A.A. | 07/12/2004 | D.M. Titulado D.L. 708 | 200.00 | P-12528882 |
| 8 | 010488308 | Cerro Lindo 17 | Nexa Resources Peru S.A.A. | 19/08/2008 | D.M. Titulado D.L. 708 | 100.00 | P-12525671 |
| 9 | 010430411 | Cerro Lindo 18 | Nexa Resources Peru S.A.A. | 11/08/2011 | D.M. Titulado D.L. 708 | 232.39 | P-13600117 |
| 10 | 010273015 | Cerro Lindo 19 | Nexa Resources Peru S.A.A. | 16/07/2015 | D.M. Titulado D.L. 708 | 747.78 | P-13927075 |
| 11 | 010273115 | Cerro Lindo 20 | Nexa Resources Peru S.A.A. | 16/07/2015 | D.M. Titulado D.L. 708 | 568.37 | P-14063670 |
| 12 | 010273215 | Cerro Lindo 21 | Nexa Resources Peru S.A.A. | 16/07/2015 | D.M. Titulado D.L. 708 | 493.75 | P-13925791 |
| 13 | 010273315 | Cerro Lindo 22 | Nexa Resources Peru S.A.A. | 16/07/2015 | D.M. Titulado D.L. 708 | 300.00 | P-13927144 |
| 14 | 010273415 | Cerro Lindo 23 | Nexa Resources Peru S.A.A. | 16/07/2015 | D.M. Titulado D.L. 708 | 602.28 | P-13611414 |
| 15 | 010273515 | Cerro Lindo 24 | Nexa Resources Peru S.A.A. | 16/07/2015 | D.M. Titulado D.L. 708 | 660.90 | P-13927140 |
| 16 | 010273615 | Cerro Lindo 25 | Nexa Resources Peru S.A.A. | 16/07/2015 | D.M. Titulado D.L. 708 | 786.09 | P-13926206 |
| 17 | 010273715 | Cerro Lindo 26 | Nexa Resources Peru S.A.A. | 16/07/2015 | D.M. Titulado D.L. 708 | 1,000.00 | |
| 18 | 010273815 | Cerro Lindo 27 | Nexa Resources Peru S.A.A. | 16/07/2015 | D.M. Titulado D.L. 708 | 500.00 | |
| 19 | 010273915 | Cerro Lindo 28 | Nexa Resources Peru S.A.A. | 16/07/2015 | D.M. Titulado D.L. 708 | 500.00 | |
| 20 | 010021818 | Cerro Lindo 32 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 669.70 | |
| 21 | 010022118 | Cerro Lindo 35 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 477.82 | |
| 22 | 010022318 | Cerro Lindo 37 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 704.14 | |
| 23 | 010022518 | Cerro Lindo 38 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 825.41 | |
| 24 | 010022418 | Cerro Lindo 39 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 320.12 | |
| 25 | 010022718 | Cerro Lindo 41 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 836.83 | |

| No. | Code | Concession | Titular | Date | Status* | Area (ha) | Public Registry Record** |
|-----|-------------|------------------------------------|----------------------------|------------|------------------------|-----------|--------------------------|
| 26 | 010022918 | Cerro Lindo 42 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 563.17 | |
| 27 | 010022818 | Cerro Lindo 43 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 416.12 | |
| 28 | 010023018 | Cerro Lindo 44 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 495.76 | |
| 29 | 010023218 | Cerro Lindo 46 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 1,000.00 | |
| 30 | 010023418 | Cerro Lindo 47 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 1,000.00 | |
| 31 | 010023518 | Cerro Lindo 48 | Nexa Resources Peru S.A.A. | 03/01/2018 | D.M. Titulado D.L. 708 | 670.05 | |
| 32 | 010209200 | Cerro Lindo 5 | Nexa Resources Peru S.A.A. | 09/11/2000 | D.M. Titulado D.L. 708 | 900.00 | P-13613580 |
| 33 | 010209300 | Cerro Lindo 6 | Nexa Resources Peru S.A.A. | 09/11/2000 | D.M. Titulado D.L. 708 | 875.97 | P-13616230 |
| 34 | 010051313 | Checho 500 M | Nexa Resources Peru S.A.A. | 02/01/2013 | D.M. Titulado D.L. 708 | 481.15 | P-13611454 |
| 35 | 010051213 | Checho 700 M | Nexa Resources Peru S.A.A. | 02/01/2013 | D.M. Titulado D.L. 708 | 700.00 | P-13613538 |
| 36 | 010167797 | Contopa 44 | Nexa Resources Peru S.A.A. | 17/04/1997 | D.M. Titulado D.L. 708 | 300.00 | P-02031014 |
| 37 | 11025895X01 | Festejo 1 | Nexa Resources Peru S.A.A. | 14/03/1990 | D.M. Titulado D.L. 109 | 1,000.00 | P-02027481 |
| 38 | 10011858X01 | Festejo 10 | Nexa Resources Peru S.A.A. | 14/03/1990 | D.M. Titulado D.L. 109 | 1,000.00 | P-02027470 |
| 39 | 11025896X01 | Festejo 2 | Nexa Resources Peru S.A.A. | 14/03/1990 | D.M. Titulado D.L. 109 | 1,000.00 | P-02027476 |
| 40 | 11025897X01 | Festejo 3 | Nexa Resources Peru S.A.A. | 14/03/1990 | D.M. Titulado D.L. 109 | 1,000.00 | P-02027477 |
| 41 | 010938595 | Festejo 30 | Nexa Resources Peru S.A.A. | 04/12/1995 | D.M. Titulado D.L. 708 | 875.59 | P-02029871 |
| 42 | 11025899X01 | Festejo 5 | Nexa Resources Peru S.A.A. | 14/03/1990 | D.M. Titulado D.L. 109 | 1,000.00 | P-02027479 |
| 43 | 10011854X01 | Festejo 6 | Nexa Resources Peru S.A.A. | 14/03/1990 | D.M. Titulado D.L. 109 | 1,000.00 | P-02027468 |
| 44 | 10011855X01 | Festejo 7 | Nexa Resources Peru S.A.A. | 14/03/1990 | D.M. Titulado D.L. 109 | 1,000.00 | P-02027482 |
| 45 | 10011856X01 | Festejo 8 | Nexa Resources Peru S.A.A. | 14/02/1990 | D.M. Titulado D.L. 109 | 1,000.26 | P-02027469 |
| 46 | 010174812 | Festejo 9 M | Nexa Resources Peru S.A.A. | 02/05/2012 | D.M. Titulado D.L. 708 | 800.00 | P-13615927 |
| 47 | 010225414 | Julia I M | Nexa Resources Peru S.A.A. | 02/05/2014 | D.M. Titulado D.L. 708 | 400.00 | P-13595461 |
| 48 | 010225614 | Kala I M | Nexa Resources Peru S.A.A. | 02/05/2014 | D.M. Titulado D.L. 708 | 200.00 | P-13613582 |
| 49 | 010225514 | Kala M | Nexa Resources Peru S.A.A. | 02/05/2014 | D.M. Titulado D.L. 708 | 100.00 | P-13613554 |
| 50 | 010432706 | Mariale Segunda Nuevo Horizonte | Nexa Resources Peru S.A.A. | 13/10/2006 | D.M. Titulado D.L. 708 | 900.00 | P-12086766 |
| 51 | 010104614 | 2008 M | Nexa Resources Peru S.A.A. | 02/01/2014 | D.M. Titulado D.L. 708 | 230.34 | P-13613581 |
| 52 | 010225714 | Ponciana 1 M | Nexa Resources Peru S.A.A. | 02/05/2014 | D.M. Titulado D.L. 708 | 400.00 | P-13615933 |
| 53 | 010140608 | VM 142 | Nexa Resources Peru S.A.A. | 07/02/2008 | D.M. Titulado D.L. 708 | 1,000.00 | P-12956960 |

| No. | Code | Concession | Titular | Date | Status* | Area (ha) | Public Registry Record** |
|-----|-----------|----------------|----------------------------|------------|--------------------------|-----------|--------------------------|
| 54 | 010140708 | VM 143 | Nexa Resources Peru S.A.A. | 07/02/2008 | D.M. Titulado D.L. 708 | 400.00 | P-12959327 |
| 55 | 010354306 | VM 21 | Nexa Resources Peru S.A.A. | 15/08/2006 | D.M. Titulado D.L. 708 | 1,000.00 | P-12177428 |
| 56 | 010354406 | VM 22 | Nexa Resources Peru S.A.A. | 15/08/2006 | D.M. Titulado D.L. 708 | 500.00 | P-12178991 |
| 57 | 010688808 | VM 278 | Nexa Resources Peru S.A.A. | 18/12/2008 | D.M. Titulado D.L. 708 | 799.03 | P-12955719 |
| 58 | 010035609 | VM 282 | Nexa Resources Peru S.A.A. | 02/02/2009 | D.M. Titulado D.L. 708 | 100.00 | P-12956175 |
| 59 | 010021518 | Cerro Lindo 29 | Nexa Resources Peru S.A.A. | 3/01/2018 | D.M. en Trámite D.L. 708 | 549.36 | |
| 60 | 010021618 | Cerro Lindo 30 | Nexa Resources Peru S.A.A. | 3/01/2018 | D.M. en Trámite D.L. 708 | 891.77 | |
| 61 | 010021718 | Cerro Lindo 31 | Nexa Resources Peru S.A.A. | 3/01/2018 | D.M. en Trámite D.L. 708 | 759.31 | |
| 62 | 010021918 | Cerro Lindo 33 | Nexa Resources Peru S.A.A. | 3/01/2018 | D.M. en Trámite D.L. 708 | 626.40 | |
| 63 | 010022018 | Cerro Lindo 34 | Nexa Resources Peru S.A.A. | 3/01/2018 | D.M. en Trámite D.L. 708 | 626.57 | |
| 64 | 010022218 | Cerro Lindo 36 | Nexa Resources Peru S.A.A. | 3/01/2018 | D.M. en Trámite D.L. 708 | 655.28 | |
| 65 | 010022618 | Cerro Lindo 40 | Nexa Resources Peru S.A.A. | 3/01/2018 | D.M. en Trámite D.L. 708 | 652.70 | |
| 66 | 010023118 | Cerro Lindo 45 | Nexa Resources Peru S.A.A. | 3/01/2018 | D.M. en Trámite D.L. 708 | 900.00 | |
| 67 | 010153218 | Cerro Lindo 49 | Nexa Resources Peru S.A.A. | 2/05/2018 | D.M. en Trámite D.L. 708 | 481.64 | |
| 68 | 010153118 | Cerro Lindo 50 | Nexa Resources Peru S.A.A. | 2/05/2018 | D.M. en Trámite D.L. 708 | 524.60 | |

Notes.

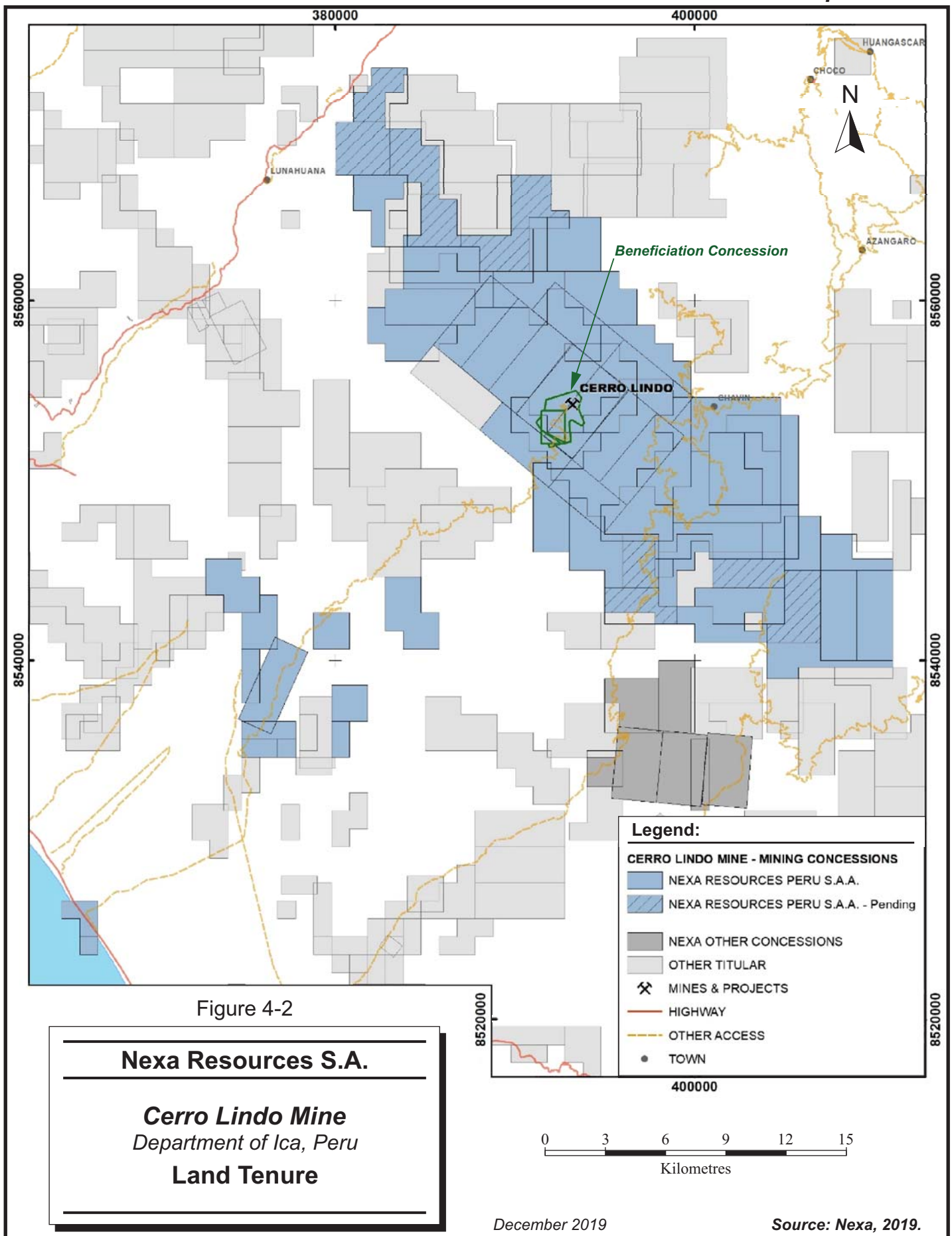
* All concessions are mineral concessions with the exception of Nos. 59 to 68 which are mineral claims (applications).

**Some of the records are being updated by the National Office of the Superintendent of Public Registers (SUNARP).

TABLE 4-2 CERRO LINDO BENEFICIATION CONCESSION
Nexa Resources S.A. – Cerro Lindo Mine

| No. | Project | Code | Concession | Holder | Date | Granted Area (ha) | District | Province | Department |
|-----|------------------|----------|-------------|----------------------------|------------|-------------------|----------|----------|------------|
| 1 | Mina Cerro Lindo | P0000506 | Cerro Lindo | Nexa Resources Peru S.A.A. | 10/10/2006 | 518.7800 | Chavin | Chincha | Ica |





Pursuant to information provided by the Peruvian Institute of Geology, Mining and Metallurgy (INGEMMET), there are four archaeological sites overlapping the Cerro Lindo concession (10000049Y01): Frente Pahuaypite (10,480.35 m²), Pahuaypite Bajo Sector 2 (1,047.42 m²), Pahuaypite Bajo (12,842.43 m²), and Patahuasi (21,573.39 m²). Exploration and/or mining activities in the area overlapping the archaeological sites are carried out under Certificate of Non-existence of Archaeological Remains (CIRA) No. 2007-253. Two other CIRAs were issued for the road and transmission line easements (see Section 20 for further detail).

While no royalties pertain to the operation, a streaming agreement applies to silver production (see Section 19).

MINERAL RIGHTS

According to Peruvian General Mining Law (the Law):

- Mineral concessions grant their holder the right to explore, develop, and mine metallic or non-metallic minerals located within their internal boundaries
- A mineral claim is an application to obtain a mineral concession. Exploration, development, and exploitation works may be initiated once title to the concession has been granted, except in areas that overlap with pre-existing claims or concessions applied for before December 15, 1991. Upon completion of the title procedure, resolutions awarding title must be recorded with the Public Registry to create enforceability against third parties and the State.
- Mineral rights are separate from surface rights. They are freely transferable.
- A mineral concession by itself does not authorize to carry out exploration or exploitation activities. The titleholder must first:
 - (i) Obtain approval from the Culture Ministry of the applicable archaeological declarations, authorizations, or certificates;
 - (ii) Obtain the environmental certification issued by the competent environmental authority, subject to the rules of public participation;
 - (iii) Obtain permission for the use of land (i.e., obtain surface rights) by agreement with the owner of the land or the completion of the administrative easement procedure, in accordance with the applicable regulation;
 - (iv) Obtain the applicable governmental licences, permits, and authorizations, according to the nature and location of the activities to be developed.
 - (v) Carry out consultations with indigenous peoples under the Culture Ministry, should there be any affected by potential exploitation of the mineral concession, as per International Labour Organization (ILO) Convention 169.
- Mineral rights holders must comply with the payment of an annual fee of \$3.00 per hectare per year, on or before June 30 of each year.

- Holders of mineral concessions must meet a Minimum Annual Production Target or spend the equivalent amount in exploration or investments before a statutory deadline. When the deadline is not met, a penalty must be paid as described below:

Mineral concessions must meet a statutory Minimum Annual Production Target of approximately US\$1,200.00 per hectare per year for metallic concessions, within a statutory term of 10 years since the concession is titled. The applicable penalty is 2% of the Minimum Annual Production Target per hectare per year from the 11th year until the 15th year. Starting in the 16th year and until the 20th year, the applicable penalty is 5% of the Minimum Annual Production Target per hectare per year, and starting in the 21st year and until the 30th year, the applicable penalty is 10% of the Minimum Annual Production Target per hectare per year. After the 30th year if the Minimum Annual Production Target is not met, the mineral concession will lapse automatically.

- Mineral concessions may not be revoked as long as the titleholder complies with the Good Standing Obligations, according to which mineral concessions will lapse automatically if any of the following events takes place:
 - (i) The annual fee is not paid for two years.
 - (ii) The applicable penalty is not paid for two consecutive years.
 - (iii) A concession expires if it does not reach the minimum production in the year 30, and the company cannot justify the non-compliance up to five additional years due to reasons of force majeure described in the current legislation.
- Agreements involving mineral rights (such as an option to acquire, a mining lease, or the transfer of a mineral concession) must be formalized through a deed issued by a public notary and must be recorded with the Public Registry to create enforceability against third parties and the Peruvian State.

ANNUAL FEES AND PENALTIES

All annual fees and penalties applicable to the mineral concessions comprising the Mine have been paid in full when due up to and including year 2019 as detailed in Table 4-3.

TABLE 4-3 CERRO LINDO ANNUAL FEE PER MINERAL RIGHT AND BENEFICIATION CONCESSION 2019
Nexa Resources S.A. – Cerro Lindo Mine

| No. | Code | Concession | Annual Fee (US\$) | Penalty (US\$) | Total Payment 2019 (US\$) |
|-----|-------------|------------------------------|-------------------|----------------|---------------------------|
| 1 | 10009257X02 | Febrero 1979 | 2,996.31 | 25,120.57 | 28,116.88 |
| 2 | 10000049Y01 | Cerro Lindo | 2,996.31 | 25,120.56 | 28,116.87 |
| 3 | 010210100 | Cerro Lindo 12 | 45.72 | 383.30 | 429.02 |
| 4 | 010210100A | Cerro Lindo 12-B Fraccionado | 2.50 | 20.93 | 23.43 |
| 5 | 010210200 | Cerro Lindo 13 | 31.61 | 264.98 | 296.59 |
| 6 | 010377204 | Cerro Lindo 14 | 2,998.30 | 2,513.72 | 5,512.02 |
| 7 | 010377104 | Cerro Lindo 15 | 600.00 | 503.03 | 1,103.03 |
| 8 | 010488308 | Cerro Lindo 17 | 300.00 | 0.00 | 300.00 |
| 9 | 010430411 | Cerro Lindo 18 | 697.18 | 0.00 | 697.18 |

| No. | Code | Concession | Annual Fee (US\$) | Penalty (US\$) | Total Payment 2019 (US\$) |
|-----|-------------|----------------|-------------------|----------------|---------------------------|
| 10 | 010273015 | Cerro Lindo 19 | 2,243.34 | 0.00 | 2,243.34 |
| 11 | 010273115 | Cerro Lindo 20 | 1,705.10 | 0.00 | 1,705.10 |
| 12 | 010273215 | Cerro Lindo 21 | 1,481.24 | 0.00 | 1,481.24 |
| 13 | 010273315 | Cerro Lindo 22 | 900.00 | 0.00 | 900.00 |
| 14 | 010273415 | Cerro Lindo 23 | 1,806.85 | 0.00 | 1,806.85 |
| 15 | 010273515 | Cerro Lindo 24 | 1,982.71 | 0.00 | 1,982.71 |
| 16 | 010273615 | Cerro Lindo 25 | 2,358.28 | 0.00 | 2,358.28 |
| 17 | 010273715 | Cerro Lindo 26 | 3,000.00 | 0.00 | 3,000.00 |
| 18 | 010273815 | Cerro Lindo 27 | 1,500.00 | 0.00 | 1,500.00 |
| 19 | 010273915 | Cerro Lindo 28 | 1,500.00 | 0.00 | 1,500.00 |
| 20 | 010021518 | Cerro Lindo 29 | 2,100.00 | 0.00 | 2,100.00 |
| 21 | 010021618 | Cerro Lindo 30 | 2,700.00 | 0.00 | 2,700.00 |
| 22 | 010021718 | Cerro Lindo 31 | 3,000.00 | 0.00 | 3,000.00 |
| 23 | 010021818 | Cerro Lindo 32 | 2,700.00 | 0.00 | 2,700.00 |
| 24 | 010021918 | Cerro Lindo 33 | 2,700.00 | 0.00 | 2,700.00 |
| 25 | 010022018 | Cerro Lindo 34 | 3,000.00 | 0.00 | 3,000.00 |
| 26 | 010022118 | Cerro Lindo 35 | 3,000.00 | 0.00 | 3,000.00 |
| 27 | 010022218 | Cerro Lindo 36 | 3,000.00 | 0.00 | 3,000.00 |
| 28 | 010022318 | Cerro Lindo 37 | 2,700.00 | 0.00 | 2,700.00 |
| 29 | 010022518 | Cerro Lindo 38 | 3,000.00 | 0.00 | 3,000.00 |
| 30 | 010022418 | Cerro Lindo 39 | 1,800.00 | 0.00 | 1,800.00 |
| 31 | 010022618 | Cerro Lindo 40 | 2,400.00 | 0.00 | 2,400.00 |
| 32 | 010022718 | Cerro Lindo 41 | 2,700.00 | 0.00 | 2,700.00 |
| 33 | 010022918 | Cerro Lindo 42 | 1,800.00 | 0.00 | 1,800.00 |
| 34 | 010022818 | Cerro Lindo 43 | 1,800.00 | 0.00 | 1,800.00 |
| 35 | 010023018 | Cerro Lindo 44 | 1,800.00 | 0.00 | 1,800.00 |
| 36 | 010023118 | Cerro Lindo 45 | 2,700.00 | 0.00 | 2,700.00 |
| 37 | 010023218 | Cerro Lindo 46 | 3,000.00 | 0.00 | 3,000.00 |
| 38 | 010023418 | Cerro Lindo 47 | 3,000.00 | 0.00 | 3,000.00 |
| 39 | 010023518 | Cerro Lindo 48 | 3,000.00 | 0.00 | 3,000.00 |
| 40 | 010153218 | Cerro Lindo 49 | 1,800.00 | 0.00 | 1,800.00 |
| 41 | 010209200 | Cerro Lindo 5 | 2,700.00 | 22,636.36 | 25,336.36 |
| 42 | 010153118 | Cerro Lindo 50 | 2,100.00 | 0.00 | 2,100.00 |
| 43 | 010209300 | Cerro Lindo 6 | 2,627.93 | 22,032.10 | 24,660.03 |
| 44 | 010051313 | Checho 500 M | 1,443.46 | 0.00 | 1,443.46 |
| 45 | 010051213 | Checho 700 M | 2,100.00 | 0.00 | 2,100.00 |
| 46 | 010167797 | Contopa 44 | 900.00 | 7,545.45 | 8,445.45 |
| 47 | 11025895X01 | Festejo 1 | 3,000.00 | 25,151.52 | 28,151.52 |
| 48 | 10011858X01 | Festejo 10 | 2,999.99 | 25,151.44 | 28,151.43 |
| 49 | 11025896X01 | Festejo 2 | 2,999.99 | 25,151.44 | 28,151.43 |
| 50 | 11025897X01 | Festejo 3 | 3,000.00 | 25,151.54 | 28,151.54 |
| 51 | 010938595 | Festejo 30 | 2,626.76 | 22,022.30 | 24,649.06 |
| 52 | 11025899X01 | Festejo 5 | 3,000.00 | 25,151.51 | 28,151.51 |
| 53 | 10011854X01 | Festejo 6 | 3,000.00 | 25,151.51 | 28,151.51 |

| No. | Code | Concession | Annual Fee (US\$) | Penalty (US\$) | Total Payment 2019 (US\$) |
|-----|-------------|---|-------------------|----------------|---------------------------|
| 54 | 10011855X01 | Festejo 7 | 3,000.00 | 25,151.51 | 28,151.51 |
| 55 | 10011856X01 | Festejo 8 | 3,000.78 | 25,158.02 | 28,158.80 |
| 56 | 010174812 | Festejo 9 M | 2,399.99 | 0.00 | 2,399.99 |
| 57 | 010225414 | Julia I M | 1,200.00 | 0.00 | 1,200.00 |
| 58 | 010225614 | Kala I M | 600.00 | 0.00 | 600.00 |
| 59 | 010225514 | Kala M | 300.00 | 0.00 | 300.00 |
| 60 | 010432706 | Mariale Segunda | 2,700.00 | 22,636.36 | 25,336.36 |
| 61 | 010104614 | Nuevo Horizonte 2008 M | 691.02 | 0.00 | 691.02 |
| 62 | 010225714 | Ponciana 1 M | 1,200.00 | 0.00 | 1,200.00 |
| 63 | 010140608 | VM 142 | 3,000.00 | 25,151.52 | 28,151.52 |
| 64 | 010140708 | VM 143 | 1,200.00 | 10,060.61 | 11,260.61 |
| 65 | 010354306 | VM 21 | 3,000.00 | 25,151.52 | 28,151.52 |
| 66 | 010354406 | VM 22 | 1,500.00 | 12,575.76 | 14,075.76 |
| 67 | 010688808 | VM 278 | 2,397.10 | 0.00 | 2,397.10 |
| 68 | 010035609 | VM 282 | 300.00 | 0.00 | 300.00 |
| 69 | P0000506 | Cerro Lindo (Beneficiation Concession) | 11,441.82 | 0.00 | 11,441.82 |

RECORDED LIENS AND ENCUMBRANCES

Pursuant to the information gathered from the Public Registry, Nexa reports that the following liens/encumbrances:

- Law suit brought against Nexa Peru affecting mineral concession CERRO LINDO by Bruna Spinetta Renati de Fossa, Enrica Carla Fossa Spinetta, Anna Fossa Spinetta y Simonetta Fossa Spinetta, all of which are recorded with the Peruvian Public Registry. The law suit was dismissed by the judge hearing the case in a decision that was upheld by the Superior Court of Lima.

SURFACE RIGHTS AND EASEMENTS

Nexa has sufficient surface rights for mining operations.

According to the General Mining Law and related legislation, surface rights are independent of mineral rights.

The law requires that the holder of a mineral concession either reach an agreement with the landowner before starting relevant mining activities (i.e., exploration, exploitation, etc.) or complete the administrative easement procedure in accordance with the applicable regulation.

Surface property is acquired through:

- The transfer of ownership by agreement of the parties (derivative title), or
- Acquisitive prescription of domain (original title).

Temporary rights to use and/or enjoy derived powers from a surface property right may be obtained through usufruct (a right to temporarily use and derive revenue) and easements.

As indicated by Nexa, the Project is located within the following surface rights:

1. Property of 500 ha
On November 24, 2005, Nexa Peru acquired this surface right from Comunidad Campesina de Chavín (Public Registry Record Partida 11026701).
2. Usufruct right of 150 ha
On November 24, 2005, Nexa Peru obtained this usufruct right from Comunidad Campesina de Chavín, in order to install the access road, water transportation pipeline, and power transmission line for the Mine (Public Registry Record Partida 11025833). According to the Public Registry, the agreement states that the usufruct right shall be in force until the mineral reserves of the Cerro Lindo Mine are exhausted, however, based on article 1001 of the Civil Code, this term would be limited to 30 years (i.e., until 2035).
3. Old Power Transmission Line
On August 13, 2014, through Ministerial Resolution 363-2014-MEM/DM, Nexa Peru obtained the permanent easement for the 60 kV S.E. Desert - Tower 39 and power line located in the district of Chavin, Grocio Prado and Pueblo Nuevo, province of Chincha, department of Ica.

On March 1, 2013, through Ministerial Resolution 082-2013-MEM/DM, Nexa Peru obtained the permanent easement for the New Power Transmission Line of 60 kV S.E. Desert – SE Cerro Lindo (modification) located in the district of Chavin, Grocio Prado and Pueblo Nuevo, province of Chincha, department of Ica.
4. Seawater Desalinization Plant
The seawater desalinization plant was built over an area of 12.9676 ha in the district of Grocio Prado, province of Chincha, department of Ica.

The Mine carried out an investigation which concluded that the property occupied by the Desalinization Plant is State property. On May 4, 2017, Nexa Peru applied for an occupation easement to the Superintendency of State Property (SBN) under Law 30327 and Supreme Decree 2-2016-VIVIENDA, which is pending.
5. Seawater Intake Plant
Since April 2007, Nexa Peru has owned aquatic and surface rights to a zone of capture of seawater in the Jahuay Beach (1,495 ha).

Nexa Peru has acquired aquatic rights through an authorization to use the aquatic area, which was granted by the Peruvian Navy, by Directorate Resolution 466-2008-MGP-DCG, and then modified by Directorate Resolution 706-2012-MGP/DCG issued on July 23, 2012. This latter resolution extended the approved aquatic area up to 1,390.10 m²

that allowed Nexa Peru to install four pipelines to extract water from the ocean, and one to discharge effluents. Nexa Peru has paid in full for the use of the aquatic area in 2016 through 2019.

Nexa Peru is in the process of acquiring surface rights for the remainder of the area through the application for an easement to the SBN under Law 30327 and Supreme Decree 2-2016-VIVIENDA, which is pending.

6. Water Pipeline

Since April 2007, Nexa Peru has been in possession of all the land occupied by the water pipeline, from the desalinization plant to the mine. Nexa Peru has carried out an investigation which concluded that the water pipeline occupies three lots, located between the desalination plant and the mine, which are State property. Nexa Peru is in the process of acquiring surface rights to these lots through an application for an easement to the SBN under Law 30327 and Supreme Decree 2-2016-VIVIENDA, which is currently pending.

TAX STABILITY AGREEMENT

On March 26, 2002, Nexa Peru entered into an Agreement of Guarantees and Measures for Investment Protection with Ministry of Energy and Mines, which will be in force until December 31, 2021. Under this agreement, Nexa Peru will benefit from tax stability, free commercialization of the products from Cerro Lindo, free disposition of the currencies generated from the export of the products from Cerro Lindo, etc.

PERMITTING AND ENVIRONMENTAL CONSIDERATIONS

Environmentally, neither the Project nor its buffer zones are located within a protected natural area. Cerro Lindo has developed a number of environmental plans and studies which form the basis for its operations. Cerro Lindo operates Environmental and Social Management systems to manage its environmental and social risks and impacts in a structured and ongoing way. These systems, along with permitting information, are discussed in Section 20. Material Government Consents are included in Appendix 1.

RPA is not aware of any environmental liabilities on the property. RPA understands that Nexa has obtained all the required permits to conduct work on the property. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

ACCESSIBILITY

The current access from Lima is via the Panamericana Sur highway to Chíncha (180 km) and then via an unpaved dirt road (60 km) from Huamanpuquio up the river valley. This dirt road forks at 51 km before reaching the mine site, in order to provide access to the district of Chavín (82 km).

The closest commercial airport is Jorge Chavez, at Callao, approximately 300 km northwest. The closest airport to the Project is in Pisco, Ica, however, the Pisco airport is restricted to military and emergency usage.

CLIMATE

The Mine is situated in an arid, cold-temperate climate. Rainfall in the region of the operation is minimal, varying on an average monthly basis from 24 mm to 36 mm in the dry season and 108 mm to 150 mm in the wet season. The evaporation rate is approximately 1,500 mm per annum. Rains, when they occur, are typically concentrated in the months of December to March, and for the rest of the year precipitation is generally rare and sporadic. The Mine operates year-round.

LOCAL RESOURCES

Various services, including temporary and permanent accommodations, are available in Chavín and the Topará River valley communities (population 2,003, census 2017) located approximately nine kilometres east of the Mine. The communities provide some of the Mine workers, with 122 people working directly for Nexa, and an additional 110 persons being employed by contractors to the operations.

A greater range of general services are available at the capital city of Lima, located approximately 270 km to the northwest. All goods and services for the operations are brought in by road from major regional centres or Lima.

INFRASTRUCTURE

The Cerro Lindo operation is comprised of the following main facilities:

- Approximately 21,000 tonnes per day (tpd) underground mine
- Access roads
- Powerlines, water pipelines
- Desalination plant
- Offices and warehouses
- Accommodations
- Process plant/concentrator
- Conveyor systems
- Waste rock facilities
- Temporary ore stockpiles
- Paste backfill plant
- Dry-stack tailings storage facilities (TSFs)

Additional information on infrastructure is provided in Sections 18 and 20.

PHYSIOGRAPHY

Characterized by rugged topography and steep slopes, the Mine area is located in the occidental Andes mountains at an average elevation of 2,000 MASL. The Mine area is dissected by ravines (quebradas) developed as part of the dendritic drainage pattern feeding the Topará River.

Vegetation is limited on hill slopes and is predominantly cacti species. Along river valleys patches of coastal forest may occur. However, these valleys are favoured areas for agricultural activities, so little of the original vegetation remains. During baseline studies conducted in support of environmental permitting, a total of 58 flora species were identified. Following five semi-annual monitoring surveys, the species identified have increased to 85 plant species belonging to 27 families. Two flora species recorded are protected by national legislation.

6 HISTORY

EXPLORATION AND DEVELOPMENT HISTORY

Artisanal-style mining of outcropping barite bodies for use by the oil industry began in the early 1960s. The Cerro Lindo deposit was discovered in 1967, during a colour anomaly reconnaissance program. Colour anomalies result from weathering of pyrite-rich rocks which causes the formation of various reddish iron oxide minerals. Various geochemical sampling and geological studies were subsequently completed. Compañía Minera – Milpo S.A.A. (Milpo), a predecessor company to Nexa Peru, acquired the property in 1984.

After acquisition, Milpo prepared access roads and conducted geological mapping, trenching, approximately 3,000 m of underground development, and 3,500 m of drilling. Phelps Dodge optioned the property in 1996, and completed 6,700 m of widely spaced, mostly vertical core drilling, as well as an electromagnetic (EM) moving-loop geophysical survey, which detected a prominent anomaly over the Cerro Lindo deposit. Phelps Dodge also carried out geochemical sampling in 1996 and 1997, which returned an intense zinc anomaly (Gariépy and Hinostroza, 2004 and Milpo, 2016e). Phelps Dodge returned the property to Milpo in 1997.

Milpo resumed exploration in 1999, conducted a thorough review of previous work, and decided to proceed with an extensive exploration program, consisting of core drilling and underground drift development. This program was completed in three distinct phases from 1999 through 2001.

During the three phases, Milpo completed a total of 28,371 m (129 holes) of core drilling and 1,365 m of underground drifting. Drift development provided access for delineation drilling and exploration of the southeastern portion of OB-1. During this program, Milpo studied the OB-1 and OB-2 zones, confirmed the presence of OB-5, and achieved the drill grid density required for a feasibility study.

AMEC Simons/GRD Minproc (2002) and GEMIN (2005) completed feasibility studies. Mine construction started in 2006. At the beginning of operations, the plant had a 5,000 tpd treatment capacity; since then, three expansions have been carried out. The plant capacity was increased to 10,000 tpd in 2011, 15,000 tpd in 2012, and 18,000 tpd in 2014 (Milpo, 2016f).

Current capacity is at nameplate 20,800 tpd, with actual production scheduled at 20,600 tpd over the life of mine (LOM) plan. Nexa has been granted approval for the terms of reference for an updated Environmental Impact Assessment (EIA), in which an expansion to 22,500 tpd is contemplated (see Section 20).

Systematic exploration restarted in 2007. This exploration resulted in discovery of new mineralized bodies (OB-6 in 2006; OB-7 in 2009; OB-6A in 2010; OB-6B in 2011; OB-2B and OB-8 in 2012; OB-5B in 2013; OB-3–4 in 2014; OB-8 in 2015; and OB1x in 2016), as well as increasing, and upgrading the classification of, estimated Mineral Resources and Mineral Reserves in previously known mineralized bodies.

PAST PRODUCTION

A summary of production to date is included in Table 6-1.

TABLE 6-1 PRODUCTION HISTORY
Nexa Resources S.A. – Cerro Lindo Mine

| | Unit | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019* |
|----------|------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Tonnage | Mt | 0.64 | 1.97 | 2.41 | 2.53 | 3.14 | 3.79 | 5.38 | 5.93 | 6.76 | 7.35 | 7.30 | 6.91 | 6.97 |
| Zn Grade | % | 3.19 | 4.12 | 3.51 | 3.14 | 3.15 | 3.08 | 3.12 | 3.06 | 2.83 | 2.56 | 2.33 | 2.07 | 2.05 |
| Cu Grade | % | 0.4 | 0.59 | 0.76 | 0.79 | 0.81 | 0.86 | 0.77 | 0.79 | 0.68 | 0.66 | 0.69 | 0.64 | 0.63 |
| Pb Grade | % | 0.49 | 0.58 | 0.43 | 0.34 | 0.34 | 0.29 | 0.32 | 0.33 | 0.31 | 0.29 | 0.27 | 0.25 | 0.25 |
| Ag Grade | g/t | 34.21 | 33.59 | 28.3 | 29.86 | 26.13 | 23.02 | 23.33 | 23.33 | 23.33 | 22.71 | 21.55 | 21.42 | 21.51 |

Note. 2019 actual production Jan-Oct, forecast Nov-Dec.

7 GEOLOGICAL SETTING AND MINERALIZATION

REGIONAL GEOLOGY

The Cerro Lindo deposit is located in a 30 km by 10 km northwest trending belt of marine volcano-sedimentary rocks of the Middle Albian to Senonian (mid-Cretaceous) Huaranguillo Formation, belonging to the Casma Group (Zalazar and Landa, 1993), which in turn is surrounded by Tertiary intrusions of the Coastal Batholith (Figure 7-1). The Casma Group is dominated by porphyritic andesites, erupted in a failed back-arc basin through an unexposed older basement as a result of extensional tectonics during subduction of oceanic lithosphere. The Casma volcano-sedimentary rocks extend for 1,600 km along the Pacific Ocean, from Ica, Southern Peru, to Piura, Northern Peru.

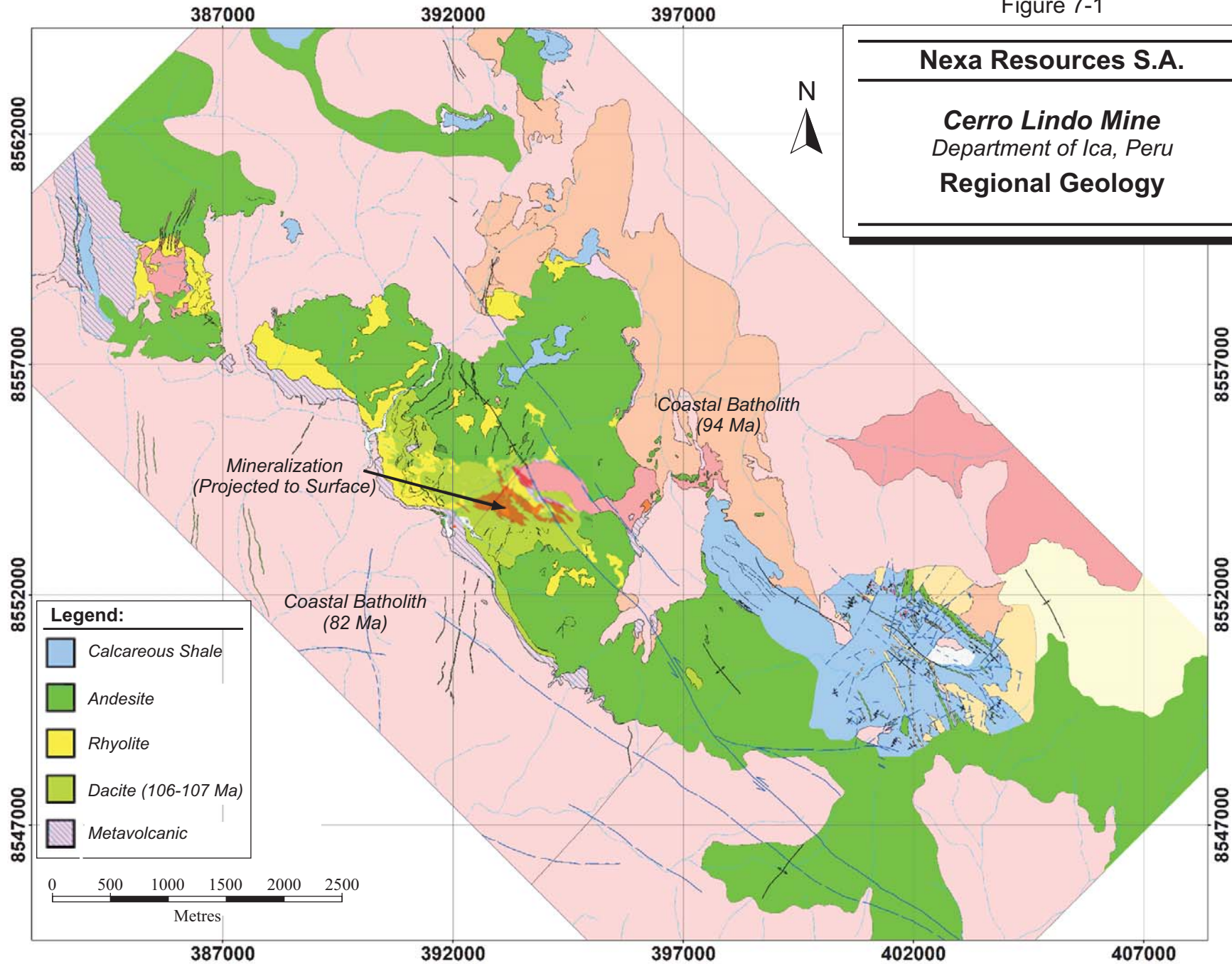
Upper Cretaceous to Tertiary intrusive rocks of the Coastal Batholith intrude the Casma Group over most of its extent. In the Cerro Lindo region, this intrusive belt is composed of granodiorites, monzogranites, and diorites of calc-alkaline affinity. Emplacement of the batholith occurred episodically over a period of 64 million years between 101 Ma and 37 Ma. The Coastal Batholith is composed of the Catahuasi, Incahuasi, and Tiabaya superunits, which overlie volcanic rocks and are generally of granodioritic to tonalitic composition, with varying granulometry. Andesitic porphyry dykes cross-cut all units in a general north-south orientation. Emplacement of the batholith generated intense contact metamorphism of the adjacent volcano-sedimentary rocks. In the Cerro Lindo area, a medium grade regional andalusite-cordierite metamorphism developed.

The Huaranguillo Formation fills the Canete volcano-sedimentary basin, one of the several similar basins that form the Casma Metallotect at the western side of the Andean Cordillera Occidental. The Huaranguillo Formation is approximately 3,000 m long; it has intercalated volcanic rocks at its base, intermediate volcanic with some shale intercalations in its upper part, and black calcareous rock in millimetre to centimetre thick layers at the top of the sequence. The Casma Metallotect hosts a number of important volcanogenic massive sulphide (VMS) deposits, including Tambogrande, Perubar, Cerro Lindo, Potrobayo, Totoral, Maria Teresa, Aurora Augusta, and Palma.

Figure 7-1

Nexa Resources S.A.

Cerro Lindo Mine
Department of Ica, Peru
Regional Geology



LOCAL AND PROPERTY GEOLOGY

Geological mapping at 1:10,000 scale was completed by Hinostroza (2016). Figure 7-2 shows the resulting map. The Huaranguillo Formation, at the property scale, consists of an approximately 2,250 m thick back-arc basin sequence extending northwest-southeast for approximately 10 km x 5 km. Zalazar and Landa (1993) divided the Huaranguillo Formation in the Cerro Lindo area into two members: a lower member, composed of shales, tuffs and andesites, and an upper member, formed of limestones, shales and volcanic rocks. Hinostroza (2016) later divided the Huaranguillo Formation into three units as described below.

The local stratigraphy of the Cerro Lindo deposit is shown in Figure 7-2 and described as follows:

1. Huaranguillo Formation (105 to 106 Ma): This formation is part of the Casma Group, of the lower Cretaceous Albian, and at Cerro Lindo is made up of three members (Hinostroza, 2016):
 - (a) Lower Member: made up of four lithological units: rhyolites, dacites, volcanic gap, and volcanoclastic, named by Canales (2016)
 - i. Rhyolite: generally occurs as long bodies with northwest-southeast directions, and is structurally controlled. These rocks are white in colour with a pinkish hue, have aphanitic and/or rarely porphyritic texture, have quartz eyes and in some cases spherulites surrounded by quartz (filled vesicles type), and are mostly silicified, with sulphide dissemination.
 - ii. Dacite: observed encompassing or interspersed with the rhyolites. These rocks are white to brown grey in colour, aphanitic to porphyritic, isotropic to anisotropic, not magnetic. Their texture is variable, the most prominent being the mosaic-like (or toad spine), porphyroblastic texture, due to the presence of cordierites in its composition (product of metamorphism); porphyritic textures are also observed, represented by some phenocrysts of plagioclase wrapped in a matrix. In areas without deformation, the dacite is isotropic, while in areas related to deformations and metamorphism it is anisotropic, showing northwest-southeast foliations and a certain relationship with mineralized bodies.
 - iii. Volcanic gap: discontinuous rock, a product of the volcanism in rhyolites and dacites, consisting of angular to sub-angular fragments of the massive rhyolite, of centimetre size (<20 cm) and with well-defined edges, wrapped in a fine matrix of dacitic composition. These gaps show gradation in the percentage of rhyolitic fragments, from 1% to approximately 25%.
 - iv. Volcanoclastic: located in the upper parts of the lower limb (e.g., Cerro Paltarumi). It is made up of elongated sub-rounded monomitic fragments of rhyolite (up to 60 cm in its major axis) of undefined edges in an aphyric matrix of andesitic composition.

Cerro Lindo Mine
Department of Ica, Peru
**Geological Map of the
Cerro Lindo Property**



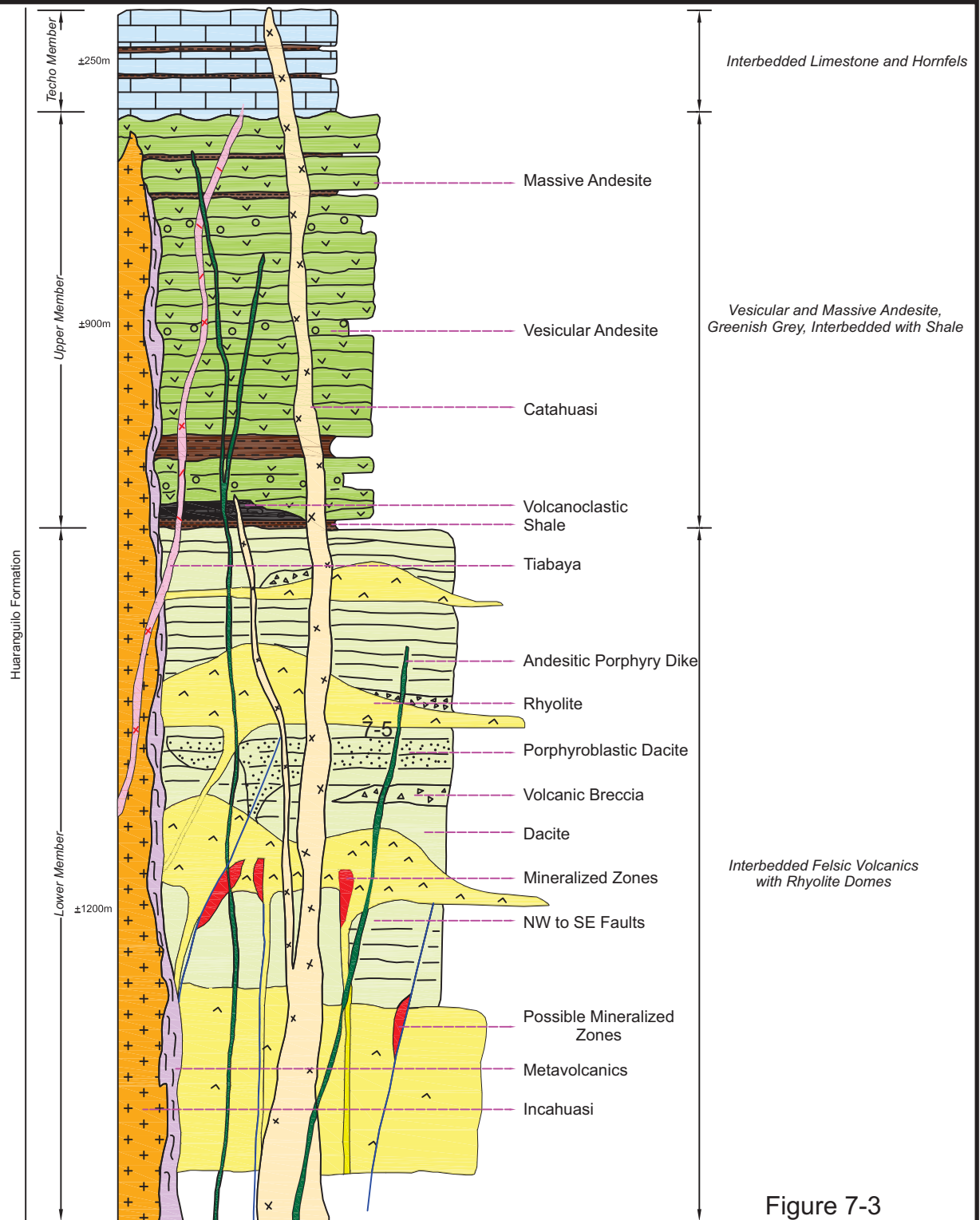


Figure 7-3

Nexa Resources S.A.

Cerro Lindo Mine
Department of Ica, Peru
Local Stratigraphic Column

- (b) Upper Limb Member: consists mainly of an intercalation of shales with massive and vesicular andesites that in some cases have porphyritic texture. It is best exposed along the UMCL road towards Chavín and on Cerro Paltarumi, at an altitude greater than 2,400 MASL, showing an anomaly of reddish colour in satellite images.
 - (i) At the base of the member, layers of shales-siltstones with thicknesses of up to two metres, called "guiding guides", are indicative of the contact between acidic and intermediate sequences.
 - (ii) Shales: black shales with thicknesses of up to 10 cm that are interspersed with millimetre thick limolite laminae, forming strata of up to two metres. These strata are rich in iron, which gives reddish colour to the areas of weathering.
 - (iii) Massive andesites: usually grey to greenish grey, with an aphanitic texture, not magnetic. Occasionally they have plagioclase or hornblende crystals smaller than two millimetres.
 - (iv) Vesicular andesites: very similar to the massive, but with the presence of vesicles of up to 15 cm, however, averaging less than three millimetres in size, and filled mainly by calcite and occasionally biotite, and rarely by quartz or amphibole. Occasional plagioclase phenocrysts are observed near or in contact with intrusive bodies.
 - (c) Roof Member: characterized by calcareous sedimentary phases, layers of marl-shales interspersed with massive andesites in the lower part, and limestone strata with narrow layers of limolites and hornfels in the upper part.
 - (i) Marls-shales: observed as "Roof pendant" in the uppermost zones of the intrusive (mainly in the Catahuasi Superunit). These appear to be strongly silicified, in some cases classified as hornfels with random stratification.
 - (ii) Limestone-hornfels: thicker than one metre, observed at elevations over 2,500 MASL (to the southwest of the town of Chavín), characterized by intercalations of dark, centimetre thick and white, millimetre thick laminae. These laminae are separated by millimetre thick limolite layers and form greater than 400 m thick strata, intensively folded in a northwest-southeast direction and in some sectors cut by rhyolitic dikes.
2. Intrusives: Three main intrusives are identified in the Huaranguillo Formation with ages of Turonian to Campanian: Catahuasi, Incahuasi, and Tiabaya superunits.
- (a) Catahuasi Superunit: located on the Campanario Hill, generally striking northwest-southeast, and has an extension striking northwest-southeast over a distance of no greater than three kilometres, structurally controlled (Ahem Patahuasi Fault). This superunit consists mainly of a white to light grey, isotropic, equigranular fine grained, non-magnetic granodiorite-tonalite with 15% of hornblende (main mafic mineral). Its age by the U-Pb method is on average 93.72 Ma (Meffre & Thompson, 2016).
 - (b) Incahuasi Superunit: located west of the Paltarumi Hill, west of the Pucasalla Creek. It is composed of grey-pink, grey-dark coloured, isotropic to anisotropic, equigranular medium grained granodiorite-granite. The lower limb of the superunit is in contact with the volcanic sequences, where strong deformation and partial fusion produced metavolcanic rocks. Its age by the U-Pb method is on average 82.35 Ma (Meffre & Thompson, 2016).

- (c) Tiabaya Superunit: located north of the Mesarumi Hill and is characterized by the presence of enclaves of microdiorites and massive andesites. This unit is composed of grey coloured, isotropic, equigranular coarse grained tonalite with hornblende being the main mafic mineral. According to INGEMMET, it has differentiated into five magmatic pulses, forming a structure centred along the San Juan River valley, where it has an average age of 80 ± 8 Ma (Pitcher, et al., 1985).
3. Other dikes: There are three different types of dikes, of which the andesitic porphyry is the most abundant.
- (a) Andesitic porphyry: most predominant among the dikes, is greenish grey in colour, has porphyritic texture, and is isotropic with moderate magnetism. Its porphyritic texture is marked by the presence of euhedral phenocrysts of plagioclase and burners of sizes up to five millimetres encompassed in a green fine grained matrix. Its age by the U-Pb method is on average 73.89 Ma (Meffre & Thompson, 2016).
- (b) Rhyodacitic porphyry: cuts the andesitic porphyry dikes, is greenish grey in colour, has porphyritic texture, and is isotropic, non-magnetic. Its texture is marked by the presence of euhedral feldspar phenocrysts of less than three millimetres, anhedral quartz eyes of up to five millimetres, and subhedral hornblende of up to one millimetre; encompassed in a green fine grained matrix.
- (c) Dacitic porphyry: observed on the Quishpi Pata Hill, has a north-northeast to south-southwest orientation and a thickness of up to 5 m. Cuts the upper member of the Huaranguillo Formation, and is cut by the Catahuasi Superunit. It is white in colour, has an aphanitic texture, and demonstrates occasional euhedral quartz phenocrysts in an aphanitic matrix.

STRUCTURAL GEOLOGY

The regional faults in the Cerro Lindo Mine area trend northwest-southeast, north-south, and northeast-southwest, parallel to the Topará Creek. The north-southeast faults are the main controls on volcanic sequences and mineralized bodies.

A number of fault systems are recognized:

- A system of syn-volcanic faults, related to the formation of the deposit, have a northwest to southeast strike.
- A conjugate fault system, striking northeast-southwest, that controls the Topará Fault; the Topará Fault displays right lateral movement.
- Late north-south fault system that controls the emplacement of barren dikes that cut the main mineralized zones.
- Reverse fault along the contact between rhyolite and the rocks of the Coastal Batholith.

These fault systems have defined structural blocks, and the paleosurface on which the deposit was probably formed (Figure 7-4).



Huaranguillo Formation rocks have been moderately to intensely folded and faulted in the Mine area. The structural pattern corresponds to open folds accompanied by a weak to very weak schistosity, however, certain shear zones locally produce intense schistosity.

METAMORPHISM

Intense contact metamorphism of the volcano-sedimentary sequences near the contacts with the Coastal Batholith intrusions reaches the garnet-cordierite-andalusite facies. Most andalusite formed at the footwall, probably as a result of strong sericitization (increased potassium).

Typically, secondary porphyroblastic textures developed in volcanic rocks as a result of contact metamorphism. Granoblastic textures are also common. However, drilling indicates that the intensity of metamorphism is irregular. Nearly 10% of the volcanic rocks still retain the primary flow breccias and banding textures.

Massive sulphides at Cerro Lindo have been recrystallized to grain sizes ranging from two to five millimetres, however, approximately 10% of the sulphides, mainly pyrite-chalcopyrite, show a very weak metamorphism where the grain size rarely exceeds 0.5 mm.

DEPOSIT GEOLOGY

EXTRUSIVE ROCKS

Rhyolitic to rhyodacitic rocks predominate in the deposit area. Flow, brecciated, and laminated textures exhibiting amygdules are frequent, as are andesitic pillow lavas. Intense thermal metamorphism produced porphyroblastic and granoblastic structures. The main rock-forming minerals are quartz, feldspar, biotite, sericite, andalusite, and pyrite.

Exhalite layers, typical of VMS deposits, are locally observed at the bottom or top of massive sulphide bodies, where they form finely laminated, thin (less than one metre) horizons composed of silica (chert) and various sulphides. These layers are limited to the immediate area of the sulphide deposits.

INTRUSIVE ROCKS

Coastal Batholith intrusive rocks, with ages ranging from Upper Cretaceous to Tertiary, were intruded between 101 Ma and 37 Ma. The batholith is primarily composed of granodiorites surrounding roof pendants of the volcano-sedimentary units. Some minor microdiorite, diorite, and gabbro bodies, as well as numerous dikes, cut the volcano-sedimentary sequences. The most common are microdiorite, medium grained diorite, granodiorite, and andesitic porphyry (the latter also cuts the granodioritic intrusion).

Late-stage feldspar porphyritic dikes occur throughout the property, cutting both the Casma Group and Coastal Batholith rocks. At Cerro Lindo, these form a northeast-southwest trending swarm.

ALTERATION

Along with the formation of the massive sulphide bodies, different types of hydrothermal alteration halos developed: silicification at the root, chlorite along the edges of the base, and sericitic alteration forms the widest halo (from proximal K-sericite to more distal Mg-sericite). Figure 7-5 shows a cross-section schematic of the massive sulphide at Cerro Lindo with its hydrothermal alteration halos, possible isotherms of hydrothermal fluid at the time of mineralization, and the distribution of chemical elements in the different areas of the deposit.

The metamorphic activity associated with the coastal batholith has overprinted the hydrothermal alteration. Most notable is the development of porphyroblasts of cordierite in the previously altered volcanic rocks.

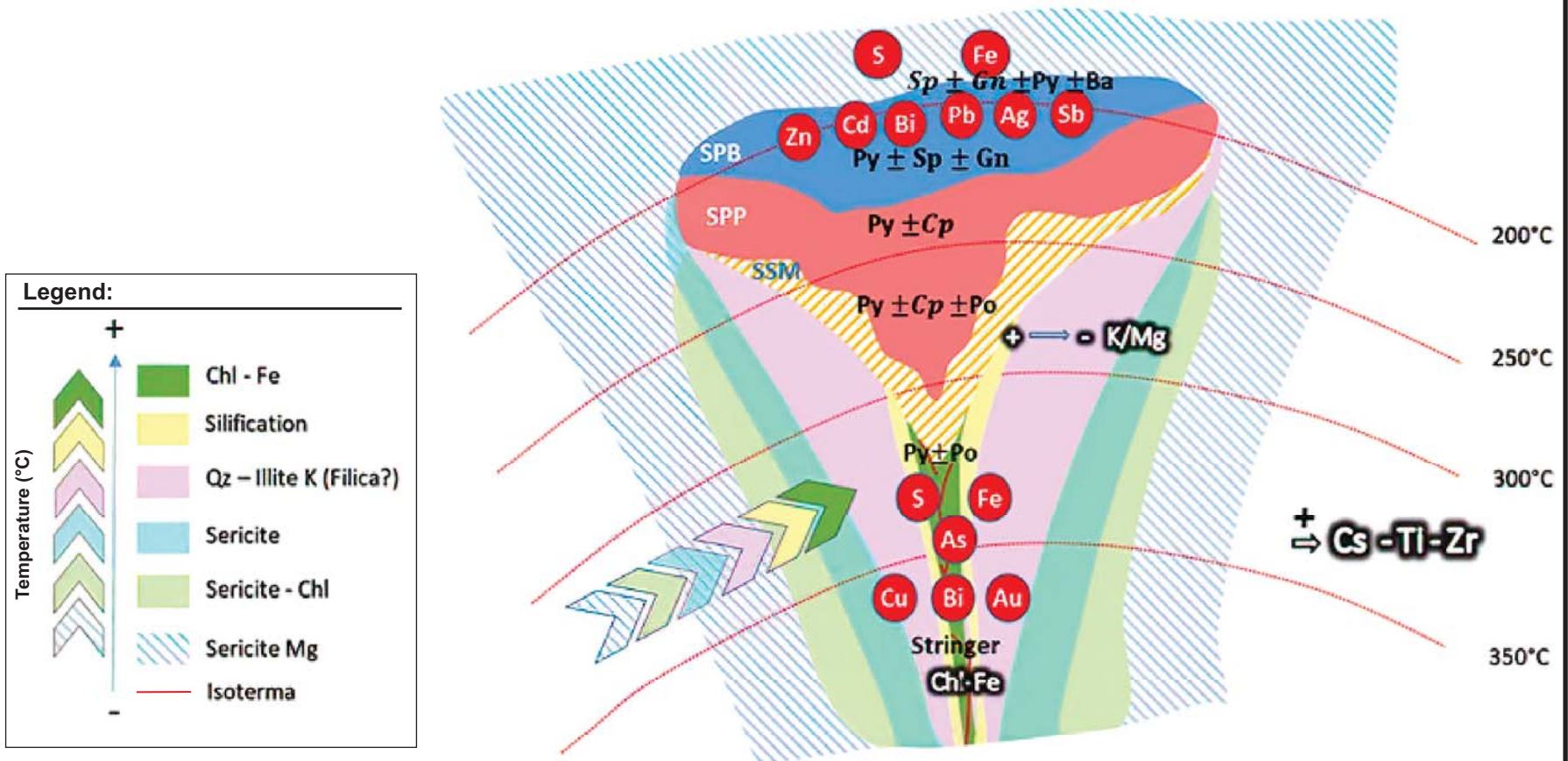


Figure 7-5

Nexa Resources S.A.

Cerro Lindo Mine

Department of Ica, Peru

**Cross Section Schematic of the
Massive Sulphide at Cerro Lindo**

MINERALIZATION

Mineralization is hosted by a pyroclastic unit composed of ash and lapilli-type polymictic tuffs with subrounded, well classified fragments. Some lapilli have centimetre-scale, pencil-like shapes, due to development of an incipient schistosity.

Eight styles of mineralization were identified at the Cerro Lindo deposit:

1. Pyritic, homogeneous, primary massive sulphide (SPP): This unit includes almost exclusively pyrite, less than 10% barite, and minor interstitial chalcopyrite. Its structure is equigranular, generally coarse grained (3 mm to 6 mm), but with fine-grained areas (0.4 mm to 2 mm)
2. Copper-rich, baritic homogeneous primary sulphides (Cu-SPB): This unit contains more than 50% total sulphides (including barite), and more than 10% barite. Barite is associated with sulphides because it was deposited from the same solution at the same time as the sulphides. Its structure is homogeneous, and it is composed of barite, pyrite, pyrrhotite, chalcopyrite, and brown sphalerite. Sulphides typically occur as intergrowths and patches, and brown sphalerite is included in chalcopyrite grains. There is less pyrite than in the Zn-SPB unit (described below). The Cu-SPB is generally found within or near the contact with Zn-SPB and SPP.
3. Zn-rich, banded, baritic primary sulphides (Zn-SPB): This unit comprises more than 50% of total sulphides (including barite), and more than 10% barite. The Zn-SPB unit contains variable proportions of pyrite, barite, yellow sphalerite, and galena. It is typically banded and has a coarse grain size (3 mm to 6 mm).
4. Semi-massive sulphides (SSM): This unit contains between 20% and 50% sulphides, which are mostly represented by barren pyrite as disseminations, patches, stringers, and stockworks. This mineralization is generally fine grained as compared to massive sulphides. SSM forms a variable envelope, 20 m to 80 m thick, around the massive sulphide bodies. The sulphide proportion decreases outward. It is better developed in the footwall.
5. Pyritic oxidized sulphides (SOP): This unit comprises bornite and covellite, and it is mostly located in the OB-2 mining production area.
6. Baritic oxidized sulphides (SOB): This unit comprises bornite, covellite, and oxidized zinc, and it is also located in the OB-2 mining production area.
7. Leached massive sulphides (SLB) and leached semi-massive sulphides (SSL): These units are located near surface in the OB-2 mining production area.
8. Mineralized volcanic rocks (VM): This unit contains rhyolite and dacite rocks with some chalcopyrite and sphalerite disseminated in veinlets or patches, located on the edge of the mineralized zones.

Cerro Lindo contains 18 mining production areas within the mineralization domains. The mineralized lenses exhibit an irregular elongated geometry, and their longest axis (nearly 500

m) has a northwest-southeast horizontal trend (azimuth 135°). The mineralized bodies are approximately 200 m thick (occurring between 1,600 MASL and 1,980 MASL) and 100 m wide. They are the largest near the edge of the Topará Ravine, after which they diminish in size toward the southeast. The mineralized bodies generally dip to the southwest at 65° on average. Locations of the main mineralized bodies within the mining production areas are shown in Figure 7-6. Table 7-1 shows the dimensions of each mineralized body within the mining production areas.

TABLE 7-1 DIMENSIONS OF MAIN MINERALIZED BODIES WITHIN MINING PRODUCTION AREAS
Nexa Resources S.A. – Cerro Lindo Mine

| Description | Unit | Mineralized Body | | | | | | | | | | | | | | | | | |
|-------------------|------|------------------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | OB-1 | OB-2 | OB-2B | OB-3-4 | OB-5 | OB-5B | OB-5C | OB-5D | OB-6 | OB-6A | OB-6B | OB-6C | OB-7 | OB-8A | OB-8B | OB-9 | OB-10 | OB-11 |
| Length | m | 350 | 450 | 420 | 150 | 350 | 635 | 200 | 40 | 200 | 460 | 200 | 100 | 170 | 150 | 400 | 300 | 400 | 250 |
| Width | m | 100 | 220 | 60 | 20 | 65 | 80 | 15 | 35 | 50 | 70 | 60 | 80 | 50 | 100 | 40 | 60 | 70 | 10 |
| Average thickness | | | | | 20 | | | | | | | | | | 10 | | | | 3 |
| Depth | m | 360 | 330 | 260 | 330 | 400 | 245 | 90 | 110 | 450 | 260 | 245 | 70 | 210 | 70 | 275 | 190 | 380 | 25 |
| Top elevation | m | 1,850 | 1,970 | 1,950 | 1,950 | 2,000 | 1,805 | 1,780 | 1,640 | 2,000 | 2,020 | 1,975 | 1,995 | 1,940 | 1,640 | 1,700 | 1,950 | 1,670 | 1,535 |
| Bottom elevation | m | 1,490 | 1,640 | 1,690 | 1,620 | 1,600 | 1,560 | 1,690 | 1,530 | 1,550 | 1,760 | 1,730 | 1,925 | 1,730 | 1,570 | 1,425 | 1,760 | 1,290 | 1,510 |

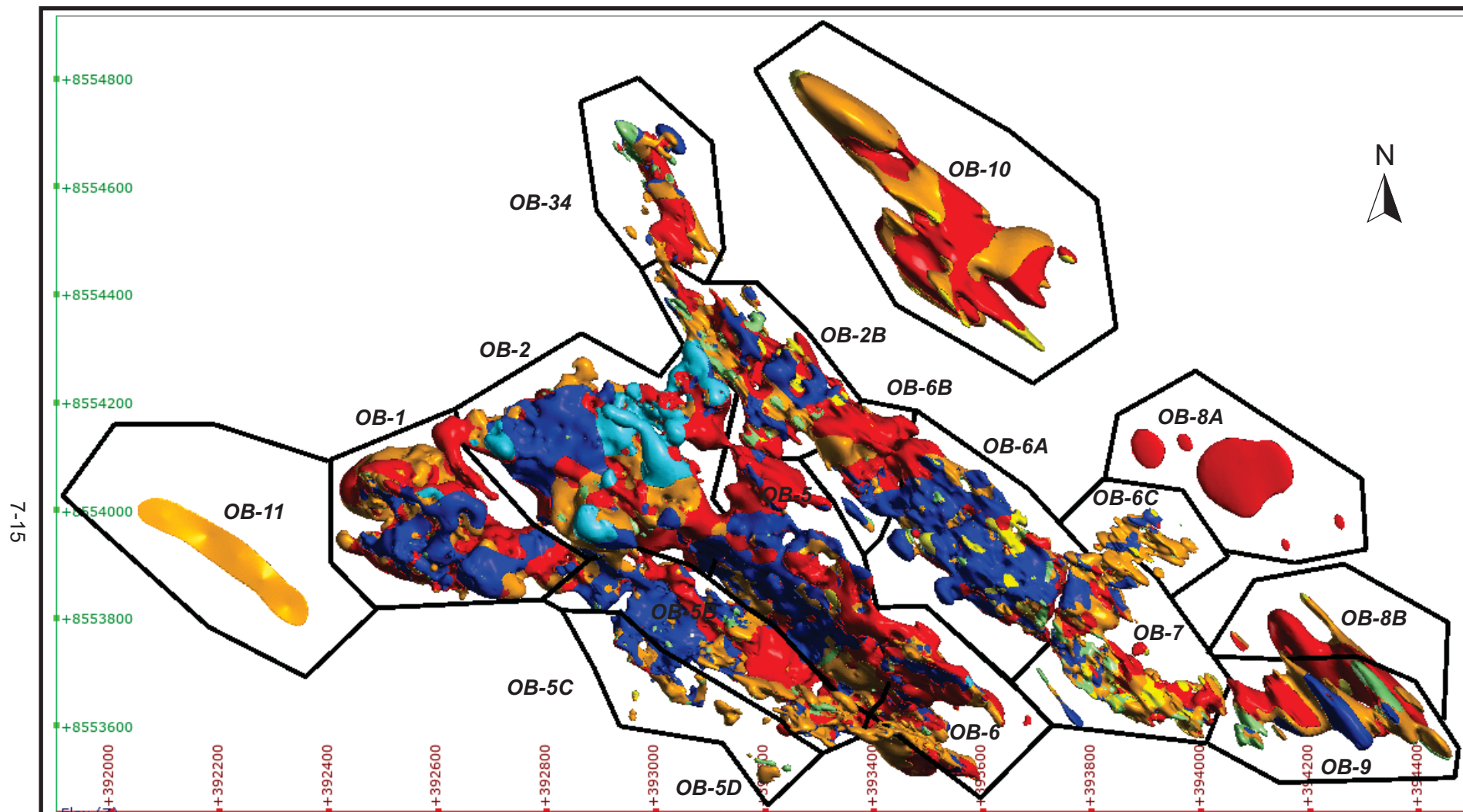


Figure 7-6

Legend:

| | |
|-------------|------------------------------|
| SPB (CLI=1) | V (CLI=5) |
| SPP (CLI=2) | SOP, SOB, SLB, SSL (CLI=6-9) |
| SSM (CLI=3) | Dikes (CLI=10) |
| VM (CLI=4) | |

0 100 200 300 400 500
Metres

Nexa Resources S.A.

Cerro Lindo Mine
Department of Ica, Peru

**Main Mineralized Bodies within
Mining Production Areas**

The majority of these bodies show two types of mineralization. The upper part features the massive mineralisation of barite, sphalerite, galena, and pyrite (SPB). The lower part includes massive pyrite (SPP), with two different general grain sizes, one fine grained with a higher chalcopyrite content and the other coarse grained and largely barren. Finally, the base of the system exhibits a cluster of small veins of pyrite, pyrrhotite, and to a lesser extent, chalcopyrite. The mineralization at Cerro Lindo is generally coarse grained, which may be related to recrystallization due to the contact metamorphism and this improves metallurgical recovery.

The massive sulphide frequently presents a marked banding, which may be related to tectonic deformation. In the contact with the adjacent batholiths, there is a noticeable predominance of mobilized sulphides elongated in banding that runs parallel to the volcanic contact with the intrusives. The rigidity of the batholiths likely fostered the generation of areas of greater sulphide deformation and mobilization, as illustrated in Figure 7-4.

Significant barite is present mainly in the upper portions of the deposit. A secondary enrichment zone, composed of chalcocite and covellite, formed near surface. Silver-rich powdery barite remains at surface as a relic from sulphide oxidation and leaching.

The lead content is usually low and is mainly associated with high grade zinc zones, and locally with late quartz veins or small volcanic enclaves. These enclaves represent approximately 2% to 3% of the deposit volume, and commonly measure 0.5 m to 10 m in diameter. Silver grades correlate well with copper and lead.

Cerro Lindo, as is typical of Kuroko-style VMS deposits, is characterized by a distinct mineralization zonation. Figure 7-5 shows the chemical zonation patterns in a cross-section schematic. Amec (2017) noted that:

- Zinc content is higher in the Zn-SPB units.
- Copper content is higher in Cu-SPP units. However, copper is also found in the SPB unit.
- Lead grades are higher in SPB units and are significantly reduced in SPP units. Some lead is found in SPP associated with SPB or in enclaves. The silver content is significantly higher in SPB, but it is sometimes also important in SPP units. The presence of silver in SPB is due to its affinity for lead.
- Zinc, lead, and silver grades are always higher in SPB than in SPP; copper grades are always higher in SPP.
- The copper grades tend to decrease from the northwest to the southeast; whereas zinc, lead, and silver grades tend to increase in the same direction.

8 DEPOSIT TYPES

This section is largely based on Amec (2017).

Gariépy and Hinostroza (2014) highlighted the similarities between the Cerro Lindo deposit and the Kuroko deposits in Japan. Kuroko deposits have been described by Ishihara (1974), Franklin et al. (1981), Ohmoto and Skinner (1982), and Urabe et al. (1983). Singer (1986) defined the Kuroko VMS descriptive deposit model as copper- and zinc-bearing massive sulphide deposits in marine volcanic rocks of intermediate to felsic composition.

These deposits are hosted by Archean to Cenozoic marine rhyolite, dacite, and subordinate basalt and associated sediments, principally organic-rich mudstone or pyritic, siliceous shale. Lava flows, tuffs, pyroclastic rocks, and breccias are common volcanic rock types. Felsic (rhyolitic) domes are sometimes associated. The depositional environment consists of hot springs related to marine volcanism, probably with anoxic marine conditions. Lead-rich deposits are associated with abundant fine grained volcanogenic sedimentary rocks. Black smokers are analogous modern deposits associated with back arc basins.

Kuroko deposits comprise an upper stratiform massive (>60% sulphide) zone (black ore) containing pyrite + sphalerite + chalcopyrite ± pyrrhotite ± galena ± barite ± tetrahedrite ± tennantite ± bornite with lower stratiform massive zone (yellow ore) – pyrite + chalcopyrite ± sphalerite ± pyrrhotite ± magnetite and a basal stringer (stockwork) zone—pyrite + chalcopyrite (gold and silver).

Following descriptions by Amec (2002), Gariépy and Hinostroza (2014), Lavado (2015), and Imaña (2015), the general features of the Cerro Lindo deposit are presented in Table 8-1. These features clearly support the classification of Cerro Lindo as a Kuroko-type VMS deposit.

TABLE 8-1 GENERAL FEATURES OF THE CERRO LINDO DEPOSIT
Nexa Resources S.A. – Cerro Lindo Mine

| Type | General Features |
|--------------------------|--|
| Lithologies | Rhyolite, dacite, rhyodacite, minor andesite |
| Rock textures | Lava flows, breccias and tuffs |
| Age | Lower Cretaceous |
| Mineralogy | Pyrite, sphalerite, galena, barite; chalcopyrite mainly in stringer zones |
| Ore textures/structures | Massive and coarse-grained to banded and fine-grained; stockworks in stringer zones |
| Zoning | Sphalerite-rich to pyrite-rich zones |
| Alteration | Sericitic, pyritic, chloritic |
| Ore control | Lens-shaped bodies: stringer zones. |
| Geochemical signature | Zn, Pb, Ba, Ag, Cu mainly in massive and banded portions; Cu also occurs in stringer zones |
| Depositional environment | Proximity to volcanic centre, volcanic depression with volcano-clastic contribution |
| Tectonic setting | Graben-like structure within back-arc basin |

The Cerro Lindo deposit is altered by thermal metamorphism caused by the adjacent batholiths and slightly deformed, possibly due to the basin's inversion tectonics. It is a massive sulphide deposit formed by eighteen known mineralized bodies to date, all hosted in dacite and breccia located along the edges of the rhyolite domes. The mineralized bodies have a clear control along the 135° azimuth and are abruptly bounded by a possible structure running parallel to the Topará Ravine, from northeast to southwest.

The mineralized bodies diminish in size with distance from the Topará Ravine, which suggests the hypothesis that the possible structure running parallel to the Topará Ravine is a raised structure and feed zone for the hydrothermal system. The massive sulphide bodies have a well-defined internal architecture (barite and sphalerite at the top and pyrite and chalcopyrite at the base). Around these bodies, well-defined hydrothermal alteration halos are preserved, with silicification and Fe-chlorite at the root, K-sericite to the sides, and Mg-sericite along the outermost edge. Figure 8-1 shows a schematic section transversal to sulphide orebodies and intrusions (Marcelo Imaña, pers. comm., 2019).

In RPA's opinion, Cerro Lindo is a Kuroko-style VMS deposit with economic grades of Zn, Cu, Pb, and Ag.

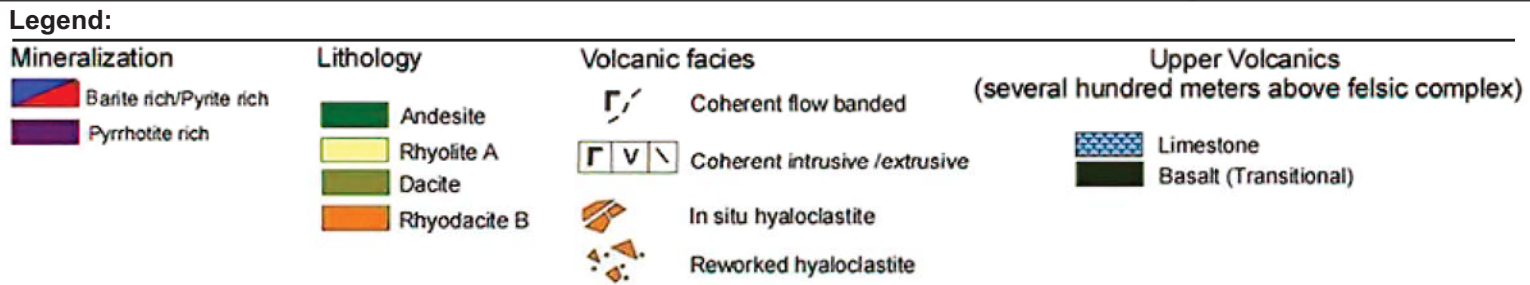
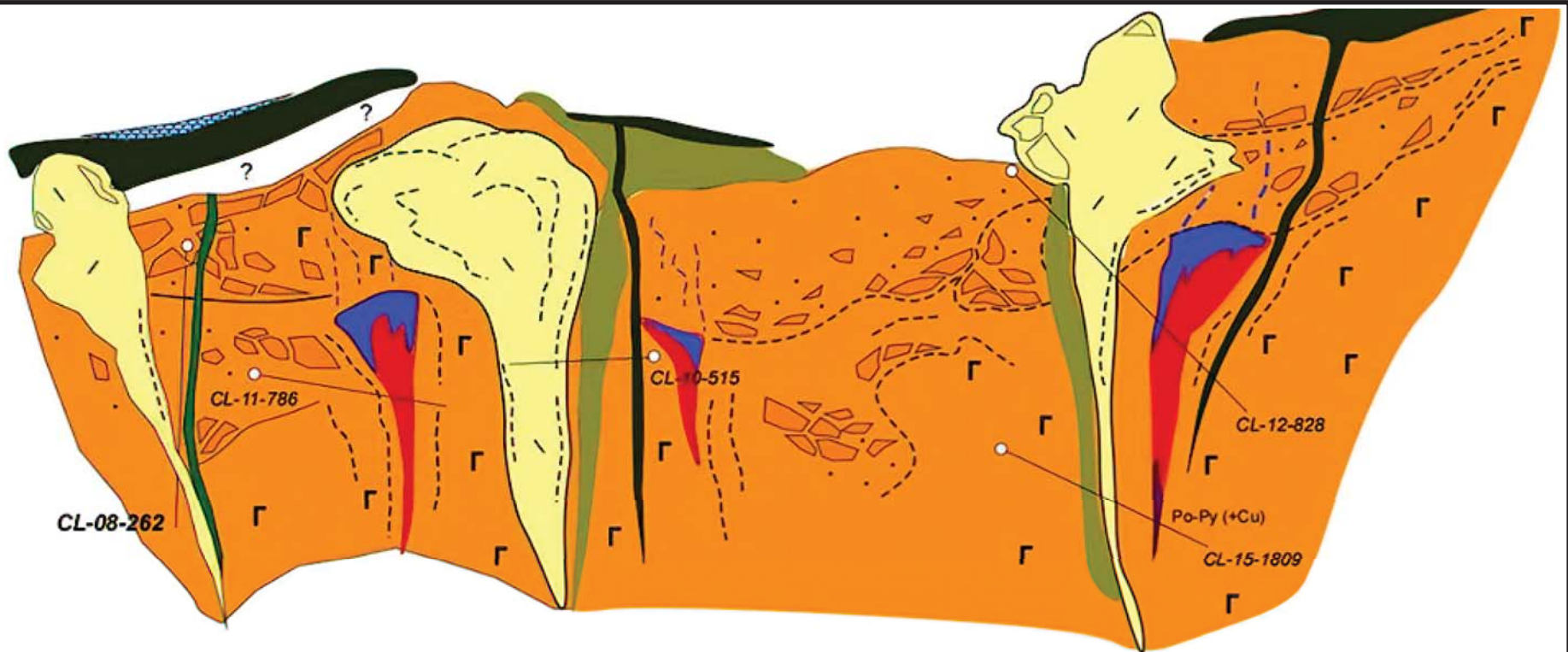


Figure 8-1

Nexa Resources S.A.

Cerro Lindo Mine

Department of Ica, Peru

**Schematic Section Transversal to
Sulphide Orebodies and Intrusions**

9 EXPLORATION

Nexa has been conducting exploration and development work at Cerro Lindo since 2006. Most of this work is generally conducted simultaneously with underground development. This work has included geological mapping, geophysics, diamond core drilling, and channel sampling. Diamond drilling and channel sampling are discussed in Section 10.

GEOLOGICAL MAPPING

Zalazar and Landa (1991) prepared the first geologic map on the region while working for the state-owned Ingenmet. In addition, various geological mapping campaigns and studies were conducted by Phelps Dodge and Milpo during the late 1990s and early 2000s (Amec, 2017).

More recently, Lavado (2015), Canales (2016), and Anglo Peruana Terra (APT) (2017, 2018) conducted detailed geological mapping campaigns on the area:

Lavado (2015) mapped 1,300 ha in the mine area and its immediate vicinity at 1:4,000 scale. The mine stratigraphy and alteration pattern, as well as factors controlling the mineral deposition, were better outlined.

Canales (2016) conducted a 1:10,000 geological mapping program that extended over 13,700 ha. The program included detailed 1:2,000 mapping over 450 ha in the immediate mine area. This program was accompanied by systematic lithogeochemical sampling (described in Section 9.3), and by 8,112 m drilling in 15 drill holes in the Topará North sector. Six holes intercepted mineralized intervals at different elevations.

APT (2017) conducted a 1:5,000 geological mapping program that covered over 2,900 ha at Cerro Lindo Sur. This program was accompanied by systematic lithogeochemical sampling. In 2018, a geological mapping program was conducted at a scale of 1:2,000 that covered over 450 ha at Pucatoro.

The surface mapping of the Pucasalla, Ventanalloc, and Toldo Chico targets has been continued with Nexa's Brownfield exploration team.

GEOCHEMISTRY

Geochemical samples were collected at different stages during the project life. Information on sampling methods and results is sparse. Samples were collected from soil (by Phelps Dodge; Milpo, 2016d), core (Imaña, 2015), or from rock outcrops (Canales, 2016). Phelps Dodge carried out geochemical studies in 1996 and 1997 and identified a pronounced zinc anomaly. Imaña (2015) collected 431 rock chip samples from various drill holes located close to OB-6 and OB-7 as part of a lithogeochemical study oriented at deciphering the chemical and volcanic stratigraphy of the deposit, and chemical modifications that occurred as a result of hydrothermal alteration. Canales (2016) carried out geological mapping and geochemical sampling of rock outcrops in the area of the Mine.

Additional details on geochemical sampling and sampling methods are not available.

At Cerro Lindo, surface geochemical sampling has been largely superseded by drilling.

GEOPHYSICS

In 2012, Quantec performed a Titan 24 direct current induced polarization and magnetotelluric (DCIP & MT) survey over the area of the Cerro Lindo Mine, with approximately 23 line km of data collected. Arce (2014) re-processed and reinterpreted the data.

Imaña (2015) presented various resistivity cross-sections resulting from a magnetotelluric survey. The sections did not include legends or scales, and no details were available. Imaña (2015) recommended the use of magnetotelluric and electromagnetic methods, both from surface and underground, in future exploration campaigns, given the massive nature of the Cerro Lindo mineralization.

Reinterpretation of the Imaña (2015) data resulted in better definition of OB-8, and extensions of other deposits.

In 2017, an extensive Titan 24 DCIP & MT survey was carried out in an area of 12 km x 6 km at a 500 m line spacing with an objective to reveal new targets under the cover of barren andesitic rocks that overlies the felsic volcanic package. Orcocobre was the main target found, characterized by a combination of anomalous rock chipping, alteration, and low resistivity. This

target, however, was discarded as a false positive that was represented by the roots of an eroded VMS system.

Further geophysical work in 2019 includes mobilization of a permanent borehole electromagnetic (EM) system, as well as completion of unmanned aerial vehicle (UAV) magnetics and versatile time domain electromagnetic (VTEM) surveys.

EXPLORATION POTENTIAL

In 2019, Cerro Lindo is undergoing an exploration program which includes 48,000 m of surface and underground diamond drilling to verify targets identified by previous exploration and to extend known mineralization at the Mine. In August, drilling was completed in the Orocobre sector (and the target was defined to be false positive, as described earlier) and continues from the surface north of the Topará Creek. The currently ongoing underground mine program seeks to extend OB-3-4 and OB-12, and drilling is being started for extensions of OB-1, OB-8, and OB-9.

In August 2019, a geological-driven workshop targeting session was held with the participation of the Nexa exploration team (Brownfield and Greenfield), external consultants such as Thomas Monecke, Marcelo Imaña, and Les Oldham, APT geologists, and corporate Nexa. As a result, the following primary exploration priorities were defined for the remainder of 2019 and the coming years:

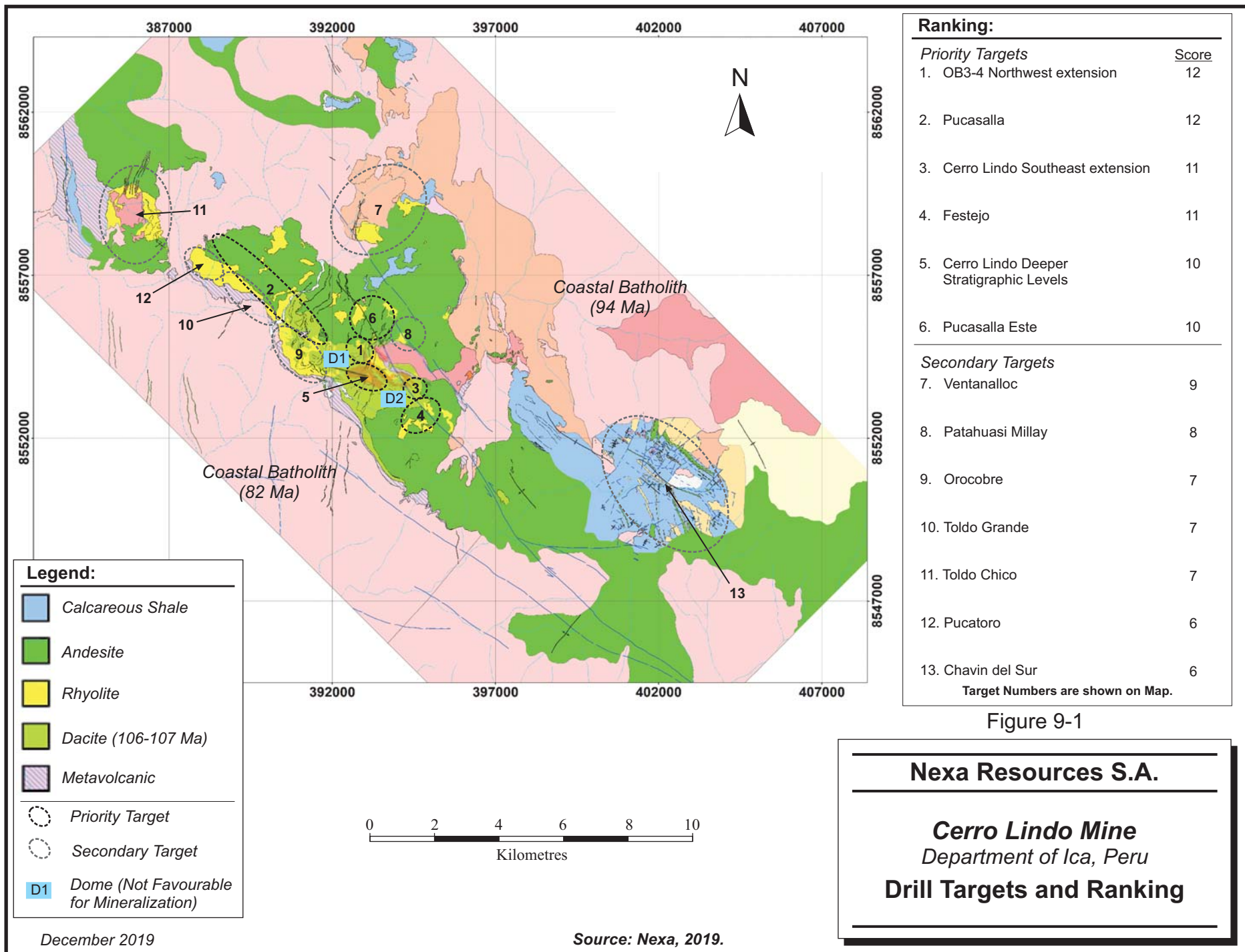
- Northwest extension of OB-3-4
- Pucasalla
- Cerro Lindo southeast extension
- Cerro Lindo Sur
- Cerro Lindo deeper stratigraphic levels
- Topará Norte

Secondary targets defined in the vicinity of the Mine include:

- Ventanalloc
- Patahuasi Millay
- Orocobre
- Toldo Grande

- Toldo Chico
- Pucatoro
- Chavin del Sul

Figure 9-1 shows the location and ranking of each of the targets.



10 DRILLING

DRILLING SUMMARY

A total of 4,128 drill holes for 560,752.03 m are included in the Cerro Lindo drilling database (Table 10-1). All drill holes were diamond drill holes (DDH), with the majority (3,961) collared underground and only 167 holes completed from the surface. Drilling has been completed by various contractors. With the exception of Milpo's 1995 down-the-hole (DTH) campaign (29 holes totalling 3,550 m), all the drilling at Cerro Lindo was diamond core drilling.

In addition to drilling, a total of 1,040 channels were completed for a total of 20,682 m between 2000 and 2016 (Table 10-2).

Figure 10-1 shows the locations of the holes drilled on the Project. Figure 10-2 is a section view illustrating selected drill holes and the related geological interpretation at the Cerro Lindo deposit. Figure 10-3 illustrates the locations of the underground channel sampling at the Mine.

TABLE 10-1 DRILLING SUMMARY AT CERRO LINDO
Nexa Resources S.A. – Cerro Lindo Mine

| Year | Surface Holes | | | Underground Holes | | | Total | | |
|---------------|---------------|------------------|------|-------------------|-------------------|------|--------------|-------------------|------|
| | Number | Metres | Type | Number | Metres | Type | Number | Metres | Type |
| 1995 | 29 | 3,550.00 | DTH | | | | | | |
| 1996 | 6 | 2,207.30 | DDH | 5 | 2,077.05 | DDH | 11 | 4,284.35 | DDH |
| 1999 | 7 | 2,722.40 | DDH | 11 | 2,156.70 | DDH | 18 | 4,879.10 | DDH |
| 2000 | 15 | 5,054.35 | DDH | 32 | 6,503.90 | DDH | 47 | 11,558.25 | DDH |
| 2001 | 3 | 705.50 | DDH | 60 | 10,663.03 | DDH | 63 | 11,368.53 | DDH |
| 2007 | 2 | 201.35 | DDH | 42 | 3,308.60 | DDH | 44 | 3,509.95 | DDH |
| 2008 | 25 | 6,170.24 | DDH | 61 | 9,290.60 | DDH | 86 | 15,460.84 | DDH |
| 2009 | 17 | 3,076.40 | DDH | 173 | 15,692.30 | DDH | 190 | 18,768.70 | DDH |
| 2010 | | | | 183 | 21,432.61 | DDH | 183 | 21,432.61 | DDH |
| 2011 | 5 | 2,949.20 | DDH | 177 | 20,579.10 | DDH | 182 | 23,528.30 | DDH |
| 2012 | 8 | 5,120.40 | DDH | 82 | 17,655.90 | DDH | 90 | 22,776.30 | DDH |
| 2013 | 2 | 1,041.10 | DDH | 306 | 36,359.00 | DDH | 308 | 37,400.10 | DDH |
| 2014 | | | | 253 | 39,277.80 | DDH | 253 | 39,277.80 | DDH |
| 2015 | 15 | 8,112.40 | DDH | 368 | 40,203.00 | DDH | 383 | 48,315.40 | DDH |
| 2016 | 18 | 12,270.10 | DDH | 706 | 73,233.50 | DDH | 724 | 85,503.60 | DDH |
| 2017 | 8 | 6,050.00 | DDH | 645 | 88,140.20 | DDH | 653 | 94,190.20 | DDH |
| 2018 | 32 | 14,956.70 | DDH | 674 | 83,170.30 | DDH | 706 | 98,127.00 | DDH |
| 2019 | 4 | 2,010.40 | DDH | 183 | 18,360.60 | DDH | 187 | 20,371.00 | DDH |
| Totals | 167 | 72,647.84 | | 3,961 | 488,104.19 | | 4,128 | 560,752.03 | |

TABLE 10-2 CHANNEL SAMPLING SUMMARY AT CERRO LINDO
Nexa Resources S.A. – Cerro Lindo Mine

| Year | No. Channels | Metres |
|--------------|-------------------------|------------------|
| <2008 | 506 | 10,278.50 |
| 2008 | 13 | 168.30 |
| 2010 | 108 | 2,698.30 |
| 2011 | 93 | 1,301.30 |
| 2012 | 113 | 2,031.10 |
| 2013 | 58 | 1,162.50 |
| 2014 | 71 | 1,487.90 |
| 2015 | 57 | 1,086.70 |
| 2016 | 21 | 468.00 |
| Total | 1,040 | 20,682.60 |

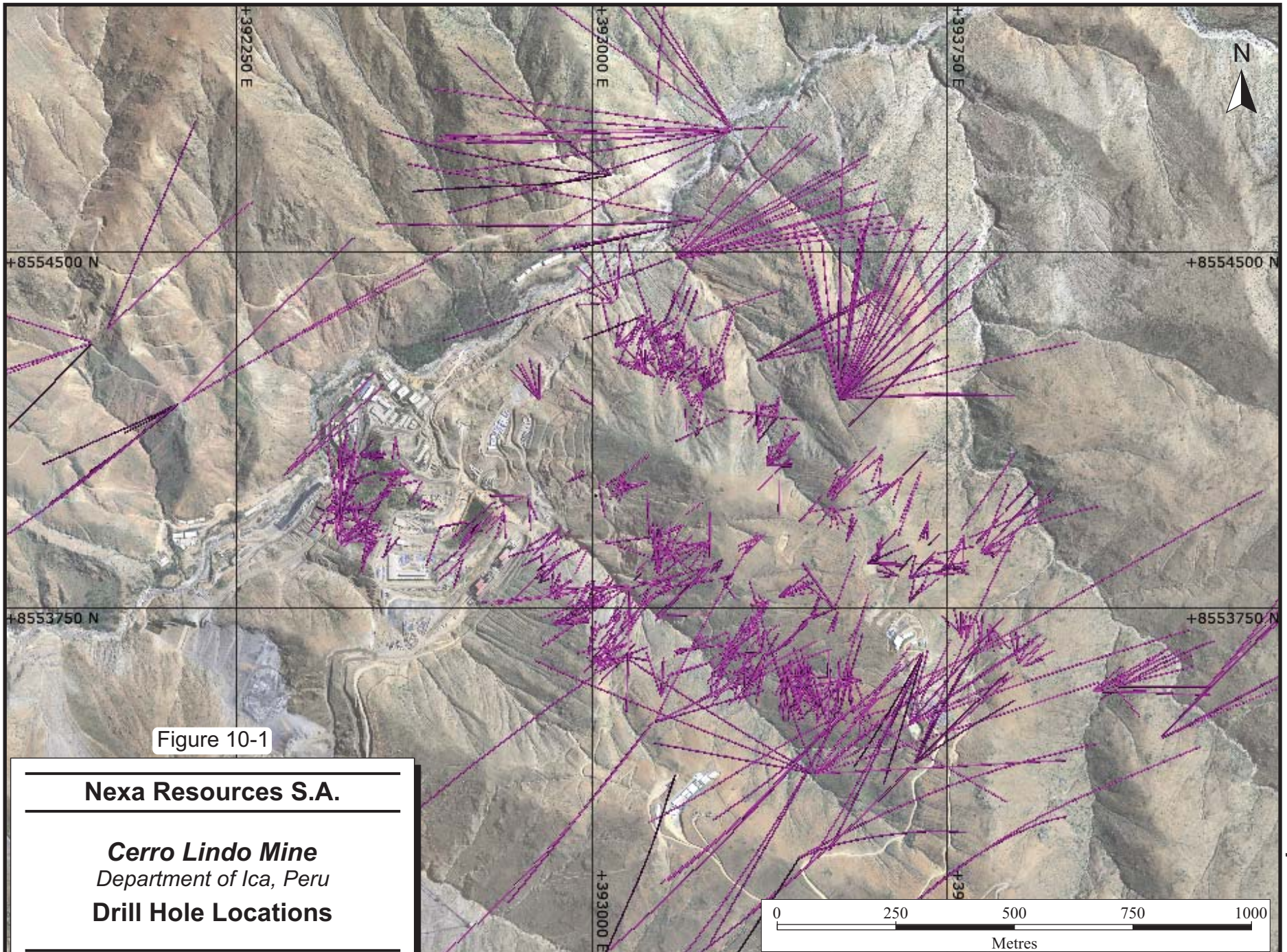


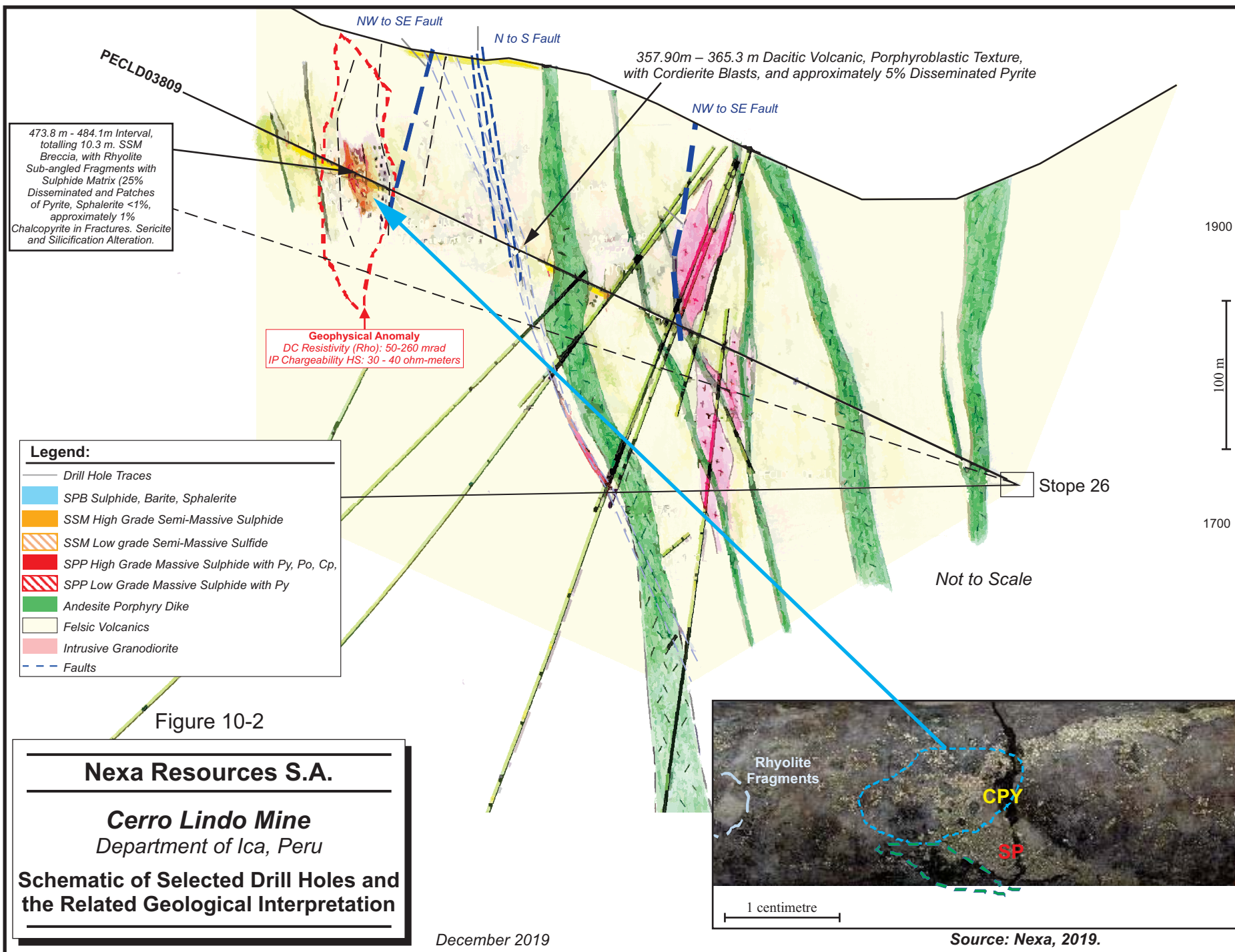
Figure 10-1

Nexa Resources S.A.

Cerro Lindo Mine
 Department of Ica, Peru
Drill Hole Locations

December 2019

Source: Nexa, 2019.



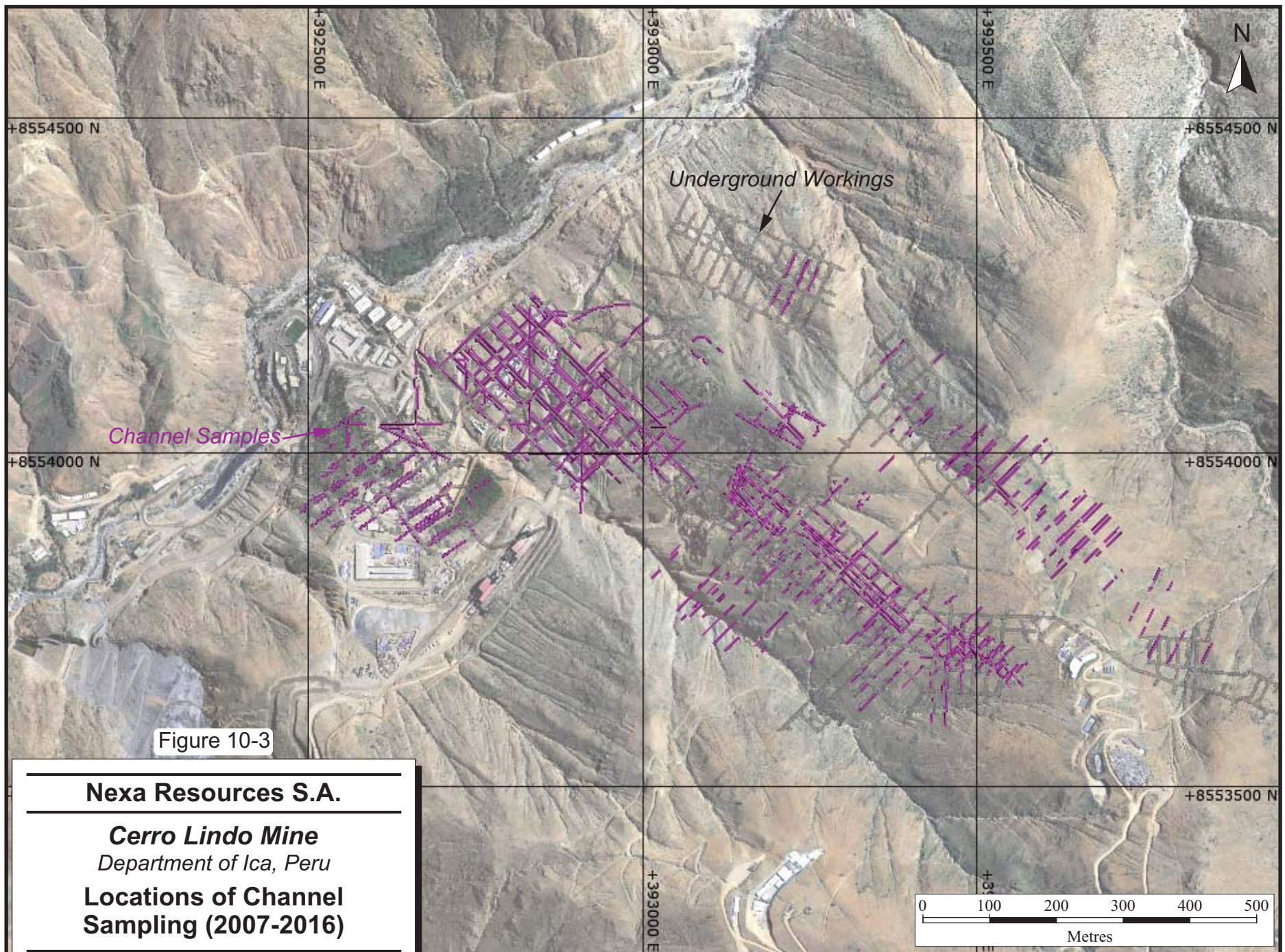


Figure 10-3

Nexa Resources S.A.

Cerro Lindo Mine

Department of Ica, Peru

**Locations of Channel
Sampling (2007-2016)**

December 2019

Source: Nexa, 2019.

DRILLING PROCEDURES

Drilling procedures are coordinated and supervised by company geologists (mine/production or exploration), and overseen by the Superintendent of Geology and Exploration. Drilling procedures are as follows:

- Initially, drill hole collar coordinates and orientation are communicated to a mine surveyor to accurately position the drill hole and are then certified by the surveyor and validated by the responsible geologist. The coordinates and collar orientation data are entered into a master CSV file, subsequently imported into the database (Fusion) and geological/mine/modelling software program. Drill hole (and channel sample) identification is generated in a systematic and specific format, including codes to reference: country, mining unit, year, and sequential number. All related drill hole data generated is similarly referenced to the corresponding drill hole collar. Basic drill hole information (i.e., collar and survey) is entered into the database and archived within four days of completing the drill hole.
- Daily drilling logs completed and provided by the contracted drilling company are entered into a database and archived.
- Drill hole survey data is collected by the drilling contractor. The survey is generally carried out after the completion of the drill hole. Various survey equipment (i.e., Gyro, Reflex, Flexit, etc.) may be used depending on the drilling contractor and equipment availability; Gyro survey deviation information is archived in PDF format.
- Survey data are collected between approximately 5 m and 10 m downhole, depending on the drilling objective (infill or recategorization). Original survey data is marked on paper, and provided to the supervising geologist, signed by the driller in charge. Survey data is validated by the responsible geologist and entered into a master CSV file, subsequently imported into the database, and geological/mine/modelling software program.
- Following the completion of a drill hole, the logging and core sampling procedures are carried out by a team of geologists. Core logging is completed using a set of geological, lithological, mineralogical, and alteration terms. Core logs are archived in logging software (Fusion). A complete series of core photographs are taken for each drill hole and stored in jpeg. Core sampling for geochemical analysis are essentially completed at the same time as core logging. Logging is completed within 48 hours after a drill hole is completed.
- The Fusion software managing the database automatically incorporates the core logging and sampling information, as well as the subsequent assay results, once the analytical work is completed. Company personnel are responsible for verifying the database; sample and assay data are initially combined in a master CSV file, subsequently imported into the database, which is used further on for import into geological/mine/modelling software.
- Drilling information is stored in a structured directory and backed up on a central server in Brazil. Data available in the drill hole database includes: drill hole location (Collar), downhole survey (Survey), sampling and geochemical analysis (Assay), and geological

characteristics (Lithology, Alteration, Mineralization). Drill core diameter varies, including: BQ (36.4 mm), NQ (47.6 mm), HQ (63.5 mm), and TT-46 (35.3 mm).

DRILL HOLE SPACING

Exploration drilling is generally completed over an 80 m by 80 m grid, whereas infill drilling is designed to cover a 20 m by 20 m grid.

DRILL CORE SAMPLING

PHELPS DODGE

Core was sampled every two metres over the length of the hole and split using a diamond saw. Half of the core was submitted for assaying and the other half was stored at the site.

NEXA

The sample interval was initially 1.5 m to 2.0 m, except when encountering lithological, structural or mineralogical breaks. All sulphide material was sampled, and additional “bracket” samples were taken on either side in the surrounding volcanic rocks, which ensured that the entire mineralized zone was sampled and provided data for dilution analysis (AMEC, 2002).

Drill core sampling is carried out under the supervision of the Sampling Geologist Supervisor and completed after the geotechnical and geological logging, and photographing the whole core. Once the sample length and cut-line have been defined by the supervising geologist, the core is cut longitudinally into two equal parts using an electric diamond drill core saw. If the core is fractured, the sampler separates and removes 50% of the fragmented material for the sample. The fragments are deposited in a pre-coded polyethylene bag and transported to the laboratory.

Current exploration core sampling follows written protocols and consists of half-core sampling of N-sized core on (usually systematic) 1.5 m intervals. The remaining half-core is kept as backup. Major mineralized body contacts are respected.

Infill drilling is typically B-sized core and is sampled in its entirety on 1.6 m intervals.

UNDERGROUND CHANNEL SAMPLING

Channel sampling was carried out from 2000 to 2016. The channel sampling procedure remained the same over these years, and the procedure is described in formal protocols. Samples were collected from cross-cuts, perpendicular to strike, and from both mineralized and barren zones (footwall and hanging wall).

Sample locations were marked with a paint line on the rib approximately one metre off the drift floor. Channel borders were then cut using an electric diamond saw, after which the samples were collected using a pneumatic or electric hammer or, rarely, a chisel and hammer between the cut borders. Samples were collected in a bucket with minimal loss of sample. Channel samples were 1.5 m long, 6 cm wide and 3 cm deep, with sample weight ranging from 4 kg to 8 kg (in barren zones, less than 4 kg). All cross-cuts were channel sampled, with the exception of those portions covered by shotcrete for safety purposes. In those cases, short infill holes were drilled instead.

AMEC observed channel sampling in early 2016. The channel sampling was discontinued and replaced by additional drilling later in 2016.

UNDERGROUND LONGHOLE SAMPLING

Upward oriented blast holes were sampled until late 2016. The drill cuttings produced from every 1.5 m long advance were collected in buckets and submitted to the laboratory for assaying.

Blast hole fans, consisting of 17 holes, were drilled every 2.2 m of drift advance. One in three face advances (every 6.6 m) was fully sampled, and the samples were submitted to the Mine laboratory for preparation and analysis. Underground longhole sampling, together with channel sampling, was used for ore control but was discontinued in 2016.

DRILLING AND CHANNEL SAMPLING RESULTS

The results of analysis and interpretation of drilling data, and prior to 2016 channel sampling data, have been continually incorporated into the Cerro Lindo 3D geological model.

The database is used by modelling geologists who work together and with the mine/production and exploration geologists to continually construct and update the 3D geological model. The 3D geological models is constructed in Leapfrog, primarily using geochemical assay results, particularly Zn, Pb, Cu, and Ag, as well as underground geological level plan maps and interpreted cross-sections and transverse sections.

In RPA's opinion, the drilling, logging, and drill core and channel sampling procedures meet industry standards. RPA is not aware of any drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

DENSITY DETERMINATIONS

Density and/or specific gravity (SG) data have been collected by Milpo and predecessors throughout the history of the project. It is not clear from the record which data type was actually collected. Density is a measure of the mass per unit volume of a material. In the case of geological materials, SG is the unitless ratio of the density of the sample to the density of water. At a water temperature of 4°C, the numerical value of density and SG for a given sample is exactly equal. At any other temperature, the values are different, however, for temperatures of <40°C, the discrepancy is in the third or fourth decimal place and is thus well within anticipated errors of the methodology. For that reason, density in g/cm³ and SG are typically used interchangeably and not reported separately. In the case of Cerro Lindo, both density and SG data have been collected and used as “density” results. The errors introduced are very small and will not affect Mineral Resource estimation. For simplicity, RPA accepts the use of the term “density” for both density and SG data in this discussion.

AMEC (2002) reported that intervals of diamond drill core were used to obtain density information by rock type for approximately 3,000 samples prior to 2002. Bondar Clegg in Lima produced the initial bulk density determinations using the standard water-displacement method on wax-coated core.

Additional sampling and measurements were completed at site by Milpo, using the water-displacement method, but without wax coating. The suitability of these measurements was verified by testing 135 samples previously submitted to Bondar Clegg. Those data were excluded from the current Mineral Resource estimate, as they were later determined by Milpo to be suspect.

Beginning in 2013, a new sampling campaign was initiated to update, and improve, the density database. Milpo collected 4,967 samples from underground drill holes and drift walls and submitted them to an external laboratory (Certimin or Inspectorate) for SG determinations using the water-displacement method with wax-coated core. Of these, 2,908 samples were located in the mineralization domains (Figure 11-1) and 2,059 samples were located in the

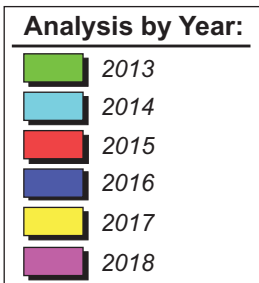
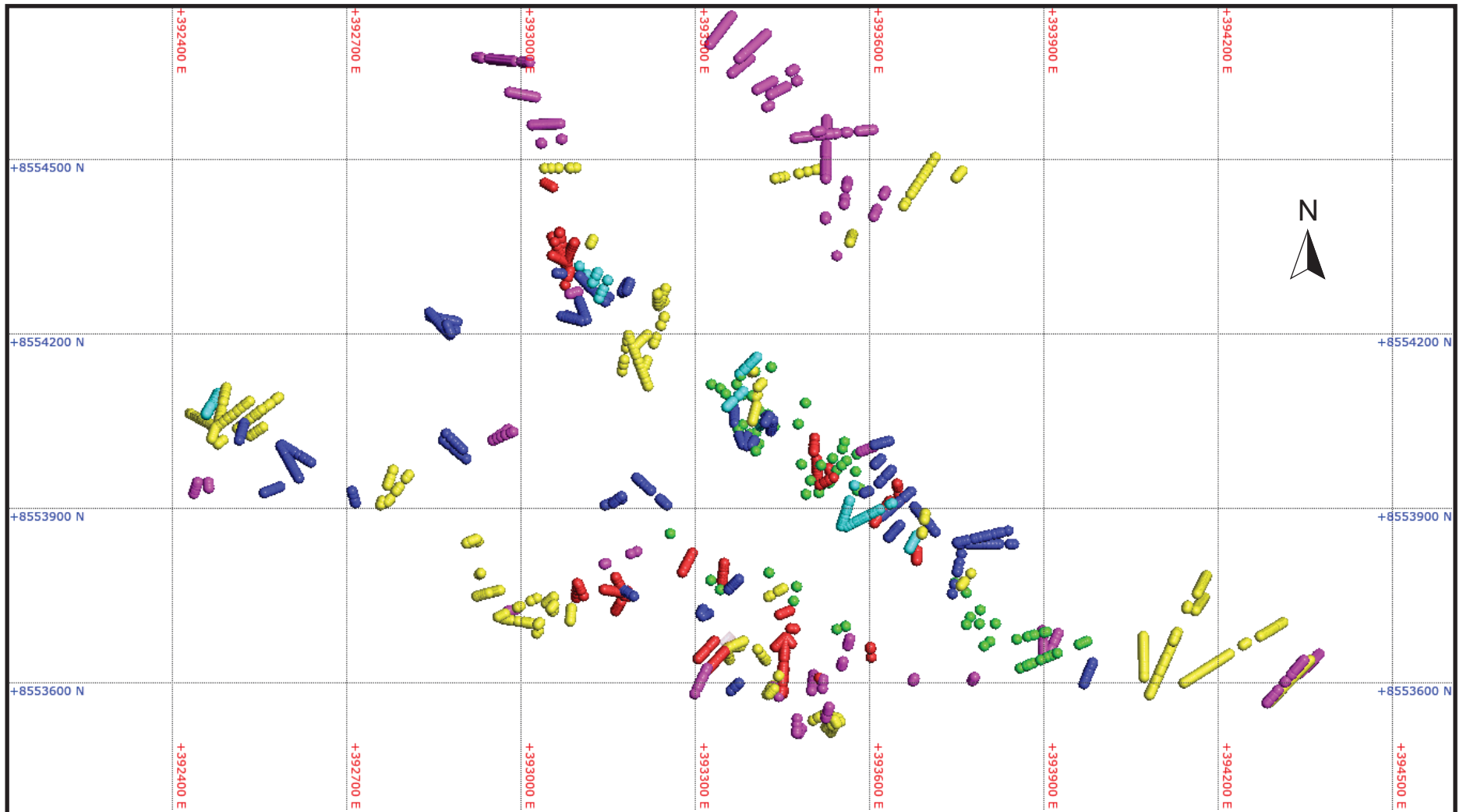
wallrock. A buffer of 10 m was used to select and review the density data in the wallrock within the resource shapes totalling 366 density measurements.

Table 11-1 summarizes the density measurements by sample type and year. The 2019 mean and median density data by domain are summarized in Section 14, Mineral Resource Estimate (Bulk Density).

TABLE 11-1 NUMBER OF SAMPLES BY SAMPLE TYPE AND YEAR
Nexa Resources S.A. – Cerro Lindo Mine

| Phase | Sample Type | All No. Samples | No. Samples within Mineralization Zones |
|---------------|-------------|-----------------|---|
| CL2013 | Drift Walls | 84 | 55 |
| | Drill Holes | 53 | 25 |
| CL2014 | Drill Holes | 197 | 119 |
| CL2015 | Drill Holes | 451 | 340 |
| CL2016 | Drill Holes | 546 | 437 |
| CL2017 | Drill Holes | 1,127 | 967 |
| CL2018 | Drill Holes | 2,509 | 965 |
| Total | | 4,967 | 2,908 |

Note. In addition, there are 366 density measurements in wallrock (10 m buffer zone) used in the resource estimate.



December 2019

Source: Nexa, 2019.

Figure 11-1

Nexa Resources S.A.
Cerro Lindo Mine
 Department of Ica, Peru
Distribution of Density Samples
Used for 2019 Mineral Resource
Estimate by Year Analyzed

ANALYTICAL AND TEST LABORATORIES

No details were available regarding laboratory procedures prior to the Milpo 1999 drilling campaign, including the Phelps Dodge drill program.

Samples from drilling and underground sampling programs completed by Milpo from 1999 to 2001 were prepared at the Bondar Clegg facility in Lima and analyzed at the Bondar Clegg laboratory in Bolivia (AMEC, 2002). Bondar Clegg's laboratories in Lima and Bolivia were not certified; however, both followed protocols set out by Bondar Clegg's Vancouver laboratory, which had ISO 9001 certification.

The check or umpire laboratory used was SGS Lima (SGS), which was an ISO 9001 certified laboratory.

Starting in 2007, all mine samples have been processed at the Cerro Lindo Mine laboratory (Mine laboratory), which was managed by SGS between 2007 and 2011 and since 2011, by Inspectorate. From 2014 to 2016, exploration samples were processed at Inspectorate Lima; however, that laboratory was replaced in early 2016 by Certimin Lima.

Inspectorate Lima has ISO 9001, ISO 14001, and ISO 19007 certification. Certimin holds ISO 9001 and NTP-ISO/IEC 17025 and 17021 certifications and is accredited by the Organismo Peruano de Acreditación (INACAL).

The Mine laboratory is neither certified nor accredited.

Table 11-2 summarizes the laboratories used for preparation and analysis of exploration and mine samples at Cerro Lindo since 1999.

TABLE 11-2 ANALYTICAL AND TEST LABORATORIES
Nexa Resources S.A. – Cerro Lindo Mine

| Laboratory Name | Location | Period of Use | Comments | Certified/Accredited | Independent |
|-----------------|------------------|---------------|---|--|-------------|
| Bondar Clegg | Lima | 1999–2001 | Preparation of drilling and underground samples. Protocols set out by Bondar Clegg Vancouver which is ISO 9001 accredited | Not accredited | Yes |
| Bondar Clegg | Bolivia | 1999–2001 | Drilling and underground sample analyzed. Protocols set out by Bondar Clegg Vancouver which is ISO 9001 accredited | Not accredited | Yes |
| SGS | Lima | 1999–2017 | Check laboratory | ISO 9001 | Yes |
| Mine laboratory | Cerro Lindo site | 2007–2011 | Processing of all mine samples. Managed by SGS. | No | No |
| Mine laboratory | Cerro Lindo site | 2011–2017 | Processing of all mine and process samples. Managed by Inspectorate Lima. | No | No |
| Inspectorate | Lima | 2014–2019 | Processing of exploration samples | ISO 9001 ISO 14001 ISO 19007 | Yes |
| Certimin | Lima | 2016–2019 | Processing of exploration samples | ISO 9001 NTP-ISO/IEC 17025 and 17021 Accredited by Organismo Peruano de Acreditación INACAL | Yes |
| Inspectorate | Lima | 2016– 2019 | Primary laboratory for exploration samples | ISO 9001 ISO 14001 ISO 19007 | Yes |

SAMPLE PREPARATION AND ANALYSIS

GEOCHEMICAL SAMPLES

Lithogeochemical samples collected by Imaña (2015) were analyzed at ACME Laboratories Vancouver using lithium metaborate fusion and inductively-coupled plasma-mass spectrometry (ICP-MS) for major oxides and for refractory and rare-earth elements. An ICP-MS package with multi-acid digestion was used to analyze other elements. Additional details regarding geochemical sample preparation and assaying during this study were not available.

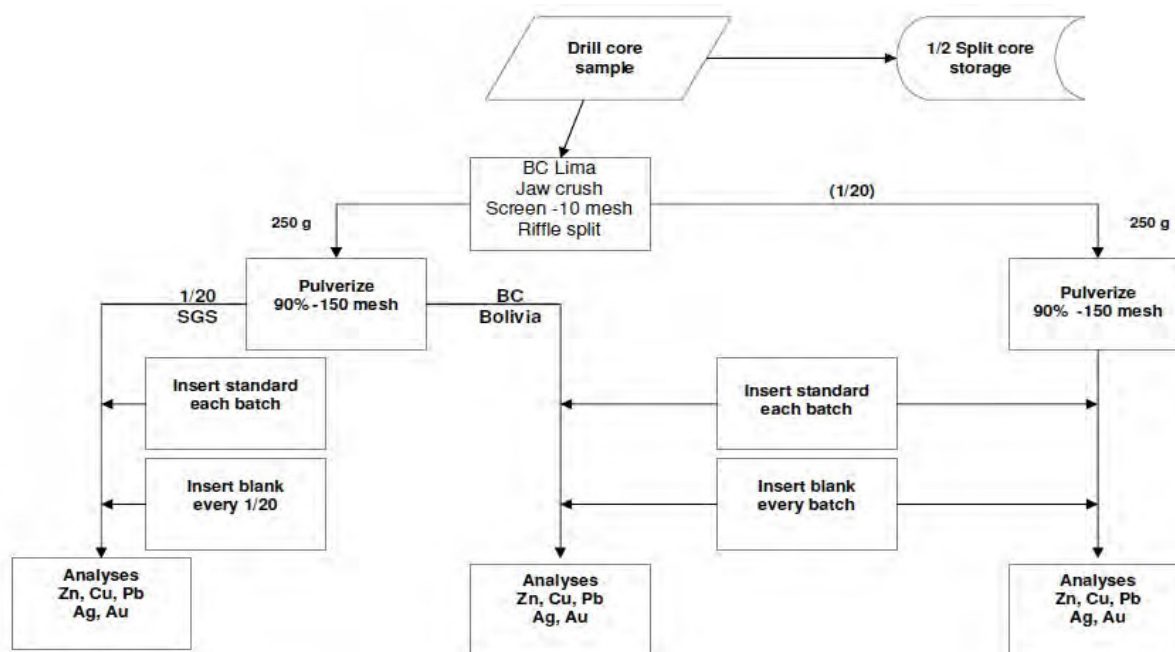
EXPLORATION SAMPLES

The sample preparation procedure at Bondar Clegg Lima involved the following steps (Figure 11-2; AMEC, 2002):

- Jaw-crushing to 2 mm (10 mesh ASTM)
- Homogenization and splitting to obtain a 250 g sub-sample using a Jones splitter
- Pulverizing the sub-sample to 90% minus 0.106 mm (150 mesh Tyler).

Samples were assayed at Bondar Clegg Bolivia for silver, copper, lead, zinc, and gold. No details were available regarding the assay methods.

FIGURE 11-2 SAMPLE PREPARATION AND QUALITY CONTROL FLOWSHEET (MILPO 2000–2001 PROGRAM)



Note: Figure prepared by AMEC, 2002.

Since 2007, exploration samples sent to Certimin and Inspectorate are prepared using the same procedure used by the Mine laboratory discussed in the following section. Analyses of silver, zinc, copper, and lead are performed by four-acid digestion followed by atomic absorption spectroscopy (AAS). A four-acid digestion followed by ICP optical emission spectrometry (ICP-OES) analysis is used for multielement analyses on all samples.

MINE SAMPLES

Since 2007, sample preparation of geological samples at the Mine laboratory has followed the procedure:

- Drying at 105°C ± 5°C in stainless steel trays.

- Primary crushing to 3/4" using a Rhino jaw crusher.
- Secondary crushing to better than 85% minus 2 mm (10 mesh ASTM) using a RockLabs jaw crusher. A Boyd crusher with a dedicated rotary splitter was acquired in 2016 and is now in service.
- Homogenization and splitting to obtain a 200 g to 250 g sub-sample using a Jones splitter with 28 one centimetre wide chutes. The dedicated rotary splitter attached to the Boyd crusher is now used.
- Pulverizing the collected sub-sample to 95% minus 0.105 mm (140 mesh ASTM) in a TM Andina™ ring pulverizer.

Geological samples average 3 kg to 5 kg. All preparation workstations are provided with compressed air hoses for cleaning and dust extraction. Sieve checks are conducted on 3% of randomly chosen crushed and pulverized samples, however, only one set of checks (the first one) is formally recorded every day. Results are posted in the laboratory for all personnel to review.

Geological samples are assayed for silver, copper, lead, zinc, and iron using 0.25 g aliquots, aqua regia digestion, and AAS determination. Detection limits for the Mine laboratory, Inspectorate Lima, and Certimin Lima are summarized in Table 11-3.

TABLE 11-3 DETECTION LIMITS AT MINE LABORATORY, INSPECTORATE LIMA AND CERTIMIN LIMA
Nexa Resources S.A. – Cerro Lindo Mine

| Laboratory | Detection Limit | | | | |
|-------------------|-----------------|---------|--------|---------|--------|
| | Ag (ppm) | Cu (%) | Pb (%) | Zn (%) | Fe (%) |
| Mine Laboratory | 0.4 | 0.01 | 0.01 | 0.01 | 0.01 |
| Inspectorate Lima | 1.0 | 0.01 | 0.01 | 0.01 | 0.01 |
| Certimin Lima | 0.2 | 0.00005 | 0.0002 | 0.00005 | 0.01 |

Laboratory personnel collect samples manually from various positions in the process flow to determine the head, concentrate, and tailing grades in 12-hour composites. The high grade concentrate samples are prepared at separate facilities from the exploration samples to avoid possible contamination of lower grade samples. Tailings are assayed using procedures similar to procedures for geological samples with concentrates requiring the use of volumetric methods for copper, lead, and zinc due to the higher grades.

During Nexa's recent drilling phases, the program included the insertion of coarse blanks and standard reference materials (SRM), as well as coarse reject and pulp duplicates.

Internal quality control (QC) protocol includes the insertion of coarse duplicates (4%) and pulp duplicates (4%) as well as one SRM (4%), and one coarse blank (4%) in each batch of 25 samples. The laboratory uses two SRMs: one for low grades and one for high grades. Every month, 30 geological samples and 10 plant samples are submitted to Inspectorate Lima for external control.

The Mine laboratory uses a proprietary Global Laboratory Information Management System (GLOBAL LIMS) for digitally registering all measurements (including scale weights), without any human intervention in the data flow. The LIMS determines the position where control samples must be inserted, and assesses the results of the QC, indicating if those results are acceptable or not. Acceptable results are then directly transferred into the mine database.

SAMPLE SECURITY

Core boxes are transported every day to the core shed by personnel from the drilling company. Analytical samples are transported by company or laboratory personnel using corporately-owned vehicles. Core boxes and samples are stored in safe, controlled areas.

Chain-of-custody procedures are followed whenever samples are moved between locations, to and from the laboratory, by filling out sample submittal forms.

In RPA's opinion, the sample preparation, analysis, and security procedures at Cerro Lindo are adequate for use in the estimation of Mineral Resources.

QUALITY ASSURANCE AND QUALITY CONTROL

PHELPS DODGE, 1996-1997

The Phelps Dodge drilling campaign included a thorough QC program, including the use of blanks, standards and duplicates. AMEC (2002) reviewed the results for all zinc values greater than 1% and concluded that this work was completed to an acceptable industry standard.

MILPO, 1999–2001

A QC program was put in place during the feasibility study (AMEC, 2002). During the early drilling, the program did not include SRMs or blanks, however, samples were submitted for external control to SGS. Zinc data showed acceptable analytical performance.

MILPO, 2012–2013

AMEC (2013) reviewed the QC protocol implemented at the time, together with QC data from 2012. The protocol included the insertion of quarter-core twin samples, twin channel samples, coarse and pulp duplicates, two SRMs for core samples and one SRM for channel samples, and coarse blanks. The insertion rates were not specified.

MILPO, 2014–2015

Campos (2016a, 2016b) described the QC program implemented during 2014 and 2015 for channel and core samples, respectively, which was similar to the program implemented in 2012–2013 (AMEC, 2013). During 2015, 975 channel samples (including 183 control samples) were submitted to the laboratory. The overall insertion rate for QC samples was 19.2%.

MILPO, 2016

Maria Campos, Database Manager at Milpo in 2016, described the QA/QC program implemented during 2016. The protocol included the insertion of coarse blanks, SRMs, and duplicates at rates listed in Table 11-4. A total of 4,394 QA/QC samples were inserted into the sample stream at an overall insertion rate of 17.50%. The 2016 QA/QC program details, for the Mine, Inspectorate Lima, and Certimin laboratories, are summarized in Table 11-5. The method of analysis used was aqua regia + AAS (Ag, Cu, Pb, and Zn).

TABLE 11-4 QA/QC SAMPLE INSERTION RATES, 2016
Nexa Resources S.A. – Cerro Lindo Mine

| Control Sample Type | | No. Samples | Insertion Rate (%) |
|---------------------|----------------------|--------------|--------------------|
| Blanks | Coarse | 1,007 | 3.60% |
| | Ley baja (STD1-STD4) | 332 | 1.20% |
| Standards | Ley media (STD2) | 273 | 1.00% |
| | Ley alta (STD3-STD5) | 327 | 1.10% |
| | Field Duplicate | 1,012 | 3.60% |
| Duplicates | Coarse Duplicate | 1,002 | 3.50% |
| | Fine Duplicate | 981 | 3.50% |
| TOTAL | | 4,934 | 17.50% |

TABLE 11-5 2016 QA/QC PROGRAM SUMMARY
Nexa Resources S.A. – Cerro Lindo Mine

| Laboratory | QA/QC Sample | Type | No. Samples. | Failure Limit (%) | Bias (%) | | | |
|---------------------|--------------|-------------|--------------|-------------------|----------|-------|--------|-------|
| | | | | | Ag | Cu | Pb | Zn |
| Mine Laboratory | Blanks | Coarse | 966 | <5% | 0.00% | 0.00% | 0.00% | 0.00% |
| | Standards | STD1,2,3 | 823 | <5% | - | - | -4.30% | - |
| | | Field Dups | 969 | <10% | 1.00% | 3.70% | 3.00% | 5.90% |
| | Duplicates | Coarse Dupl | 959 | <10% | 2.50% | 5.40% | 3.00% | 4.40% |
| | | Fine Dupl | 939 | <10% | 2.90% | 3.50% | 2.30% | 5.00% |
| Inspectorate (Lima) | Blanks | Coarse | 41 | <5% | 1.00% | 1.10% | 0.60% | 2.20% |
| | Standards | STD4,5 | 66 | <5% | 0.00% | 0.00% | 0.00% | 0.00% |
| | | Field Dupl | 43 | <10% | 7.90% | 2.00% | 2.20% | - |
| | Duplicates | Coarse Dupl | 43 | <10% | 0.00% | 0.00% | 0.00% | 2.40% |
| | | Fine Dupl | 42 | <10% | 0.00% | 0.00% | 0.00% | 0.00% |
| Certimin | Standards | STD4,5 | 43 | <5% | 0.00% | 0.00% | 0.00% | 0.00% |
| TOTAL | | | 4,934 | | | | | |

NEXA, 2017

In 2017, the QC protocol implemented at the Mine included the insertion of one coarse blank, one SRM, one twin sample, one coarse duplicate, and one pulp duplicate in every 25-sample batch, representing an overall 19% insertion rate. The coarse blank material is obtained from a nearby granodiorite pit. A total of 6,643 QA/QC samples were inserted into the sample stream (Table 11-6). The 2017 QA/QC program details, for the Mine and Certimin laboratories, are summarized in Table 11-7.

TABLE 11-6 QA/QC SAMPLE INSERTION RATES, 2017
Nexa Resources S.A. – Cerro Lindo Mine

| Control | type | No. Samples | Insertion Rate (%) |
|--------------|--------------|--------------|--------------------|
| Blanks | Coarse | 1,214 | 3.50% |
| Standards | Low grade | 621 | 1.80% |
| | High grade | 598 | 1.70% |
| | Pulp | 1,208 | 3.50% |
| Duplicates | Coarse | 1,212 | 3.50% |
| | Twin samples | 1,221 | 3.50% |
| | Pulp | 569 | 1.60% |
| Total | | 6,643 | 19.00% |

TABLE 11-7 2017 QA/QC PROGRAM SUMMARY
Nexa Resources S.A. – Cerro Lindo Mine

| Laboratory | QA/QC Sample | Type | No. Samples | Failure Limit (%) | Bias (%) | | | |
|-----------------|----------------|----------------|--------------|-------------------|----------|--------|--------|--------|
| | | | | | Ag | Cu | Pb | Zn |
| Mine Laboratory | Blanks | Coarse | 583 | <5% | 0.00% | 0.00% | 0.00% | 0.00% |
| | Standards | High-low grade | 585 | <10% | 0.90% | -1.20% | -1.60% | -2.50% |
| | | Twin sample | 586 | <10% | 3.90% | 5.50% | 5.10% | 6.70% |
| | Duplicates | Coarse | 589 | <10% | 0.20% | 0.50% | 0.00% | 0.20% |
| | | Pulps | 588 | <10 | 0.30% | 0.20% | 0.30% | 0.50% |
| Certimin | Blanks | Coarse- ICP | 452 | <5% | 0.00% | 1.80% | 0.00% | 0.20% |
| | | Coarse- AAS | 179 | <5% | 0.00% | 0.60% | 0.00% | 0.60% |
| | Standards | High-low grade | 633 | <10% | 0.40% | 2.00% | 1.50% | 1.30% |
| | | Twin sample | 635 | <10% | 6.90% | 7.60% | 6.10% | 7.20% |
| | Duplicates | Coarse | 623 | <10% | 0.30% | 0.00% | 0.00% | 0.00% |
| | | Pulps | 620 | <10% | 3.40% | 0.20% | 0.30% | 0.30% |
| | External check | Pulps | 569 | <5% | 0.90% | 3.30% | 2.20% | -1.40% |
| Total | | | 6,643 | | | | | |

Figures 11-3 and 11-4 show examples of SRM results from the Mine and Certimin laboratories

FIGURE 11-3 SRM “MCL04” RESULTS FOR ZINC – MINE LABORATORY

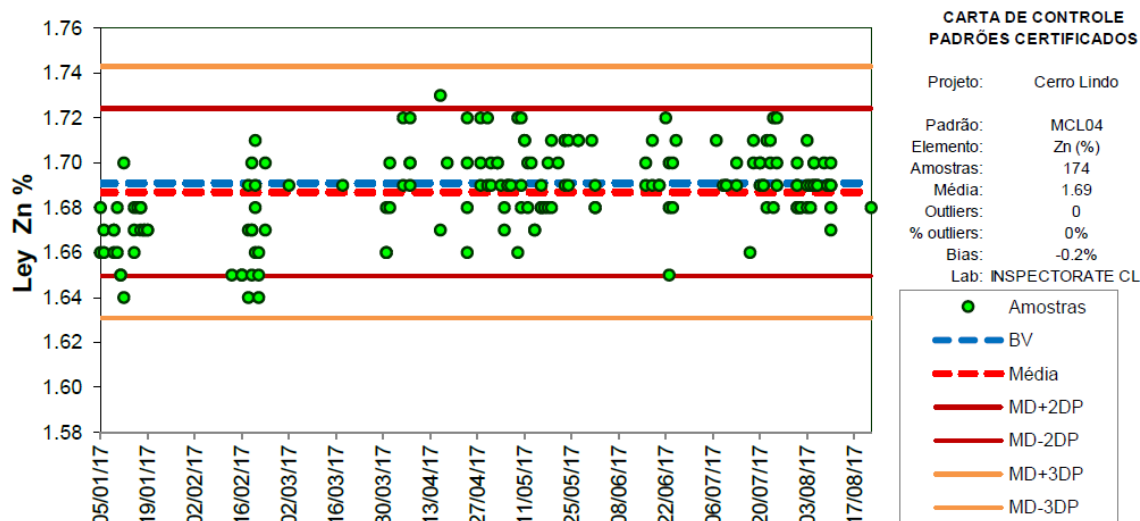
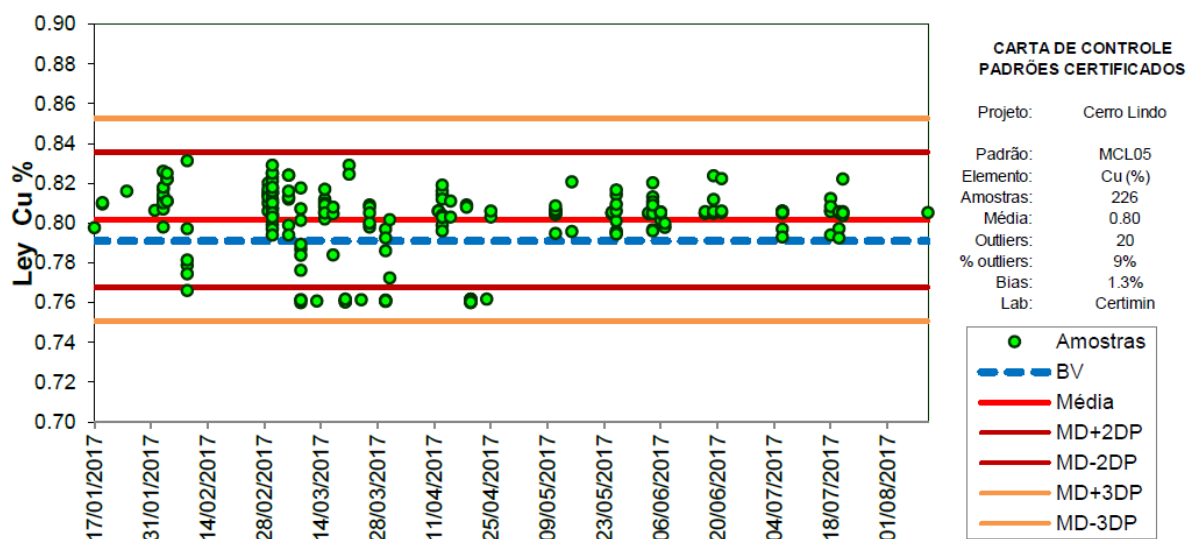


FIGURE 11-4 SRM “MCL05” RESULTS FOR COPPER - CERTIMIN



NEXA, 2018-2019

The current QC protocol is similar to that used in 2017 and samples are inserted at a 20% insertion rate. RPA reviewed selected QC reports from 2018 and 2019. Example results are shown in Figures 11-5 to 11-8. Tables 11-8 to 11-10 show blank, duplicate, and SRM results for the period September 1, 2018 to April 30, 2019. Table 11-11 shows external laboratory check results versus the primary laboratories (Inspectorate Lima and Certimin) for the same period. Nexa used ALS Lima as an external laboratory during this period.

**TABLE 11-8 CERRO LINDO BLANK RESULTS – SEPTEMBER 1, 2018 TO
APRIL 30, 2019
Nexa Resources S.A. – Cerro Lindo Mine**

| Laboratory | Element | CLBG | | Comments |
|--------------|---------|-------|-----------|----------|
| | | No. | Failure % | |
| Certimin | Ag ppm | 501 | 0.00 | |
| | Cu % | 501 | 0.00 | |
| | Pb % | 501 | 0.00 | |
| | Zn % | 501 | 0.00 | |
| | Ag oz/t | 380 | 0.00 | |
| Inspectorate | Ag ppm | 913 | 0.00 | |
| | Cu % | 1,293 | 0.00 | |
| | Pb % | 1,293 | 0.00 | |
| | Zn % | 1,293 | 0.08 | 1 failed |

**TABLE 11-9 CERRO LINDO DUPLICATE RESULTS – SEPTEMBER 1, 2018 TO
APRIL 30, 2019
Nexa Resources S.A. – Cerro Lindo Mine**

| Laboratory | Element | DP - Pulp Duplicates | | RG - Coarse Rejects | | RP - Core duplicate | |
|--------------|---------|----------------------|-------------|---------------------|-------------|---------------------|-------------|
| | | No. | Failure (%) | No. | Failure (%) | No. | Failure (%) |
| Certimin | Ag ppm | 1,438 | 1.0 | 1,648 | 0.3 | 1,234 | 0.1 |
| | Cu % | 1,840 | 0.2 | 2,067 | 0.4 | 919 | 0.7 |
| | Pb % | 1,841 | 0.2 | 2,067 | 0.3 | 918 | 0.7 |
| | Zn % | 1,843 | 0.2 | 2,069 | 0.3 | 920 | 2.2 |
| Inspectorate | Ag oz/t | 404 | 0.2 | 420 | 0 | 159 | 0 |
| | Ag ppm | 1,438 | 0 | 1,648 | 0.1 | 1,234 | 0 |
| | Cu % | 1,840 | 0.2 | 2,067 | 0.1 | 919 | 0.2 |
| | Pb % | 1,841 | 0.1 | 2,067 | 0.2 | 918 | 0.2 |
| | Zn % | 1,843 | 0.1 | 2,069 | 0.2 | 920 | 1.7 |

Limit 10% failure

CERT filter >0.01% Cu, Pb, Zn and >1 ppm Ag

INSP filter >0.02% Cu, Pb, Zn and (>0.2 oz/t and >5 ppm) Ag

TABLE 11-10 CERRO LINDO SRM BIAS% - SEPTEMBER 1, 2018 TO APRIL 30, 2019
Nexa Resources S.A. – Cerro Lindo Mine

| Laboratory | Element | MCL-04 | | MCL-05 | | PECLSTD001 | | PECLSTD002 | | PECLSTD003 | |
|--------------|---------|--------|----------|--------|----------|------------|----------|------------|----------|------------|----------|
| | | No. | Bias (%) | No. | Bias (%) | No. | Bias (%) | No. | Bias (%) | No. | Bias (%) |
| Certimin | Ag ppm | 132 | 4.34 | 127 | 0.50 | 86 | 0.44 | 83 | 0.41 | 75 | -0.22 |
| | Cu % | 132 | -0.59 | 127 | 1.88 | 86 | 1.71 | 83 | 2.00 | 75 | 1.86 |
| | Pb % | 132 | -2.09 | 127 | 1.96 | 86 | 0.35 | 83 | 0.48 | 75 | 0.89 |
| | Zn % | 132 | -1.66 | 127 | 0.28 | 86 | 0.84 | 83 | 3.38 | 75 | 2.68 |
| Inspectorate | Ag oz/t | 201 | 2.03 | 159 | 0.60 | | | | | | |
| | Ag ppm | 118 | 5.26 | 95 | 0.47 | 224 | 0.46 | 223 | 1.19 | 200 | -4.99 |
| | Cu % | 319 | 2.32 | 254 | 0.07 | 224 | 0.38 | 223 | 0.48 | 200 | -3.58 |
| | Pb % | 319 | -7.97 | 254 | -2.22 | 224 | -2.17 | 223 | -4.96 | 200 | -6.71 |
| | Zn % | 319 | 0.23 | 254 | 0.03 | 224 | 1.49 | 223 | 1.24 | 200 | -3.58 |

0 - 5% bias Excellent

5 - 10% bias Attention

>10% bias Reject

STD Bias % = (average/ certified value) - 1

TABLE 11-11 ALS LIMA VERSUS PRIMARY LABORATORY CHECK RESULTS - SEPTEMBER 1, 2018 TO APRIL 30, 2019
Nexa Resources S.A. – Cerro Lindo Mine

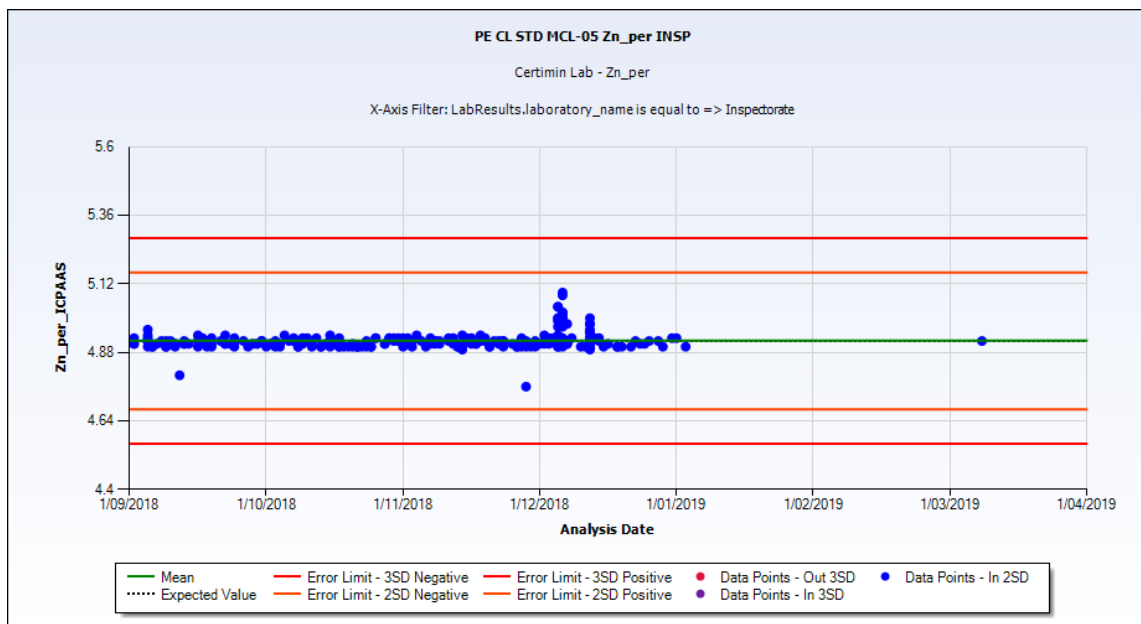
| Primary Laboratory | Element | Check | |
|--------------------|---------|-------|--------|
| | | No. | Bias% |
| Certimin | Ag ppm | 41 | -4.03% |
| | Cu % | 208 | 0.00% |
| | Pb % | 71 | 0.00% |
| | Zn % | 222 | 4.55% |
| Inspectorate | Ag ppm | 273 | -4.88% |
| | Cu % | 352 | -3.92% |
| | Pb % | 255 | -4.44% |
| | Zn % | 350 | 0.78% |

0 - 5% bias Excellent

5 - 10% bias Attention

>10% bias Reject

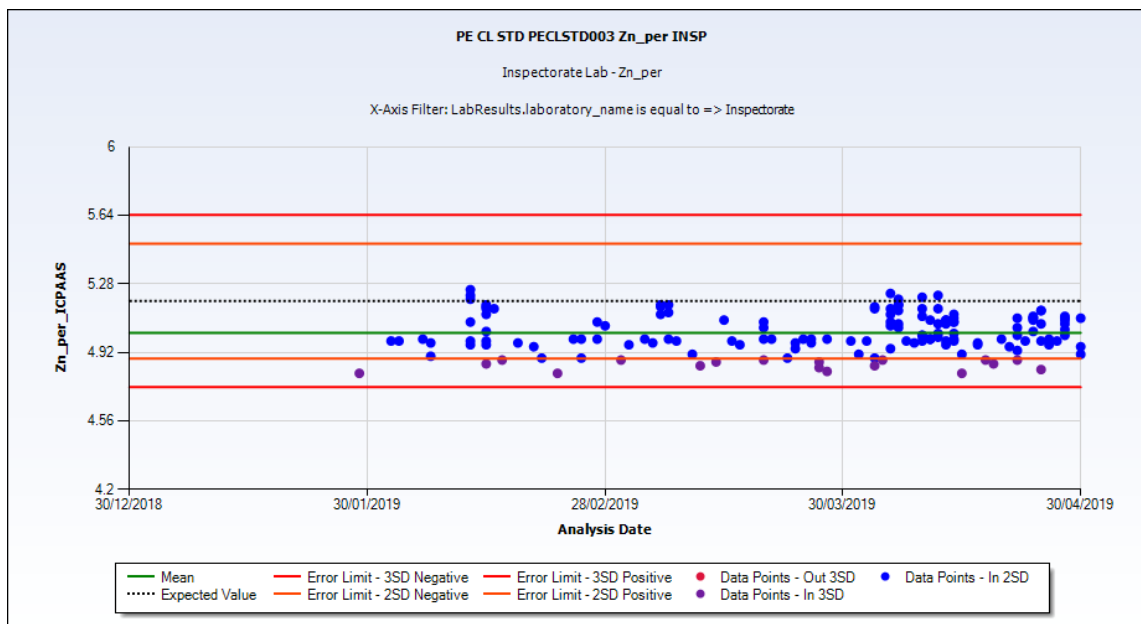
FIGURE 11-5 SRM “MCL-05” RESULTS FOR ZINC - INSPECTORATE



SUMMARY

| | |
|-------------------------|---------------------|
| Standard Code | MCL-05 |
| Element | Zn |
| Unit of Measure | per |
| Analytical Technique | ICPAAS |
| Expected (Actual value) | 4.920 |
| Project | CL |
| Lab | Inspectorate |
| Analysis Date From | 1/09/2018 |
| Analysis Date To | 7/03/2019 |
| Count of Samples | 254 |
| Average Actual | 4.92 |
| Bias % | 0.03 |

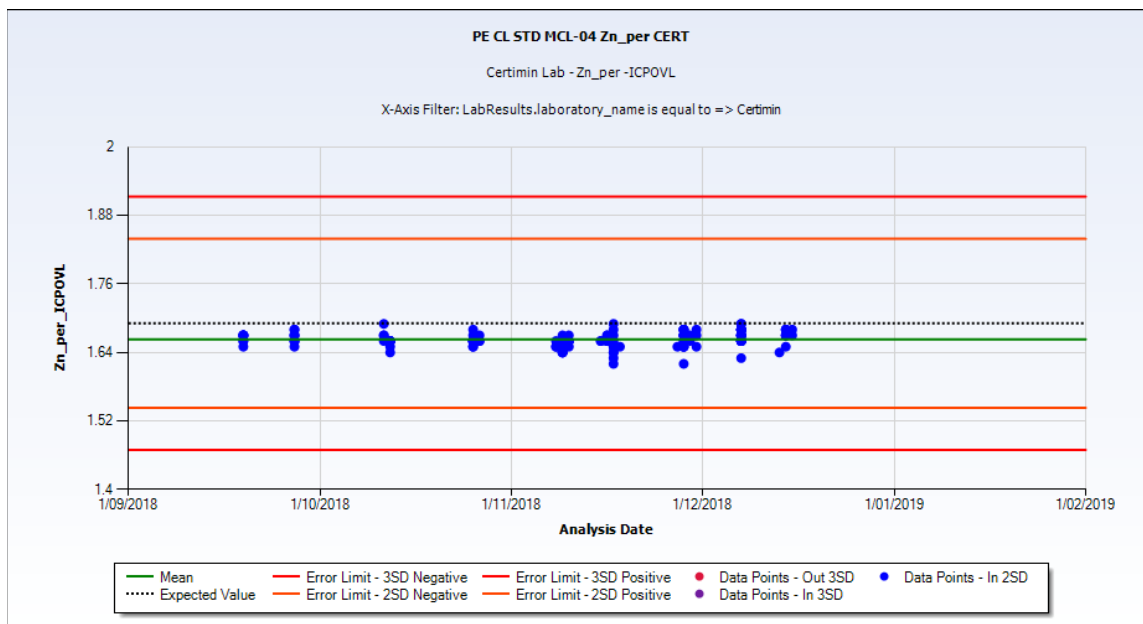
FIGURE 11-6 SRM “PECLSTD003” RESULTS FOR ZINC - INSPECTORATE



SUMMARY

| | |
|-------------------------|---------------------|
| Standard Code | PECLSTD003 |
| Element | Zn |
| Unit of Measure | per |
| Analytical Technique | ICPAAS |
| Expected (Actual value) | 5.190 |
| Project | CL |
| Lab | Inspectorate |
| Analysis Date From | 30/12/2018 |
| Analysis Date To | 29/04/2019 |
| Count of Samples | 200 |
| Average Actual | 5.02 |
| Bias % | -3.21 |

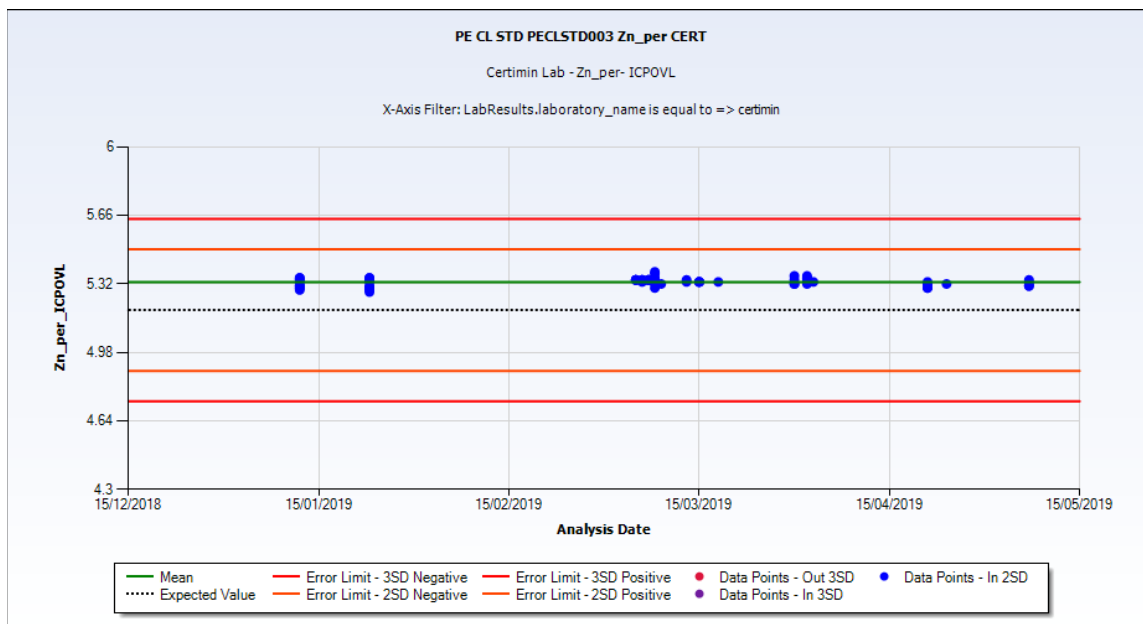
FIGURE 11-7 SRM “MCL-05” RESULTS FOR ZINC - CERTIMIN



SUMMARY

| | |
|-------------------------|-------------------|
| Standard Code | MCL-04 |
| Element | Zn |
| Unit of Measure | per |
| Analytical Technique | ICPOVL |
| Expected (Actual value) | 1.691 |
| Project | CL |
| Lab | Certimin |
| Analysis Date From | 19/09/2018 |
| Analysis Date To | 14/12/2018 |
| Count of Samples | 132 |
| Average Actual | 1.663 |
| Bias % | -1.66 |

FIGURE 11-8 SRM “PECLSTD003” RESULTS FOR ZINC - CERTIMIN



SUMMARY

| | |
|-------------------------|-------------------|
| Standard Code | PECLSTD003 |
| Element | Zn |
| Unit of Measure | per |
| Analytical Technique | ICPOVL |
| Expected (Actual value) | 5.190 |
| Project | CL |
| Lab | Certimin |
| Analysis Date From | 28/12/2018 |
| Analysis Date To | 22/04/2019 |
| Count of Samples | 75 |
| Average Actual | 5.33 |
| Bias % | 2.68 |

In RPA’s opinion, the QA/QC program as designed and implemented by Cerro Lindo is adequate, and the assay results within the database are suitable for use in a Mineral Resource estimate.

12 DATA VERIFICATION

During the last quarter of 2017, Nexa transferred the drill database from Excel files to Fusion software. Nexa performed an exhaustive number of checks to confirm the accuracy of the data migration. RPA reviewed the resultant Excel summary and is of the opinion that Nexa performed the data migration with sufficient checks and documentation. Nexa has also implemented regular data verification workflows to ensure the collection of reliable data. Coordinates, core logging, surveying, and sampling are monitored by exploration, mine geologists, and verified routinely for consistency.

DATABASES

Mine data are stored in Datamine's Fusion database, which is located in the Mine server at Cerro Lindo. Nexa performs regular backups to a remote server in Lima and central server in Brazil. Access to the database is strictly controlled.

Logging and sampling data are digitally entered into the database by downloading the information from the logging tablets.

Collar coordinates are digitally entered by the surveyors in Excel files to a server managed by the Survey group. Every Friday, the database administrator e-mails the Survey group a special empty form, which is completed by the surveyors and then stored in the Survey group server. The completed form is returned to the database administrator in PDF format. Using internal routines, the database administrator later captures this information from the Survey group server and saves it in the mine server.

Assay data are captured from the Global LIMS server using custom routines, and this information is then entered into the Fusion database. The laboratory also issues *.csv and pdf-format certificates, however, only the information that is digitally captured from the server is considered to be the true record.

Personnel from the Geology department conduct daily quality control checks on the data entry. A first check consists of identifying duplicate sample numbers or lack of information for certain intervals. Every month, all the assay data entered in the server are compared with a

compilation of individual *.csv files issued by the laboratory. Paper records are stored at a safe location at the mine.

RPA is of the opinion that the data collection, import, and validation workflows are consistent with industry standards, and are of sufficient quality to support Mineral Reserve and Mineral Resource estimation.

INTERNAL VERIFICATION

The updated database includes all historic data (drill holes and channels) and new drill holes completed to April 30, 2019. Prior to using this database for Mineral Resource estimation, the data was reviewed for geologic consistency and checked against the original information. The Cerro Lindo resource database is regularly maintained and validated by the database administrator using Fusion software validation routines and by regularly checking the drill hole data on-screen.

The updated and validated database was exported from Fusion and sent to Lima, for an additional internal validation which involved cross-checks and consistency checks on approximately 5% of the data. The database was then transferred to a central master server (backup for all Nexa projects). Nexa prepared “The Informe de Validación de Base de Datos Cerro Lindo” report containing additional detail regarding data validation.

EXTERNAL VERIFICATION 2003-2017

AMEC conducted five separate verification exercises from 2003 to 2017. These exercises included:

- site visits to review and confirm findings by site geologists (2003)
- drill core data, logging, and sampling reviews with site geologists (2003, 2013, 2016)
- review of density measurement equipment and procedures (2003)
- checks on 10% of the assay and geological data from drilling campaigns (2003)
- high-level review of Milpo’s operational procedures and QC program (2013)
- signed assay certificate spot checks (2016)
- reviews of geological interpretation using wireframes, drilling, selected plans, and sections (2016, 2017)
- spot collar and downhole survey record checks (2016)

- a thorough audit of the 2010–2017 portion of the Cerro Lindo database (2017)
- review of the integrity of downhole surveys (2017)

Amec (2017) generally concluded that the above aspects of the project were reasonable, acceptable, and adequate to support Mineral Resource estimation and mine planning. A few errors identified by Amec during data validation were immediately corrected by Cerro Lindo staff.

RPA VERIFICATION

Rosmery Cárdenas, Principal Geologist with RPA and an independent QP, visited the Cerro Lindo Mine from June 4 to 7, 2019. During the site visit, Ms. Cárdenas reviewed plans and sections, visited the core shack, examined drill core and mineralized exposures at the underground mine, and held discussions with Nexa personnel.

As part of the data verification process, RPA inspected the drill holes in section and plan view to review geological interpretation related to the drill hole and channel database and found good correlation. RPA queried the database for unique headers, unique samples, duplicate holes, overlapping intervals, blank and zero grade assays, and long sample intervals. RPA also reviewed QA/QC data collected by Nexa. RPA did not identify any significant discrepancies.

RPA performed checks on the Cerro Lindo Mineral Resource database by comparing August 2017 to April 2019 assay certificates, matching approximately 74,000 sample IDs to the assay database for Zn, Cu, Pb, Ag, and Fe. The database values corresponded with the assay certificate data for the SPB, SPP, and SSM zones. No significant errors were found.

RPA found that the database is well maintained, and generally exceeds industry standards. RPA is of the opinion that database and database verification procedures for the Project comply with industry standards and are adequate for the purposes of Mineral Resource estimation.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

The processing plant at Cerro Lindo has been in operation since 2007 and uses a conventional polymetallic flotation scheme to produce zinc, lead, and copper concentrates with silver content. The concentrates are relatively clean and high grade, and in general do not contain penalizable concentrations of deleterious elements. A small penalty does result from the combined content of Pb and Zn in the copper concentrate, which since 2016 has contained Pb + Zn in the approximate range of 4.8% to 5.6%. Silver in the feed is mostly recovered to the copper and lead concentrates, resulting in silver credits for these two concentrates.

Amec summarized test work completed to support feasibility studies prior to construction of the plant (AMEC, 2017). AMEC Simons/GRD Minproc and GEMIN completed feasibility studies in 2002 and 2005, respectively. Metallurgical test work conducted to support these studies formed the basis of the conventional polymetallic flotation concentrator process design that was subsequently constructed and started up in 2006. At the beginning of operations, the plant had a lower (5,000 tpd) treatment capacity and processed higher grades than the current operation. The plant was designed for subsequent expansion to treat lower-grade ore later in the mine life.

RECENT TEST WORK

In April 2019, Transmin Metallurgical Consultants (Transmin) reported on test work completed at the Certimin Laboratory in Lima, Peru, to characterize ore that would be mined in 2019 and to be used in the development of a geometallurgical model that would provide information relevant to the processing of future Cerro Lindo ores. A total of 25 samples were gathered including 21 core samples and four samples collected from within the mine to represent ore that had not been intersected in drilling. The ore is described as consisting mainly of two lithologies, pyritic primary sulphides (SPP) and baritic primary sulphides (SPB).

Test work included comminution (abrasion index and Bond work index determinations), and open and locked cycle bulk rougher and cleaner, and Zn rougher and cleaner flotation tests. Six of the individual samples were used for the comminution test work (due to available sample

mass), while two composites (LBC-01 and LBC-02) made up of the 25 individual samples were used for the flotation test work.

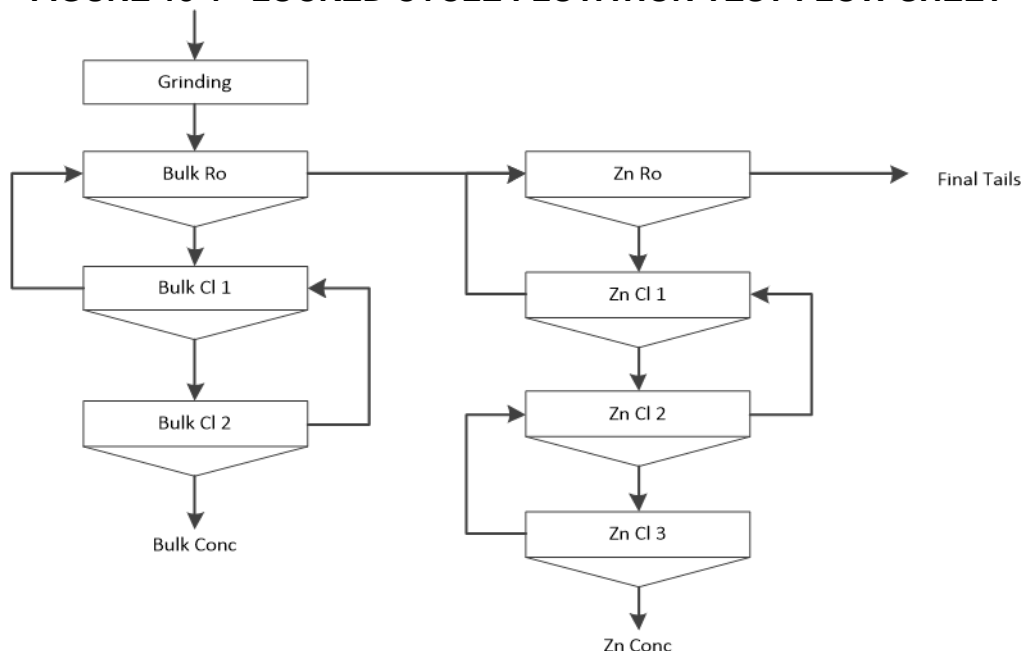
Results of the comminution test work are shown in Table 13-1. The Bond work index values are significantly lower than the design value (17.1 kWh/t) used in the 2016 design criteria for the expansion to 21,000 tpd, and therefore there should be no grinding capacity limitations when processing ore represented by these samples.

**TABLE 13-1 COMMINUTION TEST WORK RESULTS FOR THE SIX
COMMINUTION SAMPLES
Nexa Resources S.A. – Cerro Lindo Mine**

| Sample ID | Ai g | BWi kWh/t |
|-----------------------------|-----------------|----------------------|
| LBS-03 | 0.19 | 10.5 |
| LBS-04 | 0.17 | 11.5 |
| LBS-05 | 0.058 | 11.1 |
| LBS-11 | 0.039 | 6.6 |
| LBS-23 | 0.063 | 10.2 |
| LBS-25 | 0.11 | 12.0 |
| Average | 0.105 | 10.3 |
| 75 th Percentile | 0.155 | 11.4 |

Open circuit flotation tests were followed up with locked cycle tests. The flow sheet for the locked cycle tests is shown in Figure 13-1.

FIGURE 13-1 LOCKED CYCLE FLOTATION TEST FLOW SHEET



Source: Transmin, 2019

Results from the locked cycle tests are summarized in Table 13-2, showing the average bulk and zinc concentrate grades achieved in the last three cycles of the tests.

TABLE 13-2 AVERAGE OF LOCKED CYCLE TEST CONCENTRATE ANALYSES FOR THE LAST THREE CYCLES
Nexa Resources S.A. – Cerro Lindo Mine

| Sample ID | Stream | Analysis | | | | | | | |
|-----------|----------|-----------|---------|---------|---------|---------|--------|-----------|---------|
| | | Ag g/t | Cu % | Pb % | Zn % | Fe % | S % | Hg ppm | As % |
| LBC-01 | Bulk Con | 641 | 16.3 | 11.3 | 3.9 | 27.9 | 30.5 | 16 | 0.1 |
| | Zinc Con | 25 | 0.3 | 0.1 | 54.2 | 7.6 | 35.2 | 141 | 0.0 |
| LBC-02 | Bulk Con | 592 | 18.1 | 13.7 | 3.0 | 27.2 | 33.7 | 12 | 0.1 |
| | Zinc Con | 25 | 0.3 | 0.2 | 57.3 | 5.9 | 35.7 | 133 | 0.0 |

Variability flotation test work was conducted by completing open cycle rougher tests to produce rougher bulk and zinc concentrates. Results are presented in Tables 13-3 and 13-4.

TABLE 13-3 BULK ROUGHER CONCENTRATES FROM VARIABILITY TESTS
Nexa Resources S.A. – Cerro Lindo Mine

| Sample ID | Bulk Concentrate Grade | | | | | | Recovery | | | | | |
|-----------|------------------------|---------|---------|---------|---------|--------|----------|---------|---------|---------|---------|--------|
| | Ag g/t | Cu % | Pb % | Zn % | Fe % | S % | Ag % | Cu % | Pb % | Zn % | Fe % | S % |
| LBS-01 | 70.8 | 2.97 | 0.030 | 0.17 | 44.7 | 45.6 | 23.2 | 23.1 | 17.6 | 9.38 | 5.38 | 5.33 |
| LBS-02 | 199 | 5.30 | 1.94 | 1.47 | 20.6 | 30.4 | 82.2 | 82.9 | 92.5 | 5.65 | 5.77 | 5.69 |
| LBS-03 | 115 | 6.26 | 0.020 | 1.19 | 39.1 | 43.1 | 31.0 | 28.6 | 16.0 | 3.62 | 8.94 | 8.55 |
| LBS-04 | 530 | 0.68 | 11.8 | 5.66 | 25.1 | 33.3 | 92.2 | 73.2 | 96.0 | 9.68 | 12.2 | 11.0 |
| LBS-05 | 450 | 0.47 | 12.3 | 3.60 | 36.7 | 42.1 | 89.9 | 57.0 | 95.1 | 4.00 | 12.3 | 9.98 |
| LBS-06 | 108 | 5.69 | 0.15 | 1.04 | 40.2 | 34.2 | 30.9 | 35.0 | 16.2 | 6.47 | 6.99 | 5.26 |
| LBS-07 | 49.7 | 0.58 | 1.08 | 0.55 | 46.6 | 26.2 | 32.7 | 18.7 | 33.4 | 5.29 | 14.1 | 7.63 |
| LBS-08 | 315 | 12.0 | 0.010 | 0.64 | 41.6 | 42.9 | 22.2 | 21.0 | 12.5 | 6.61 | 4.93 | 4.56 |
| LBS-09 | 496 | 17.9 | 1.68 | 3.81 | 25.5 | 31.7 | 67.6 | 71.8 | 96.3 | 5.02 | 9.69 | 8.21 |
| LBS-10 | 722 | 14.5 | 9.55 | 5.01 | 18.5 | 26.4 | 55.4 | 34.9 | 91.6 | 3.53 | 13.6 | 6.37 |
| LBS-11 | 483 | 19.2 | 5.77 | 4.68 | 20.9 | 29.6 | 72.8 | 73.3 | 94.1 | 3.71 | 13.0 | 6.82 |
| LBS-12 | 109 | 6.78 | 3.10 | 5.46 | 17.6 | 25.1 | 79.6 | 73.3 | 85.1 | 14.1 | 30.7 | 17.3 |
| LBS-13 | 282 | 12.7 | 0.010 | 0.52 | 42.4 | 45.5 | 31.0 | 34.8 | 24.8 | 7.44 | 13.6 | 13.4 |
| LBS-14 | 8.26 | 0.66 | 0.090 | 1.34 | 43.9 | 48.2 | 63.5 | 83.3 | 43.6 | 14.4 | 64.5 | 49.9 |
| LBS-15 | 85.4 | 1.21 | 2.34 | 5.77 | 30.2 | 43.6 | 66.2 | 56.4 | 78.9 | 12.4 | 13.2 | 14.0 |
| LBS-16 | 135 | 5.52 | 0.030 | 0.39 | 44.3 | 46.9 | 55.9 | 66.0 | 40.6 | 13.3 | 32.4 | 31.5 |
| LBS-17 | 48.6 | 2.10 | 0.030 | 0.21 | 41.2 | 45.2 | 28.5 | 15.5 | 14.6 | 9.70 | 3.84 | 3.83 |
| LBS-18 | 66.8 | 1.93 | 0.030 | 0.47 | 43.0 | 43.4 | 26.3 | 10.7 | 12.7 | 6.15 | 3.69 | 3.49 |
| LBS-19 | 162 | 0.89 | 2.79 | 4.79 | 31.5 | 39.2 | 64.2 | 40.8 | 88.0 | 3.45 | 9.68 | 7.48 |
| LBS-20 | 466 | 0.45 | 9.81 | 6.57 | 24.6 | 35.8 | 75.9 | 20.3 | 94.3 | 3.34 | 7.98 | 5.77 |
| LBS-21 | 622 | 0.53 | 16.6 | 7.11 | 25.8 | 36.3 | 90.9 | 61.9 | 97.2 | 11.4 | 26.5 | 17.6 |
| LBS-22 | 40.0 | 0.99 | 0.050 | 0.54 | 44.1 | 40.4 | 21.2 | 10.7 | 17.0 | 4.41 | 5.40 | 4.40 |
| LBS-23 | 185 | 14.0 | 0.31 | 2.04 | 31.0 | 34.3 | 54.3 | 79.2 | 49.8 | 8.70 | 4.69 | 4.50 |
| LBS-24 | 1,480 | 7.01 | 11.7 | 2.20 | 23.3 | 29.5 | 87.0 | 92.6 | 91.1 | 18.2 | 11.5 | 11.8 |
| LBS-25 | 15.8 | 0.31 | 0.020 | 0.27 | 46.8 | 42.0 | 29.6 | 15.2 | 28.6 | 8.19 | 18.4 | 15.7 |

Source: Transmin, 2019

TABLE 13-4 ZINC ROUGHER CONCENTRATES FROM VARIABILITY TESTS
Nexa Resources S.A. – Cerro Lindo Mine

| Sample ID | Zinc Concentrate Grade | | | | | | Recovery | | | | | |
|-----------|------------------------|---------|---------|---------|---------|--------|----------|---------|---------|---------|---------|--------|
| | Ag g/t | Cu % | Pb % | Zn % | Fe % | S % | Ag % | Cu % | Pb % | Zn % | Fe % | S % |
| LBS-01 | 70.8 | 2.97 | 0.030 | 0.17 | 44.7 | 45.6 | 23.2 | 23.1 | 17.6 | 9.38 | 5.38 | 5.33 |
| LBS-02 | 199 | 5.30 | 1.94 | 1.47 | 20.6 | 30.4 | 82.2 | 82.9 | 92.5 | 5.65 | 5.77 | 5.69 |
| LBS-03 | 115 | 6.26 | 0.020 | 1.19 | 39.1 | 43.1 | 31.0 | 28.6 | 16.0 | 3.62 | 8.94 | 8.55 |
| LBS-04 | 530 | 0.68 | 11.8 | 5.66 | 25.1 | 33.3 | 92.2 | 73.2 | 96.0 | 9.68 | 12.2 | 11.0 |
| LBS-05 | 450 | 0.47 | 12.3 | 3.60 | 36.7 | 42.1 | 89.9 | 57.0 | 95.1 | 4.00 | 12.3 | 9.98 |
| LBS-06 | 108 | 5.69 | 0.15 | 1.04 | 40.2 | 34.2 | 30.9 | 35.0 | 16.2 | 6.47 | 6.99 | 5.26 |
| LBS-07 | 49.7 | 0.58 | 1.08 | 0.55 | 46.6 | 26.2 | 32.7 | 18.7 | 33.4 | 5.29 | 14.1 | 7.63 |
| LBS-08 | 315 | 12.0 | 0.010 | 0.64 | 41.6 | 42.9 | 22.2 | 21.0 | 12.5 | 6.61 | 4.93 | 4.56 |
| LBS-09 | 496 | 17.9 | 1.68 | 3.81 | 25.5 | 31.7 | 67.6 | 71.8 | 96.3 | 5.02 | 9.69 | 8.21 |
| LBS-10 | 722 | 14.5 | 9.55 | 5.01 | 18.5 | 26.4 | 55.4 | 34.9 | 91.6 | 3.53 | 13.6 | 6.37 |
| LBS-11 | 483 | 19.2 | 5.77 | 4.68 | 20.9 | 29.6 | 72.8 | 73.3 | 94.1 | 3.71 | 13.0 | 6.82 |
| LBS-12 | 109 | 6.78 | 3.10 | 5.46 | 17.6 | 25.1 | 79.6 | 73.3 | 85.1 | 14.1 | 30.7 | 17.3 |
| LBS-13 | 282 | 12.7 | 0.010 | 0.52 | 42.4 | 45.5 | 31.0 | 34.8 | 24.8 | 7.44 | 13.6 | 13.4 |
| LBS-14 | 8.26 | 0.66 | 0.090 | 1.34 | 43.9 | 48.2 | 63.5 | 83.3 | 43.6 | 14.4 | 64.5 | 49.9 |
| LBS-15 | 85.4 | 1.21 | 2.34 | 5.77 | 30.2 | 43.6 | 66.2 | 56.4 | 78.9 | 12.4 | 13.2 | 14.0 |
| LBS-16 | 135 | 5.52 | 0.030 | 0.39 | 44.3 | 46.9 | 55.9 | 66.0 | 40.6 | 13.3 | 32.4 | 31.5 |
| LBS-17 | 48.6 | 2.10 | 0.030 | 0.21 | 41.2 | 45.2 | 28.5 | 15.5 | 14.6 | 9.70 | 3.84 | 3.83 |
| LBS-18 | 66.8 | 1.93 | 0.030 | 0.47 | 43.0 | 43.4 | 26.3 | 10.7 | 12.7 | 6.15 | 3.69 | 3.49 |
| LBS-19 | 162 | 0.89 | 2.79 | 4.79 | 31.5 | 39.2 | 64.2 | 40.8 | 88.0 | 3.45 | 9.68 | 7.48 |
| LBS-20 | 466 | 0.45 | 9.81 | 6.57 | 24.6 | 35.8 | 75.9 | 20.3 | 94.3 | 3.34 | 7.98 | 5.77 |
| LBS-21 | 622 | 0.53 | 16.6 | 7.11 | 25.8 | 36.3 | 90.9 | 61.9 | 97.2 | 11.4 | 26.5 | 17.6 |
| LBS-22 | 40.0 | 0.99 | 0.050 | 0.54 | 44.1 | 40.4 | 21.2 | 10.7 | 17.0 | 4.41 | 5.40 | 4.40 |
| LBS-23 | 185 | 14.0 | 0.31 | 2.04 | 31.0 | 34.3 | 54.3 | 79.2 | 49.8 | 8.70 | 4.69 | 4.50 |
| LBS-24 | 1,480 | 7.01 | 11.7 | 2.20 | 23.3 | 29.5 | 87.0 | 92.6 | 91.1 | 18.2 | 11.5 | 11.8 |
| LBS-25 | 15.8 | 0.31 | 0.020 | 0.27 | 46.8 | 42.0 | 29.6 | 15.2 | 28.6 | 8.19 | 18.4 | 15.7 |

Source: Transmin, 2019

Transmin used the test work results to derive relationships for throughput, grinding media consumption, recovery, and concentrate grade that could be used in a geometallurgical model.

Key conclusions derived from the test work included that there were no risks to throughput identified in comminution test work, Ag recovery is related to the Pb grade in the feed, and higher levels of soluble copper in the feed may negatively affect the recovery of Zn and Cu.

LOM PLAN

The current LOM plan continues to 2026, with a peak processing rate of approximately 21,000 tpd. Table 13-5 shows historical and forecast processing rates, head grades, and recoveries for the LOM. Analysis of historical production shows that recoveries of Cu, Pb, and Zn are

related to their head grades, while Ag recoveries to the copper and lead concentrates tend to follow the Cu and Pb head grades. Average LOM planned head grades of Cu, Pb, and Ag for the next three years are similar to those experienced from 2016 to 2019 at 0.60%, 0.21%, and 0.64 oz/t, respectively, while the planned head grades of Zn decrease steadily after 2020. Head grades towards the end of the LOM are anticipated to decrease, particularly those of Zn. Forecast recoveries and concentrate grades are initially in line with those of recent years, and then predicted to fall as head grades decrease. Apart from decreasing head grades, no fundamental changes to the concentrator feed are anticipated, and in RPA's opinion, based on recent processing plant performance, the forecast recoveries and concentrate qualities for the near future are reasonable. However, with Zn and Pb head grades at the end of the LOM being well below the historical ranges, there is a risk that actual recoveries may be lower than forecast due to the lack of data on processing material with these low head grades.

A small amount of transition or supergene ore has been identified in two stopes. Since large quantities of this ore fed to the concentrator negatively affect recoveries and concentrate quality, the proportion of this ore allowed in the concentrator feed blend is limited, and this is managed through mine planning and blending practices. Currently, this material does not form part of the feed blend, and test work is underway to determine economical alternatives for processing the ore, e.g., by campaigning this material through the processing plant using conditions and reagents optimized specifically for this material.

Process control and metallurgical accounting samples are collected automatically by cross stream (grinding mill feed) and in-line pipe samplers (slurry samples), and the samples are analyzed on site by a third-party laboratory operator. Filtered concentrate is also sampled during truck loading by taking samples from the front-end loader bucket using a pipe sampler according to a pre-determined pattern. Duplicate samples are regularly sent to the laboratory operator's Lima laboratory for analysis and comparison with the site laboratory. Concentrator feed mass is measured by belt weigh scales on the two mill feed belts, and concentrates are weighed by truck scale on despatch from site. Tails mass is calculated by difference.

TABLE 13-5 SUMMARY OF HISTORICAL PERFORMANCE AND LOM PLAN
Nexa Resources S.A. – Cerro Lindo Mine

| | | | Actual | | | | LOM Plan | | | | | | |
|------------------|----------|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Units | | | 2016 | 2017 | 2018 | 2019* | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
| Plant Throughput | | t | 7,345,202 | 7,297,624 | 6,914,653 | 6,968,252 | 7,440,000 | 7,300,000 | 7,300,000 | 7,300,000 | 7,300,000 | 7,300,000 | 3,666,511 |
| | | tpd | 20,069 | 19,993 | 18,944 | 19,519 | 21,000 | 20,600 | 20,600 | 20,600 | 20,600 | 20,600 | 20,600 |
| Head Grades | Ag | oz/t | 0.73 | 0.69 | 0.69 | 0.69 | 0.66 | 0.61 | 0.64 | 0.59 | 0.60 | 0.55 | 0.54 |
| | Pb | % | 0.29 | 0.27 | 0.25 | 0.25 | 0.22 | 0.20 | 0.20 | 0.11 | 0.13 | 0.12 | 0.09 |
| | Cu | % | 0.66 | 0.69 | 0.64 | 0.63 | 0.65 | 0.58 | 0.58 | 0.82 | 0.76 | 0.59 | 0.59 |
| | Zn | % | 2.57 | 2.33 | 2.07 | 2.05 | 1.68 | 1.52 | 1.53 | 0.95 | 1.12 | 0.94 | 0.67 |
| Cu Concentrate | | t | 154,362 | 166,595 | 145,685 | 146,546 | 146,282 | 117,270 | 129,763 | 190,970 | 190,067 | 144,994 | 74,582 |
| Pb Concentrate | | t | 24,526 | 22,792 | 19,929 | 19,715 | 16,951 | 16,955 | 13,534 | 9,871 | 8,606 | 8,012 | 2,873 |
| Zn Concentrate | | t | 295,082 | 264,377 | 221,001 | 221,942 | 176,606 | 165,950 | 145,525 | 112,726 | 113,886 | 99,962 | 31,644 |
| Cu Concentrate | Recovery | | | | | | | | | | | | |
| | Cu | % | 84.1 | 86.1 | 86.7 | 86.6 | 86.82 | 84.46 | 85.92 | 88.94 | 88.91 | 86.07 | 85.36 |
| | Ag | % | 37.4 | 41.6 | 42.6 | 40.0 | 42.51 | 42.51 | 42.51 | 42.51 | 42.51 | 42.51 | 42.51 |
| | Grade | | | | | | | | | | | | |
| | Cu | % | 26.3 | 26.2 | 26.3 | 26.1 | 26.40 | 26.40 | 26.40 | 26.40 | 26.40 | 26.40 | 26.40 |
| | Ag | oz/t | 12.6 | 12.5 | 13.7 | 13.0 | 13.05 | 13.05 | 13.05 | 13.05 | 13.05 | 13.05 | 13.05 |
| | Zn | % | 4.3 | 4.1 | 3.6 | 3.8 | | | | | | | |
| Pb Concentrate | Pb | % | 1.3 | 1.1 | 1.2 | 1.3 | | | | | | | |
| | Recovery | | | | | | | | | | | | |
| | Pb | % | 74.3 | 76.0 | 73.8 | 73.4 | 72.37 | 72.48 | 70.18 | 65.46 | 64.02 | 63.27 | 54.53 |
| | Ag | % | 31.6 | 30.1 | 28.8 | 29.3 | 28.67 | 28.67 | 28.67 | 28.67 | 28.67 | 28.67 | 28.67 |
| | Grade | | | | | | | | | | | | |
| Pb | % | 64.6 | 65.1 | 64.0 | 64.0 | 64.20 | 64.20 | 64.20 | 64.20 | 64.20 | 64.20 | 64.20 | |
| Zn Concentrate | Ag | oz/t | 67.1 | 64.5 | 67.6 | 70.9 | 88.66 | 88.66 | 88.66 | 88.66 | 88.66 | 88.66 | 88.66 |
| | Recovery | | | | | | | | | | | | |
| | Zn | % | 92.2 | 91.5 | 90.9 | 90.5 | 89.45 | 89.03 | 88.25 | 85.75 | 85.83 | 85.00 | 82.25 |
| Zn Concentrate | Grade | | | | | | | | | | | | |
| | Zn | % | 58.9 | 59.0 | 59.0 | 58.3 | 59.03 | 59.03 | 59.03 | 59.03 | 59.03 | 59.03 | 59.03 |

Notes:

* Actual 2019 plant performance for January to October, forecast for November and December

14 MINERAL RESOURCE ESTIMATE

INTRODUCTION

The Mineral Resource estimate for the Cerro Lindo mine, as of July 31, 2019, using all data available as of April 30, 2019 was completed by Cerro Lindo staff and reviewed by RPA.

The Mineral Resource estimate as of July 31, 2019 was completed using Datamine Studio RM, Leapfrog Geo, and Isatis software. Wireframes for geology and mineralization were constructed in Leapfrog Geo based on geology sections, assay results, lithological information, underground mapping, and structural data. Assays were capped to various levels based on exploratory data analysis and then composited to 2.5 m lengths. Wireframes were filled with blocks and sub-celling at wireframe boundaries. Blocks were interpolated with grade using ordinary kriging (OK) and inverse distance cubed (ID³) interpolation algorithms. Block estimates were validated using industry standard validation techniques. Classification of blocks used distance-based and other criteria. The Mineral Resource estimate was reported within resource shapes generated in Deswik Stope Optimizer software, satisfying continuity criteria, and using a net smelter return (NSR) cut-off value of US\$32.91/t on a block basis.

A summary of the Cerro Lindo underground Mineral Resources, exclusive of Mineral Reserves, for the Cerro Lindo deposit, is shown in Table 14-1. Table 14-2 shows the Mineral Resources sub-divided into mineralization domains. NSR cut-off values for the Mineral Resources were established using a zinc price of US\$1.31/lb, a lead price of US\$1.04/lb, a copper price of US\$3.34/lb, and a silver price of US\$19.31/oz.

The Mineral Resource estimates are prepared in accordance with Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM (2014) definitions).

TABLE 14-1 SUMMARY OF MINERAL RESOURCES – JULY 31, 2019
Nexa Resources S.A. – Cerro Lindo Mine

| Category | Tonnage (Mt) | Grade | | | | Contained Metal | | | |
|----------------------|-----------------|-------------|-------------|---------------|-----------------|-----------------|-----------------|-------------------|--------------------|
| | | Zinc (%) | Lead (%) | Copper (%) | Silver (g/t) | Zinc (000 t) | Lead (000 t) | Copper (000 t) | Silver (000 oz) |
| Measured | 3.10 | 2.58 | 0.33 | 0.69 | 27.87 | 79.8 | 10.2 | 21.4 | 2,776 |
| Indicated | 2.27 | 1.64 | 0.28 | 0.68 | 29.66 | 37.4 | 6.3 | 15.4 | 2,167 |
| Total M&I | 5.37 | 2.18 | 0.31 | 0.68 | 28.63 | 117.2 | 16.5 | 36.8 | 4,943 |
| Inferred | 5.14 | 2.43 | 0.53 | 0.53 | 43.12 | 125.1 | 27.1 | 27.1 | 7,123 |

Notes

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are reported on a 100% ownership basis.
3. Mineral Resources are estimated at an NSR cut-off value of US\$32.91/t.
4. Mineral Resources are estimated using an average long term metal prices of Zn: US\$2,899.15/t (US\$1.31/lb); Pb: US\$2,304.47/t (US\$1.04/lb); Cu: US\$7,362.42/t (US\$3.34/lb); and Ag: US\$19.31/oz.
5. A minimum mining width of 5.0 m was used to create resource shapes.
6. Bulk density varies depending on mineralization domain.
7. Mineral Resources are exclusive of Mineral Reserves.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
9. Numbers may not add due to rounding.

TABLE 14-2 MINERAL RESOURCE ESTIMATE BY MINERALIZATION DOMAINS – JULY 31, 2019
Nexa Resources S.A. – Cerro Lindo Mine

| Category | Domain | Tonnage (Mt) | Grade | | | | Contained Metal | | | |
|----------------------|------------|-----------------|-------------|-------------|---------------|-----------------|-----------------|-----------------|-------------------|--------------------|
| | | | Zinc (%) | Lead (%) | Copper (%) | Silver (g/t) | Zinc (000 t) | Lead (000 t) | Copper (000 t) | Silver (000 oz) |
| Measured | SPB | 1.21 | 5.53 | 0.68 | 0.45 | 35.13 | 67.0 | 8.2 | 5.5 | 1,369 |
| | SPP | 1.89 | 0.68 | 0.11 | 0.84 | 23.21 | 12.8 | 2.0 | 15.9 | 1,407 |
| Indicated | SPB | 0.72 | 3.54 | 0.47 | 0.57 | 31.73 | 25.6 | 3.4 | 4.1 | 739 |
| | SPP | 1.01 | 0.57 | 0.10 | 0.88 | 23.51 | 5.8 | 1.0 | 8.9 | 767 |
| | SSM | 0.53 | 1.12 | 0.36 | 0.45 | 38.57 | 6.0 | 1.9 | 2.4 | 661 |
| Total M&I | SPB | 1.94 | 4.78 | 0.60 | 0.49 | 33.86 | 92.6 | 11.6 | 9.6 | 2,108 |
| | SPP | 2.90 | 0.64 | 0.10 | 0.85 | 23.31 | 18.6 | 3.0 | 24.8 | 2,174 |
| | SSM | 0.53 | 1.12 | 0.36 | 0.45 | 38.57 | 6.0 | 1.9 | 2.4 | 661 |
| Inferred | SPB | 1.21 | 7.62 | 1.13 | 0.52 | 66.61 | 92.4 | 13.7 | 6.3 | 2,599 |
| | SPP | 1.57 | 0.42 | 0.03 | 0.65 | 17.66 | 6.6 | 0.5 | 10.3 | 892 |
| | SSM | 1.73 | 0.97 | 0.59 | 0.42 | 50.98 | 16.8 | 10.2 | 7.2 | 2,840 |
| | VM | 0.54 | 1.64 | 0.48 | 0.38 | 42.51 | 8.8 | 2.6 | 2.1 | 739 |
| | SOP | 0.01 | 0.60 | 0.15 | 1.13 | 22.00 | 0.0 | 0.0 | 0.1 | 6 |
| | SOB | 0.07 | 0.51 | 0.16 | 1.51 | 20.75 | 0.4 | 0.1 | 1.1 | 48 |
| | SLB | 0.00 | 0.67 | 1.20 | 0.32 | 78.76 | 0.0 | 0.0 | 0.0 | 1 |
| | SSL | 0.00 | 2.26 | 1.42 | 1.86 | 96.53 | 0.0 | 0.0 | 0.0 | 0 |

Notes

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at an NSR cut-off value of US\$32.91/t.
3. Mineral Resources are estimated using an average long term metal prices of Zn: US\$2,899.15/t (US\$1.31/lb); Pb: US\$2,304.47/t (US\$1.04/lb); Cu: US\$7,362.42/t (US\$3.34/lb); and Ag: US\$19.31/oz.

4. A minimum mining width of 5.0 m was used to create resource shapes.
5. Bulk density varies depending on the mineralization domain.
6. Mineral Resources are exclusive of Mineral Reserves.
7. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
8. Numbers may not add due to rounding.

RPA reviewed the Mineral Resource assumptions, input parameters, geological interpretation, and block modelling and reporting procedures, and is of the opinion that the Mineral Resource estimate is appropriate for the style of mineralization and that the block model is reasonable and acceptable to support the July 31, 2019 Mineral Resource estimate.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

RESOURCE DATABASE

Nexa maintains the entire database in Studio RM-FUSION. The resource database contains drilling information and analytical results up to April 30, 2019. Information received after this date was not used in the Mineral Resource estimate. The database comprises 3,942 drill holes for a total of 543,420 m and 1,040 underground channels for a total of 20,682 m.

The Mineral Resource estimates is based on the WGS-84 coordinate system, and two B-Level National Grid points are used as a reference for all topographical measurements.

RPA received data from Nexa in Microsoft Excel format. A Datamine database was also provided and extracted in CSV format. Data were amalgamated, parsed as required, and imported by RPA into Vulcan Version 10.1.5 (Vulcan) software and Sequent Limited's Leapfrog software version 4.4 (Leapfrog) for review.

The drill hole and channel database comprise coordinate, length, azimuth, dip, lithology, density, and assay data. For grade estimation, unsampled intervals within mineralization wireframes were replaced with zero grades. Detection limit text values (e.g., "<0.05") were replaced with numerical values that were half of the analytical detection limit. The channel sample data was converted into drill hole data for use in interpretation and Mineral Resource estimation.

For the purpose of the Mineral Resource estimate, the drill hole data were limited to those assays located inside the mineralization wireframes. This includes 3,411 drill holes containing 115,406 samples totalling 157,048 m, and 1,011 underground channels containing 12,293 samples totalling 19,112 m. A total of 186 drill holes were excluded from the Mineral Resource database (Table 14-3) as they either had no surveyed collar measurements, were drilled for geotechnical or geometallurgical purposes, or had missing assay values outside the mineralization zones, however, all drill holes were used for geological modelling purposes. The 29 DTH holes completed during 1995 were also excluded from the modelling and estimation processes as the historical information was not available to Nexa.

RPA conducted a number of checks on the Mineral Resource database as discussed in Section 12, Data Verification. RPA is of the opinion that the database is of high quality and generally exceeds industry standards and is appropriate to support Mineral Resource estimation.

TABLE 14-3 EXCLUDED HOLES
Nexa Resources S.A. – Cerro Lindo Mine

| Hole ID | Total Metres | Comments |
|---|--------------|---|
| PECLD04140 | 45.00 | Missing drill hole coordinates |
| PECLD03057,PECLD03059,PECLD03060,PECLD03236,PECLD03237,PECLD03409,PECLD03557,PECLD03735,PECLD03738,PECLD03739,PECLD03819,PECLD03871,PECLD03872,PECLD03892,PECLD04093,PECLD04095, PECLDCL-10-563,PECLDCL-15-1602,PECLDCL-15-1754,PECLDCL-15-1779,PECLDCL-15-1780,PECLDCL-16-2031,PECLDCL-16-2080,PECLDCL-16-2095,PECLDCL-16-2102,PECLDCL-16-2290,PECLDCL-16-2291,PECLDCL-16-2311,PECLDCL-17-2899 | 1,469.60 | Missing pick-up survey |
| PECLD03075 | 392.20 | Parallel re-drilled hole |
| PECLD03447 | 30.00 | Replaced for twin hole PECLD03444 |
| PECLD03452 | 55.00 | Replaced for twin hole PECLD03448 |
| PECLD04103,PECLD04105,PECLD04107,PECLD04109,PECLD04110,PECLD04112,PECLD04113,PECLD04115 | 142.20 | Drill hole for blasting purpose - stope 018 |
| PECLD04111 | 22.00 | Abandoned drill hole for drilling problems |
| PECLDCL-09-406 | 65.30 | Parallel re-drilled hole CL-09-404 |
| PECLDCL-09-431 | 15.60 | Parallel re-drilled hole CL-09-430 |
| PECLDCL-09-470 | 77.70 | Inconsistencies with hole CL-09-968 |
| PECLDCL-10-486,PECLDCL-10-487,PECLDCL-10-488,PECLDCL-10-489,PECLDCL-10-490, PECLDCL-10-494,PECLDCL-10-495,PECLDCL-10-555,PECLDCL-10-549,PECLDCL-10-551,PECLDCL-10-552, PECLDCL-10-553,PECLDCL-10-557,PECLDCL-10-558,PECLDCL-10-561,PECLDCL-10-562,PECLDCL-10-586, PECLDCL-10-588,PECLDCL-10-590,PECLDCL-10-599,PECLDCL-10-601,PECLDCL-10-602, | 944.11 | Drill holes for underground service |

| Hole ID | Total Metres | Comments |
|---|--------------|--|
| PECLDCL-13-968 | 41.10 | Parallel re-drilled hole PECLDCL-13-938 |
| PECLDCL-14-1435,PECLDCL-14-1471 | 184.00 | No azimuth and dip records |
| PECLDCL-14-1453 | 60.00 | Parallel re-drilled hole PECLDCL-14-1452 |
| PECLDCL-14-1477 | 154.00 | Inconsistencies with hole CL-14-1485 (aborted DDH) |
| PECLDCL-16-1930 | 70.50 | Parallel re-drilled hole CL-16-1929 |
| PECLDCL-16-2533 | 60.00 | Parallel re-drilled hole CL-16-2528 |
| PECLDCL-15-1702,PECLDCL-15-1703 | 100.00 | Geometallurgical holes |
| PECLDCL-00-65,PECLDCL-00-66,PECLDCL-07-154,PECLDCL-07-179,PECLDCL-07-180,PECLDCL-07-182 PECLDCL-08-201,PECLDCL-08-212,PECLDCL-08-239,PECLDCL-08-251,PECLDCL-08-256,PECLDCL-09-292 PECLDCL-09-293,PECLDCL-09-305,PECLDCL-09-313,PECLDCL-09-325,PECLDCL-09-358,PECLDCL-09-361 PECLDCL-09-363,PECLDCL-09-400,PECLDCL-09-401,PECLDCL-09-404,PECLDCL-09-405,PECLDCL-09-408 PECLDCL-09-411,PECLDCL-10-483,PECLDCL-11-677,PECLDCL-08-241,PECLDCL-11-703,PECLDCL-11-710 PECLDCL-08-245,PECLDCL-08-260,PECLDCL-08-262,PECLDCL-09-294,PECLDCL-09-322,PECLDCL-09-349 PECLDCL-09-396,PECLDCL-09-397,PECLDCL-09-402,PECLDCL-10-485,PECLDCL-10-578,PECLDCL-11-780 PECLDCL-10-582,PECLDCL-11-769,PECLDCL-11-775,PECLDCL-11-795,PECLDCL-11-809,PECLDCL-11-781 PECLDCL-11-812,PECLDCL-11-816,PECLDCL-12-852,PECLDCL-12-875,PECLDCL-11-815,PECLDCL-12-880 PECLDCL-12-879,PECLDCL-12-888,PECLDCL-12-905,PECLDCL-12-909,PECLDCL-12-933,PECLDCL-13-962 PECLDCL-13-970,PECLDCL-13-971,PECLDCL-13-974,PECLDCL-13-976,PECLDCL-14-1307,PECLDCL-14-1392 | 10,888.70 | Drill holes outside mineralization zones in Volcanic rocks |

| Hole ID | Total Metres | Comments |
|---|------------------|---------------------|
| PECLDCL-14-1411,PECLDCL-14-1499,PECLDCL-14-1500,PECLDCL-15-1625,PECLDCL-16-2216,PECLDCL-16-2404 | | |
| PECLDCL-07-165,PECLDCL-07-172,PECLDCL-07-194,PECLDCL-08-199,PECLDCL-08-200,PECLDCL-08-230 PECLDCL-09-297,PECLDCL-09-301,PECLDCL-09-303,PECLDCL-09-320,PECLDCL-09-323,PECLDCL-09-326 PECLDCL-09-328,PECLDCL-09-333,PECLDCL-09-334,PECLDCL-09-355,PECLDCL-09-359,PECLDCL-09-449 PECLDCL-09-453,PECLDCL-09-454,PECLDCL-09-457,PECLDCL-10-528,PECLDCL-11-678,PECLDCL-11-722 PECLDCL-11-723,PECLDCL-11-727,PECLDCL-11-728,PECLDCL-11-772,PECLDCL-11-774,PECLDCL-11-776 PECLDCL-11-778,PECLDCL-11-779,PECLDCL-11-782,PECLDCL-11-787,PECLDCL-12-882,PECLDCL-11-668 PECLDCL-11-671,PECLDCL-11-672,PECLDCL-11-674 | 2,560.15 | Geomechanical holes |
| Total | 17,377.16 | |

GEOLOGICAL INTERPRETATION

Nexa changed its modelling approach based on geological continuity review. Previous models were prepared by separating geological solids into individual mining operation areas (called “OB”) creating artificial islands of mineralization. The updated geological wireframes are based on the geological interpretation of lithological description, mineralization type (massive sulphide, semi-massive sulphide, sulphide, oxidized, leached and mineralized volcanic units), and a reference assay threshold for the semi-massive and mineralized volcanic units. The reference data setup and solid modelling were performed in Leapfrog Geo software. Structural data was used to help define the orientation of the mineralization. Some drill hole intercepts below cut-off grade were included to maintain geological continuity.

The overall mineralization strikes at approximately 310° azimuth, closely follows the main fault (NW), and extends over a 1,850 m strike length. It is hosted mostly in volcanic rocks and consists of 10 interpreted geological domains, with eight mineralization domains and two barren domains (Table 14-4).

TABLE 14-4 GEOLOGICAL DOMAINS
Nexa Resources S.A. – Cerro Lindo Mine

| Geological Domain | CLI Code | Assay Threshold Criteria | | | Lithology Logging | Description |
|-------------------|----------|--------------------------|--------|----------|-------------------|--|
| | | Fe (%) | Zn (%) | Cu (%) | | |
| SPB | 1 | - | - | - | SPB | Mineralized baritic massive sulphides (Zn rich unit) |
| SPP | 2 | - | - | - | SPP | Mineralized pyritic massive sulphides (barren and Cu rich units) |
| SSM | 3 | >15 | and >1 | or >0.25 | SSM | Mineralized semi-massive sulphides |
| VM | 4 | - | >1 | or >0.25 | Volc. rock | Mineralized felsic volcanic rocks |
| Enclave | 5 | - | - | - | Volc. rock | Barren felsic volcanic - internal waste |
| SOP | 6 | - | - | - | SOP | Mineralized oxidized massive sulphides |
| SOB | 7 | - | - | - | SOB | Mineralized oxidized massive sulphides baritic zone |
| SLB | 8 | - | - | - | SLB | Mineralized leached massive sulphide baritic zone |
| SSL | 9 | - | - | - | SSL | Mineralized leached semi-massive sulphide |
| Dike | 10 | - | - | - | Dike | Barren porphyry andesite dike |

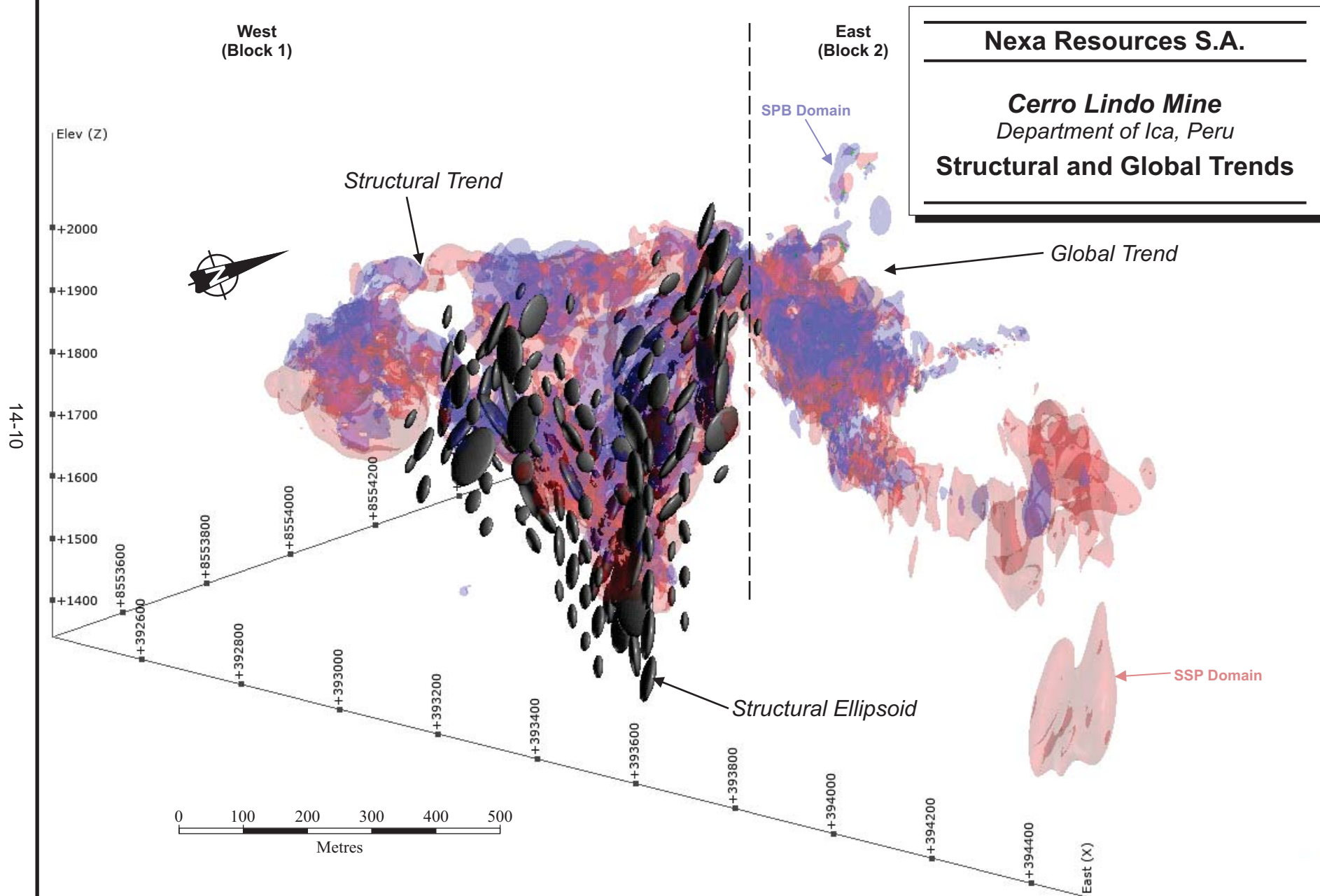
GEOLOGICAL MODELLING

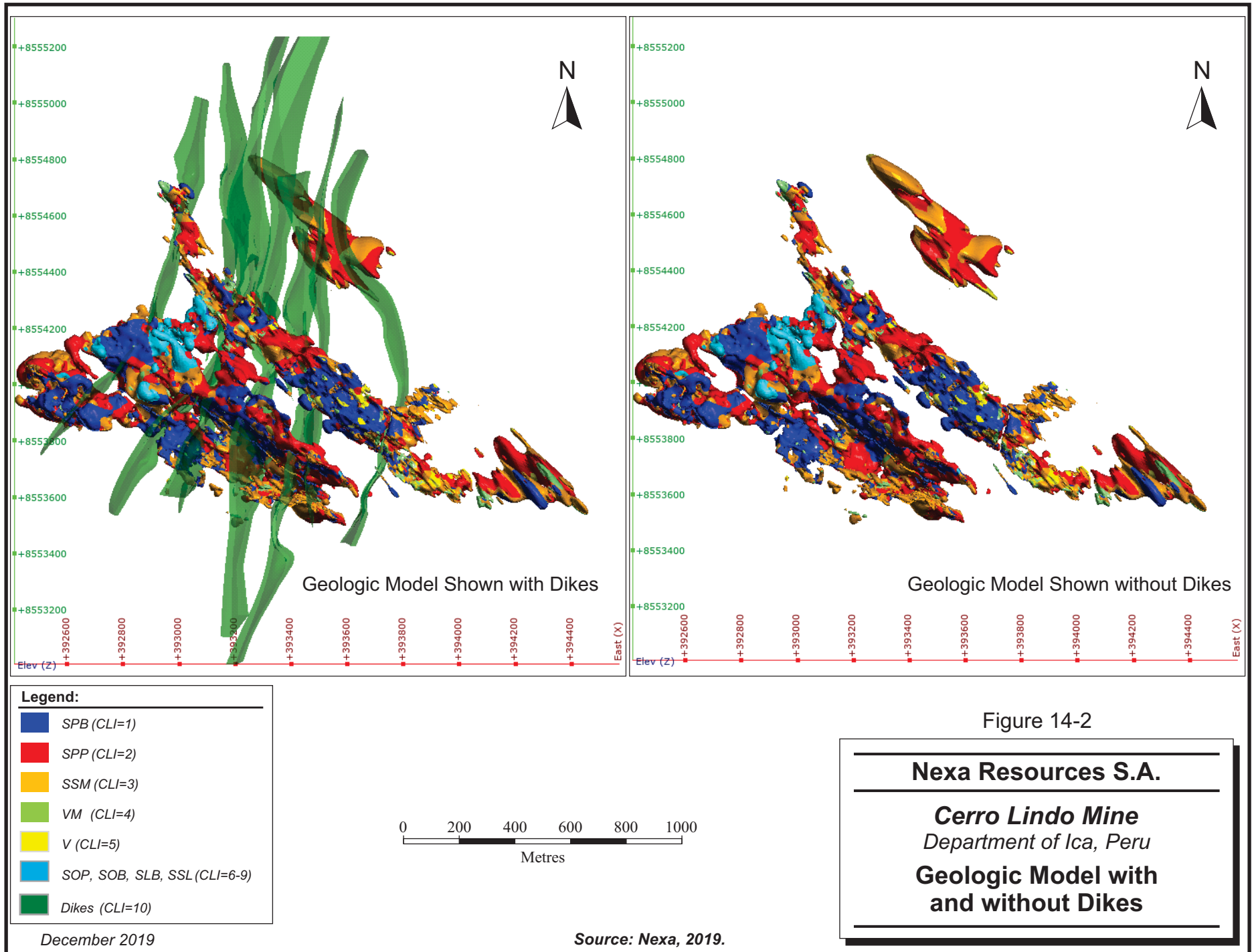
Nexa performed geological modelling of the Cerro Lindo deposit using Leapfrog Geo software. All contact surfaces were modelled based on the drilling and channel sampling assay results, as well as the structural and lithological controls observed in underground workings and drill core logging data. The model is divided into two structural areas, West (Block 1) and East (Block 2). Both areas are modelled based on mineralization and geological trends. A total of four trends were interpreted and modelled (Figure 14-1). Each area then was sub-divided by geological domains, using the SSM domain as the background host rock. Interpreted sections and plan views were used to guide the modelling, and polylines were used to better control contacts where data was sparse.

The dikes were interpreted in a separate Leapfrog project, modelled as vein objects and grouped using the vein system tool, with no consideration of external lithologies. Extra boundary control was imposed using polylines if necessary. The modelled mineralized zones were then clipped by the dike solids and exported to Datamine software to encode the block model.

Figure 14-2 shows the geological model in plan view with and without fault zones and dikes.

Figure 14-1





DOMAIN MODELLING

Nexa prepared grade domain models for the SPP and SSM domains by creating grade shell wireframes based on grade assays. For SPB high grade domain, a probabilistic indicator block model was created. Geological models in combination with grade domains were used to prepare the estimation domains.

ZN GRADE DOMAINS FOR SPB DOMAIN

A 1.5% Zn high grade indicator was selected to define low grade and high grade blocks. All 2.5 m SPB composites were assigned either 1, 0, or -9, depending on the composite indicator threshold value being greater than or equal to the threshold value, or not available, respectively. The 0 and 1 indicators were then estimated using inverse distance squared (ID^2) interpolation. The indicator interpolations assign probabilities to each block. A 50% probability rule is used to categorize the blocks into the low grade and high grade domains within the SPB domain.

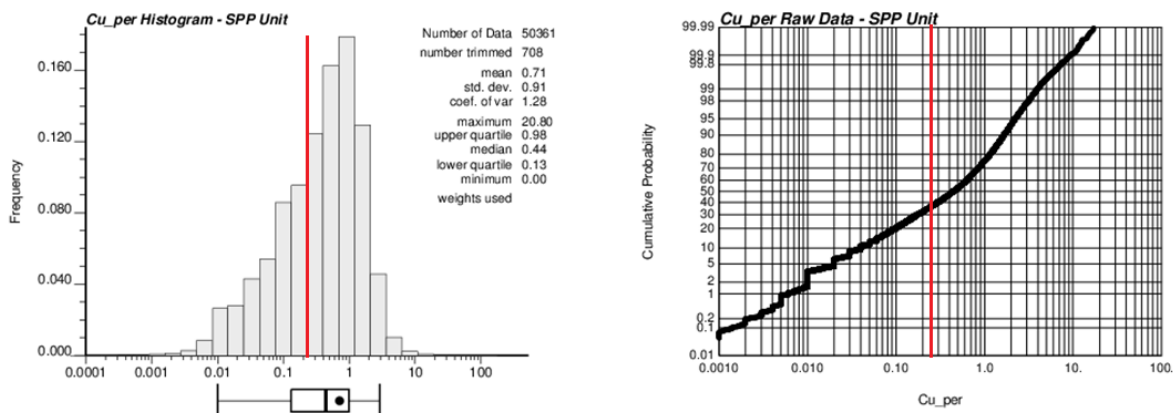
A minimum of six composites and a maximum of 14, with a maximum of two composites per hole, were required for an estimate to be made. This requirement ensures that at least three holes were within the search range for a block to be estimated. Search orientations were based on local trends.

CU GRADE DOMAINS FOR SPP DOMAIN

The high grade copper portion of the SPP domain (SPP HG, or Type 2) was defined using a $>0.25\%$ Cu modelling threshold (Figure 14-3). The purpose of building this domain inside the SPP mineralized zone was to control the internal dilution and limit the smearing of high grade copper values during the grade estimation. The low grade domain (SPP LG, or Type 1) was prepared as a result of flagging the SPP HG solid with a higher priority than the SPP solid. Figure 14-4 shows plan views of the SPP HG and SPP LG domains.

The solids were built based on the radial basis function (RBF) interpolants, which interpolate all samples above defined grade (0.25% Cu) and limit the selection inside the SPP boundary.

FIGURE 14-3 CU DISTRIBUTION IN SPP DOMAIN



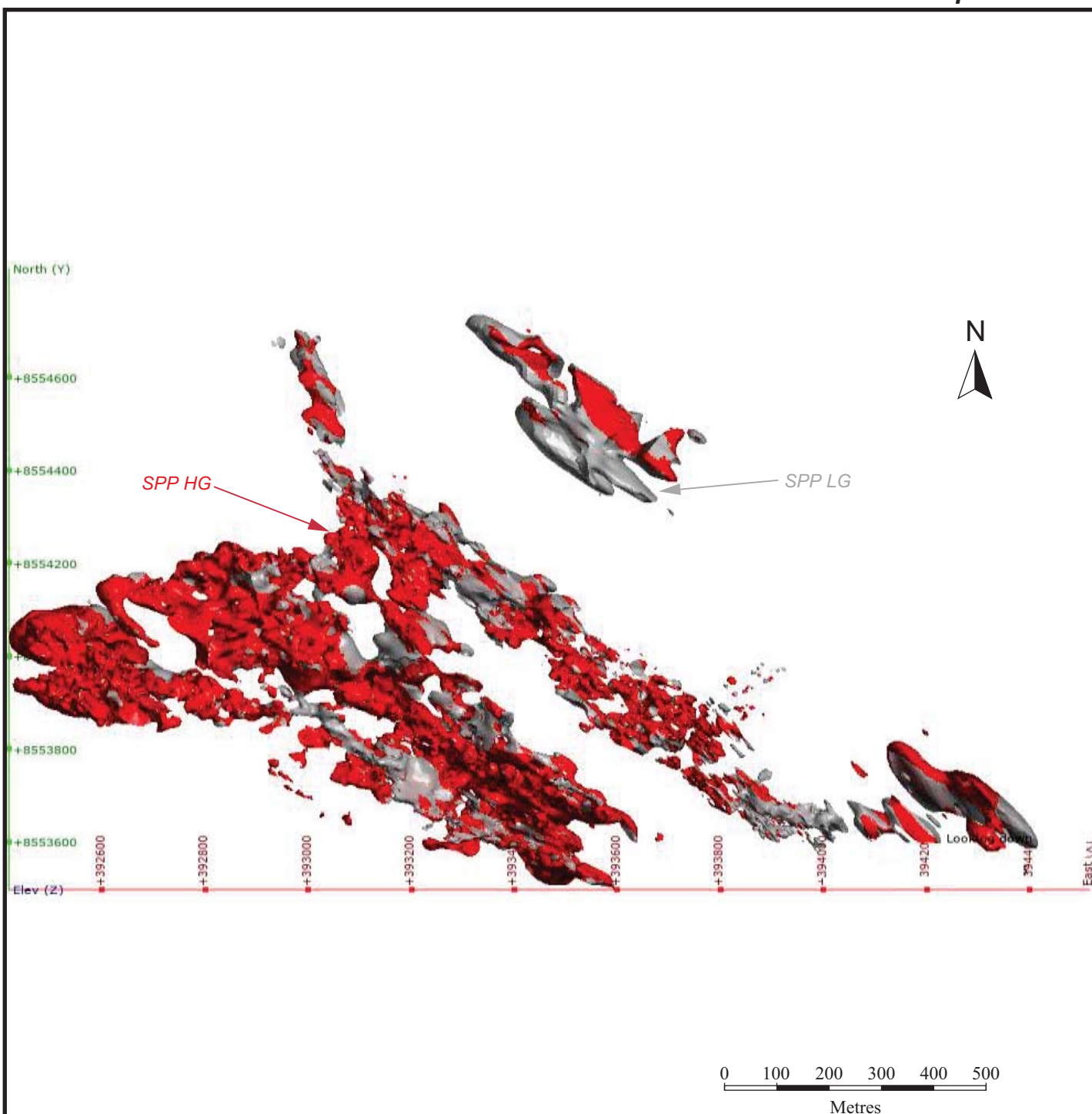


Figure 14-4

Nexa Resources S.A.

Cerro Lindo Mine

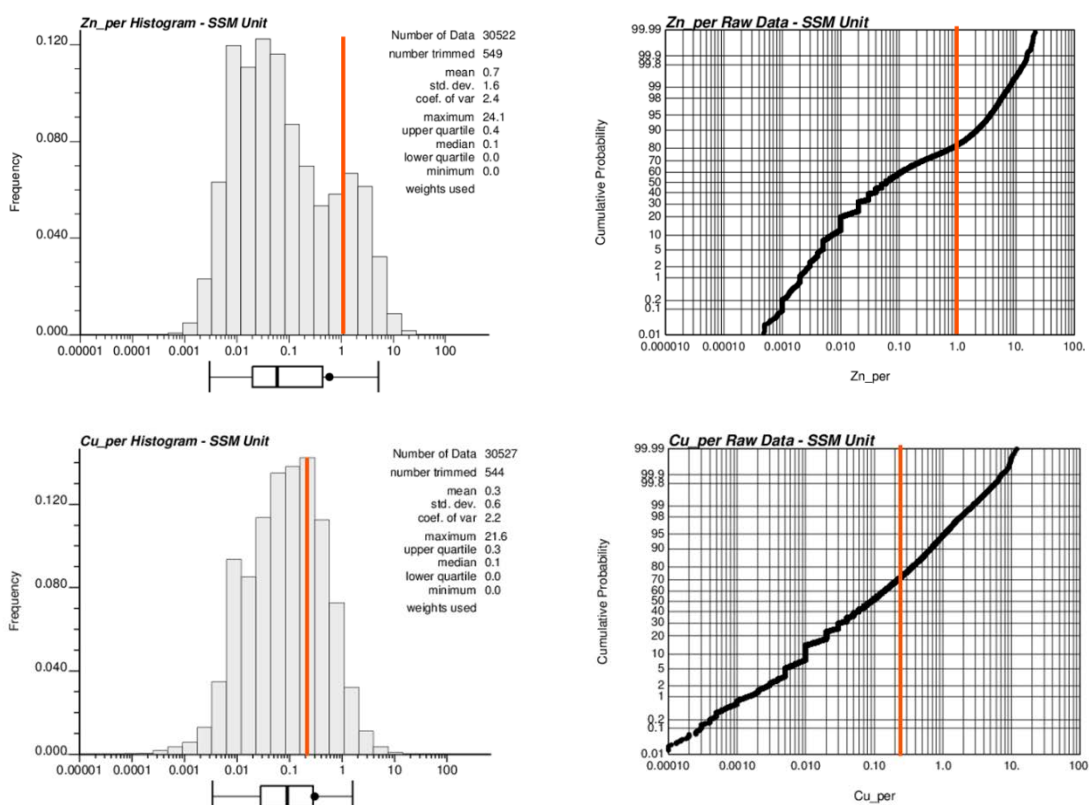
Department of Ica, Peru

**SPP LG and SPP HG Domains
– Plan View**

CU AND ZN GRADE DOMAINS FOR SSM DOMAIN

For the SSM domain, the high grade solid was modelled using thresholds of $>0.25\%Cu$ and $>1\% Zn$ (Figure 14-5). Nexa built two independent solids for copper and zinc which were subsequently combined into one high grade domain. This high grade domain (SSM HG, or Type 2) was constructed to control internal dilution and limit smearing of high grade copper and zinc values during the grade estimation. The low grade domain (SSM LG, or Type 1) was prepared as a result of flagging the SSM HG solid with a higher priority than the SSM solid. Figure 14-6 shows plan views of the SSM HG and SSM LG domains.

FIGURE 14-5 ZN AND CU DISTRIBUTION IN SSM DOMAIN



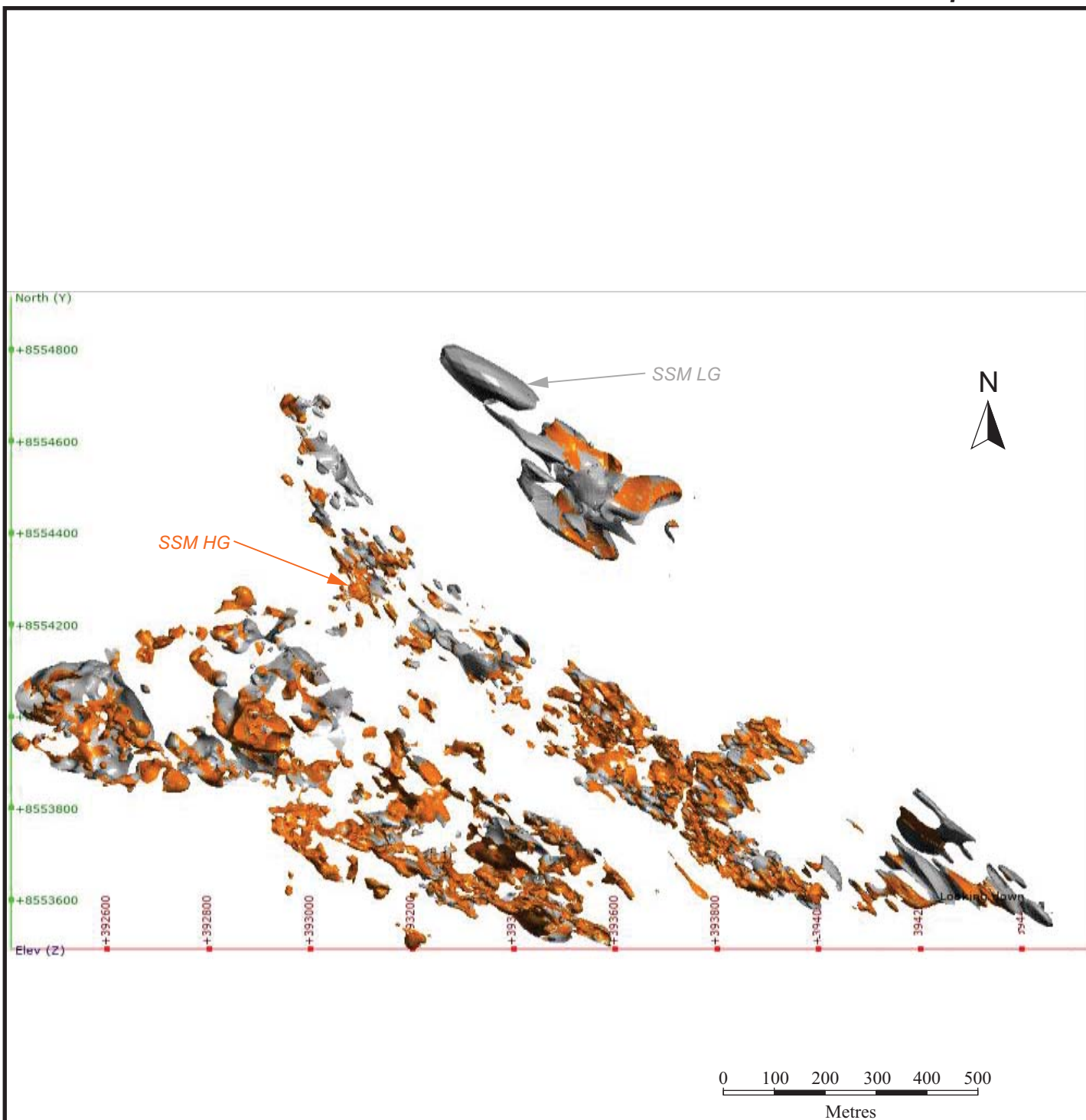


Figure 14-6

Nexa Resources S.A.
Cerro Lindo Mine
 Department of Ica, Peru
SSM LG and SSM HG Domains
- Plan View

RPA noticed that unifying the Zn and Cu grade shells within the SSM resulted in a mix of populations as the Zn and Cu grades are not spatially correlated. Nexa addressed this issue by using a 10 m search yield restriction over 1.0% Zn and 1.5% Cu grade composites rather than using the unified solid.

ESTIMATION DOMAINS

Based on observations of the drill core and underground mineralization exposures, discussions with the geologists on site, a review of the data in 3D, and a statistical analysis, the mineralization at Cerro Lindo is considered to be lithologically and structurally controlled. The bulk of the mineralization is located in the SPP and SPB domains, with some mineralization in the SSM, and lesser mineralization in the VM, SOB, SOP, SLB, and SSL. High grade zones usually present more massive mineralization, with higher grade Zn and Cu zones.

Nexa defined 13 estimation domains that were created using a number of geological parameters, which include: geological domains (lithological control and mineralization type), structural blocks (East and West, or Block 1 and Block 2), grade domains (high grade and low grade domains, or Type 2 and Type 1 respectively), and the anisotropy and orientation of the estimation domains. Table 14-5 summarizes the estimation domains

TABLE 14-5 ESTIMATION DOMAINS
Nexa Resources S.A. – Cerro Lindo Mine

| Estimation Domain | CLI Code | Type | Block | Description |
|--|----------|------|-------|------------------|
| Baritic massive sulphide (Zn rich unit) - West Block | 1 | - | 1 | SPB / BLOCK 1 |
| Baritic massive sulphide - East Block | 1 | - | 2 | SPB / BLOCK 2 |
| Pyritic massive sulphide - Low Grade Domain - West Block | 2 | 1 | 1 | SPP LG / BLOCK 1 |
| Pyritic massive sulphide - Low Grade Domain - East Block | 2 | 1 | 2 | SPP LG / BLOCK 2 |
| Pyritic massive sulphide - High Grade Domain (Cu rich unit) - West Block | 2 | 2 | 1 | SPP HG / BLOCK 1 |
| Pyritic massive sulphide - High Grade Domain (CU rich unit) - East Block | 2 | 2 | 2 | SPP HG / BLOCK 2 |
| Semi-massive sulphides - Low Grade Domain | 3 | 1 | - | SSM LG |
| Semi-massive sulphides - High Grade Domain | 3 | 2 | - | SSM HG |

| Estimation Domain | CLI Code | Type | Block | Description |
|---|----------|------|-------|-------------|
| Mineralized felsic volcanic | 4 | 1 | - | VM |
| Oxidized massive sulphides | 6 | 1 | - | SOB |
| Oxidized massive sulphides baritic zone | 7 | 1 | - | SOP |
| Leached massive sulphide baritic zone | 8 | 1 | - | SLB |
| Leached semi-massive sulphide | 9 | 1 | - | SSL |

With respect to the geological and domain modelling used to support the Mineral Resource estimate, RPA offers the following conclusions and recommendations:

- Overall, the mineralization wireframes are adequate for the style of mineralization.
- The wireframes are suitable to support Mineral Resource and Mineral Reserve estimation.
- Post-mineralization dike modelling should be improved to capture more of the logged intercepts and core angles, as well as contacts based on the underground mapping. Dikes are important to delimit internal waste and to guide the local interpolation strategy as some of them are controlling the mineralization trends behaving like faults.
- Review the Leapfrog interaction chronology to match the interpretation. SSM has been used as a background lithology, however, the VM and volcanic rocks should be used as a background lithology based on sectional and plan view interpretation.
- Build a more detailed structural model and structural domains to customize local search anisotropies and directions. It appears that there are at least four main structural trends present (northwest-southeast dipping northeast, northwest-southeast dipping southwest, northeast-southwest dipping northwest, and west-northwest/east-southeast dipping northwest and plunging west-northwest) that should be investigated further. Some mineralization domains appear to have mineralization trending in various directions due to local faulting and folding and further sub-domaining may be warranted.
- Subdivide the SPP domain into SPP chalcopyrite and SPP barren based on a combination of mineralogy and copper assays. There is a clear copper economic mineralization population at approximately 0.20% Cu that should be used as a separate domain from the barren domain to prevent the mix of populations and smearing of their grades. In the current model, this issue has been partially addressed by using a 0.25% grade shell, however, the chalcopyrite mineralogy data and interpretation should be incorporated.
- Subdivide the SPB domain into SPB sphalerite and SPB barren based on a combination of mineralogy and Zn assays. There is a clear zinc economic mineralization population at approximately 0.30% Zn that should be used as a separate domain from the barren domain to prevent the mix of populations and smearing of their grades. In addition, incorporate a high grade envelope approximately at 1.5% Zn to prevent smearing of high grades into low grades. In the current model, this issue has been partially addressed during the estimates by using a 1.5% Zn probability model.
- Investigate building copper and zinc mineralization domains separately without clipping against each other, using geological controls (lithology and mineralogy) and grades, and including channel samples. Incorporate high grade domains to control continuous high grade zones.

- Review and consider combining the sub-division of the SOP, SOB, SLL, and SLB, as some of these domains have very few samples.

EXPLORATORY DATA ANALYSIS – RAW ASSAYS

Nexa performed exploratory data analysis (EDA) for each estimation domain, including univariate statistics, histograms, cumulative probability plots; box plots to compare geology domain statistics, and contact plots to investigate grade profiles between estimation domains and determine the extent of sample sharing across the geology contacts within the rock type domains. Hard boundaries were determined for each of the estimation variables (zinc, copper, lead, and silver).

Table 14-6 lists composited univariate statistics for zinc, copper, lead, and silver by estimation domain. The majority of the zinc is contained in three mineralized domains: SPB, SPP HG, and SSM HG.

TABLE 14-6 ESTIMATION DOMAIN RAW ASSAY STATISTICS
Nexa Resources S.A. – Cerro Lindo Mine

| Domain | Grade | No. Samples | Uncapped values | | | | | CV |
|--------|----------|-------------|-----------------|----------|-------|----------|----------------|------|
| | | | Minimum | Maximum | Mean | Variance | Std. Deviation | |
| SPB | Zn (%) | 38,820 | 0.00 | 60.59 | 4.96 | 24.84 | 4.98 | 1.00 |
| | Pb (%) | 38,820 | 0.00 | 63.70 | 0.59 | 1.31 | 1.15 | 1.95 |
| | Cu (%) | 38,820 | 0.00 | 22.43 | 0.53 | 0.72 | 0.85 | 1.60 |
| | Ag (ppm) | 38,820 | 0.00 | 4,111.57 | 30.56 | 3,033.54 | 55.08 | 1.80 |
| | Fe (%) | 38,820 | 0.00 | 60.00 | 20.10 | 197.98 | 14.07 | 0.70 |
| SPP LG | Zn (%) | 17,405 | 0.00 | 66.92 | 0.51 | 3.54 | 1.88 | 3.71 |
| | Pb (%) | 17,405 | 0.00 | 23.92 | 0.07 | 0.13 | 0.36 | 5.11 |
| | Cu (%) | 17,405 | 0.00 | 1.66 | 0.10 | 0.01 | 0.09 | 0.95 |
| | Ag (ppm) | 17,405 | 0.00 | 714.00 | 7.37 | 272.83 | 16.52 | 2.24 |
| | Fe (%) | 17,405 | 0.00 | 60.00 | 39.79 | 350.22 | 18.71 | 0.47 |
| SPP HG | Zn (%) | 45,425 | 0.00 | 40.81 | 0.86 | 4.59 | 2.14 | 2.50 |
| | Pb (%) | 45,425 | 0.00 | 39.56 | 0.09 | 0.27 | 0.52 | 5.60 |
| | Cu (%) | 45,425 | 0.00 | 33.36 | 0.95 | 1.01 | 1.00 | 1.06 |
| | Ag (ppm) | 45,425 | 0.00 | 2,951.72 | 22.72 | 1,690.25 | 41.11 | 1.81 |
| | Fe (%) | 45,425 | 0.00 | 62.68 | 39.44 | 402.36 | 20.06 | 0.51 |
| SSM LG | Zn (%) | 9,457 | 0.00 | 5.51 | 0.11 | 0.07 | 0.27 | 2.52 |
| | Pb (%) | 9,457 | 0.00 | 7.84 | 0.07 | 0.04 | 0.21 | 3.09 |
| | Cu (%) | 9,457 | 0.00 | 0.91 | 0.08 | 0.01 | 0.09 | 1.07 |
| | Ag (ppm) | 9,457 | 0.00 | 439.18 | 8.21 | 321.04 | 17.92 | 2.18 |
| | Fe (%) | 9,457 | 0.00 | 60.00 | 21.87 | 140.35 | 11.85 | 0.54 |

| Domain | Grade | No. Samples | Uncapped values | | | | | CV |
|--------|----------|-------------|-----------------|-----------|-------|-----------|----------------|------|
| | | | Minimum | Maximum | Mean | Variance | Std. Deviation | |
| SSM HG | Zn (%) | 12,649 | 0.00 | 40.02 | 1.51 | 8.54 | 2.92 | 1.94 |
| | Pb (%) | 12,649 | 0.00 | 29.97 | 0.37 | 0.97 | 0.98 | 2.67 |
| | Cu (%) | 12,649 | 0.00 | 21.65 | 0.50 | 0.58 | 0.76 | 1.53 |
| | Ag (ppm) | 12,649 | 0.00 | 2,810.51 | 39.81 | 6,580.59 | 81.12 | 2.04 |
| | Fe (%) | 12,649 | 0.00 | 60.00 | 18.22 | 152.54 | 12.35 | 0.68 |
| VM | Zn (%) | 4,916 | 0.00 | 36.86 | 1.22 | 5.03 | 2.24 | 1.84 |
| | Pb (%) | 4,916 | 0.00 | 59.66 | 0.44 | 1.69 | 1.30 | 2.93 |
| | Cu (%) | 4,916 | 0.00 | 11.94 | 0.43 | 0.45 | 0.67 | 1.57 |
| | Ag (ppm) | 4,916 | 0.00 | 10,398.52 | 47.74 | 27,030.75 | 164.41 | 3.44 |
| | Fe (%) | 4,916 | 0.00 | 60.00 | 11.63 | 103.16 | 10.16 | 0.87 |
| SOP | Zn (%) | 761 | 0.00 | 4.01 | 0.28 | 0.27 | 0.52 | 1.86 |
| | Pb (%) | 761 | 0.00 | 5.25 | 0.07 | 0.07 | 0.26 | 3.86 |
| | Cu (%) | 761 | 0.00 | 14.65 | 0.62 | 1.22 | 1.10 | 1.79 |
| | Ag (ppm) | 761 | 0.00 | 377.91 | 13.51 | 687.09 | 26.21 | 1.94 |
| | Fe (%) | 761 | 0.00 | 60.00 | 34.90 | 611.40 | 24.73 | 0.71 |
| SOB | Zn (%) | 454 | 0.00 | 18.03 | 0.98 | 3.15 | 1.77 | 1.82 |
| | Pb (%) | 454 | 0.00 | 2.06 | 0.13 | 0.09 | 0.29 | 2.20 |
| | Cu (%) | 454 | 0.00 | 10.32 | 1.43 | 2.50 | 1.58 | 1.11 |
| | Ag (ppm) | 454 | 0.00 | 335.00 | 22.91 | 744.93 | 27.29 | 1.19 |
| | Fe (%) | 454 | 0.00 | 60.00 | 23.53 | 210.81 | 14.52 | 0.62 |
| SLB | Zn (%) | 260 | 0.00 | 9.21 | 0.62 | 2.44 | 1.56 | 2.52 |
| | Pb (%) | 260 | 0.00 | 5.02 | 0.51 | 0.90 | 0.95 | 1.85 |
| | Cu (%) | 260 | 0.00 | 4.09 | 0.26 | 0.39 | 0.62 | 2.43 |
| | Ag (ppm) | 260 | 0.00 | 240.43 | 29.23 | 2,092.53 | 45.74 | 1.57 |
| | Fe (%) | 260 | 0.00 | 40.97 | 3.79 | 75.45 | 8.69 | 2.29 |
| SSL | Zn (%) | 12 | 0.00 | 5.26 | 1.33 | 2.44 | 1.56 | 1.18 |
| | Pb (%) | 12 | 0.00 | 1.45 | 0.51 | 0.33 | 0.57 | 1.13 |
| | Cu (%) | 12 | 0.00 | 1.93 | 0.47 | 0.32 | 0.57 | 1.20 |
| | Ag (ppm) | 12 | 0.00 | 122.55 | 44.79 | 1,827.90 | 42.75 | 0.95 |
| | Fe (%) | 12 | 0.00 | 26.06 | 15.40 | 57.22 | 7.56 | 0.49 |

TREATMENT OF HIGH GRADE ASSAYS

Where the assay distribution is skewed positively or approaches log-normal, erratic high grade values can have a disproportionate effect on the average grade of a deposit. One method of treating these outliers in order to reduce their influence on the average grade is to cut or cap them at a specific grade level.

Nexa applied high grade capping to Zn, Pb, Cu, Ag, and Fe assays in order to limit the influence of a small amount of outlier values located in the upper tail of the metal distributions (Figures 14-7 to 14-9). Raw assays were capped prior to compositing. A summary of final capping

levels is shown in Table 14-7. A summary of capped grade statistics is provided in Table 14-8.

Grade plots commonly show outliers at the 98th to 99th percentile. The final outlier threshold was selected at lower percentiles to adjust to grade reconciliation with the mine and process, and to reduce global bias. After domaining, the zinc values are generally low, with lesser high values showing a very erratic tail in the zinc distribution for SPP HG, SPP LG, SSM HG, and SSM LG. To address this issue and supported by reconciliation data, Nexa applied in these domains an additional high yield restriction during estimates to control the influence of high grades and prevent smearing into low grades. The high yield restriction strategy used by Nexa is presented in Table 14-9.

TABLE 14-7 GRADE CAPPING LEVELS
Nexa Resources S.A. – Cerro Lindo Mine

| Domain | Type | Description | Zn (%) | Pb (%) | Cu (%) | Ag (ppm) | Fe (%) |
|--------|------|-------------|--------|--------|--------|----------|--------|
| CLI=1 | 1 | SPB | 20 | 7 | 6 | 300 | 45 |
| CLI=2 | 1 | SPP LG | 15 | 1 | 0.5 | 100 | 45 |
| CLI=2 | 2 | SPP HG | 15 | 2 | 7 | 200 | 45 |
| CLI=3 | 1 | SSM LG | 1 | 1.5 | 0.5 | 90 | 45 |
| CLI=3 | 2 | SSM HG | 15 | 5.5 | 5 | 300 | 45 |
| CLI=4 | 1 | VM | 8 | 5 | 5 | 400 | 40 |
| CLI=5 | 1 | Enclave | 8 | 5 | 7 | 500 | 40 |
| CLI=6 | 1 | SOB | 8 | 1 | 7 | 100 | 45 |
| CLI=7 | 1 | SOP | 1.5 | 1 | 6 | 110 | 40 |
| CLI=8 | 1 | SLB | 4 | 4 | 2 | 200 | 45 |
| CLI=9 | 1 | SSL | - | - | - | - | 45 |

FIGURE 14-7 CAPPING ANALYSIS FOR SPB MINERALIZATION

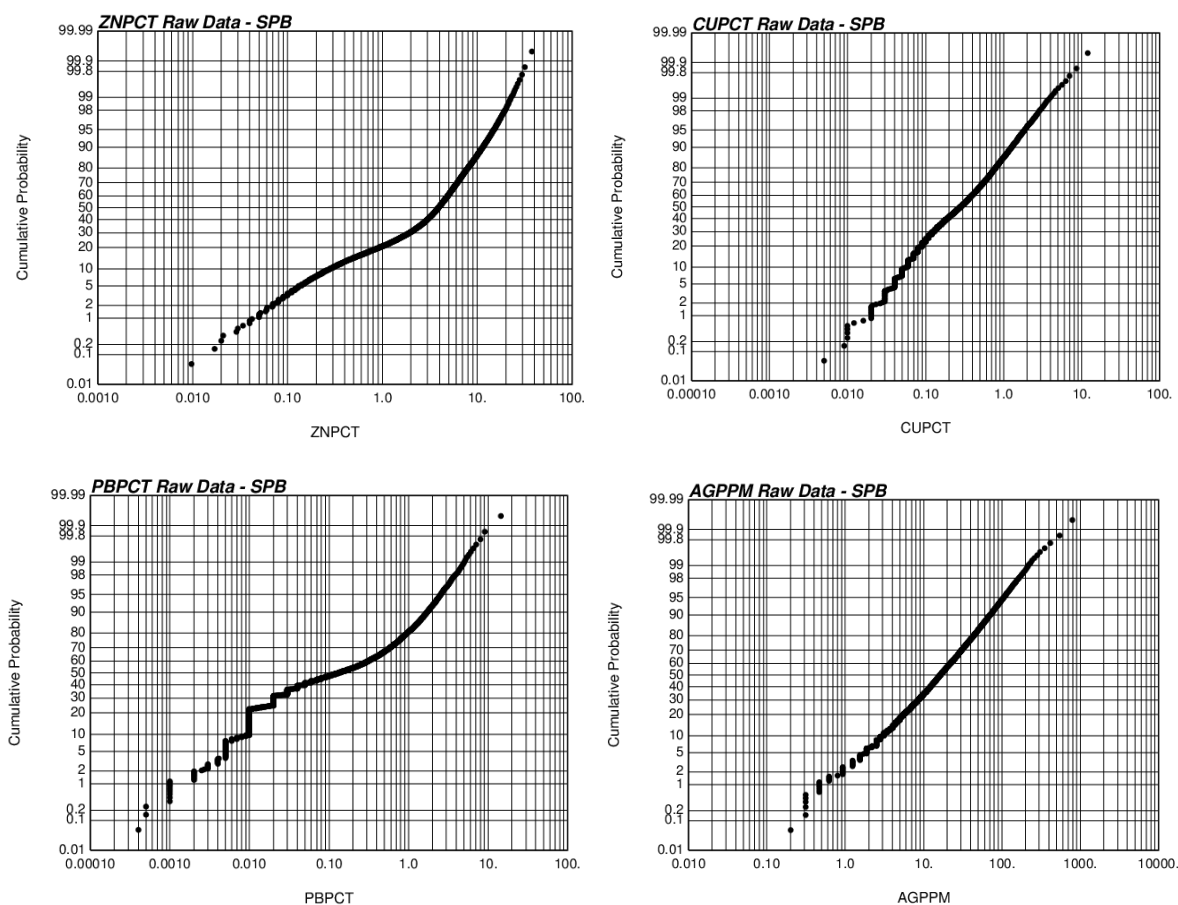


FIGURE 14-8 CAPPING ANALYSIS FOR SPP HIGH GRADE MINERALIZATION

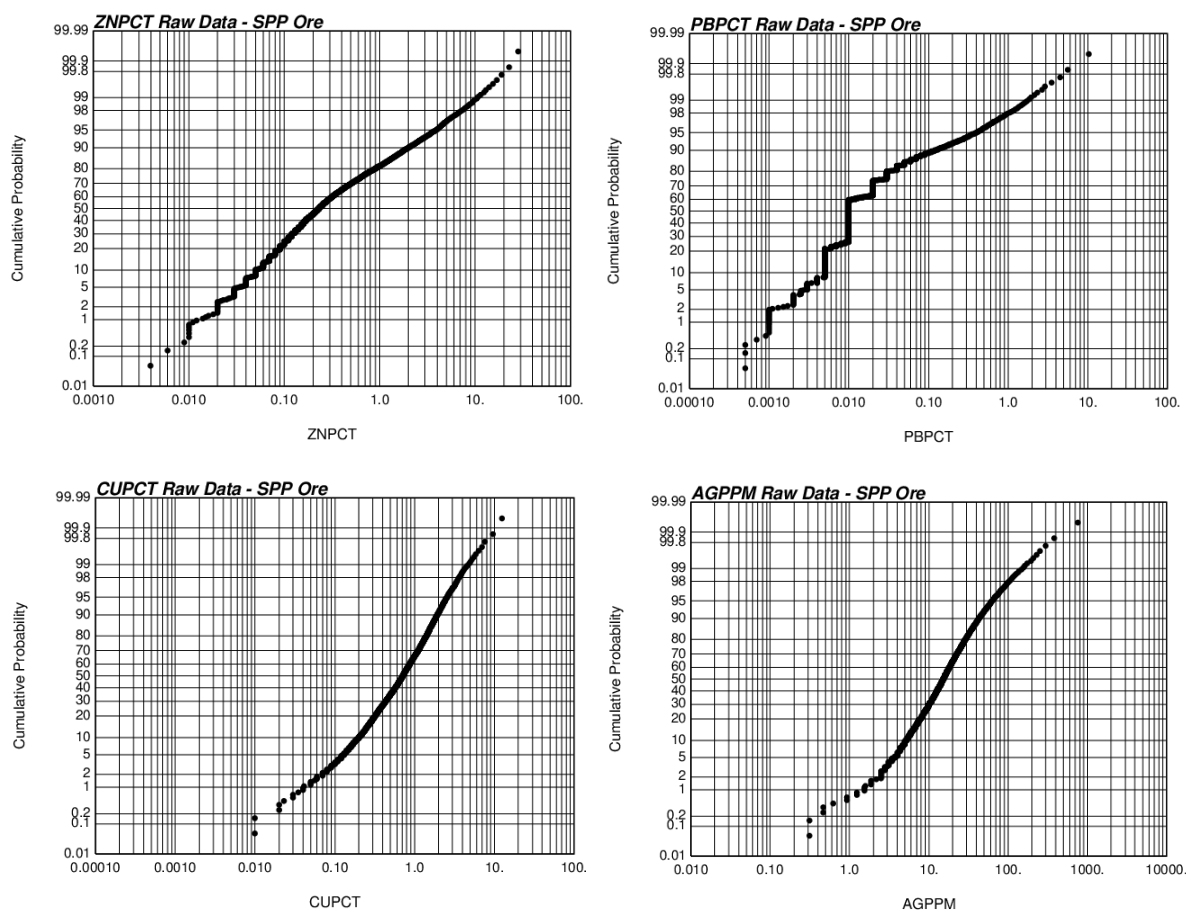


FIGURE 14-9 CAPPING ANALYSIS FOR SSM HIGH GRADE MINERALIZATION

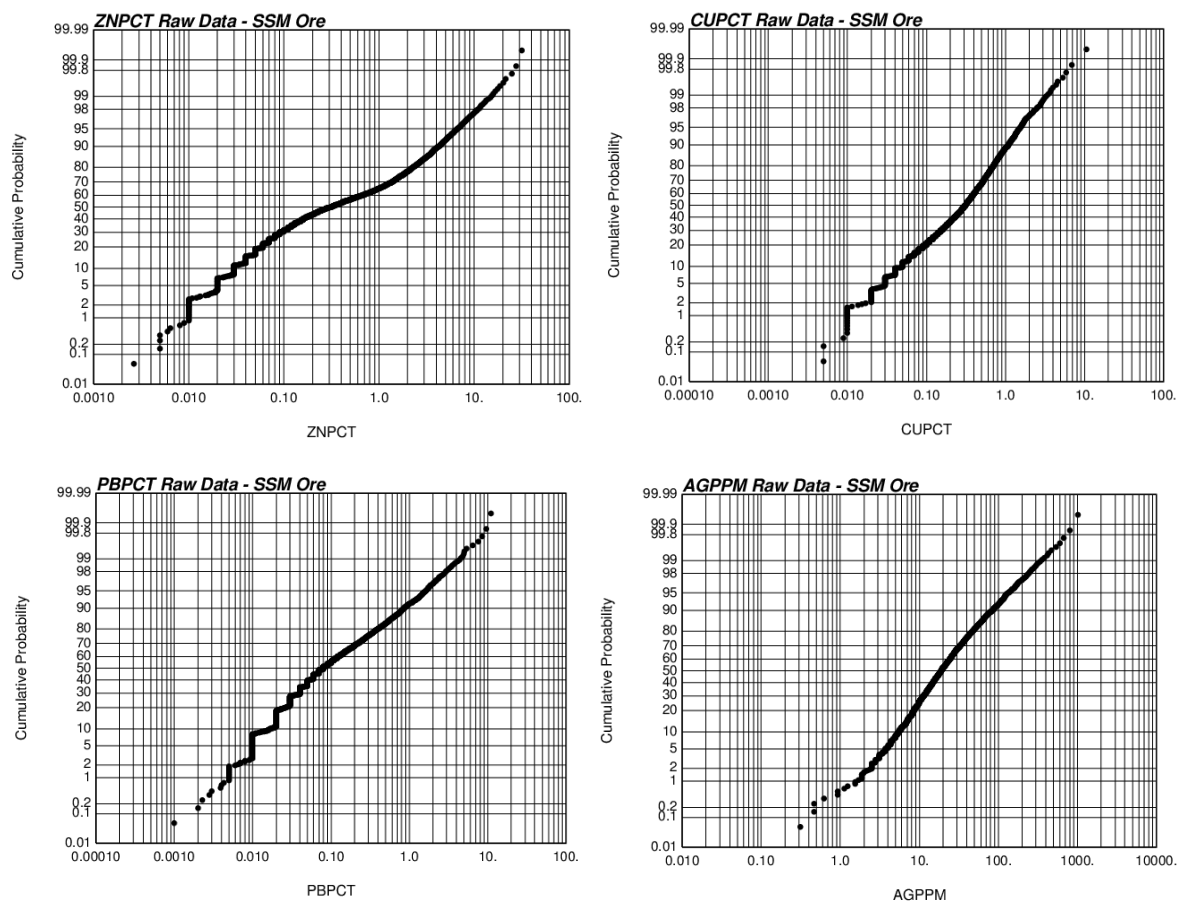


TABLE 14-8 CAPPED ASSAY STATISTICS
Nexa Resources S.A. – Cerro Lindo Mine

| Domain | Grade | No. Samples | Capped Values | | | | | CV |
|--------|----------|----------------|---------------|---------|-------|----------|----------------|------|
| | | | Minimum | Maximum | Mean | Variance | Std. Deviation | |
| SPB | Zn (%) | 38,820 | 0.00 | 20.00 | 4.87 | 21.35 | 4.62 | 0.95 |
| | Pb (%) | 38,820 | 0.00 | 7.00 | 0.57 | 0.99 | 1.00 | 1.73 |
| | Cu (%) | 38,820 | 0.00 | 6.00 | 0.52 | 0.55 | 0.74 | 1.42 |
| | Ag (ppm) | 38,820 | 0.00 | 300.00 | 29.49 | 1,652.03 | 40.65 | 1.38 |
| | Fe (%) | 38,820 | 0.00 | 45.00 | 19.71 | 173.00 | 13.15 | 0.67 |
| SPP LG | Zn (%) | 17,405 | 0.00 | 15.00 | 0.49 | 2.72 | 1.65 | 3.37 |
| | Pb (%) | 17,405 | 0.00 | 1.00 | 0.05 | 0.02 | 0.15 | 2.82 |
| | Cu (%) | 17,405 | 0.00 | 0.50 | 0.10 | 0.01 | 0.09 | 0.89 |
| | Ag (ppm) | 17,405 | 0.00 | 100.00 | 7.00 | 138.91 | 11.79 | 1.68 |
| | Fe (%) | 17,405 | 0.00 | 45.00 | 35.03 | 208.47 | 14.44 | 0.41 |
| SPP HG | Zn (%) | 45,425 | 0.00 | 15.00 | 0.83 | 3.50 | 1.87 | 2.25 |
| | Pb (%) | 45,425 | 0.00 | 2.00 | 0.08 | 0.07 | 0.26 | 3.37 |
| | Cu (%) | 45,425 | 0.00 | 7.00 | 0.94 | 0.82 | 0.91 | 0.97 |
| | Ag (ppm) | 45,425 | 0.00 | 200.00 | 21.72 | 634.90 | 25.20 | 1.16 |
| | Fe (%) | 45,425 | 0.00 | 45.00 | 34.21 | 239.90 | 15.49 | 0.45 |
| SSM LG | Zn (%) | 9,457 | 0.00 | 1.00 | 0.10 | 0.04 | 0.19 | 1.95 |
| | Pb (%) | 9,457 | 0.00 | 1.50 | 0.06 | 0.02 | 0.13 | 2.05 |
| | Cu (%) | 9,457 | 0.00 | 0.50 | 0.08 | 0.01 | 0.08 | 1.06 |
| | Ag (ppm) | 9,457 | 0.00 | 90.00 | 7.68 | 129.68 | 11.39 | 1.48 |
| | Fe (%) | 9,457 | 0.00 | 45.00 | 21.56 | 120.89 | 11.00 | 0.51 |
| SSM HG | Zn (%) | 12,649 | 0.00 | 15.00 | 1.45 | 6.50 | 2.55 | 1.75 |
| | Pb (%) | 12,649 | 0.00 | 5.50 | 0.35 | 0.57 | 0.75 | 2.17 |
| | Cu (%) | 12,649 | 0.00 | 5.00 | 0.49 | 0.42 | 0.65 | 1.32 |
| | Ag (ppm) | 12,649 | 0.00 | 300.00 | 36.39 | 2,684.25 | 51.81 | 1.42 |
| | Fe (%) | 12,649 | 0.00 | 45.00 | 17.85 | 127.63 | 11.30 | 0.63 |
| VM | Zn (%) | 4,916 | 0.00 | 8.00 | 1.12 | 2.78 | 1.67 | 1.49 |
| | Pb (%) | 4,916 | 0.00 | 5.00 | 0.41 | 0.62 | 0.79 | 1.93 |
| | Cu (%) | 4,916 | 0.00 | 5.00 | 0.42 | 0.39 | 0.62 | 1.47 |
| | Ag (ppm) | 4,916 | 0.00 | 400.00 | 42.67 | 4,354.21 | 65.99 | 1.55 |
| | Fe (%) | 4,916 | 0.00 | 40.00 | 11.30 | 77.91 | 8.83 | 0.78 |
| SOP | Zn (%) | 761 | 0.00 | 4.01 | 0.28 | 0.27 | 0.52 | 1.86 |
| | Pb (%) | 761 | 0.00 | 1.00 | 0.06 | 0.02 | 0.15 | 2.53 |
| | Cu (%) | 761 | 0.00 | 7.00 | 0.60 | 0.91 | 0.96 | 1.59 |
| | Ag (ppm) | 761 | 0.00 | 100.00 | 12.67 | 348.43 | 18.67 | 1.47 |
| | Fe (%) | 761 | 0.00 | 45.00 | 28.93 | 366.24 | 19.14 | 0.66 |
| SOB | Zn (%) | 454 | 0.00 | 1.50 | 0.57 | 0.37 | 0.61 | 1.07 |
| | Pb (%) | 454 | 0.00 | 1.00 | 0.12 | 0.05 | 0.23 | 1.90 |
| | Cu (%) | 454 | 0.00 | 6.00 | 1.40 | 2.18 | 1.48 | 1.05 |
| | Ag (ppm) | 454 | 0.00 | 110.00 | 22.15 | 468.17 | 21.64 | 0.98 |
| | Fe (%) | 454 | 0.00 | 40.00 | 22.49 | 160.62 | 12.67 | 0.56 |

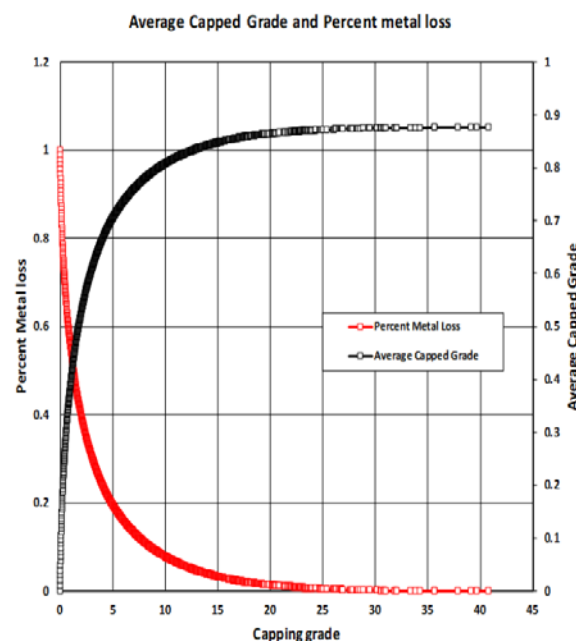
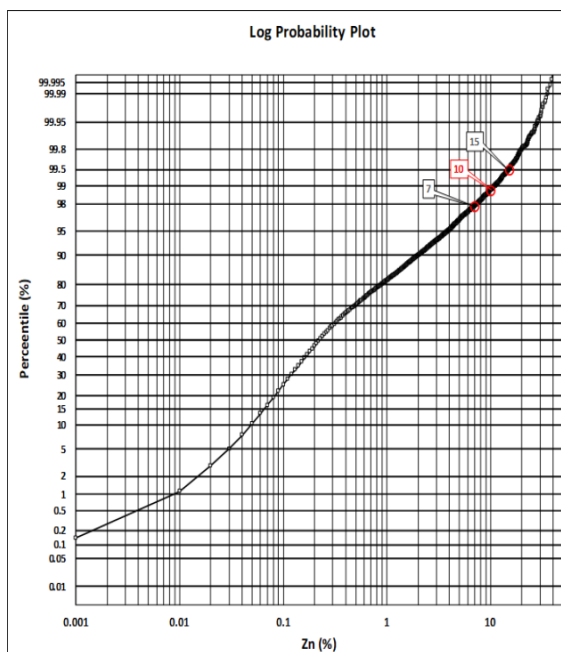
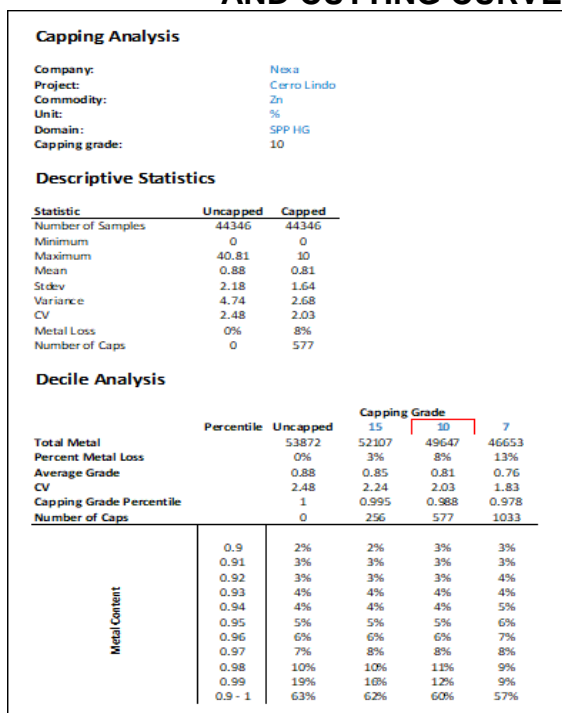
| Domain | Grade | No. Samples | Capped Values | | | | | |
|--------|----------|-------------|---------------|---------|-------|----------|----------------|------|
| | | | Minimum | Maximum | Mean | Variance | Std. Deviation | CV |
| SLB | Zn (%) | 260 | 0.00 | 4.00 | 0.51 | 1.31 | 1.15 | 2.24 |
| | Pb (%) | 260 | 0.00 | 4.00 | 0.50 | 0.79 | 0.89 | 1.78 |
| | Cu (%) | 260 | 0.00 | 2.00 | 0.24 | 0.30 | 0.54 | 2.31 |
| | Ag (ppm) | 260 | 0.00 | 200.00 | 28.80 | 1,932.07 | 43.96 | 1.53 |
| | Fe (%) | 260 | 0.00 | 40.97 | 3.79 | 75.45 | 8.69 | 2.29 |
| SSL | Zn (%) | 12 | 0.00 | 5.26 | 1.33 | 2.44 | 1.56 | 1.18 |
| | Pb (%) | 12 | 0.00 | 1.45 | 0.51 | 0.33 | 0.57 | 1.13 |
| | Cu (%) | 12 | 0.00 | 1.93 | 0.47 | 0.32 | 0.57 | 1.20 |
| | Ag (ppm) | 12 | 0.00 | 122.55 | 44.79 | 1,827.90 | 42.75 | 0.95 |
| | Fe (%) | 12 | 0.00 | 26.06 | 15.40 | 57.22 | 7.56 | 0.49 |

TABLE 14-9 HIGH YIELD RESTRICTION
Nexa Resources S.A. – Cerro Lindo Mine

| Grade | CLI | Domain | Threshold for High Yield Composites (%) | Distance Restriction (m) |
|-------|-----|--------|---|--------------------------|
| Zn | 2 | SPP | 1.5 | 10 |
| Zn | 3 | SSM | 1 | 10 |
| Cu | | SSM | 1.5 | 10 |

RPA performed an independent capping analysis on some elements for three of the largest domains (SPB, SPP, and SSM), as well as a visual validation of the block model in section and plan view. Log probability plots were inspected for each of these domains and RPA applied a capping grade using a combination of histograms, probability plots, and decile analyses. RPA found that most of the coefficients of variation (CV) after applying capping were low, with the exception of the CV values for zinc in the SPP HG, SPP LG, SSM HG, and SSM LG domains of more than 1.5, however, an additional yield restriction during estimates was used to limit the spatial influence of the small population of high grade samples. Figure 14-10 shows a probability plot, decile analysis, histogram, and cutting curve for SPP HG.

FIGURE 14-10 ZINC DECILE ANALYSIS, PROBABILITY PLOT, HISTOGRAM AND CUTTING CURVE FOR DOMAIN SPP HG



RPA considers that the capping levels and yield restrictions selected are appropriate.

RPA offers the following conclusions and recommendations:

- In general, the capping levels are reasonable, and suitable for the estimation of Mineral Resources.
- Investigate if capping levels should be applied based on high grade and low grade domains for zinc, lead, copper, and silver. SPP HG is a high grade domain for copper, however, the high grades of copper are not necessarily spatially correlated with the high grades of zinc. An additional high grade domain for zinc should be investigated.
- Report the metal loss as a result of capping high grades and assess the amount of metal in the upper decile and percentiles of the distribution to gain a better understanding of the amount of risk associated with the extreme values in each capping domain. In the SPP HG and SSM HG domains, there is 50% to 60% of the metal within the upper decile and 10% to 30% of the total metal within the upper percentile of the zinc distributions.
- Adjust capping and yield restriction values with production data when an accurate reconciliation process is established.

COMPOSITING

Nexa composited the capped assays to 2.5 m with a 1.25 m tolerance, beginning at the collars. Small intervals were merged with the previous interval. Sample lengths range from 1.25 m to 3.75 m. Composites were tagged with rock type codes from the drill hole geology data. The majority of samples (93%) had a length from 90 cm to 1.5 m. Unsourced core intervals were set to zero for all elements. The composite length corresponds to half of the parent block size height for the deposit.

Nexa performed EDA for each rock type domain including:

- Histograms (Figure 14-11), cumulative probability plots, and decile analyses to determine outliers;
- Box plots to compare geology domain statistics (Figure 14-12);
- Contact plots to investigate grade profiles between geology domains and determine the extent of sample sharing across the geology contacts within the rock type domains.
 - Soft, firm, or hard boundaries were determined for each of the estimation variables (zinc, copper, lead, and silver).

TABLE 14-10 ESTIMATION DOMAIN COMPOSITE STATISTICS
Nexa Resources S.A. – Cerro Lindo Mine

| Domain | Grade | No. Samples | Minimum | Maximum | Mean | Variance | Std. Deviation | CV |
|--------|----------|-------------|---------|---------|-------|----------|----------------|------|
| SPB | Zn (%) | 21,571 | 0.00 | 20.00 | 4.88 | 17.31 | 4.16 | 0.85 |
| | Pb (%) | 21,571 | 0.00 | 7.00 | 0.57 | 0.72 | 0.85 | 1.48 |
| | Cu (%) | 21,571 | 0.00 | 6.00 | 0.52 | 0.39 | 0.62 | 1.19 |
| | Ag (ppm) | 21,571 | 0.00 | 300.00 | 29.47 | 1172.19 | 34.24 | 1.16 |
| | Fe_cap | 21,571 | 0.00 | 45.00 | 19.71 | 152.49 | 12.35 | 0.63 |
| SPP LG | Zn (%) | 9,454 | 0.00 | 15.00 | 0.48 | 2.23 | 1.49 | 3.09 |
| | Pb (%) | 9,454 | 0.00 | 1.00 | 0.05 | 0.02 | 0.13 | 2.43 |
| | Cu (%) | 9,454 | 0.00 | 0.50 | 0.10 | 0.01 | 0.07 | 0.72 |
| | Ag (ppm) | 9,454 | 0.00 | 100.00 | 6.96 | 89.22 | 9.45 | 1.36 |
| | Fe_cap | 9,454 | 0.00 | 45.00 | 35.05 | 176.70 | 13.29 | 0.38 |
| SPP HG | Zn (%) | 25,141 | 0.00 | 15.00 | 0.83 | 2.60 | 1.61 | 1.94 |
| | Pb (%) | 25,141 | 0.00 | 2.00 | 0.08 | 0.04 | 0.21 | 2.78 |
| | Cu (%) | 25,141 | 0.00 | 7.00 | 0.94 | 0.59 | 0.77 | 0.82 |
| | Ag (ppm) | 25,141 | 0.00 | 200.00 | 21.71 | 421.08 | 20.52 | 0.95 |
| | Fe_cap | 25,141 | 0.00 | 45.00 | 34.21 | 205.91 | 14.35 | 0.42 |
| SSM LG | Zn (%) | 4,795 | 0.00 | 1.00 | 0.10 | 0.03 | 0.16 | 1.71 |
| | Pb (%) | 4,795 | 0.00 | 1.50 | 0.06 | 0.01 | 0.10 | 1.63 |
| | Cu (%) | 4,795 | 0.00 | 0.44 | 0.08 | 0.00 | 0.07 | 0.85 |
| | Ag (ppm) | 4,795 | 0.00 | 90.00 | 7.63 | 83.88 | 9.16 | 1.20 |
| | Fe_cap | 4,795 | 0.00 | 45.00 | 21.57 | 96.44 | 9.82 | 0.46 |
| SSM HG | Zn (%) | 6,276 | 0.00 | 15.00 | 1.46 | 4.57 | 2.14 | 1.46 |
| | Pb (%) | 6,276 | 0.00 | 5.50 | 0.35 | 0.36 | 0.60 | 1.73 |
| | Cu (%) | 6,276 | 0.00 | 5.00 | 0.49 | 0.27 | 0.52 | 1.07 |
| | Ag (ppm) | 6,276 | 0.00 | 300.00 | 36.30 | 1748.07 | 41.81 | 1.15 |
| | Fe_cap | 6,276 | 0.00 | 45.00 | 17.82 | 100.20 | 10.01 | 0.56 |
| VM | Zn (%) | 2,487 | 0.00 | 8.00 | 1.12 | 2.03 | 1.43 | 1.27 |
| | Pb (%) | 2,487 | 0.00 | 5.00 | 0.41 | 0.42 | 0.65 | 1.60 |
| | Cu (%) | 2,487 | 0.00 | 4.39 | 0.42 | 0.26 | 0.51 | 1.22 |
| | Ag (ppm) | 2,487 | 0.00 | 400.00 | 42.60 | 3034.36 | 55.08 | 1.29 |
| | Fe_cap | 2,487 | 0.00 | 40.00 | 11.30 | 58.38 | 7.64 | 0.68 |
| SOP | Zn (%) | 450 | 0.00 | 3.69 | 0.28 | 0.22 | 0.46 | 1.65 |
| | Pb (%) | 450 | 0.00 | 1.00 | 0.06 | 0.02 | 0.13 | 2.24 |
| | Cu (%) | 450 | 0.00 | 7.00 | 0.60 | 0.83 | 0.91 | 1.51 |
| | Ag (ppm) | 450 | 0.00 | 100.00 | 12.68 | 280.14 | 16.74 | 1.32 |
| | Fe_cap | 450 | 0.00 | 45.00 | 28.96 | 341.38 | 18.48 | 0.64 |
| SOB | Zn (%) | 254 | 0.00 | 1.50 | 0.57 | 0.31 | 0.56 | 0.97 |
| | Pb (%) | 254 | 0.00 | 1.00 | 0.12 | 0.04 | 0.19 | 1.58 |
| | Cu (%) | 254 | 0.00 | 6.00 | 1.41 | 1.63 | 1.28 | 0.91 |
| | Ag (ppm) | 254 | 0.00 | 108.48 | 22.26 | 320.97 | 17.92 | 0.80 |
| | Fe_cap | 254 | 0.00 | 40.00 | 22.56 | 138.72 | 11.78 | 0.52 |

| Domain | Grade | No. Samples | Minimum | Maximum | Mean | Variance | Std. Deviation | CV |
|--------|----------|-------------|---------|---------|-------|----------|----------------|------|
| SLB | Zn (%) | 216 | 0.00 | 4.00 | 0.51 | 1.18 | 1.09 | 2.12 |
| | Pb (%) | 216 | 0.00 | 4.00 | 0.50 | 0.69 | 0.83 | 1.66 |
| | Cu (%) | 216 | 0.00 | 2.00 | 0.24 | 0.27 | 0.52 | 2.23 |
| | Ag (ppm) | 216 | 0.00 | 184.61 | 28.82 | 1663.14 | 40.78 | 1.41 |
| | Fe_cap | 216 | 0.00 | 36.87 | 3.75 | 69.24 | 8.32 | 2.22 |
| SSL | Zn (%) | 6 | 0.09 | 3.92 | 1.33 | 1.90 | 1.38 | 1.04 |
| | Pb (%) | 6 | 0.03 | 1.45 | 0.51 | 0.17 | 0.42 | 0.82 |
| | Cu (%) | 6 | 0.09 | 1.93 | 0.47 | 0.30 | 0.55 | 1.16 |
| | Ag (ppm) | 6 | 8.24 | 98.91 | 44.79 | 607.01 | 24.64 | 0.55 |
| | Fe_cap | 6 | 8.89 | 21.81 | 15.40 | 18.00 | 4.24 | 0.28 |

FIGURE 14-11 COMPOSITE HISTOGRAM EXAMPLES

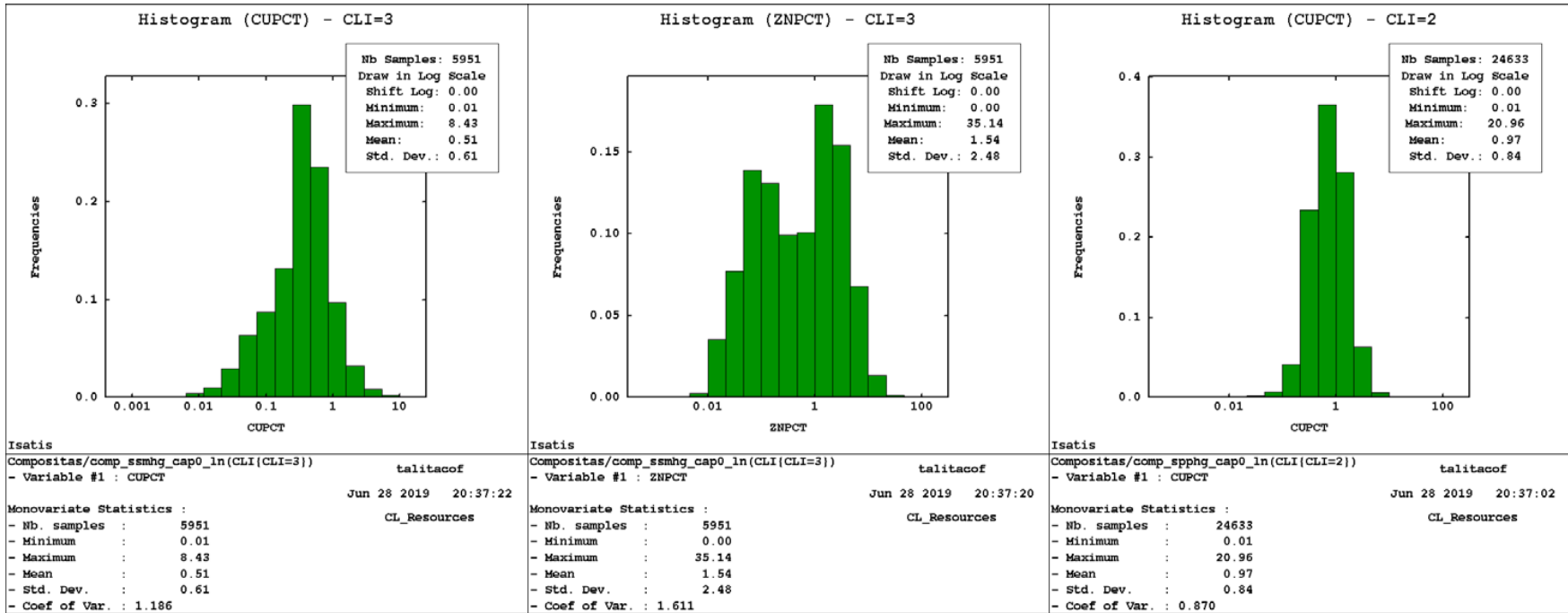
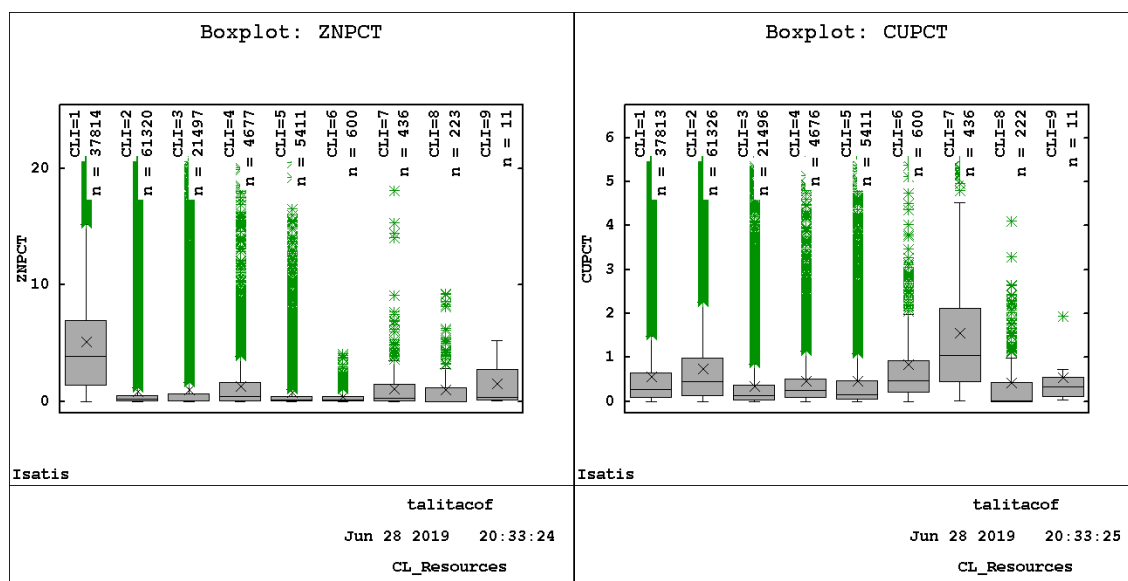


FIGURE 14-12 BOXPLOT GRAPHICS FOR ZN AND CU



RPA reviewed the composites and offers the following conclusions and recommendations:

- The composite length is appropriate given the dominant sampling length and the 5 m block height and is suitable to support Mineral Resource and Mineral Reserve estimation.
- RPA recommends investigating density-weighted compositing.

TREND ANALYSIS

VARIOGRAPHY

Two-structure and three-structure spherical models in three directions were developed with experimental variograms for Zn, Pb, Cu, Ag, and Fe in Isatis software. The variograms were calculated using the composites for SPB, SPP HG, and LG domains, which were split by Block 1 and Block 2, and for SSM HG and LG domains. Figures 14-13 and 14-14 show examples of variograms for Zn and Cu, respectively.

FIGURE 14-13 ZN VARIOGRAM FOR MINERALIZATION SPB, BLOCK 1, AND BLOCK 2 DOMAINS

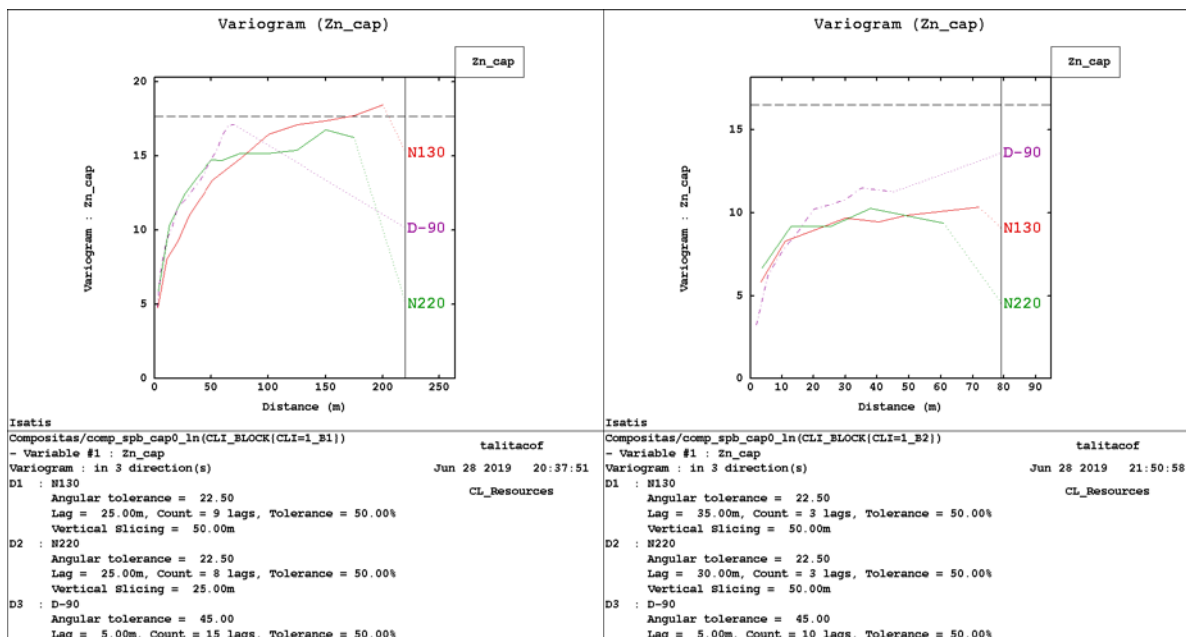
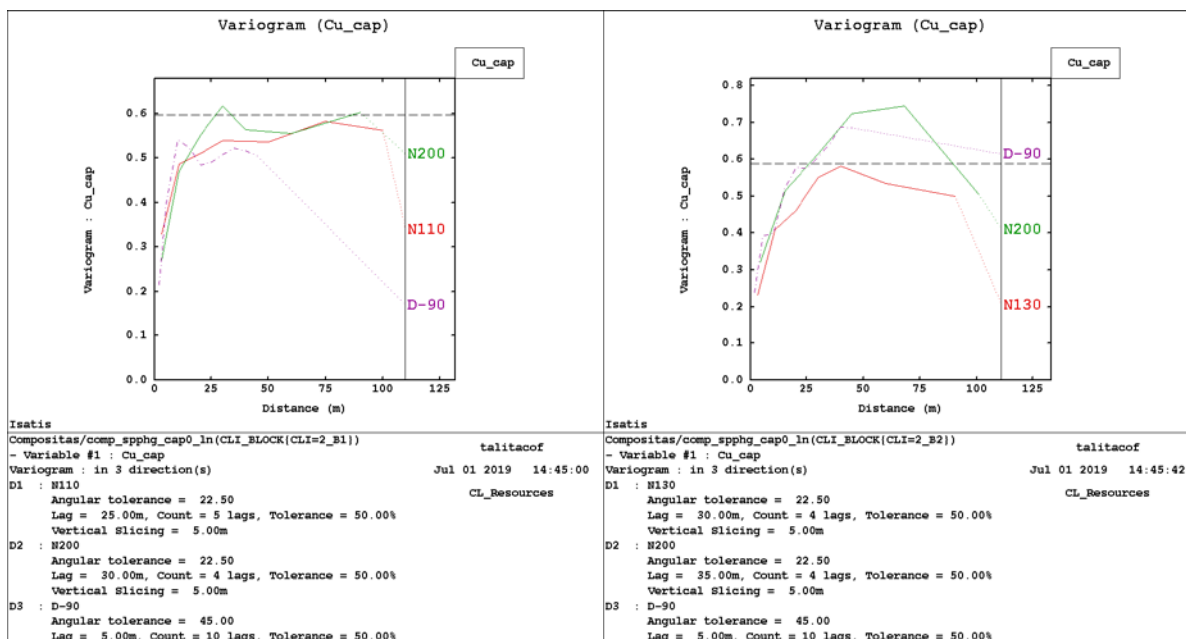


FIGURE 14-14 CU VARIOGRAM: SPP HG, BLOCK 1, AND 2 DOMAINS

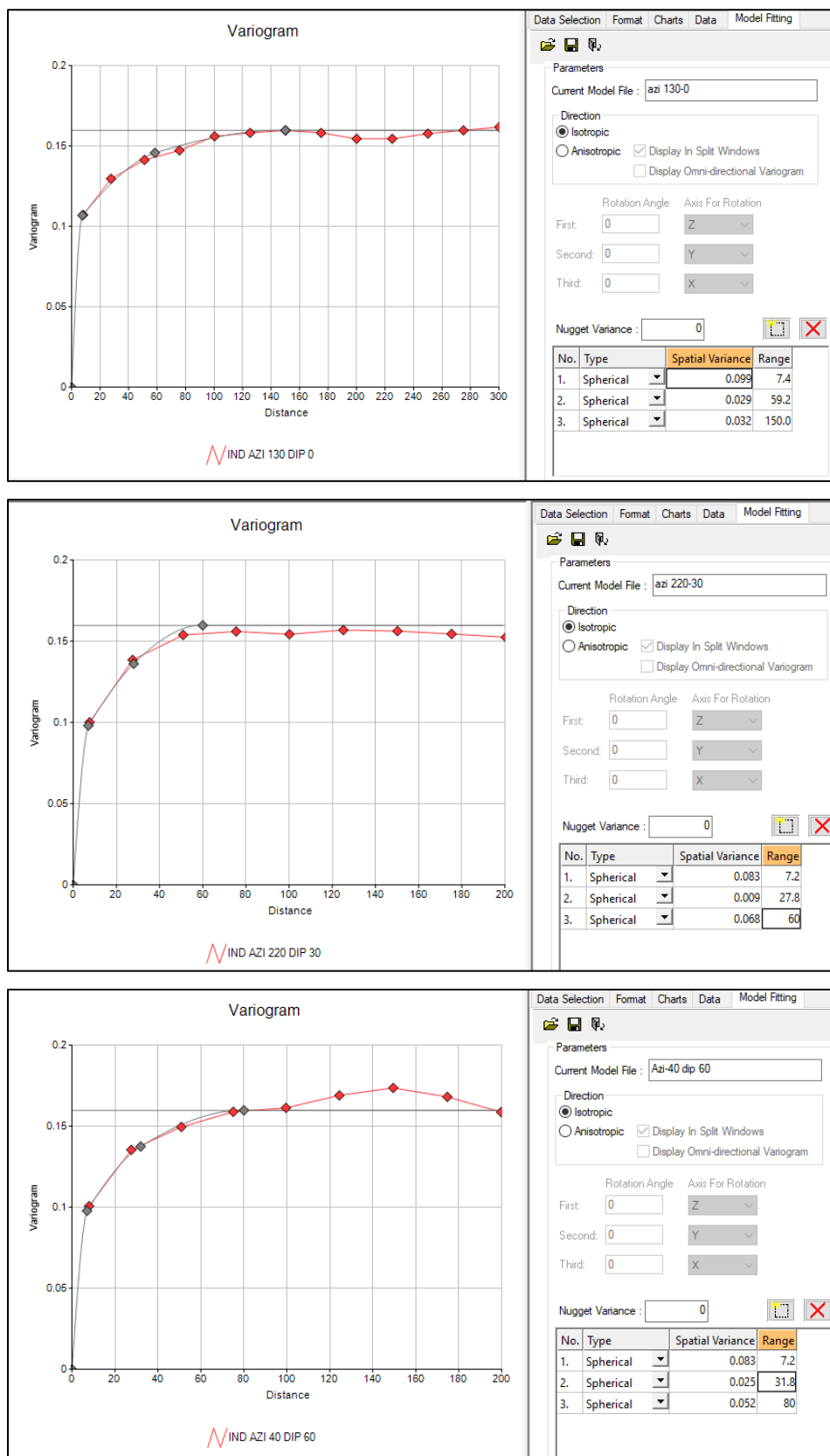


SEARCH STRATEGY AND GRADE INTERPOLATION

Grades were interpolated into blocks on a parent cell basis using OK for the SPB, SPP, and SSM domains. For all the other domains, ID³ interpolation method was used. All the variables, Zn, Cu, Pb, Ag and Fe, are interpolated, and estimates are not density weighted. All directions were based on Datamine's dynamic anisotropy, which varies search ellipsoid orientations according to the trend of the mineralization domain.

The SPB domain was also divided into high- and low-grade domains using an indicator with a threshold of 1.5% of Zn (Figure 14-15). The definition of low grade was estimated based on a probability of 50% to be below 1.5% Zn. All blocks inside this domain were based on composites grading less than 1.5% Zn and the variograms parameters calculated for the Block 1 SPB domain.

FIGURE 14-15 INDICATOR VARIOGRAMS: 3 DIRECTIONS IN SPB DOMAIN



The grade estimation was completed in three passes. Pass 1 uses a search radius equal to the variogram range; Pass 2 uses a search radius equal to 1.5 times the range of Pass 1; and Pass 3 uses a search radius of 10 times the range of Pass 1.

For zinc estimates in the SPP and SSM domains, Nexa applied a high yield restriction within a search radius of 10 m when grade blocks were above 1.5% Zn and 1.0% Zn, respectively. For copper estimates in the SSM domain, Nexa applied a high yield restriction within a search radius of 10 m when grade blocks were above 1.5% Cu. The search criteria are listed in Table 14-11 for zinc estimates and in Table 14-12 for copper estimates.

TABLE 14-11 ZINC ESTIMATION PARAMETERS
Nexa Resources S.A. – Cerro Lindo Mine

| Mineralization Domain | Method | Rotation System | | | Search Ellipse | | | Pass 1 SVOL | # Comp | | Pass 2 SVOL | # Comp | | Pass 3 SVOL | # Comp | |
|-----------------------|-----------------|-----------------|---|---|----------------|----|------|-------------|--------|-----|-------------|--------|-----|-------------|--------|-----|
| | | S-AXIS | | | S-DIST | | | | Min | Max | | Min | Max | | Min | Max |
| | | 1 | 2 | 3 | 1 | 2 | 3 | | | | | | | | | |
| SPB (CLI=1) | OK | 3 | 2 | 1 | 50 | 50 | 20 | 1 | 6 | 14 | 1.5 | 5 | 14 | 20 | 2 | 10 |
| SPP (CLI=2) | OK | 3 | 2 | 1 | 100 | 80 | 50 | 1 | 6 | 14 | 1.5 | 5 | 14 | 10 | 2 | 10 |
| SSM (CLI=3) | OK | 3 | 2 | 1 | 76 | 64 | 40 | 1 | 6 | 14 | 1.5 | 5 | 14 | 10 | 2 | 10 |
| VM (CLI=4) | ID ³ | 3 | 2 | 1 | 87 | 70 | 40 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |
| V (CLI=5) | ID ³ | 3 | 2 | 1 | 25 | 25 | 12.5 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |
| SOP (CLI=6) | ID ³ | 3 | 2 | 1 | 121 | 98 | 50 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |
| SOB (CLI=7) | ID ³ | 3 | 2 | 1 | 121 | 98 | 50 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |
| SLB (CLI=8) | ID ³ | 3 | 2 | 1 | 121 | 98 | 50 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |
| SSL (CLI=9) | ID ³ | 3 | 2 | 1 | 121 | 98 | 50 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |

TABLE 14-12 COPPER ESTIMATION PARAMETERS
Nexa Resources S.A. – Cerro Lindo Mine

| Mineralization Domain | Method | Rotation System | | | Search Ellipse | | | Pass 1 SVOLFAC | # Comp | | Pass 2 SVOLFAC | # Comp | | Pass 3 SVOLFAC | # Comp | |
|-----------------------|--------|-----------------|---|---|----------------|----|------|----------------|--------|-----|----------------|--------|-----|----------------|--------|-----|
| | | S-AXIS | | | S-DIST | | | | Min | Max | | Min | Max | | Min | Max |
| | | 1 | 2 | 3 | 1 | 2 | 3 | | | | | | | | | |
| SPB (CLI=1) | OK | 3 | 2 | 1 | 70 | 65 | 35 | 1 | 6 | 14 | 1.5 | 5 | 14 | 10 | 2 | 10 |
| SPP (CLI=2) | OK | 3 | 2 | 1 | 110 | 90 | 60 | 1 | 6 | 14 | 1.5 | 5 | 14 | 10 | 2 | 10 |
| SSM (CLI=3) | OK | 3 | 2 | 1 | 60 | 50 | 30 | 1 | 6 | 14 | 1.5 | 5 | 14 | 10 | 2 | 10 |
| VM (CLI=4) | ID³ | 3 | 2 | 1 | 87 | 70 | 40 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |
| V (CLI=5) | ID³ | 3 | 2 | 1 | 25 | 25 | 12.5 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |
| SOP (CLI=6) | ID³ | 3 | 2 | 1 | 121 | 98 | 50 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |
| SOB (CLI=7) | ID³ | 3 | 2 | 1 | 121 | 98 | 50 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |
| SLB (CLI=8) | ID³ | 3 | 2 | 1 | 121 | 98 | 50 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |
| SSL (CLI=9) | ID³ | 3 | 2 | 1 | 121 | 98 | 50 | 1 | 6 | 12 | 1.5 | 5 | 12 | 10 | 2 | 8 |

BULK DENSITY

The Cerro Lindo deposit has 3,274 density determinations that were used for resource estimates. A summary of the density measurements taken by geological domains is presented in Table 14-13 and the density sample location is shown in Figure 14-16. Nexa interpolated the density values for the SPP and SPB domains and assigned an average density value for SSM, SOP, SOB, SSL, SLB, VM, enclave, and wallrock as shown in Table 14-14.

TABLE 14-13 DENSITY DATA
Nexa Resources S.A. – Cerro Lindo Mine

| CLI | Domain | No. | Density (t/m ³) |
|-----|--------------|--------------|-----------------------------|
| 1 | SPP | 600 | 4.12 |
| 2 | SPB | 1,447 | 4.38 |
| 3 | SSM | 539 | 3.42 |
| 4 | VM | 137 | 2.92 |
| 5 | V | 185 | 3.00 |
| 6 | SOP | - | 3.00 |
| 7 | SOB | - | 3.00 |
| 8 | SLB | - | 3.00 |
| 9 | SSL | - | 3.00 |
| | Wallrock | 366 | 2.89 |
| | Total | 3,274 | |

TABLE 14-14 ASSIGNED DENSITY VALUES
Nexa Resources S.A. – Cerro Lindo Mine

| CLI | Domain | Density (t/m ³) |
|-----|----------|--------------------------------|
| 3 | SSM | 3.42 |
| 4 | VM | 2.92 |
| 5 | V | 3.00 |
| 6 | SOP | 3.00 |
| 7 | SOB | 3.00 |
| 8 | SLB | 3.00 |
| 9 | SSL | 3.00 |
| | Wallrock | 2.89 |

There were not density measurements available for the SOP, SOB, SLB, and SSL domains. Nexa applied the lower quartile of the SPP and SPB density measurements assuming a lower density as a result of the oxidization and leaching processes. RPA recommends generating density data for the SOP, SOB, SSL, and SLB domains that currently do not have density tests available. In RPA's opinion, this will not have a significant impact on the resource estimate as these domains represent less than one percent of the Mineral Resources.

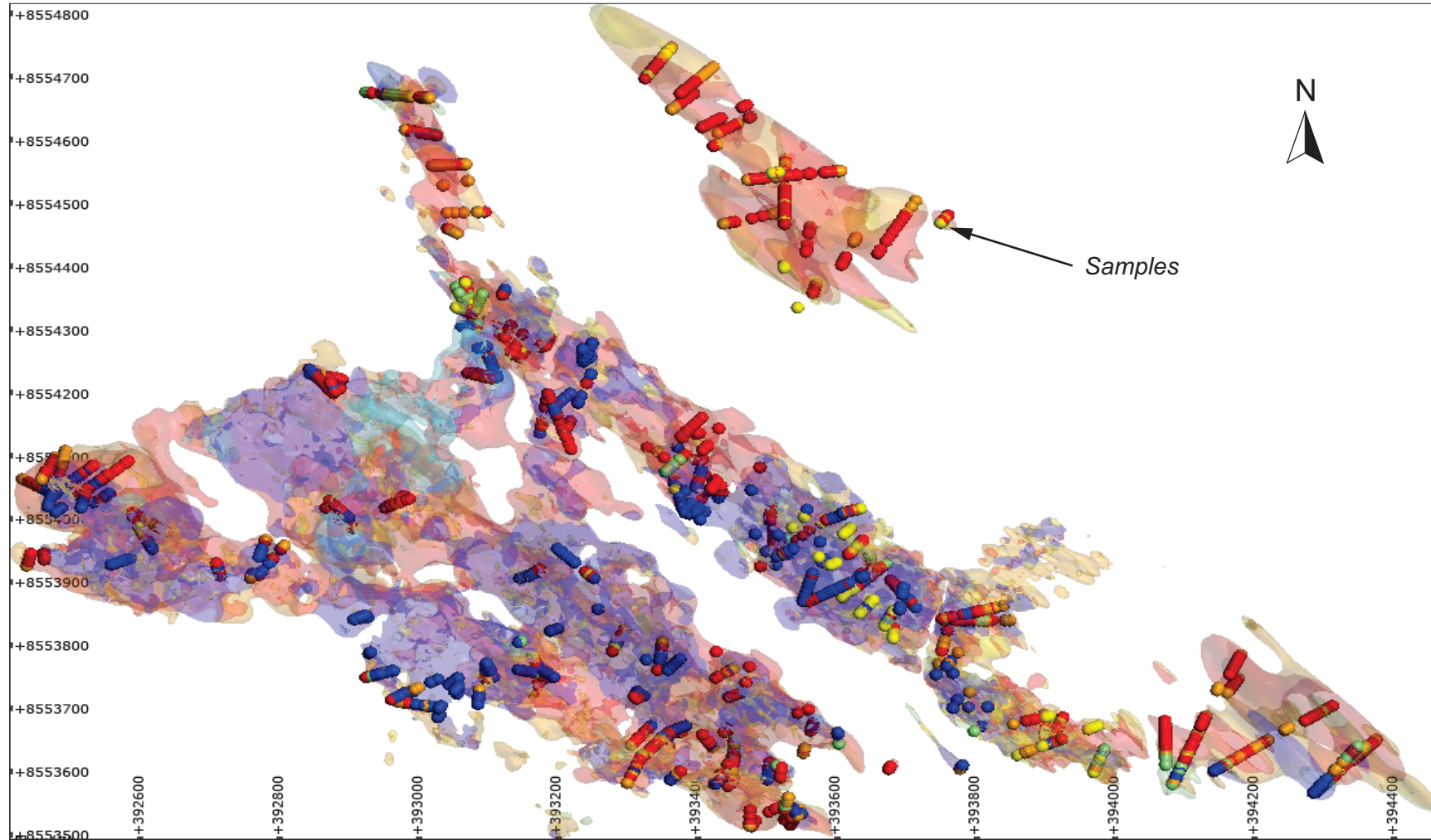







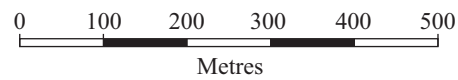


Figure 14-16

Domain:

| | |
|---|---|
|  SPB |  V |
|  SPP |  SOP/SOB/SLB/SSL |
|  SSM |  Dikes |
|  VM | |



Nexa Resources S.A.

Cerro Lindo Mine

Department of Ica, Peru

**Density Samples Location by
Geological Domains**

For the SPP and SPB mineralization wireframes, Nexa interpolated the density values using an inverse distance cubed (ID³) method. The search ellipsoids for density are generally sub-vertical pancake shapes with the same orientation as the mineralization and the grade estimate. The average density value is 4.48 t/m³ for the SPB blocks and 4.57 t/m³ for the SPP blocks.

Block estimation parameters for bulk density are shown in Table 14-15.

TABLE 14-15 BLOCK ESTIMATION PARAMETERS FOR BULK DENSITY
Nexa Resources S.A. – Cerro Lindo Mine

| Pass Name | Domain | Type | Search X (m) | Search Y (m) | Search Z (m) | Min Samples | Max Samples | Max Samples Per Hole | Lower Sample Cap (t/m ³) | Upper Sample Cap (t/m ³) |
|-----------|--------|-----------------|--------------|--------------|--------------|-------------|-------------|----------------------|--------------------------------------|--------------------------------------|
| 1 | SPB | ID ³ | 50 | 50 | 25 | 3 | 14 | 2 | 2.34 | 4.96 |
| 2 | SPB | ID ³ | 100 | 100 | 50 | 3 | 14 | 2 | 2.34 | 4.96 |
| 3 | SPB | ID ³ | 1000 | 1000 | 500 | 1 | 14 | 2 | 2.34 | 4.96 |
| 1 | SPP | ID ³ | 50 | 50 | 25 | 3 | 14 | 2 | 2.05 | 5.02 |
| 2 | SPP | ID ³ | 100 | 100 | 50 | 3 | 14 | 2 | 2.05 | 5.02 |
| 3 | SPP | ID ³ | 1000 | 1000 | 500 | 1 | 14 | 2 | 2.05 | 5.02 |

Block density values were interpolated for SPB and SPP domains using the ID³ method.

Nexa validated the density estimate by examining the block density distribution against the samples, stepping across the model in vertical section and plan view and preparing swath plots. A statistical comparison of density sample populations to block populations is shown in Table 14-16. A plan view comparing density sample values to block values is shown in Figure 14-17. Swath plots of ID³ density estimates versus NN density estimates, as well as sample density values are shown in Figures 14-18 and 14-19.

TABLE 14-16 STATISTICAL COMPARISON OF BLOCKS VERSUS COMPOSITES: DENSITY
Nexa Resources S.A. – Cerro Lindo Mine

| Domain | No. of Blocks | No. of Samples | Min Blocks (t/m ³) | Min Samples (t/m ³) | Max Blocks (t/m ³) | Max Samples (t/m ³) | Mean Blocks (t/m ³) | Mean Samples (t/m ³) | Mean Diff (t/m ³) | Mean Diff (%) |
|--------|---------------|----------------|--------------------------------|---------------------------------|--------------------------------|---------------------------------|---------------------------------|----------------------------------|-------------------------------|---------------|
| 1 | 2,349,407 | 600 | 2.49 | 2.34 | 4.90 | 4.96 | 4.48 | 4.12 | 0.36 | 8% |
| 2 | 7,280,037 | 1,447 | 2.67 | 2.05 | 5.00 | 5.02 | 4.57 | 4.38 | 0.19 | 4% |

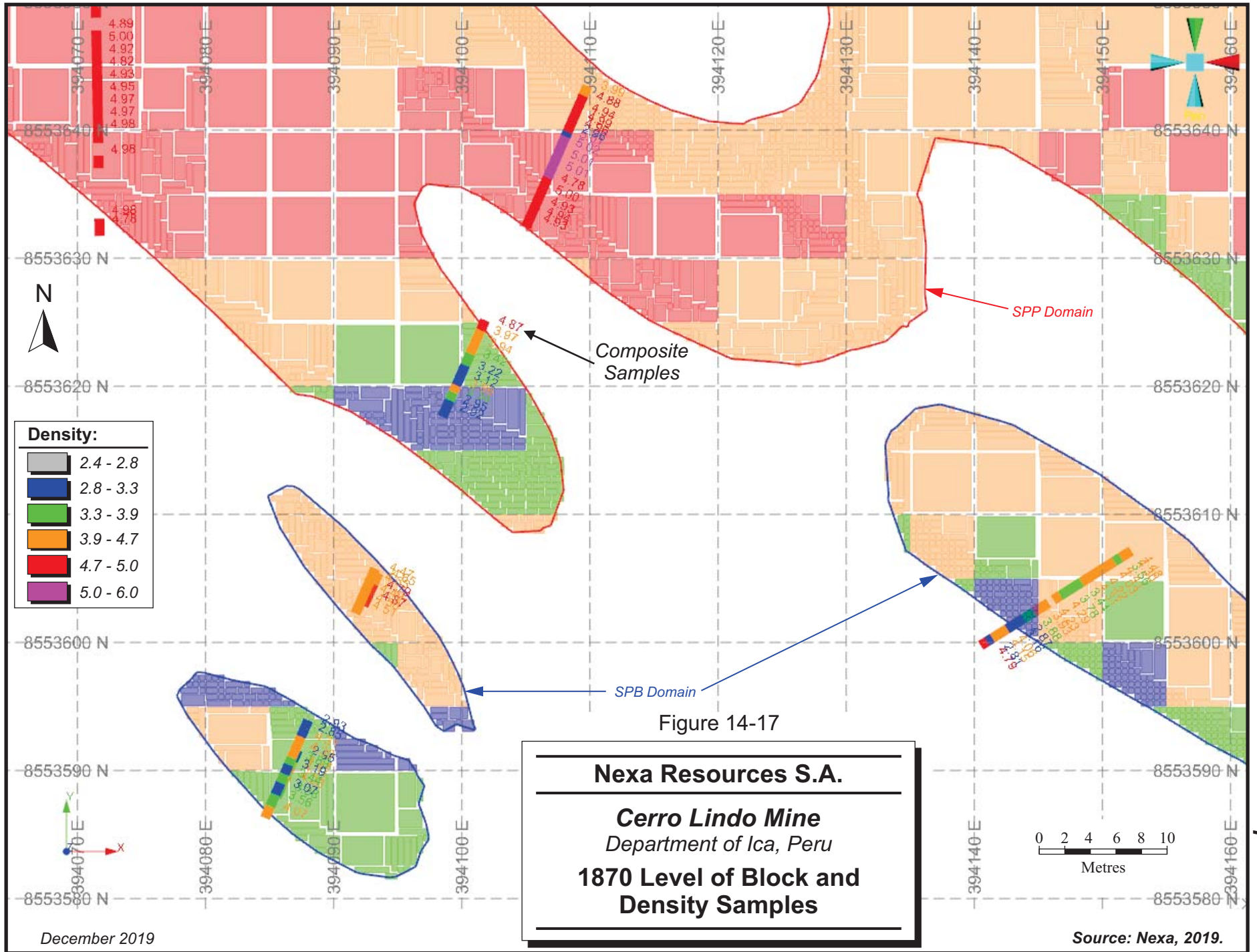


FIGURE 14-18 SPP SWATH PLOTS – DENSITY VALUES

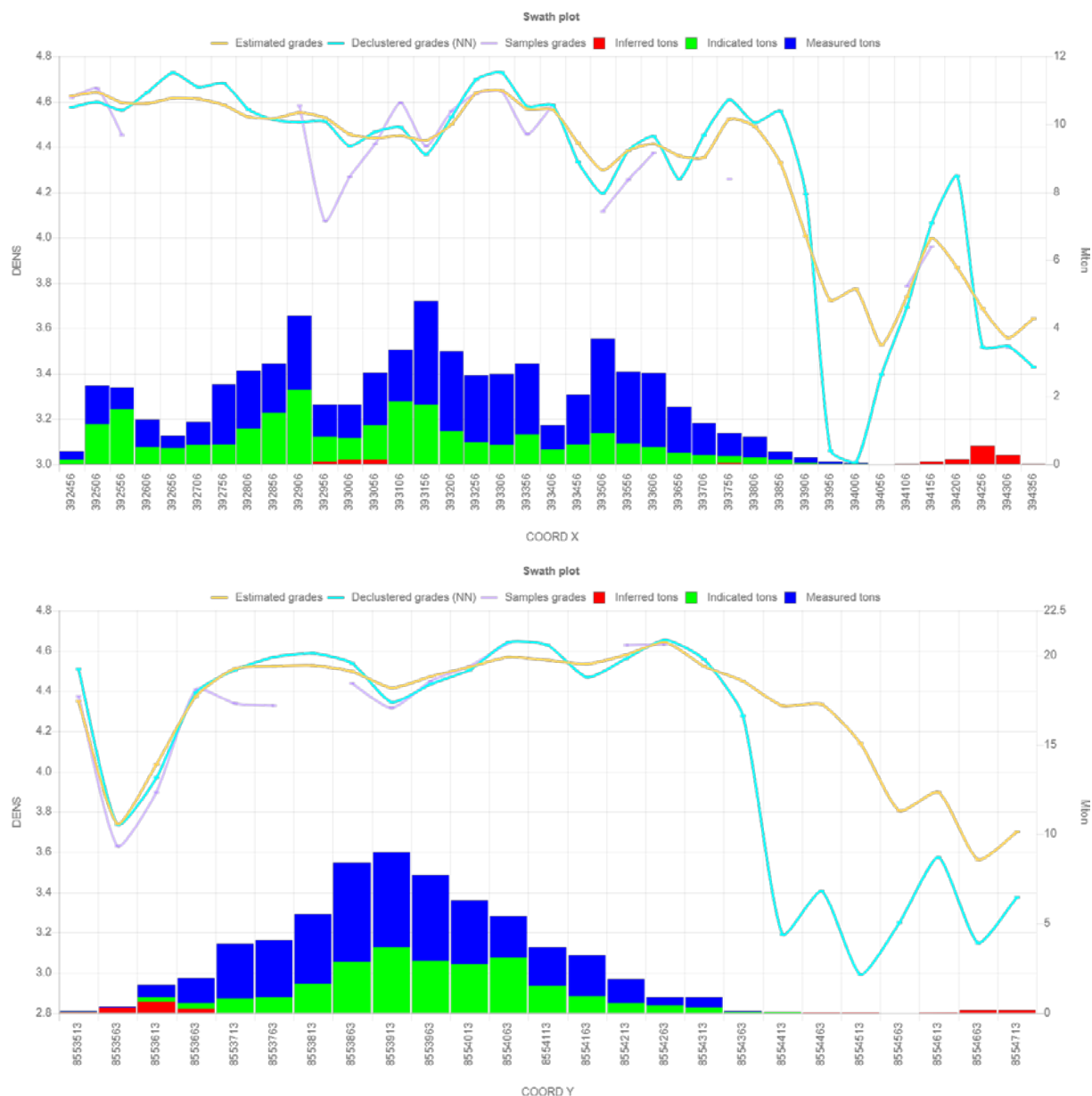
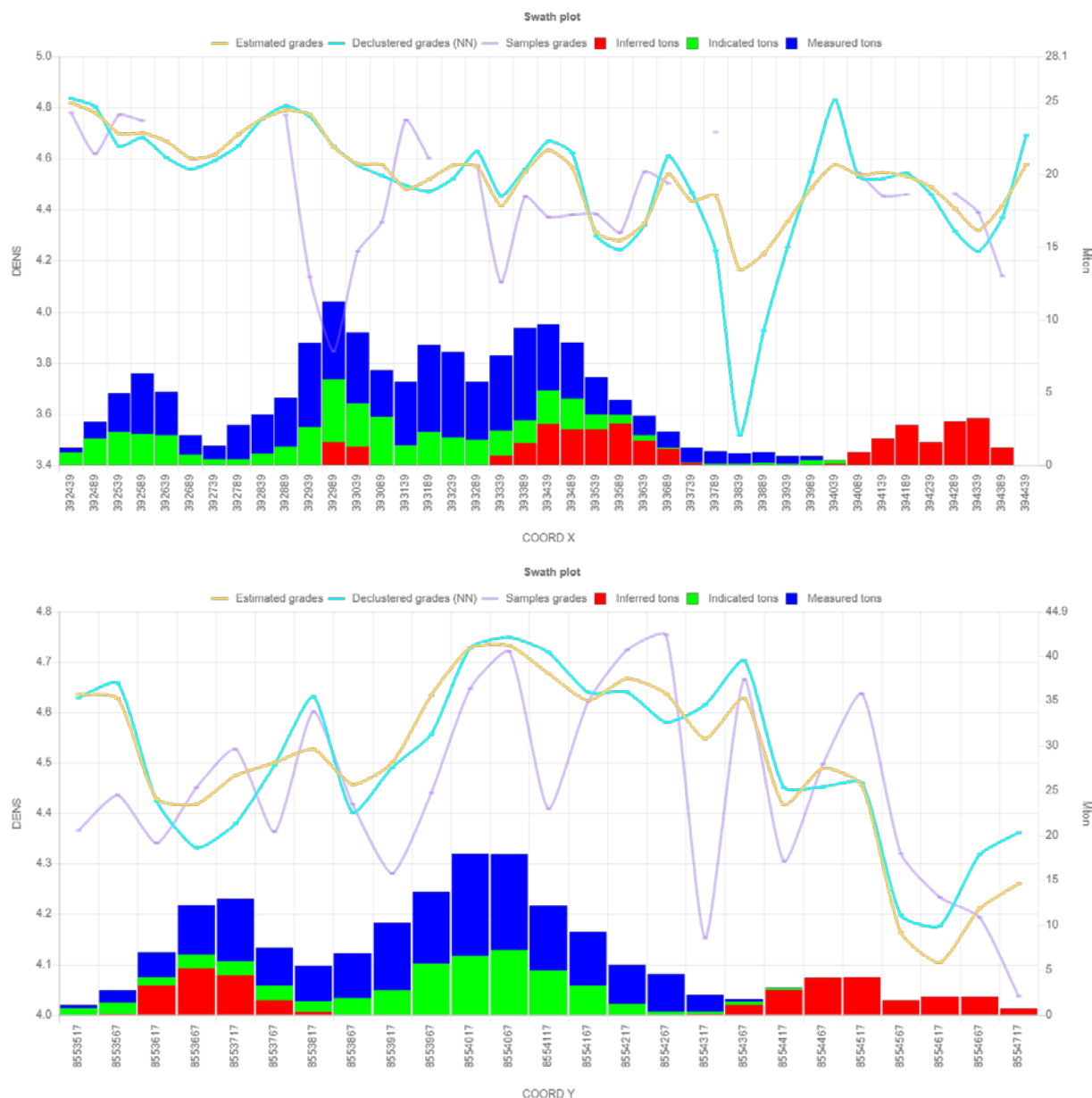


FIGURE 14-19 SPP SWATH PLOTS – DENSITY VALUES



RPA reviewed the density data distribution and location and is of the opinion that the density values are reasonable for the style of mineralization and the density samples are well distributed throughout the deposit.

BLOCK MODELS

Cerro Lindo wireframes were filled with blocks in Datamine Studio RM. The block model was sub-celled at wireframes boundaries with parent cells measuring 5 m by 5 m by 5 m and

minimum sub-cell sizes of 0.5 m by 0.5 m by 0.5 m. The block model setup is shown in Table 14-17 and a description of the block model attributes are given in Table 14-18.

TABLE 14-17 BLOCK MODEL SETUP
Nexa Resources S.A. – Cerro Lindo Mine

| Parameter | X | Y | Z |
|------------------|---------|-----------|-----|
| Origin (m) | 392,000 | 8,552,800 | 950 |
| Block Size (m) | 5 | 5 | 5 |
| Number of Blocks | 538 | 420 | 322 |

TABLE 14-18 BLOCK MODEL ATTRIBUTE DESCRIPTIONS
Nexa Resources S.A. – Cerro Lindo Mine

| Field | Description | Field | Description |
|-------|---|----------|--|
| ZN | Estimated Zn(%) | ZN_NN | Estimated by NN Zn(%) |
| PB | Estimated Pb(%) | PB_NN | Estimated by NN Pb(%) |
| CU | Estimated Cu(%) | CU_NN | Estimated by NN Cu(%) |
| AG | Estimated Ag(g/t) | AG_NN | Estimated by NN Ag(g/t) |
| FE | Estimated Fe(%) | FE_NN | Estimated by NN Fe(%) |
| DENS | Estimated density for SPB and SPP and mean values for all other domains | CLITYPE | Calculated column CLI+TYPE |
| | | DIR | Estimated Azimuth of block |
| | 1 Measured | DIPRT | Estimated DIP of block |
| CLASS | 2 Indicated | TON | Tonnes (VOLUME*Dens) |
| | 3 Inferred | VOLUME | Xinc*Yinc*Zinc |
| | -99 Not classified | GEOCD | 9 SPB |
| *CLI | 1 SPB | | 6 SPP |
| | 2 SPP | | 5 SSM |
| | 3 SSM | | 28 VM |
| | 4 VM | | 29 ENCLAVE |
| | 5 ENCLAVE | | 7 SOP |
| | 6 SOP | | 10 SOB |
| | 7 SOB | | 11 SLB |
| | 8 SLB | | 25 SSL |
| | 9 SSL | | 3 DIKE |
| | 10 DIKE | | 1 OB8A |
| | 11 OB8A | | 3 OB11 |
| | 13 OB11 | | 1 Outside High Grade Envelope |
| | 1 West Block | TYPE | 2 Inside High Grade Envelope |
| BLOCK | 2 East Block | | 0 Waste |
| | 3 Exploration targets | | |
| ZNEQ | Calculated value (ZN*3034+PB*2530+CU*7351+AG/10000*21.58/31.1035*1000000)/3034) | NSRRES19 | Calculated NSR values based on 2018 parameters |

RPA is of the opinion that the block size is appropriate, based on the drill spacing and proposed mining method, and is suitable to support the estimation of Mineral Resources and Mineral Reserves.

NET SMELTER RETURN AND CUT-OFF VALUE

An NSR cut-off value was determined using the Mineral Resource metal prices, metal recoveries, transport, treatment, and refining costs, as well as mine operating cost. Metal prices used for Mineral Resources are based on consensus, long term forecasts from banks, financial institutions, and other sources.

The cut-off value used for the Resource estimate is based on an NSR value, in units of US\$/t, which can be directly compared to operating unit costs. The NSR formula is:

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

Cut-off costs and NSR parameters are summarized in Table 14-19. The break even NSR cut-off value is \$32.91/t processed.

TABLE 14-19 NSR DATA
Nexa Resources S.A. – Cerro Lindo Mine

| Item | Units | Value |
|------------------------|-------------|-------|
| Metallurgical Recovery | | |
| Zn | % | 91.0 |
| Pb | % | 74.2 |
| Cu | % | 86.7 |
| Ag | % | 71.2 |
| Zn Concentrate Payable | % | 85.0 |
| Pb Concentrate Payable | % | 95.0 |
| Cu Concentrate Payable | % | 97.0 |
| Metal Prices | | |
| Zn | US\$/lb | 1.38 |
| Pb | US\$/lb | 1.15 |
| Cu | US\$/lb | 3.33 |
| Ag | US\$/oz | 21.58 |
| Transport Charges | | |
| Zn Concentrate | US\$/t conc | 31 |
| Pb Concentrate | US\$/t conc | 30 |

| Item | Units | Value |
|-----------------------|--------------------|--------------|
| Cu Concentrate | US\$/t conc | 32 |
| Treatment Charges | | |
| Zn Concentrate | US\$/t conc | 293 |
| Pb Concentrate | US\$/t conc | 122 |
| Cu Concentrate | US\$/t conc | 86 |
| Refining Charges | | |
| Cu in Cu conc | US\$/lb | 0.02 |
| Ag in Cu conc | US\$/oz | 0.70 |
| Ag in Pb conc | US\$/oz | 1.00 |
| Operating Costs | | |
| Mining | US\$/t proc | 18.48 |
| Process + Maintenance | US\$/t proc | 12.62 |
| G&A | US\$/t proc | 1.81 |
| Total | US\$/t proc | 32.91 |

Metallurgical recoveries in Table 14-19 are averages, however, NSR calculations use a head grade-recovery relationship for each metal, based on recent operating performance. NSR factors are therefore variable by head grade, with average NSR factors summarized in Table 14-20.

TABLE 14-20 NSR FACTORS
Nexa Resources S.A. – Cerro Lindo Mine

| Item | Units | Value |
|------|--------|---------|
| Zn | US\$/% | \$21.13 |
| Pb | US\$/% | \$16.06 |
| Cu | US\$/% | \$56.92 |
| Ag | US\$/g | \$0.44 |

CLASSIFICATION

Definitions for resource categories used in this report are consistent with those defined by CIM (2014) and adopted by NI 43-101. In the CIM classification, a Mineral Resource is defined as “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”. Mineral Resources are classified into Measured, Indicated, and Inferred categories. A Mineral Reserve is defined as the “economically mineable part of a Measured and/or Indicated Mineral Resource” demonstrated by studies at Pre-Feasibility or Feasibility level as appropriate. Mineral Reserves are classified into Proven and Probable categories.

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Blocks were classified based on the following criteria:

- Confidence in modelling of mineralization and rock type domains. These models, in particular the SPB and SPP domains, control tonnage delineation of Mineral Resource blocks, particularly along the margins.
- Reliability of sampling data. This includes database integrity as well as no significant bias observed in QA/QC analysis results.
- Confidence in estimation of block grades for the various metals.
- Drill hole spacing studies related to confidence in estimating grade.
- Variogram model parameters.
- Visual assessments of the geometries of mineralized domain in relation to drill hole spacing.
- Production experience in the deposit.

Based on the criteria listed above, Mineral Resource classification for the SPP and SPB domains is based on the number of drill holes and distances determined by variogram ranges as follows:

- Measured: 26 m x 26 m x 12 m (DH ≥ 3);
- Indicated: 50 m x 50 m x 26 m (DH ≥ 3);
- Inferred: 150 m x 150 m x 45 m (DH ≥ 3).

The initial classification result was then smoothed to eliminate isolated small patches and irregular shapes, yielding more realistic shapes from a mining perspective.

The SSM domain blocks were classified based on the continuity of the orebodies and production experience. The SSM mineralization is more discontinuous than the SPP and SPP

domains, as they are found more as patches or stringers. The Indicated classification was more restrictive and based on mining exposure. Indicated and Inferred blocks were classified according to the following criteria:

- Indicated: 25 m x 25 m x 20 m (DH \geq 3);
- Inferred: 150 m x 150 m x 45 m. (DH \geq 3)

All the other domains (VM, SBO, SOP, SSL, and SLB) were classified as Inferred blocks, using the following criteria.

- Inferred: 150 m x 150 m x 45 m. (DH \geq 3)

The subsequent post-processing downgraded volumes lower than approximately 20,000 m³ classified as Indicated to the Inferred category.

Figures 14-20 and 14-21 show histogram validations of the classification based on the distance of each block to its closest sample for the SPB/SPP and SSM domains, respectively. Figure 14-22 shows a plan view of the final model classification.

FIGURE 14-20 VALIDATION OF CLASSIFICATION (SPB AND SPP)

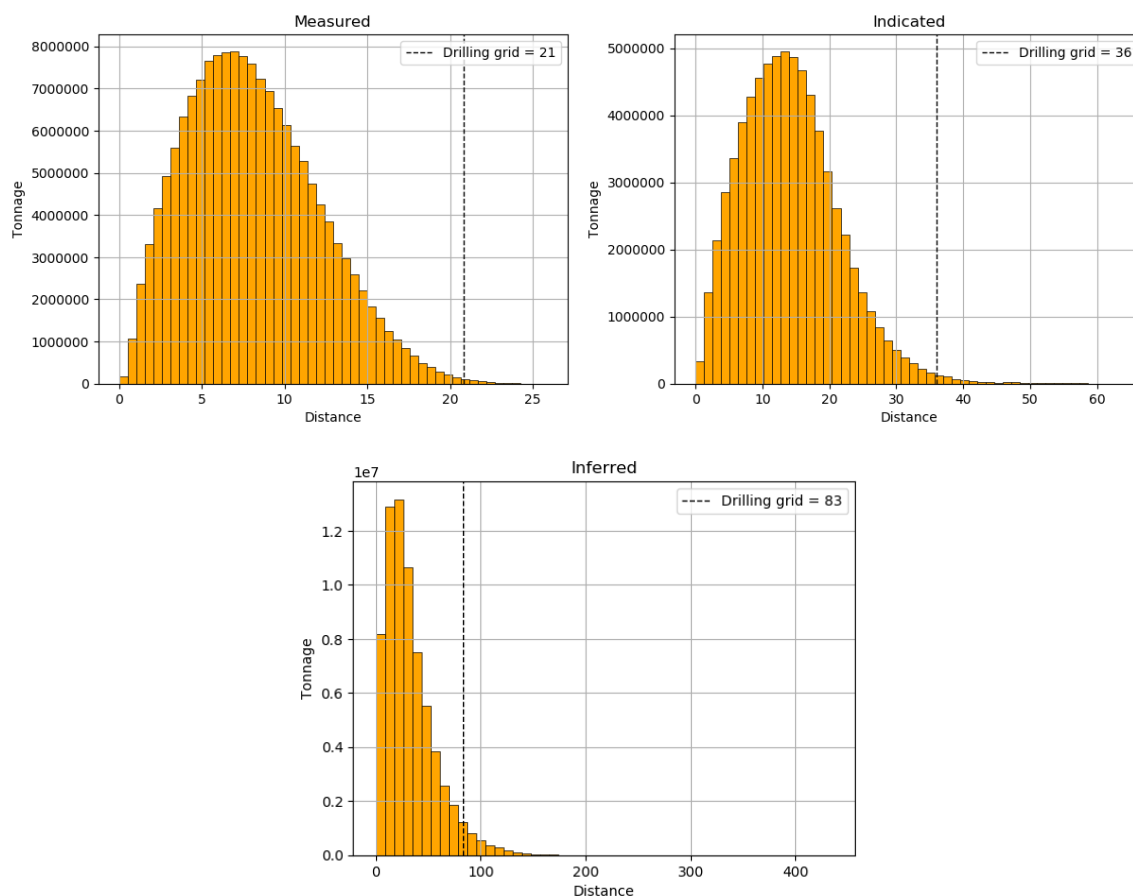
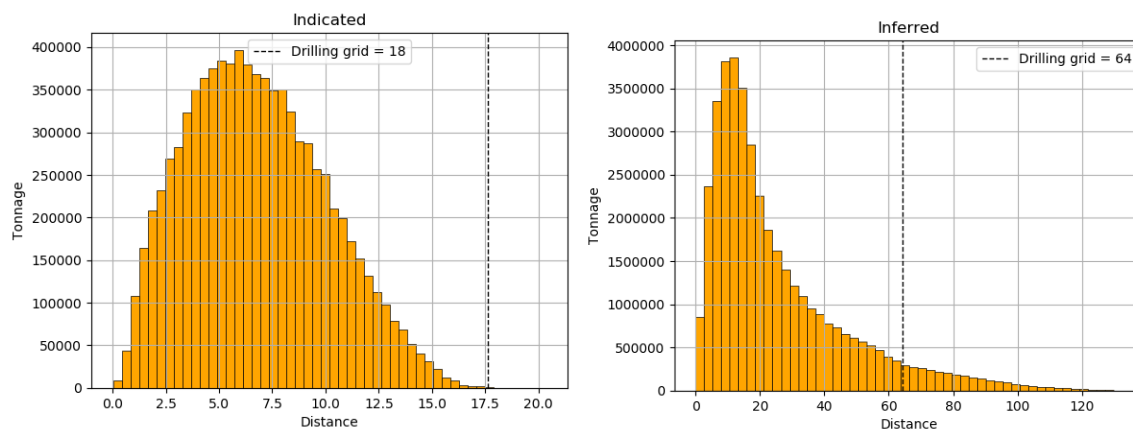
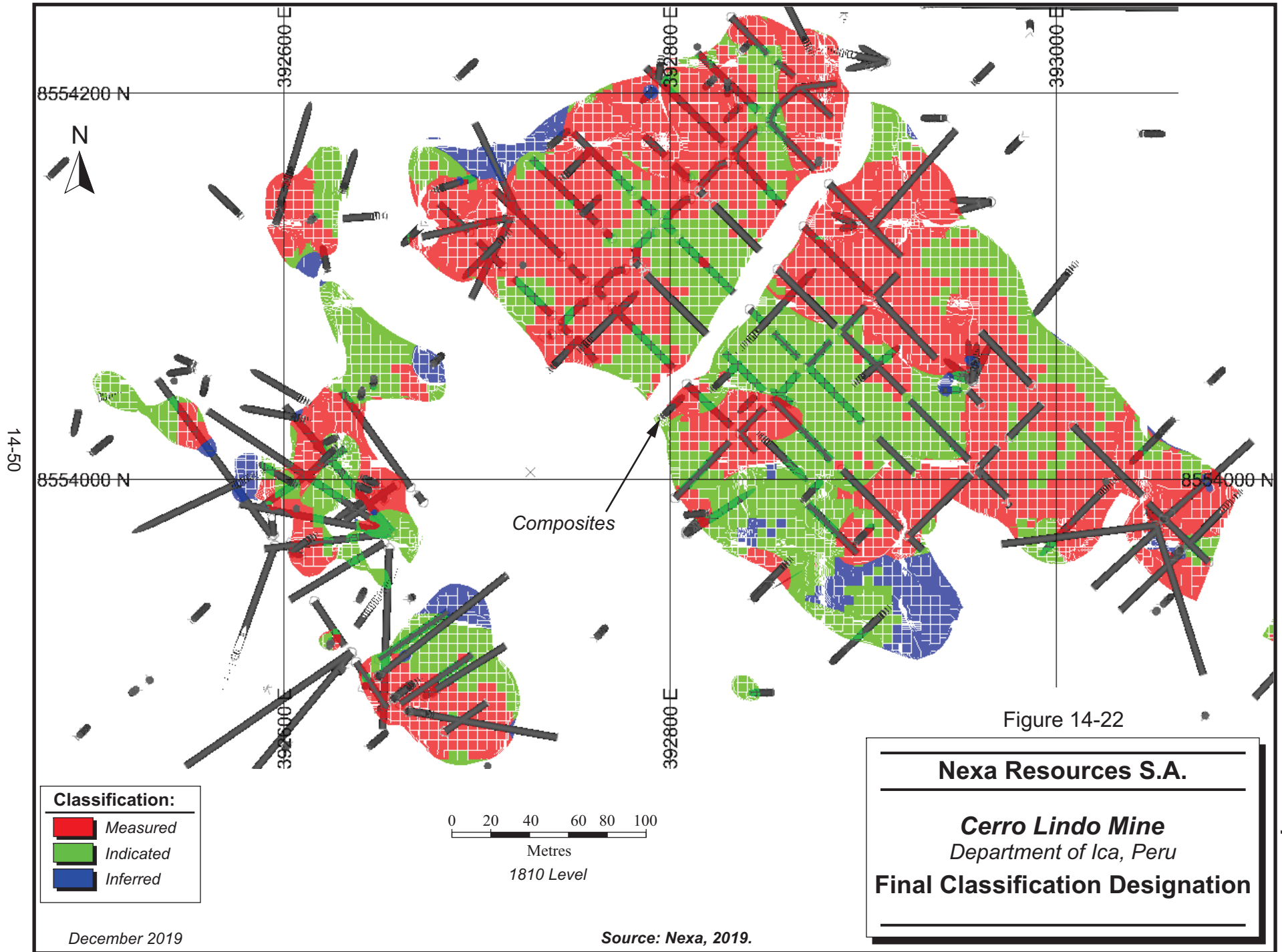


FIGURE 14-21 VALIDATION OF CLASSIFICATION (SSM)





RPA is of the opinion that the definitions for resource categories used in this report are consistent with those defined by CIM (2014) and incorporated by reference in NI 43-101.

BLOCK MODEL VALIDATION

Nexa and RPA carried out a number of block model validation procedures including:

- Comparison between OK, nearest neighbour (NN), and composite mean grades (Table 14-21).
- Swath plots (Figure 14-23 and 14-24).
- Visual inspection of composites versus block (Figure 14-25 and 14-26).
- Reconciliation with the plant (Figure 14-27).

Nexa compared the OK grade estimates with NN and composite mean grades. Overall, the differences were below 5% for the comparison between the OK and NN grades. Swath plots showed adherence of the grades locally, without significant bias.

The visual inspection of composite and block grades revealed that the spatial grade correlation is good for zinc and copper and reasonable for lead and silver

Swath plots (Figure 14-23 and 14-24) show acceptable agreement of composite, NN, and OK for zinc and copper block grades.

The resource model reconciles well with the plant. For 2017, the plant produced 103% of the total resource model tonnage, 100% of the zinc grade, and 105% of the copper grade. For 2018, the plant produced 94% of the total resource model tonnage, 97% of the zinc grade, and 108% of the copper grade.

RPA's validation results suggest that the grade estimates for zinc, copper, lead, and silver are reasonable, and that the block model is suitable to support Mineral Resource and Mineral Reserve estimation.

TABLE 14-21 COMPARISON BETWEEN ESTIMATES (OK/ID³), NN AND COMPOSITE MEANS

| DOMAIN | Grade | Composites | | | | OK/ID ² Estimates | | NN Estimates | | Difference of Relative Means | |
|--------|----------|-------------|-------|------|------------|------------------------------|------|--------------|------|------------------------------|---------------------------|
| | | No. Samples | Mean | CV | No. Blocks | Mean | CV | Mean | CV | OK/ID ² vs. Comp | OK/ID ² vs. NN |
| | | | | | | | | | | | |
| SPB | Zn (%) | 21,571 | 4.88 | 0.85 | 2,349,343 | 4.67 | 0.63 | 4.80 | 0.85 | -4% | -3% |
| | Pb (%) | 21,571 | 0.57 | 1.48 | 2,349,343 | 0.56 | 0.87 | 0.57 | 1.46 | -2% | -2% |
| | Cu (%) | 21,571 | 0.52 | 1.19 | 2,349,343 | 0.54 | 0.62 | 0.54 | 1.17 | 3% | 0% |
| | Ag (ppm) | 21,571 | 29.47 | 1.16 | 2,349,343 | 29.82 | 0.74 | 30.33 | 1.16 | 1% | -2% |
| | Fe_cap | 21,571 | 19.71 | 0.63 | 2,349,343 | 18.83 | 0.47 | 18.58 | 0.69 | -5% | 1% |
| SPP LG | Zn (%) | 9,454 | 0.48 | 3.09 | 2,656,454 | 0.23 | 2.36 | 0.24 | 3.15 | -108% | -4% |
| | Pb (%) | 9,454 | 0.05 | 2.43 | 2,656,454 | 0.03 | 1.65 | 0.03 | 2.89 | -59% | 4% |
| | Cu (%) | 9,454 | 0.10 | 0.72 | 2,656,454 | 0.10 | 0.35 | 0.10 | 0.69 | 5% | 2% |
| | Ag (ppm) | 9,454 | 6.96 | 1.36 | 2,656,454 | 5.73 | 0.70 | 5.57 | 1.42 | -21% | 3% |
| | Fe_cap | 9,454 | 35.05 | 0.38 | 2,656,454 | 36.52 | 0.23 | 36.69 | 0.35 | 4% | 0% |
| SPP HG | Zn (%) | 25,141 | 0.83 | 1.94 | 4,623,583 | 0.62 | 1.36 | 0.65 | 2.01 | -33% | -5% |
| | Pb (%) | 25,141 | 0.08 | 2.78 | 4,623,583 | 0.07 | 1.62 | 0.07 | 2.93 | -6% | -1% |
| | Cu (%) | 25,141 | 0.94 | 0.82 | 4,623,583 | 0.87 | 0.49 | 0.87 | 0.88 | -7% | 0% |
| | Ag (ppm) | 25,141 | 21.71 | 0.95 | 4,623,583 | 20.41 | 0.52 | 20.40 | 0.99 | -6% | 0% |
| | Fe_cap | 25,141 | 34.21 | 0.42 | 4,623,583 | 33.36 | 0.30 | 33.11 | 0.47 | -3% | 1% |
| SSM LG | Zn (%) | 4,795 | 0.10 | 1.71 | 2,090,455 | 0.06 | 1.42 | 0.05 | 2.19 | -68% | 6% |
| | Pb (%) | 4,795 | 0.06 | 1.63 | 2,090,455 | 0.03 | 1.38 | 0.03 | 2.43 | -92% | 6% |
| | Cu (%) | 4,795 | 0.08 | 0.85 | 2,090,455 | 0.08 | 0.50 | 0.07 | 0.97 | 1% | 13% |
| | Ag (ppm) | 4,795 | 7.63 | 1.20 | 2,090,455 | 4.57 | 0.97 | 4.43 | 1.62 | -67% | 3% |
| | Fe_cap | 4,795 | 21.57 | 0.46 | 2,090,455 | 21.18 | 0.28 | 20.94 | 0.48 | -2% | 1% |
| SSM HG | Zn (%) | 6,276 | 1.46 | 1.46 | 2,242,077 | 0.86 | 1.23 | 0.91 | 1.69 | -70% | -6% |
| | Pb (%) | 6,276 | 0.35 | 1.73 | 2,242,077 | 0.32 | 1.02 | 0.34 | 2.00 | -9% | -6% |
| | Cu (%) | 6,276 | 0.49 | 1.07 | 2,242,077 | 0.46 | 0.50 | 0.47 | 0.90 | -7% | -2% |
| | Ag (ppm) | 6,276 | 36.30 | 1.15 | 2,242,077 | 33.17 | 0.71 | 34.20 | 1.28 | -9% | -3% |
| | Fe_cap | 6,276 | 17.82 | 0.56 | 2,242,077 | 17.52 | 0.42 | 17.52 | 0.62 | -2% | 0% |
| VM | Zn (%) | 2,487 | 1.12 | 1.27 | 391,373 | 1.00 | 1.09 | 0.99 | 1.40 | -12% | 1% |
| | Pb (%) | 2,487 | 0.41 | 1.60 | 391,373 | 0.32 | 1.50 | 0.31 | 2.12 | -28% | 2% |
| | Cu (%) | 2,487 | 0.42 | 1.22 | 391,373 | 0.35 | 0.96 | 0.35 | 1.25 | -20% | 0% |
| | Ag (ppm) | 2,487 | 42.60 | 1.29 | 391,373 | 32.86 | 1.15 | 32.64 | 1.53 | -30% | 1% |
| | Fe_cap | 2,487 | 11.30 | 0.68 | 391,373 | 11.38 | 0.58 | 11.37 | 0.71 | 1% | 0% |
| SOP | Zn (%) | 450 | 0.28 | 1.65 | 60,042 | 0.27 | 1.18 | 0.28 | 1.69 | -2% | -1% |
| | Pb (%) | 450 | 0.06 | 2.24 | 60,042 | 0.05 | 1.57 | 0.05 | 2.22 | -23% | -6% |
| | Cu (%) | 450 | 0.60 | 1.51 | 60,042 | 0.57 | 1.15 | 0.53 | 1.54 | -5% | 8% |
| | Ag (ppm) | 450 | 12.68 | 1.32 | 60,042 | 12.64 | 0.86 | 13.08 | 1.24 | 0% | -4% |
| | Fe_cap | 450 | 28.96 | 0.64 | 60,042 | 30.77 | 0.47 | 30.37 | 0.57 | 6% | 1% |
| SOB | Zn (%) | 254 | 0.57 | 0.97 | 52,241 | 0.48 | 0.81 | 0.44 | 1.21 | -19% | 9% |
| | Pb (%) | 254 | 0.12 | 1.58 | 52,241 | 0.13 | 1.00 | 0.13 | 1.52 | 7% | -4% |
| | Cu (%) | 254 | 1.41 | 0.91 | 52,241 | 1.41 | 0.58 | 1.26 | 0.97 | 0% | 10% |
| | Ag (ppm) | 254 | 22.26 | 0.80 | 52,241 | 22.30 | 0.48 | 21.58 | 0.84 | 0% | 3% |
| | Fe_cap | 254 | 22.56 | 0.52 | 52,241 | 22.02 | 0.36 | 22.65 | 0.51 | -2% | -3% |
| SLB | Zn (%) | 216 | 0.51 | 2.12 | 68,796 | 0.28 | 1.80 | 0.22 | 2.96 | -82% | 24% |
| | Pb (%) | 216 | 0.50 | 1.66 | 68,796 | 0.40 | 1.45 | 0.40 | 1.90 | -26% | 0% |
| | Cu (%) | 216 | 0.24 | 2.23 | 68,796 | 0.13 | 1.86 | 0.08 | 3.35 | -86% | 34% |

| DOMAIN | Grade | Composites | | | No. Blocks | OK/ID ² Estimates | | NN Estimates | | Difference of Relative Means | |
|--------|----------|----------------|-------|------|---------------|---------------------------------|------|-----------------|------|---------------------------------|------------------------------|
| | | No. Samples | Mean | CV | | Mean | CV | Mean | CV | OK/ID ² vs. Comp | OK/ID ² vs. NN |
| SSL | Ag (ppm) | 216 | 28.82 | 1.41 | 68,796 | 25.88 | 1.22 | 26.74 | 1.53 | -11% | -3% |
| | Fe_cap | 216 | 3.75 | 2.22 | 68,796 | 3.08 | 1.89 | 2.08 | 3.23 | -22% | 33% |
| | Zn (%) | 6 | 1.33 | 1.04 | 1,762 | 1.64 | 0.71 | 2.16 | 0.85 | 19% | -31% |
| | Pb (%) | 6 | 0.51 | 0.82 | 1,762 | 0.44 | 0.63 | 0.48 | 0.68 | -15% | -9% |
| | Cu (%) | 6 | 0.47 | 1.16 | 1,762 | 0.21 | 0.65 | 0.20 | 0.70 | -122% | 5% |
| | Ag (ppm) | 6 | 44.79 | 0.55 | 1,762 | 35.93 | 0.50 | 35.74 | 0.50 | -25% | 1% |
| | Fe_cap | 6 | 15.40 | 0.28 | 1,762 | 15.27 | 0.19 | 16.50 | 0.20 | -1% | -8% |

FIGURE 14-23 SWATH PLOT: CU GRADE VARIATION ALONG X, Y, AND Z

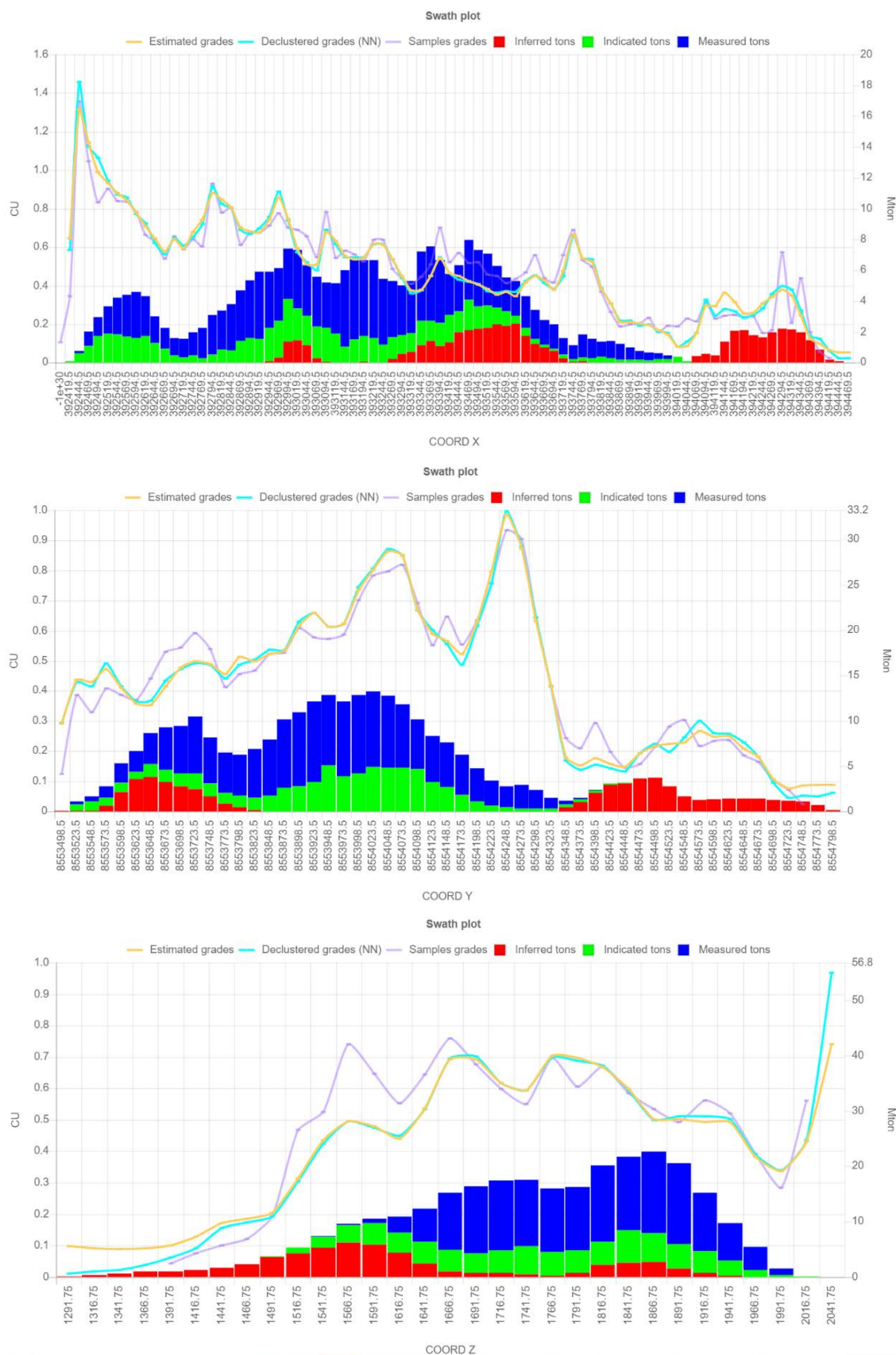
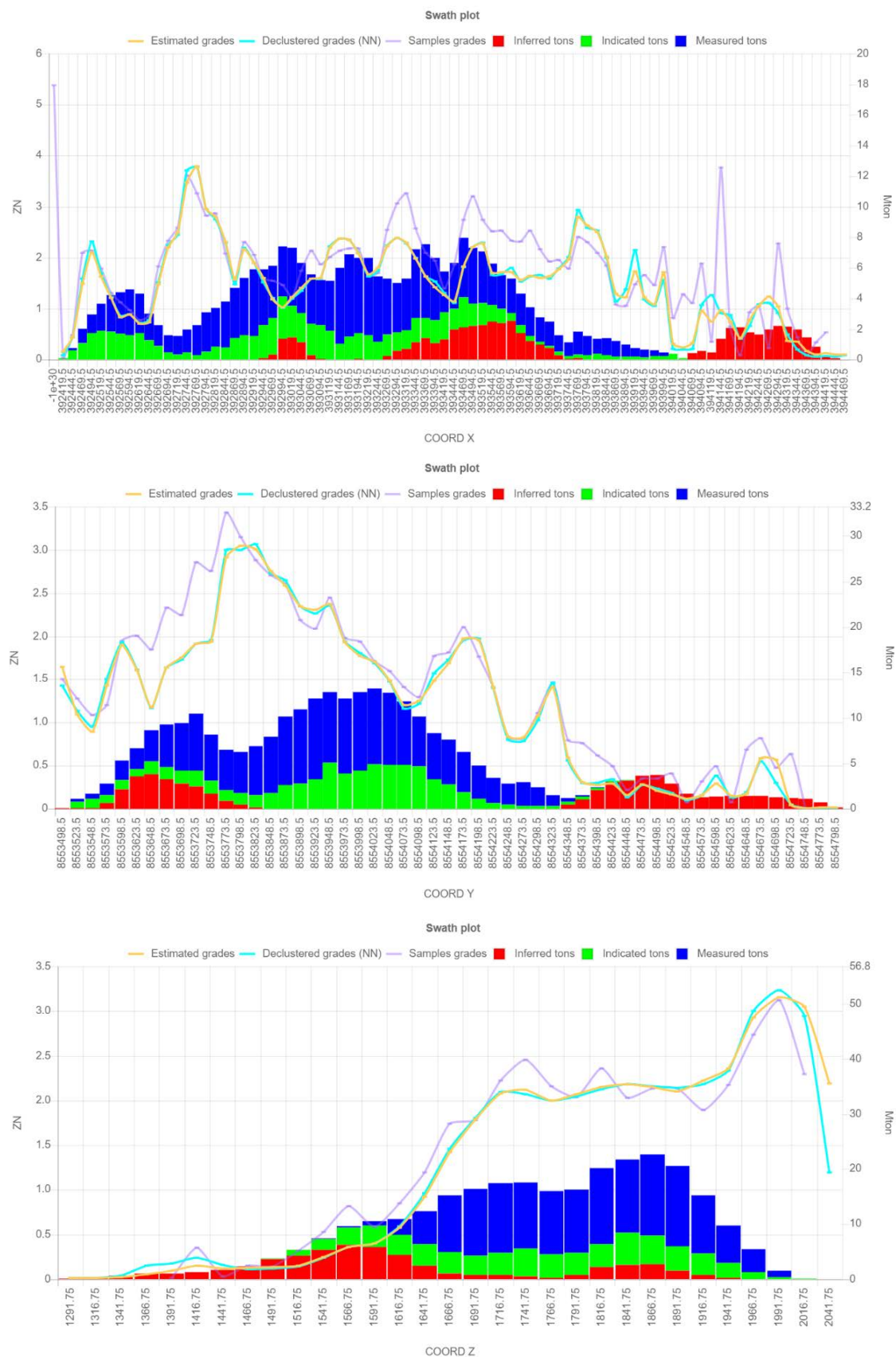
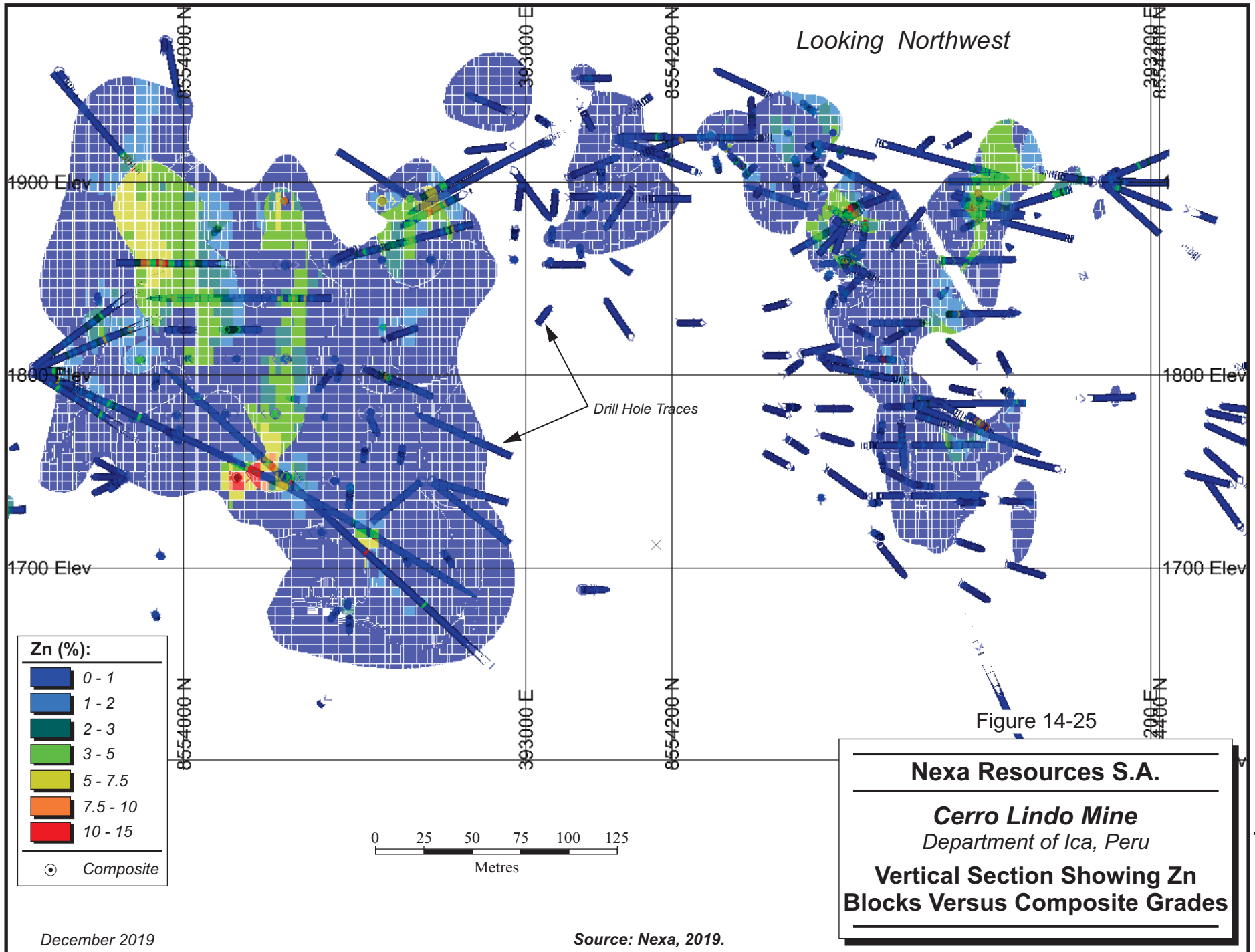


FIGURE 14-24 SWATH PLOT: ZN GRADE VARIATION ALONG X, Y, AND Z





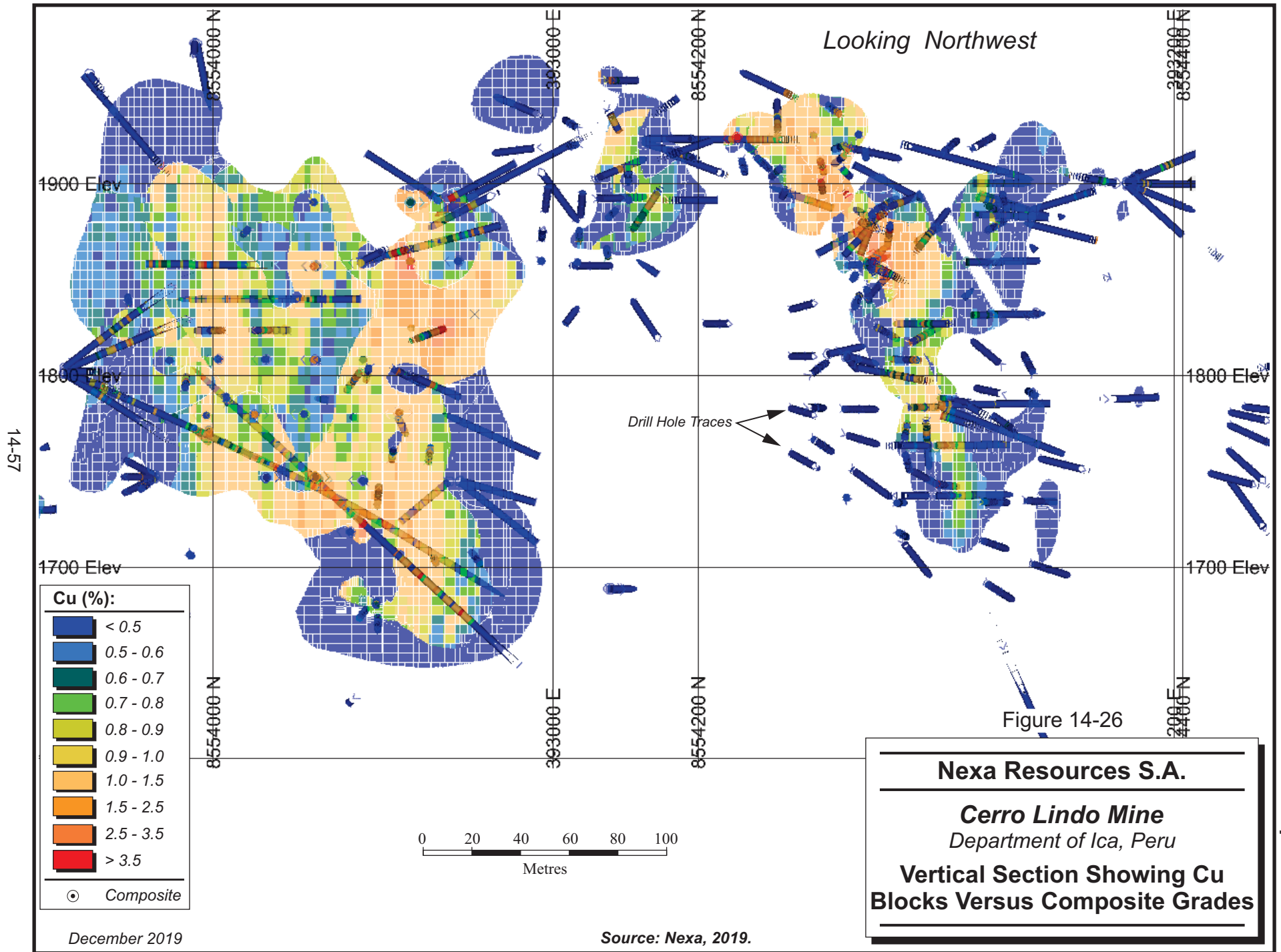
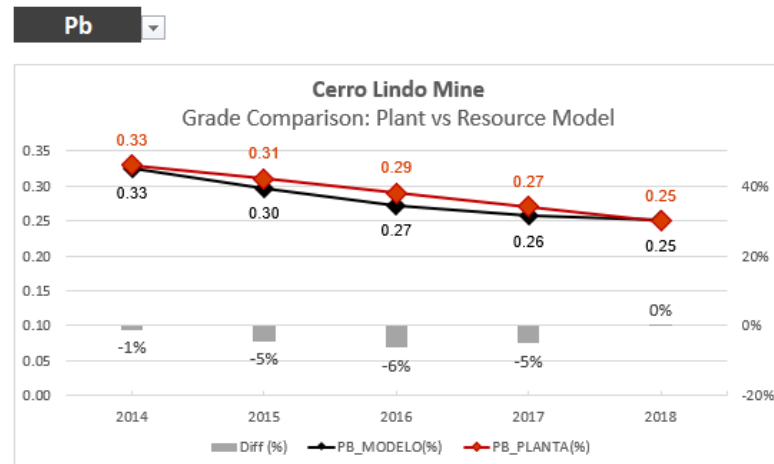
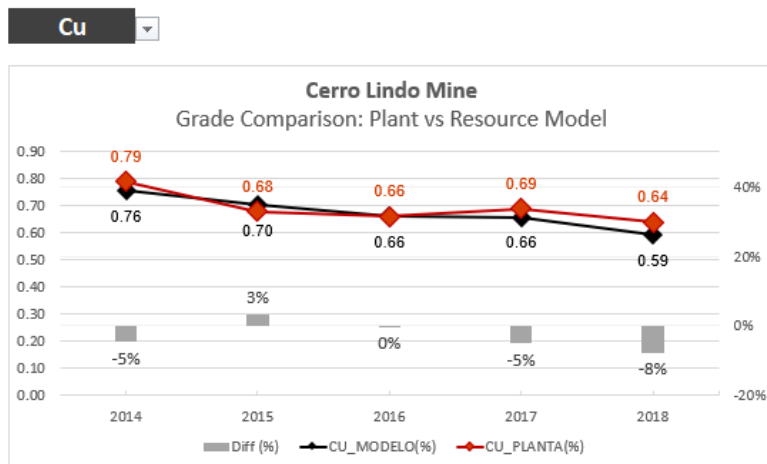
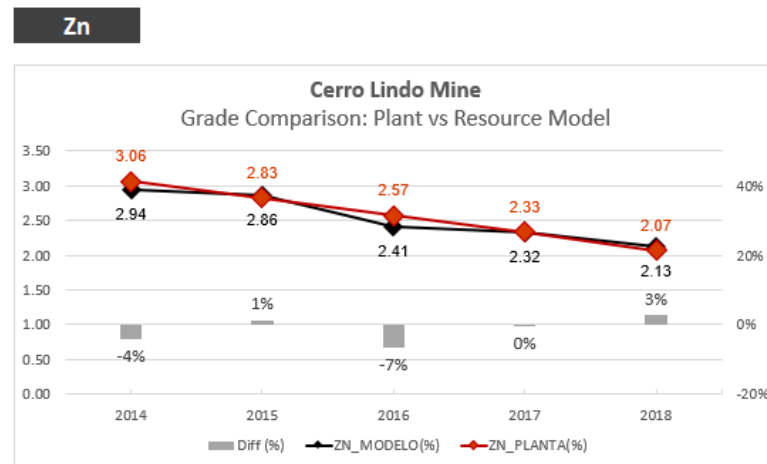
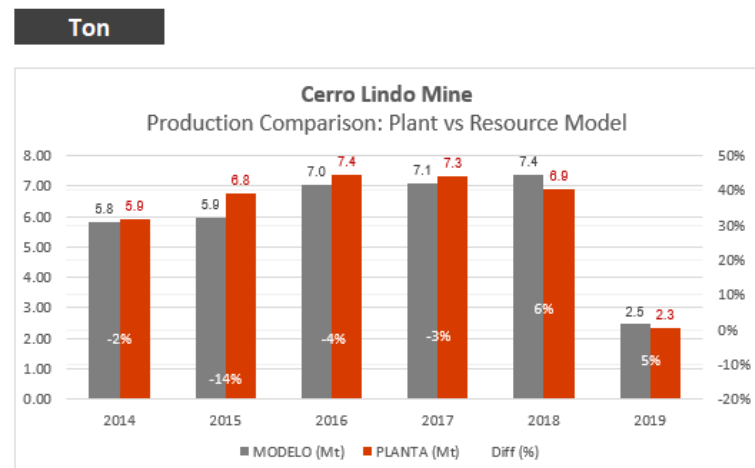


FIGURE 14-27 PLANT VERSUS RESOURCE MODEL RECONCILIATION



MINERAL RESOURCE REPORTING

The Mineral Resources for the Cerro Lindo underground operation as of July 31, 2019, are summarized in Table 14-1. The Mineral Resources are exclusive of Mineral Reserves and are reported at an NSR cut-off value of US\$32.91/t on a block basis using resource shapes for continuity purposes. This is in compliance with the CIM (2014) resource definition requirement of “reasonable prospects for eventual economic extraction”.

For the Cerro Lindo underground, wireframe models of the completed underground excavations as of July 31, 2019 were prepared to remove the portions of the mineralized zones that had been mined out before the resource and reserve stopes were generated. The sub-blocking functions of the Deswik software package were employed to maximize the accuracy of the mined-out contacts. For the underground excavations, solid models of the stopes, mine development, and drifts were constructed digitally from data collected using an Optech cavity monitoring system and a total station surveying units.

RPA observed some internal overlaps of reserve stopes with resource shapes, however, priority rules for flagging solids was applied to avoid double counting. RPA also noticed that there was minor overlapping of the resource and reserve shapes with the mined-out ones and “no possible areas” that could be considered to be resource and reserve (due to poor ground conditions or inaccessibility), however, the overlapping volume is less than 1%. RPA recommends performing boolean operations and removing the intersected volumes between solids and flag the “no possible areas” to the model to enable volume comparison of solids versus blocks.

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

COMPARISON TO PREVIOUS MINERAL RESOURCE ESTIMATES

A comparison of the current Nexa estimate, exclusive of Mineral Reserves, to the previous 2018 Mineral Resource estimate is presented in Table 14-22. The reasons for the changes are primarily due to the following:

-
- Higher NSR cut-off values
 - Depletion of material through mining
 - Extension of the mineralization domains (SPP, SPB, SSM, and VM) through infill and exploration diamond drilling; particularly, SSM as part of the background rock
 - New resource shapes reporting methodology that includes all the blocks over an NSR cut-off value of US\$32.91/t in each resource shape
 - New “no possible areas” that are excluded from the Mineral Reserves and Mineral Resources, due to poor ground conditions and inaccessibility.
 - Slightly lower density values in the wallrock
 - Inclusion of the dike model that contains lower density values
 - New classification criteria for SSM

TABLE 14-22 CERRO LINDO UNDERGROUND COMPARISON OF 2018 VERSUS 2019 MINERAL RESOURCES
Nexa Resources S.A. – Cerro Lindo Mine

| Category | Cerro Lindo Mineral Resources - July 31, 2019 | | | | | | | | | Cerro Lindo Mineral Resources - December 31, 2018 | | | | | | | | |
|----------------------|---|-------------|-------------|---------------|-----------------|-----------------|-----------------|-------------------|--------------------|---|-------------|-------------|---------------|-----------------|-----------------|-----------------|-------------------|--------------------|
| | Tonnage (Mt) | Zinc (%) | Lead (%) | Copper (%) | Silver (g/t) | Zinc (000 t) | Lead (000 t) | Copper (000 t) | Silver (000 oz) | Tonnage (Mt) | Zinc (%) | Lead (%) | Copper (%) | Silver (g/t) | Zinc (000 t) | Lead (000 t) | Copper (000 t) | Silver (000 oz) |
| Measured | 3.10 | 2.58 | 0.33 | 0.69 | 27.87 | 79.8 | 10.2 | 21.4 | 2,776 | 1.69 | 2.14 | 0.29 | 0.75 | 28.10 | 36.2 | 4.9 | 12.7 | 1,527 |
| Indicated | 2.27 | 1.64 | 0.28 | 0.68 | 29.66 | 37.4 | 6.3 | 15.4 | 2,167 | 2.06 | 1.48 | 0.20 | 0.61 | 23.70 | 30.5 | 4.1 | 12.6 | 1,570 |
| Total M&I | 5.37 | 2.18 | 0.31 | 0.68 | 28.63 | 117.2 | 16.5 | 36.8 | 4,943 | 3.75 | 1.78 | 0.24 | 0.67 | 25.70 | 66.7 | 9.0 | 25.2 | 3,096 |
| Inferred | 5.14 | 2.43 | 0.53 | 0.53 | 43.12 | 125.1 | 27.1 | 27.1 | 7,123 | 9.33 | 1.65 | 0.23 | 0.60 | 23.40 | 153.9 | 21.5 | 56.0 | 7,019 |

15 MINERAL RESERVE ESTIMATE

Cerro Lindo operates at a rate of 7.3 Mtpa, producing zinc, lead, and copper concentrates with silver content. Mining methods include sub-level stoping (SLS) for the majority of the Mineral Reserves, and some sill pillar recovery using cut-and-fill (CAF) methods. Mineral Reserves, estimated as of July 31, 2019, are summarized in Table 15-1 and are supported by a LOM plan with a current mine life of eight years.

TABLE 15-1 MINERAL RESERVES – JULY 31, 2019
Nexa Resources S.A. – Cerro Lindo Mine

| Category | Tonnage (Mt) | Grade | | | | Contained Metal | | | |
|--------------|-----------------|-------------|-------------|---------------|-----------------|-----------------|-----------------|-------------------|--------------------|
| | | Zinc (%) | Lead (%) | Copper (%) | Silver (g/t) | Zinc (000 t) | Lead (000 t) | Copper (000 t) | Silver (000 oz) |
| Proven | 22.71 | 1.54 | 0.19 | 0.63 | 19.05 | 350.5 | 42.4 | 143.1 | 13,914 |
| Probable | 27.41 | 1.05 | 0.14 | 0.67 | 18.77 | 288.2 | 38.6 | 182.7 | 16,535 |
| Total | 50.12 | 1.27 | 0.16 | 0.65 | 18.90 | 638.7 | 81.0 | 325.8 | 30,449 |

Notes:

1. CIM (2014) definitions were followed for Mineral Reserves.
2. Mineral Reserves are reported on a 100% ownership basis.
3. Mineral Reserves are estimated at NSR cut-off values of US\$32.91/t processed and US\$40.00/t processed for SLS and CAF respectively. A number of incremental stopes (down to US\$28/t NSR value) are included in the estimate.
4. Mineral Reserves are estimated using average long term metal prices of Zn: US\$2,521/t (US\$1.14/lb); Pb: US\$2,004/t (US\$0.91/lb); Cu: US\$6,402/t (US\$2.90/lb); Ag: US\$16.79/oz.
5. A minimum mining width of 5.0 m was used for both CAF and SLS stopes and 4.0 m for pillar recovery CAF stopes.
6. Bulk density varies depending on mineralization domain.
7. Numbers may not add due to rounding.

RPA is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

DILUTION AND EXTRACTION

Dilution and extraction are based on analysis of 2018 stope operating results, considered separately for primary, secondary, and tertiary stopes. One set of factors is based on results from stopes mined with the standard layout – one perpendicular drill drift (for the slot) in each stope. The second set is for a new layout that has seen some success in the mine – two perpendicular drill drifts per stope. Factors are summarized in Table 15-2.

TABLE 15-2 DILUTION AND EXTRACTION FACTORS
Nexa Resources S.A. – Cerro Lindo Mine

| | Primary | Secondary | Tertiary |
|------------------------|----------------|------------------|-----------------|
| Standard Layout | | | |
| Dilution | 5.7% | 8.1% | 17% |
| Extraction | 86.4% | 76.1% | 78% |
| New Layout | | | |
| Dilution | 1.1% | 6.5% | |
| Extraction | 84.7% | 81.3% | |

Dilution is assumed to be zero grade.

Extraction may appear low, however, in addition to accounting for underbreak and mucking losses, it also incorporates short-term design changes. The stope shapes used for reserve estimation are on a regular grid, so the extraction factor includes allowances for skin pillars to maintain the integrity of adjacent backfill.

The new layout involves slightly higher costs (due to extra development), however, the improvements in dilution reduction and increased extraction for secondary stopes appear to be worthwhile.

RPA notes that, going forward, a greater proportion of the stopes will be on the edges of the orebodies, where past results may be less indicative of future performance. Dilution from adjacent disseminated mineralization is likely to carry low grades, and edge stope results will not necessarily match up with those of more centrally-located stopes.

RPA recommends that Nexa continue to collect and analyze the stope performance data, and consider further segregation of the stope dataset, to assess differences in performance for edge stopes.

Sill pillar recovery via cut and fill mining is included in Mineral Reserves, with factors of 10% dilution and 90% extraction applied to planned mining areas. These areas exclude portions of the sill pillars deemed unrecoverable.

CUT-OFF VALUE

An NSR cut-off value was determined using the Mineral Reserve metal prices, metal recoveries, transport, treatment, and refining costs, as well as mine operating cost. Metal prices used for Mineral Reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources.

The cut-off value used for the Reserve is based on an NSR value, in units of US\$/t, which can be directly compared to operating unit costs. The NSR formula is:

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

Cut-off costs and NSR parameters are summarized in Table 15-3. The break even NSR cut-off value is \$32.91/t processed. An incremental cut-off value of \$28.1/t was used for certain stopes in the middle of the extraction sequence. For CAF sill pillar recovery, a cut-off value of US\$40.00/t was used.

TABLE 15-3 NSR DATA
Nexa Resources S.A. – Cerro Lindo Mine

| Item | Units | Value |
|------------------------|-------------|-------|
| Metallurgical Recovery | | |
| Zn | % | 91.0 |
| Pb | % | 74.2 |
| Cu | % | 86.7 |
| Ag | % | 71.2 |
| Zn Concentrate Payable | % | 85.0 |
| Pb Concentrate Payable | % | 95.0 |
| Cu Concentrate Payable | % | 97.0 |
| Metal Prices | | |
| Zn | US\$/lb | 1.14 |
| Pb | US\$/lb | 0.91 |
| Cu | US\$/lb | 2.90 |
| Ag | US\$/oz | 16.79 |
| Transport Charges | | |
| Zn Concentrate | US\$/t conc | 31 |
| Pb Concentrate | US\$/t conc | 30 |
| Cu Concentrate | US\$/t conc | 32 |
| Treatment Charges | | |
| Zn Concentrate | US\$/t conc | 293 |
| Pb Concentrate | US\$/t conc | 122 |
| Cu Concentrate | US\$/t conc | 86 |
| Refining Charges | | |
| Cu in Cu conc | US\$/lb | 0.02 |

| Item | Units | Value |
|-----------------------|--------------------|--------------|
| Ag in Cu conc | US\$/oz | 0.70 |
| Ag in Pb conc | US\$/oz | 1.00 |
| Operating Costs | | |
| Mining | US\$/t proc | 18.48 |
| Process + Maintenance | US\$/t proc | 12.62 |
| G&A | US\$/t proc | 1.81 |
| Total | US\$/t proc | 32.91 |

Metallurgical recoveries in Table 15-3 are averages, however, NSR calculations use a head grade-recovery relationship for each metal, based on recent operating performance. NSR factors are therefore variable by head grade, with average NSR factors summarized in Table 15-4.

TABLE 15-4 NSR FACTORS
Nexa Resources S.A. – Cerro Lindo Mine

| Item | Units | Value |
|------|--------|---------|
| Zn | US\$/% | \$17.75 |
| Pb | US\$/% | \$13.74 |
| Cu | US\$/% | \$48.92 |
| Ag | US\$/g | \$0.38 |

16 MINING METHODS

OVERVIEW

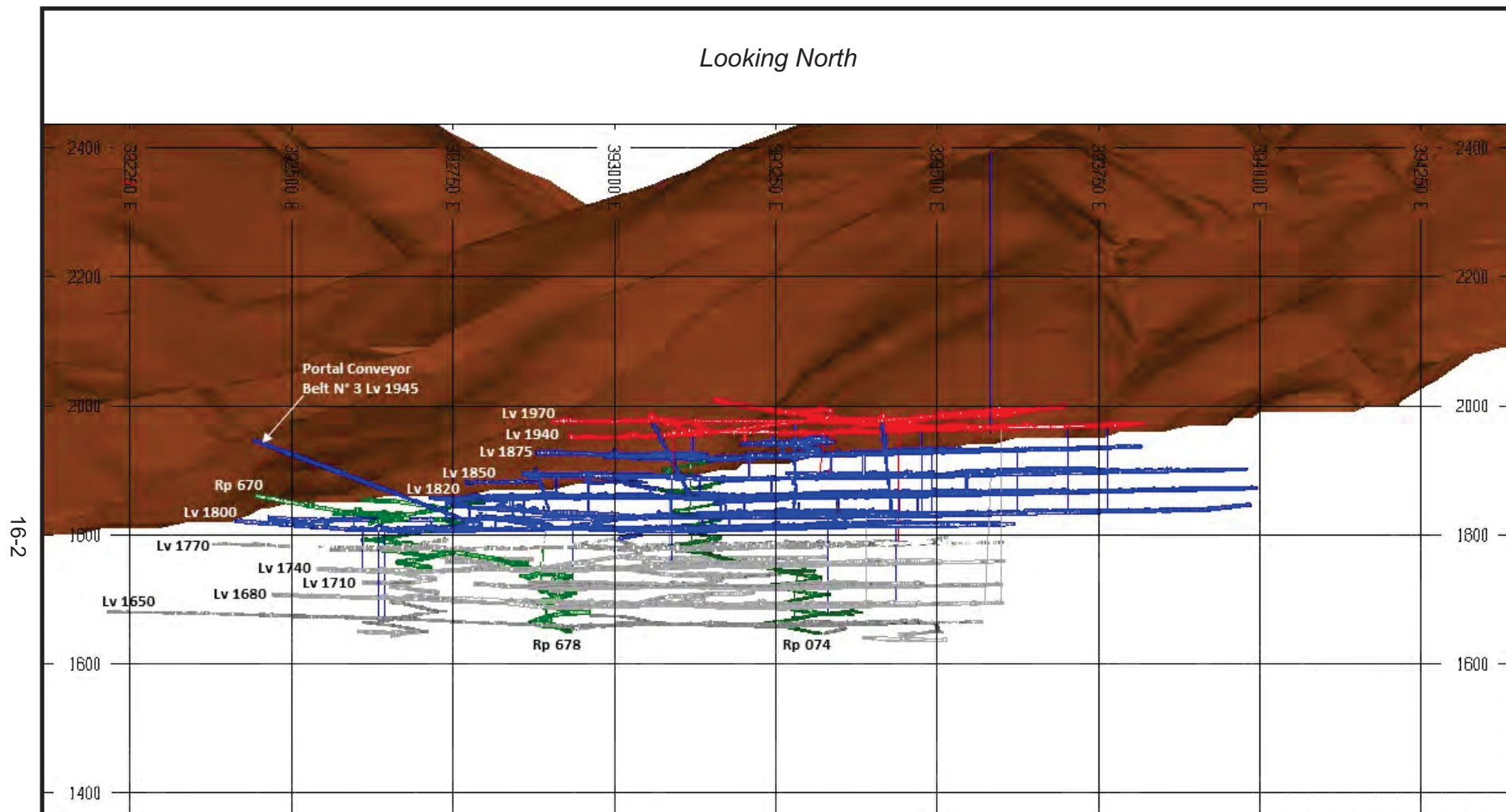
Cerro Lindo has been operating since July 2007, recently at rates exceeding 7 Mtpa. The mine is mechanized, using rubber-tired equipment for all development and production operations. Mining is carried out in nine separate orebodies, using large longhole stoping methods, in a primary/secondary/tertiary sequence. Stopes are backfilled with a low-cement content paste fill made from flotation tailings.

The highest operating level is the 1970 m level, the lowest operating level is the 1600 m level, and the ultimate bottom level is planned to be the 1520 m level.

A longitudinal section through the mine is presented as Figure 16-1.

Mine access is through 15 portals servicing adits, drifts, and declines. The majority of the ore is delivered to grizzlies on the 1830 m level which serve a crusher installed on the 1820 m level. Crushed ore is delivered to the surface stockpile via inclined conveyor through a portal at the 1940 m level. From the surface stockpile, ore is delivered to the concentrator via a system of inclined overland conveyors.

A simplified plan of the 1820 m level is shown in Figure 16-2. It shows development in ore, planned development for 2016, three portals, and the conveyor incline.

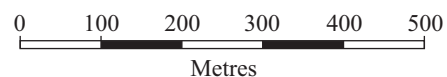


16-2

Figure 16-1

Legend:

- Development Fresh Air
- Development Exhaust Air
- Topography
- Ramps
- Development



Level 1820 M is shown in Figure 16-2

Nexa Resources S.A.

Cerro Lindo Mine
Department of Ica, Peru
Mine Longitudinal Section

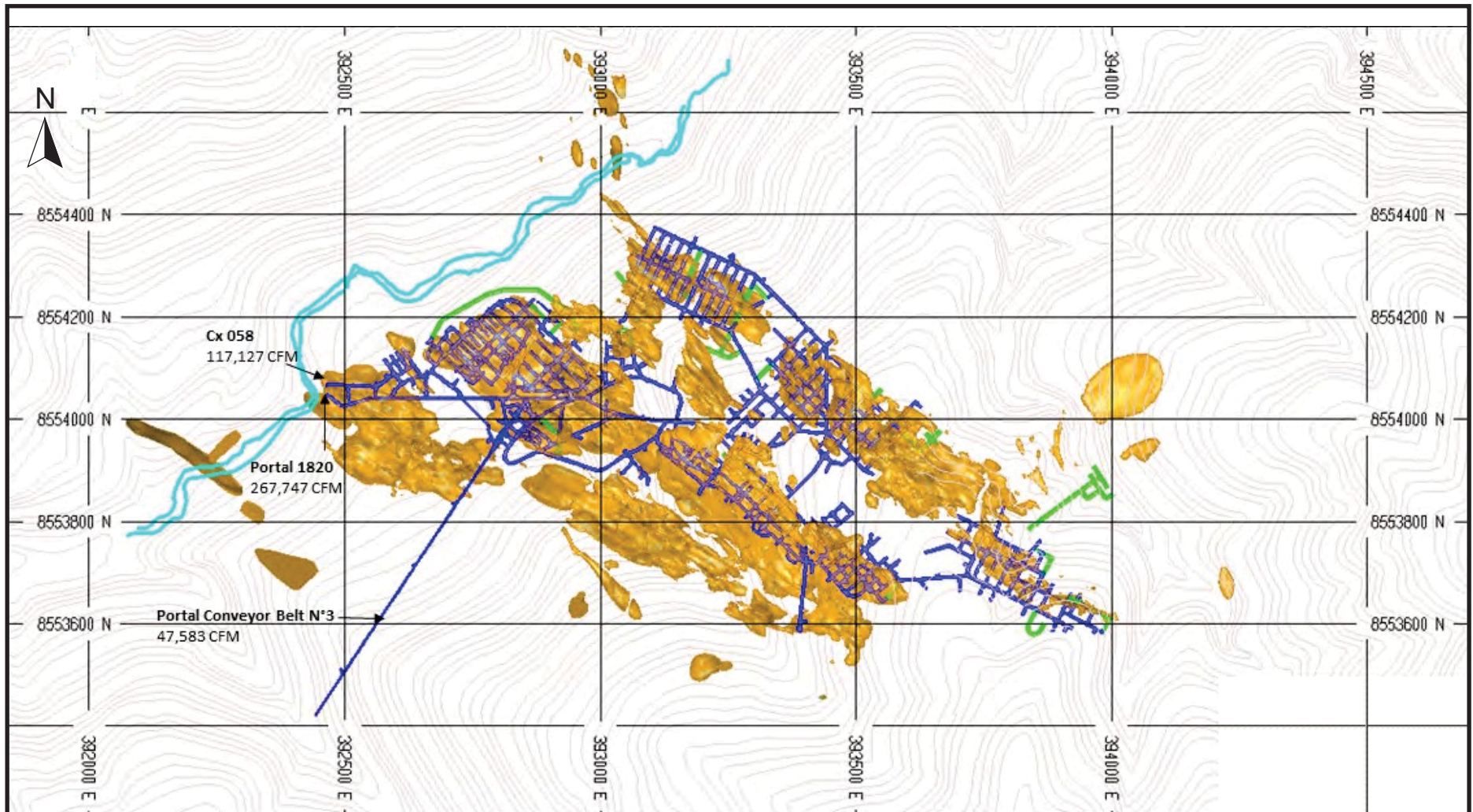


Figure 16-2

Legend:

- Development
- 2016 Project Development
- Mineralization
- Topography
- Topara River

Nexa Resources S.A.

Cerro Lindo Mine
 Department of Ica, Peru
Simplified Plan of 1820 M Level

December 2019

Source: Nexa, 2016.

GEOTECHNICAL CONSIDERATIONS

GEOTECHNICAL ASSESSMENTS

Independent geotechnical assessments were commissioned for the Cerro Lindo deposit, including by AMEC in 2014 and SRK in 2017.

SRK completed a geomechanical 3D modelling exercise and evaluation of the overall stability conditions within the mine. These assessments have recommended design standards for development and production stope openings, backfill strength requirements, maximum stope dimensions, and guidance for stope sequencing.

GEOTECHNICAL OVERVIEW

The main lithological units have been described and modelled with acceptable detail to support geotechnical characterization and hazard evaluation related to mining activities. As related to the mining method employed at the time of the assessment, rock mass conditions are well understood and appropriate for the current mining depths, the rock reinforcement types, and geotechnical input into the mine production and development.

The geotechnical mapping and data analysis protocols include industry-standard practices such as detailed descriptions of the various structural domains and their characteristics. This work is based on field mapping, geological modelling, and limited geotechnical core drilling.

Geotechnical characterization is a continuous proactive process as new mining areas are accessed.

Geotechnical numerical modelling requires verification through instrumentation and monitoring data. In 2016, SRK recommended that an external third party review be conducted on the current modelling practices as inconsistencies were noted in initial element loading, field stress types, extents of external boundaries, and meshing quality. These could significantly affect the outcome of the model. As a general recommendation, an effort should be made to construct three-dimensional models of the mine to properly account for the influence of out-of-plane stresses and strains.

There is an opportunity to collect additional geotechnical data from the drilling programs to improve geotechnical knowledge which will assist in improved stope designs and subsequent recovery factors and reduced dilution.

STOPE SIZING

Typical SLS stope dimensions depend on the ground conditions and are 30 m wide, and usually 25 m long. Stope dimensions may vary because of orebody geometry or local geotechnical conditions. In the lower levels of OB-1 and OB-2, the vertical level interval has been reduced to 20 m to manage changing geotechnical conditions with depth.

HYDROGEOLOGICAL CONSIDERATIONS

The Cerro Lindo Mine does not produce significant quantities of water and exploration drilling to date has not intersected any water-bearing structures that could introduce major inflows into the mine. The only pumping required is to remove drilling water from the workings. This water is collected, treated, and recycled for use in the operation.

The underground mine is a net consumer of water; it requires more water than the groundwater that flows in. Considering all groundwater and recirculated water, the mine requires approximately 864 m³/day of make-up water to meet its needs.

MINING METHODS

SUBLEVEL OPEN STOPING

The primary mining method used at Cerro Lindo is SLS with paste backfill.

The stopes are accessed on levels of 30 m vertical interval by production crosscuts that extend from a footwall lateral access through to the hanging wall. Stopes are 30 m wide, and usually 25 m long (across strike); stope dimensions may vary because of orebody geometry or local geotechnical conditions. After mining, the stopes are backfilled with cemented paste fill made from the tailings stream. The paste fill is allowed to cure before an adjacent stope is mined.

Stopes are mined in a primary–secondary sequence, progressing from hanging wall to footwall, and from bottom to top (Figure 16-3).

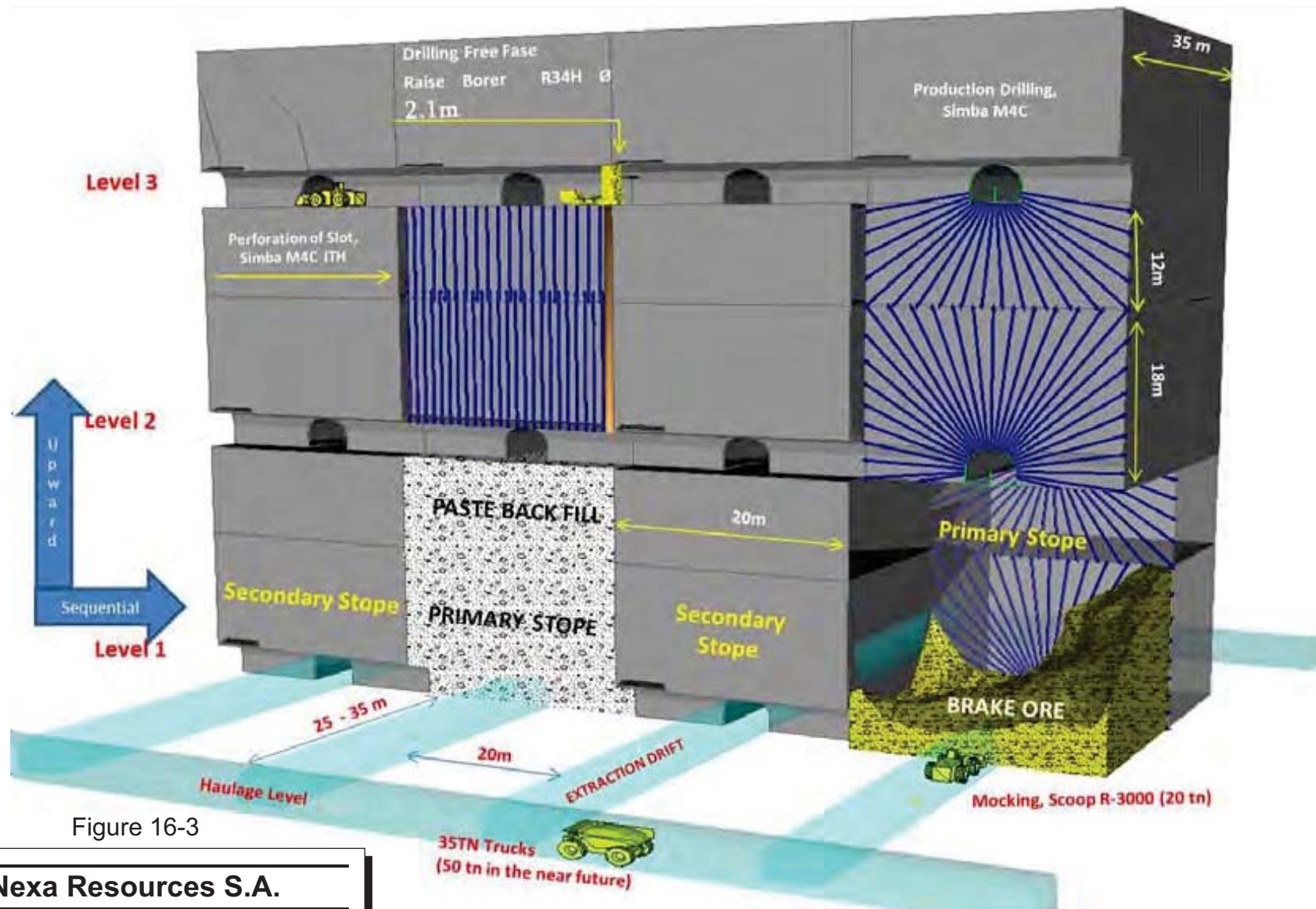


Figure 16-3

Nexa Resources S.A.
Cerro Lindo Mine
 Department of Ica, Peru
Typical Sub-Level Stopping
Primary/Secondary Mining
Sequence Schematic

Not to Scale

December 2019

Source: Nexa, 2017.

CUT-AND-FILL/DRIFT-AND-FILL

CAF mining methods will be used to extract sill pillars, remnants, and irregular shaped portions of the deposit. Although these methods have not previously been used at the Cerro Lindo Mine, they are commonly used in Peru, including at Nexa's Cerro de Pasco operations (Atacocha and El Porvenir). Paste fill will be the primary backfill method used, with waste fill used when appropriate.

Because of the geometry of the orebodies, sill pillars at Cerro Lindo typically have a large horizontal extent, with the vertical thickness usually limited to approximately 20 m. The sill pillars will be mined from bottom up, in horizontal slices 4 m thick. For geotechnical and safety reasons, the top slice that intersects the stopes above is not included in the mine plan or in Mineral Reserves.

Figure 16-4 shows a typical sill pillar extraction plan, where the existing development for the tops of the stopes below have been mined and filled. Mining on the horizon is by 4 m wide by 4 m high drifts that are backfilled as soon as the room is completed. After the backfill has reached sufficient strength, the adjacent room is mined and filled.

Because of the multiple accesses into the sill pillars, and the large available area, production planning has assumed that two mining faces, and two backfill rooms are available at all times. As each horizontal slice is completed, the next lift above will be extracted.

In RPA's opinion, the CAF method represents a slow and careful approach to sill pillar recovery. Risks to extraction include losses to the any voids at the bottom of the sill pillar, and areas that must be abandoned due to instability. Getting good-quality backfill tight to the backs of the drifts is key to this mining method – greater attention to these details is required here, compared to longhole stoping.

CAF mining will be less productive and higher cost. RPA recommends a trial of this method as soon as a sill pillar area is ready (i.e., stope mining in that portion of the orebody is complete), in order to confirm assumptions around design, production, and execution.

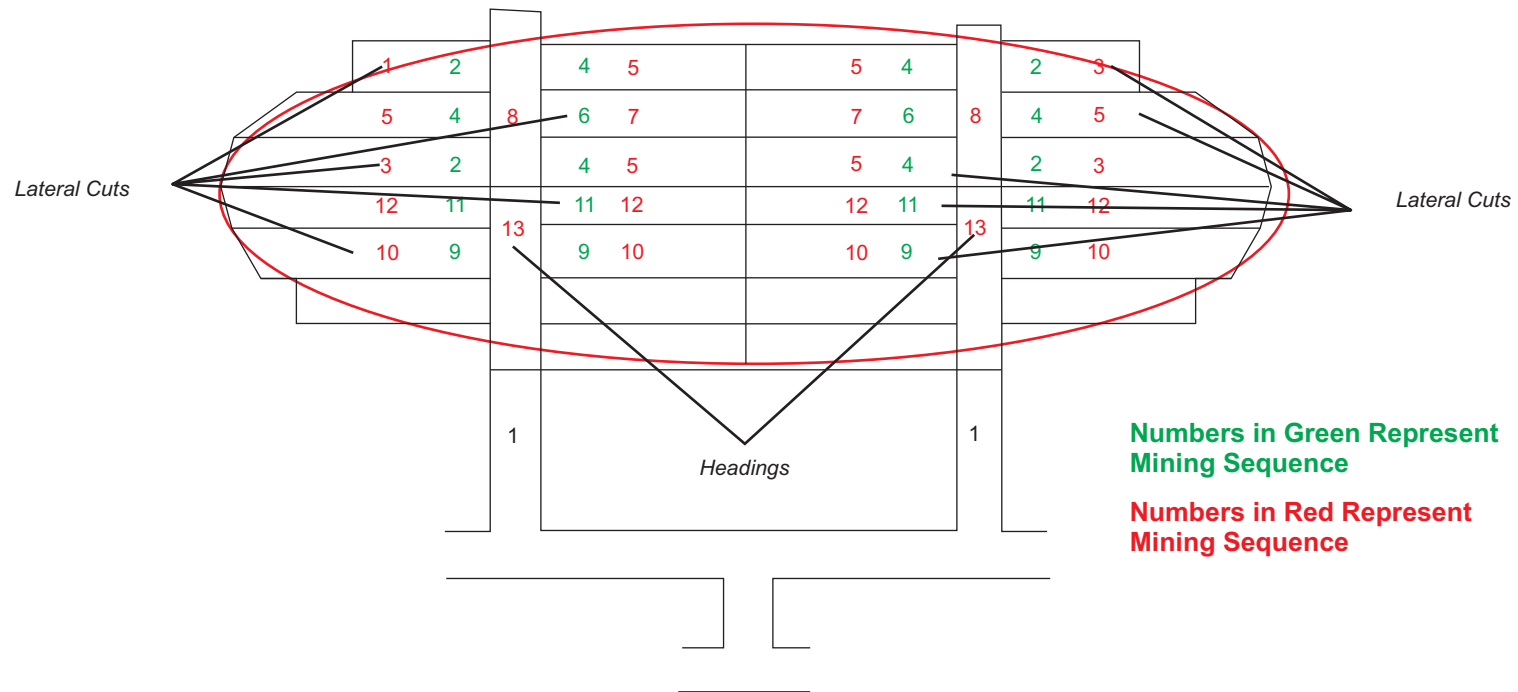


Figure 16-4

Nexa Resources S.A.

Cerro Lindo Mine

Department of Ica, Peru

**Typical Cut and Fill Stope Plan
and Sequence Schematic**

An alternate recovery method for sill pillars is a longhole retreat – develop undercut drifts at the bottom, drill upholes, blast, muck, and repeat, moving towards solid ground. This method is likely to be lower extraction (inducing instability and requiring portions of the sill pillar to be left in place), however may be more productive and lower cost. It may be a better fit for Cerro Lindo's crews and equipment, as it more closely resembles the current SLS mining.

MINE DESIGN

RPA reviewed the stope design practices used at Cerro Lindo. The stope design practices include consideration of geology, geotechnical, mining, and operational factors. Stope results are tracked and used as feedback to the design process.

Nexa uses Deswik software for mine design and Mineral Reserve estimation. A stope optimizer is used to define the ultimate limits of each orebody, which are then sub-divided on a regular grid to create stopes. Material types, NSR values, and interactions with previously-mined areas are reviewed. Dilution and extraction are applied.

At the short-term planning stage, secondary stopes are redesigned, with the walls pulled in to leave a skin pillar next to the backfilled primaries (this is a significant source of lost extraction).

BACKFILL

Stopes are backfilled with cemented paste. The paste plant is located on the surface, near the exhaust portals. It is supplied with whole mill tailings by pipeline from the process plant.

The paste plant operates two identical vacuum filter trains to supply 300 tonnes per hour (tph) of filter cake to the paste mixers. The nominal binder percentage is 3% cement, although this can be varied as and if required. Paste is pumped underground to its point of use. Paste distribution pipelines enter the mine through the 1970 m level exhaust portals and are laid along the floor of the drifts through much of their route.

Total required paste delivery is 5,000 m³/day. The existing plant operates at 95% availability and meets these requirements; however, the plant has very little redundancy and make-up capacity. The plant is equipped with stand-by pumps for delivering paste to the stopes.

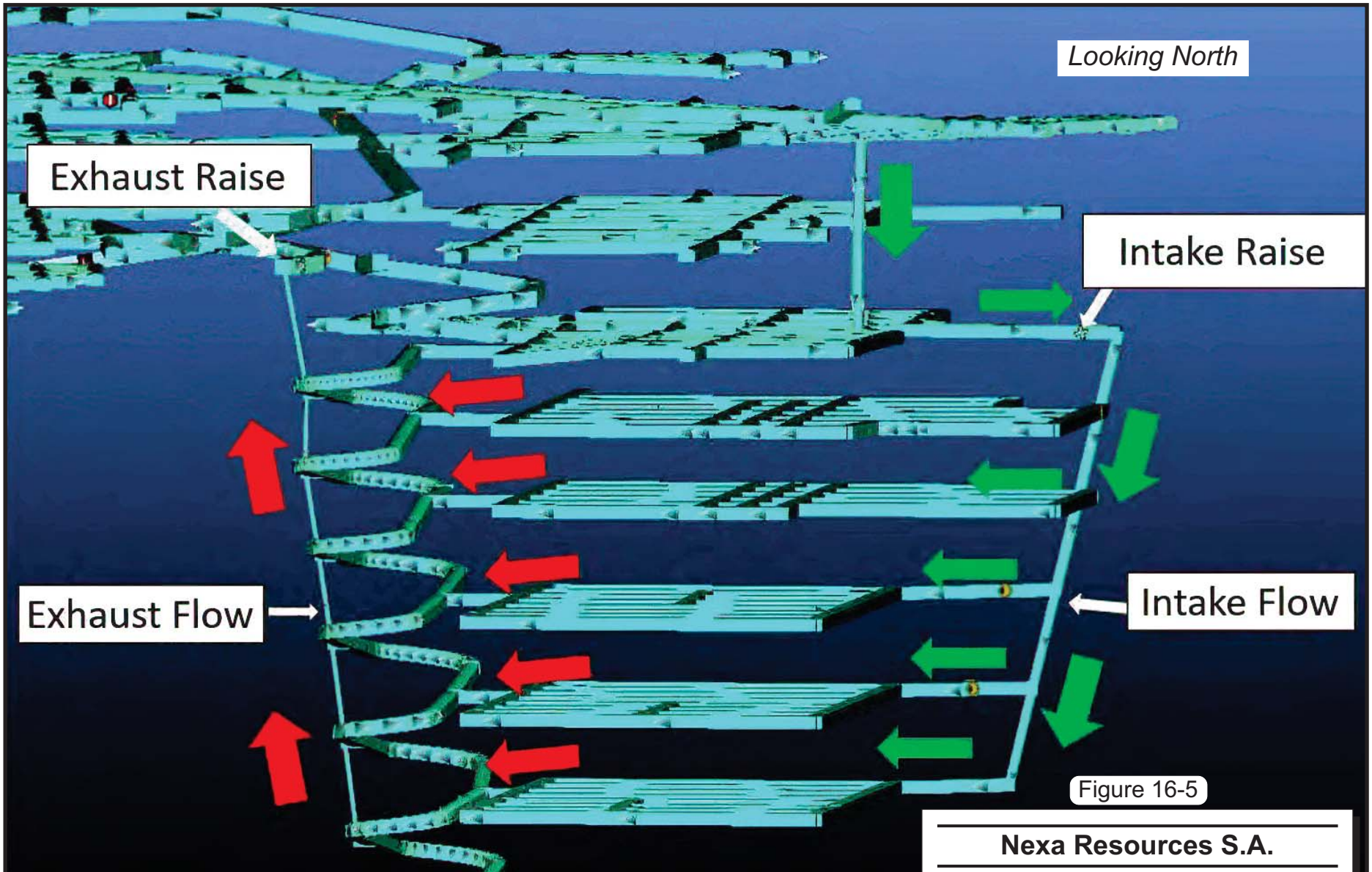
Stopes are filled in three vertical lifts. The bottom lift, approximately 5 m to 6 m high, is filled with paste having 5% cement. This lift is allowed to cure for two days, before the balance of the stope is filled with 3% cement paste.

VENTILATION

The mine ventilation circuit is complex, consisting of portals, main fans, airflows, and main interconnecting ramps and raises.

Each orebody is ventilated by a quasi-parallel split serving that orebody alone. Figure 16-5 illustrates the vent circuit for OB-1; this is a typical arrangement seen in all the Cerro Lindo mining areas.

A total of 1.86 million cubic feet per minute enter the mine through 12 portals and exhaust through five portals. The ventilation system is powered by 19 main fans, all of which are installed underground on the exhaust circuit. The fans draw exhaust air from different mining areas, and direct it through the dedicated exhaust level to the four exhaust portals on the 1970, 1950, and 1940 m levels.



16-11

Figure 16-5

Nexa Resources S.A.

Cerro Lindo Mine
 Department of Ica, Peru
Ventilation Schematic for OB-1

Not to Scale

UNDERGROUND INFRASTRUCTURE FACILITIES

The infrastructure for the mine is relatively straightforward. The mine is accessed via ramps and declines; there is no shaft and associated infrastructure. The key underground facilities are summarized in Table 16-1.

TABLE 16-1 UNDERGROUND INFRASTRUCTURE FACILITIES
Nexa Resources S.A. – Cerro Lindo Mine

| Area | Comment |
|------------------------|---|
| Ramps | Three main ramps provide primary access to and haulage routes from the lower levels, these ramps are being deepened to access the lowermost levels of the mine. In addition, there are local ramps at each orebody which provide communication and access to stopes and development areas. |
| Electrical power | The mine is serviced by a power reticulation system which supplies approximately 7MW to the mine. Power is distributed to all working areas where appropriate connection boxes are provided for mobile equipment and equipment such as fans and pumps. |
| Service water | Water is at a premium in Cerro Lindo. All water is recycled and re-used as much as possible. Service water is primarily used underground for drilling water, cooling, dust control, and concrete/shotcrete service. Service water is provided from a central plant-wide source and distributed underground via a system of pipelines to all working areas. |
| Dewatering | The mine makes very little water from geological sources. Service water is collected and pumped to the surface where it is treated for reuse. |
| Compressed air | Almost all drilling equipment is electric over hydraulic and is equipped with on-board air compressors. Compressed air is used for miscellaneous uses such as construction, ground repair, and similar uses. A compressed air reticulation system delivers compressed air from surface compressors to areas where it is needed. |
| Communications | The mine is equipped with a leaky feeder radio system and hard wired telephones to select locations. The mine is serviced by an underground communications center, manned 24 hrs/day, which can contact any site facility, including emergency response, should there be any problems. |
| Maintenance facilities | There are two service level shops underground. Both are operated by maintenance contractors: Caterpillar and Atlas-Copco. These shops are equipped to perform routine preventive maintenance and light repairs. Mobile equipment requiring major maintenance is taken to shop facilities on the surface. Contractors providing support for the mine maintain their own equipment on surface and do not use the underground shop facilities. |
| Fuel and lubricants | Mobile equipment is fueled underground by service equipment, operated by the equipment owner. Each contractor services its own equipment. There is no fuel storage underground. Small quantities of lubricant and hydraulic oils are stored in service bays. |
| Warehouse and supply | Most materials are stored on surface in a variety of warehouses and storage yards. Most mining supplies and materials are provided to the contractors through the warehouse system. |

PRODUCTION SCHEDULE

The mine plan for the remainder of the LOM is based on a daily production rate of 20,600 tpd for 354 days per year. The annual production rate is, therefore, 7.30 Mt.

Stope scheduling is somewhat constrained by the mining sequence within each Orebody, although mine planners and grade control geologists do attempt to maintain relatively constant mill feed grades.

A production table is included as Table 16-2 and reported by mining method in Table 16-3.

Cerro Lindo is almost completely developed. With the exception of the bottom levels of OB-1 and OB-6, which are yet to be developed, and the pillar recovery and remnant mining, there is very little flexibility in the mining sequence. The mine planners use what flexibility is available to try to maintain uniform head-grades to the concentrator and avoid geotechnical issues that can be a result of poor stope sequencing.

TABLE 16-2 PRODUCTION SCHEDULE
Nexa Resources S.A. – Cerro Lindo Mine

| | Units | Total | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|-----------------|--------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Production | Mt | 50.1 | 2.52 | 7.44 | 7.30 | 7.30 | 7.30 | 7.30 | 7.30 | 3.67 |
| Zn grade | % | 1.27 | 1.85 | 1.68 | 1.52 | 1.53 | 0.95 | 1.12 | 0.94 | 0.67 |
| Pb grade | % | 0.16 | 0.24 | 0.22 | 0.20 | 0.20 | 0.11 | 0.13 | 0.12 | 0.09 |
| Cu grade | % | 0.65 | 0.54 | 0.66 | 0.58 | 0.58 | 0.82 | 0.76 | 0.59 | 0.59 |
| Ag grade | g/t | 18.9 | 21.4 | 20.5 | 19.1 | 20.0 | 18.4 | 18.7 | 17.0 | 16.7 |
| Contained Metal | | | | | | | | | | |
| Zn | 000 t | 639 | 47 | 125 | 111 | 112 | 70 | 82 | 68 | 25 |
| Pb | 000 t | 81 | 6 | 16 | 15 | 15 | 8 | 9 | 8 | 3 |
| Cu | 000 t | 326 | 14 | 47 | 42 | 42 | 60 | 55 | 43 | 21 |
| Ag | 000 oz | 30,449 | 1,728 | 4,905 | 4,479 | 4,688 | 4,309 | 4,388 | 3,984 | 1,968 |

Note: 2019 production is Aug-Dec.

TABLE 16-3 PRODUCTION SCHEDULE BY MINING METHOD
Nexa Resources S.A. – Cerro Lindo Mine

| | Units | Total | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|-------------|-------|-------|------|------|------|------|------|------|------|------|
| Primary | % | 26% | 5% | 18% | 27% | 33% | 41% | 34% | 23% | 5% |
| Secondary | % | 41% | 61% | 54% | 31% | 39% | 36% | 36% | 38% | 48% |
| Tertiary | % | 13% | 12% | 15% | 13% | 5% | 16% | 17% | 17% | 2% |
| CAF | % | 16% | 14% | 5% | 22% | 14% | 7% | 13% | 22% | 44% |
| Development | % | 4% | 7% | 8% | 7% | 10% | 0% | 0% | 0% | 1% |

MINING EQUIPMENT

The mobile equipment fleet for Cerro Lindo is composed of equipment owned by Nexa and numerous contractors. Since each entity is responsible for achieving its own goals independently, each entity has included spare equipment and capacity as it deems necessary. A summary of the fleet by equipment class and operator is shown in Table 16-4.

The haulage truck fleet is made up of a variety of truck manufacturers and capacities. Nexa indicated that the haulage contractors are replacing their smaller and older units with large capacity (50 t) units. This will reduce congestion, improve haulage capacity, and reduce the load on the ventilation system.

Availability of mobile equipment is reported to average 85%.

TABLE 16-4 NEXA EQUIPMENT FLEET
Nexa Resources S.A. – Cerro Lindo Mine

| Type | Units |
|-----------------------------------|-------|
| Scooptram (9-11 yd ³) | 11 |
| Longhole Drill | 6 |
| Jumbo Drill | 2 |
| Bolter | 2 |
| Rock-Breaker | 5 |
| Scaler | 5 |
| Forklift | 2 |

17 RECOVERY METHODS

The Cerro Lindo processing plant is located on a ridge adjacent to the mine and is at an altitude of 2,100 MASL to 2,200 MASL. The plant commenced operations in 2007 with a processing capacity of 5,000 tpd, however, has since been expanded to a name-plate capacity of 20,800 tpd. Processing consists of conventional crushing, grinding, and flotation to produce separate copper, lead, and zinc concentrates. The tailings are thickened and filtered for use as backfill or trucked to the dry-stack tailings storage facility.

PROCESS DESCRIPTION

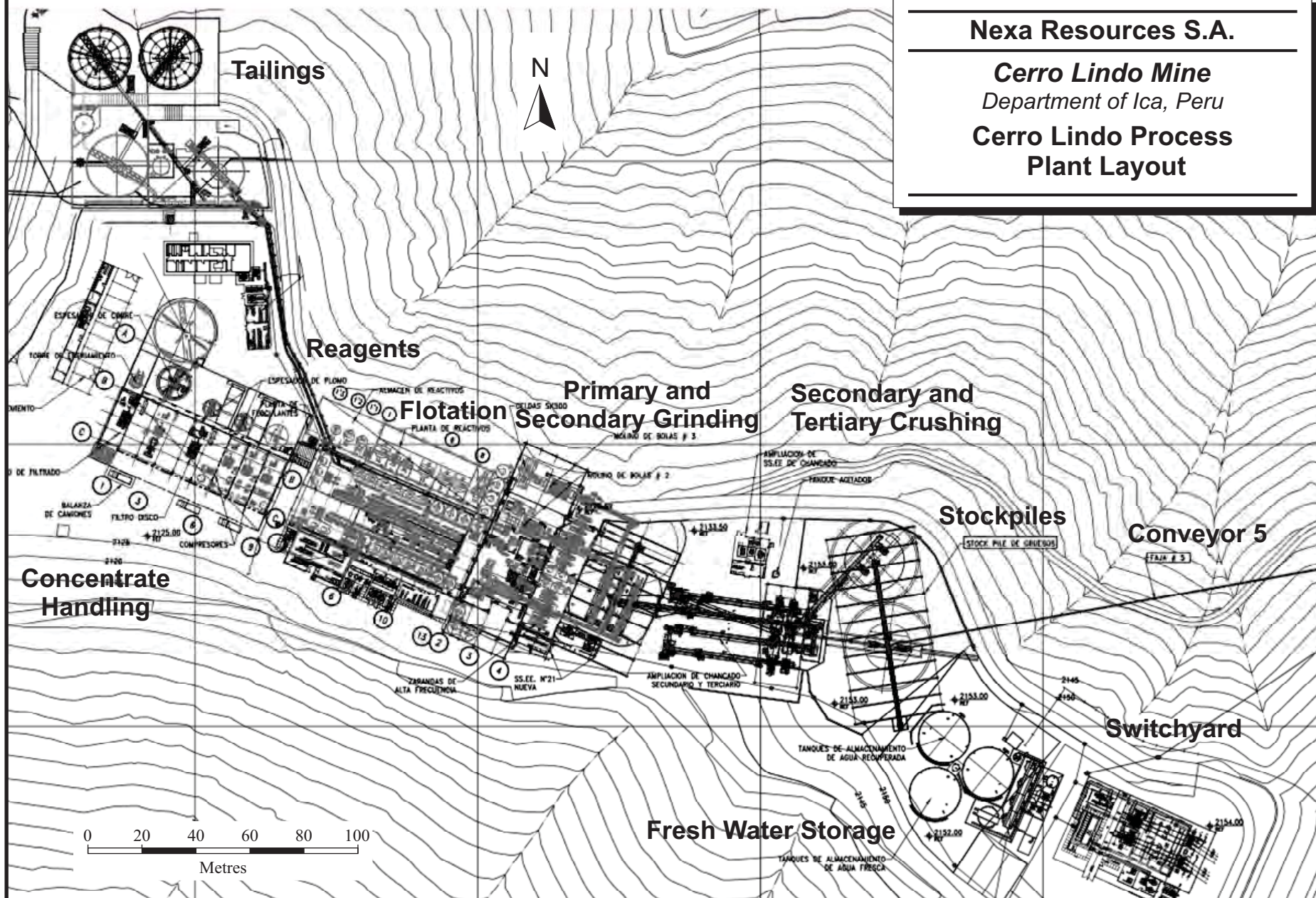
The process plant layout is shown in Figure 17-1 and a simplified process flow sheet is shown in Figure 17-2.

CRUSHING

Crushing is carried out in three stages with the first stage being underground, where the primary jaw crusher, fed by a vibrating grizzly feeder, crushes ore to less than 100 mm. Crushed ore is conveyed to the coarse ore stockpiles located at the processing plant. When the primary crusher requires maintenance, ore is trucked directly to surface where it is stockpiled prior to being crushed in a mobile primary crusher, which discharges onto the coarse ore stockpile feed conveyor.

Coarse ore is reclaimed from the stockpile and fed to two parallel crushing circuits, each consisting of secondary and tertiary crushing. Reclaimed ore is screened and the oversize reports to the secondary crushers, while the undersize is directed to the fine ore bins. Secondary crusher product is screened, with the screen oversize reporting to the tertiary crushers and the undersize being directed to the fine ore bins. The tertiary crushers are in closed circuit with the tertiary screens and the screen undersize is directed to the fine ore bins. The crushed ore is 80% passing (P_{80}) 4 mm, and the two fine ore bins provide approximately 16 hours of storage capacity.

Cerro Lindo Process Plant Layout



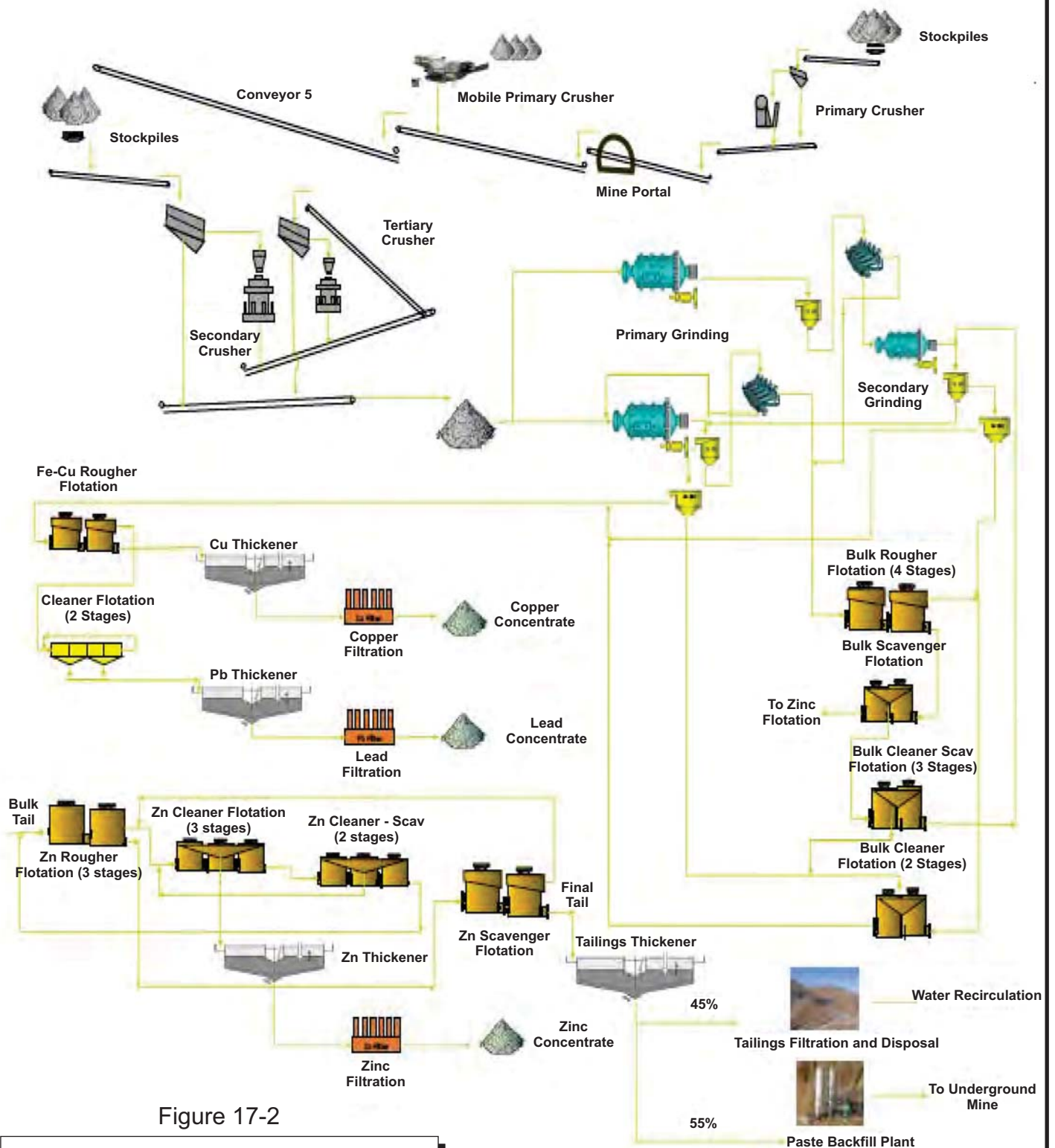


Figure 17-2

Nexa Resources S.A.

Cerro Lindo Mine
Department of Ica, Peru
Simplified Process Flow Sheet

GRINDING

Fine ore is fed from the fine ore bins at a total of approximately 900 tph to two parallel ball mill circuits, each in closed circuit with high frequency classifying screens. Each grinding circuit also includes flash flotation, producing bulk (copper and lead) concentrate. The first grinding circuit is the originally-installed single-stage ball mill circuit capable of processing 5,000 tpd, while the second circuit consisting of two identically sized ball mills in series processing approximately 16,000 tpd. The P_{80} of the grinding circuits is 150 μm to 170 μm .

FLOTATION

Flotation consists of bulk rougher and scavenger flotation to produce a copper-lead concentrate, which is then cleaned combined with the flash flotation bulk concentrate prior to being separated into copper and lead concentrates. Bulk flotation tails forms the feed to zinc rougher and scavenger flotation on the bulk flotation tails to produce a zinc concentrate, which is then cleaned. The three concentrates are thickened and filtered, and then deposited into dedicated concrete storage bunkers.

Concentrate is reclaimed by front-end loader and each bucket is sampled before being loaded into trucks. The trucks are weighed on a weigh bridge adjacent to the concentrate handling area before being despatched to the Port of Callao (copper and lead concentrates) or Nexa's Cajamarquilla refinery (zinc concentrate) near Lima.

TAILINGS

Final tails consist of zinc scavenger tails. The tails are directed to the tails thickener. The thickened underflow is divided, with part going to the paste-backfill plant, and the remainder going to the dry-stack tailings filtration plant. The split between tailings to paste-backfill and dry-stack tailings is approximately 55:45.

The tailings filtration plant and paste-backfill plant are located between the dry-stack TSFs to the south of the concentrator. Horizontal belt filters are used to reduce the moisture of the tailings to approximately 12%. Dry-stack tailings is discharged onto a stockpile, which is reclaimed by front-end loader and trucks for subsequent placement, grading, and compaction on one of the two dry-stack storage facilities. Cement and fly-ash are added to the paste-backfill tailings filter cake producing a paste of approximately 83% solids. This is pumped underground by high-pressure positive displacement pumps.

A concrete spillage containment pond with a capacity of 10,000 m³ is located below the elevation of the plant platform and tailings thickeners and provides emergency containment if needed.

As mining has progressed, the distance that paste has to be pumped has increased, and this has led to limitations in the amount of paste that can be pumped to the furthest points in the mine, as well as strain on the pumping and piping system. This in turn means that dry-stack tailings filtration is fully utilized. Any breakdowns in the paste-backfill system therefore result in throughput reductions in the processing plant, as there is no tailings surge capacity other than limited space in the tailings thickener. Mitigating steps will be necessary to ensure that paste-backfill system limitations do not become significant processing rate constraints in the future. Nexa plans to install an additional belt filter for dry-stack tailings filtration, which will help to minimize the effect on processing plant throughput in the case where the paste-backfill system is down.

CONCENTRATE QUALITY

The concentrates produced at Cerro Lindo contain low concentrations of deleterious elements and higher than average concentrations of the primary metals. However, the copper concentrate attracts a small penalty of approximately US\$3.00 per tonne due to the combined lead and zinc content of the concentrate (approximately 4.5% to 6.5%).

PROCESS WATER

Water is supplied from a desalination plant located at the coast capable of producing 60 L/s and is pumped 60 km to the mine site. This is sufficient to supply the requirements for make-up water and potable water (treated at the mine site). Most of the process water requirement is recovered from tailings thickening and filtration and is returned to the three 3,600 m³ water storage tanks. Approximately 90% of total tailings water is recovered and recycled to the plant as process water.

PROCESS CONSUMABLES AND POWER

The main process consumables include steel grinding balls, sodium cyanide, lime, and various flotation reagents. No significant changes to the feed ore, process, or capacity of the processing plant are anticipated, and therefore unit consumption of these materials is expected

to remain similar to historical consumption rates. The same applies to electrical energy consumption, which is supplied from the national grid.

18 PROJECT INFRASTRUCTURE

The operational and in place infrastructure at Cerro Lindo includes:

- An underground mine accessed by 15 portals and an extensive ramp system
- An underground crusher and conveying system to surface
- Surface ore stockpiles
- A 20,800 tpd capacity processing plant
- Two dry-stack TSFs
- Waste rock storage facility
- Power supply
- Access and site roads
- Maintenance shops
- Offices
- Camp facilities
- Warehousing and storage

A surface site plan is presented in Figure 18-1. Descriptions of infrastructure not covered elsewhere are included below.

SITE ACCESS

Access to the mine site is via paved highway to Chinchá (180 km from Lima), followed by a 60 km unpaved road. The unpaved road covers a significant gain in elevation and has a number of narrow sections that restrict speeds for heavy haulage. Nexa maintains rest stops at wide areas and enforces safe speed limits on employees and contractors.

Despite the low speed achievable on the road to the mine, the relatively short distance to Chinchá represents a logistical advantage for the Cerro Lindo Mine, in comparison with many Peruvian operations.

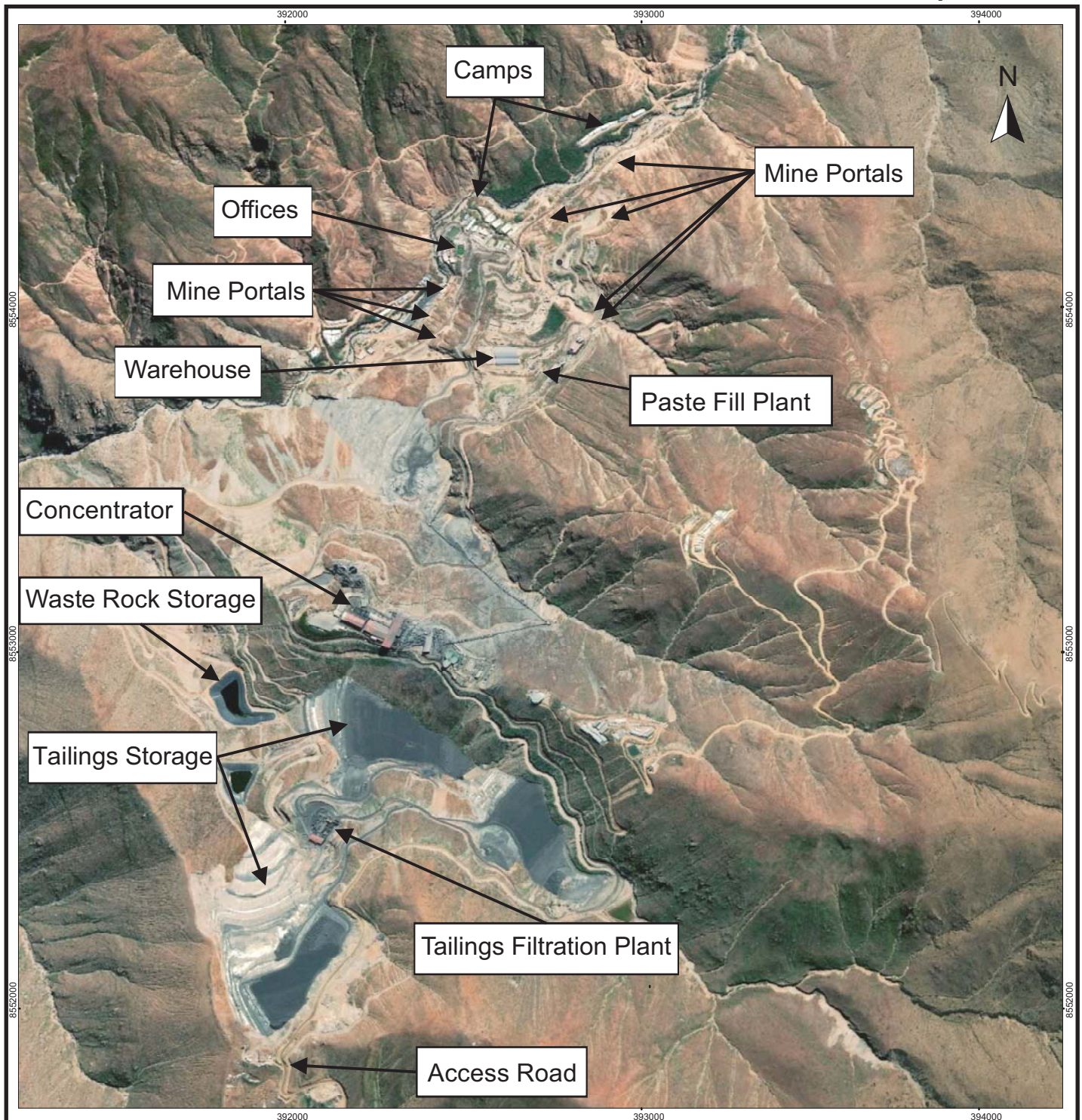
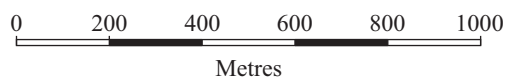


Figure 18-1



Nexa Resources S.A.

Cerro Lindo Mine
 Department of Ica, Peru
Site Layout Plan

POWER SUPPLY

Electrical power is provided to the Mine via the national grid. Two 220 kV transmission lines supply power from the substation. Secondary substations on site transform the voltage to 10 kV for distribution and 480 V to 120 V for use.

Site power demand is approximately 37 MW, consisting of:

- Mine – 7 MW
- Desalination and water supply – 4 MW
- Plant – 25 MW
- Camp and Offices – 0.5 MW

WATER SUPPLY

There is no fresh water withdrawal from natural water bodies at the Mine site, and the Mine obtains very little water from the underground mine workings. Approximately 40% of total demand is extracted from five local groundwater wells/boreholes. The remaining 60% of industrial fresh water is supplied from a desalination plant located on the coast.

The pumping system from the desalination plant is divided into three stages to transport the water approximately 45 km to an elevation of 2,200 m. Three pump stations are located along the six-inch pipeline route from the desalination plant to the mine site.

Service water is primarily used underground for drilling water, cooling, dust control, and concrete/shotcrete service. Service water is provided from a central plant-wide source and distributed underground via a system of pipelines to all working areas. Service water is collected and pumped to the surface where it is treated for re-use.

SITE BUILDINGS

Site facilities are distributed along the valley below the concentrator, where terrain permits. Facilities include offices, separate camps for contractors, hourly employees, and staff, warehousing and storage areas, maintenance shops, and the paste fill plant. Fuel storage is located on surface, with underground equipment fueled by service trucks.

19 MARKET STUDIES AND CONTRACTS

MARKETS

The principal commodities at the Project are freely traded, at prices and terms that are widely known, so that prospects for sale of any production are virtually assured. RPA reviewed the concentrate terms provided by Nexa and found them to be consistent with current industry norms.

Metal prices are based on long term consensus forecasts by independent banks and financial institutions. A year-by-year price curve was used for cash flow modelling.

SILVER STREAMING AGREEMENT

Nexa has a silver streaming agreement with Triple Flag Mining Finance Bermuda Ltd. (Triple Flag) on silver production from the Mine. In exchange for an initial payment of US\$250 million, Triple Flag has the rights to 65% of all payable silver, at a cost of 10% of the spot silver price (up to a total of 19.5 Moz Ag). After the total has been reached, currently anticipated to be 2027, Triple Flag is entitled to 25% of payable silver.

CONTRACTS

Various operational support services are provided by contractors, including underground mining, surface tailings haulage and placement, concentrate haulage, catering, security, and the mine site laboratory.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

ENVIRONMENTAL AND SOCIAL SETTING

The information presented in this section is based on documentation provided by Nexa and meetings with mine site personnel. The meetings were held with Astrid Gómez (Environment Manager at Cerro Lindo) and Lorena Roque (Community Relations Manager at Cerro Lindo). A site visit was conducted in support of the preparation of Section 20 of this Technical Report from June 17 to June 20, 2019.

MINE OPERATION OVERVIEW

The Cerro Lindo Mine facilities and infrastructure are located in the districts of Chavín, Pueblo Nuevo, and Grocio Prado, in the province of Chincha (department of Ica), Perú. The Mine facilities and camps are located along the left bank of the Topará Creek in the occidental Andes Mountains, approximately 40 km northeast of the town of Chincha at elevations ranging from 1,820 MASL to 2,200 MASL. The desalination plant is located at sea level approximately 15 km northwest of the town of Chincha.

The mine operation started in July 2007. The community relations team was created in 2003, in parallel with the preparation and approval of the Environmental Impact Assessment (EIA), although it started to work actively in the mine area in 2005, one year before construction start-up. The mine life declared in 2011 was 12 years (up to year 2022). The current mine life is approximately eight years (until 2027) based on the most recent estimate of Mineral Reserves. The mining operation is comprised of the following main facilities:

- Underground zinc-lead-copper-silver mine (four portals)
- Active waste rock dump (Pahuaypite) and inactive waste rock dumps (No. 1, No. 2, No. 7, and No. 100)
- TSF Pahuaypite 1 and Pahuaypite 2
- Tailings filter plant
- Paste backfill plant
- Water management ponds (contingency ponds downstream of the TSFs)
- Temporary ore stockpile
- Process plant

- Landfill
- Ancillary buildings (administration, storage, vehicle maintenance, medical center, solid residue disposal facilities, laboratories, gas station, magazine, etc.)
- Permanent camps (five)
- Transmission lines and electrical substations
- Desalination plant

The Cerro Lindo process plant is a polymetallic flotation-based concentrator with a production rate of 20,600 tpd according to the current mine plan. The approved Environmental Impact Assessment (EIA) grants authorization for a maximum production rate of 22,500 tpd. Processing is based on conventional crushing, grinding, sequential lead and copper bulk flotation followed by zinc rougher flotation, subsequent copper and lead separation and cleaner flotation, zinc cleaner flotation, and concentrate thickening and filtration to produce separate concentrates of zinc, lead, and copper with silver content.

Tailings from the process plant are thickened and then further dewatered in either the paste plant to be deposited underground, or to the filter plant to the south of the process plant to be filtered and subsequently placed in two dry-stack storage facilities, Pahuaypite 1 and Pahuaypite 2. As much as 90% of the process water from dewatered tailings is recycled with industrial fresh water being supplied from a desalination plant at the coast to meet site and process water make-up requirements. At the Mine site, there is no fresh water withdrawal from natural water bodies and there is no discharge of industrial or treated sewage water to the environment.

EXISTING CONDITIONS

The summary of the baseline characterization presented below is based on the baseline analyses included in the 2018 EIA for the mine site and the desalination plant area near Chinchá.

Climate. The Cerro Lindo Mine is located at the Topará valley, which has an arid, mesothermal climate with absent or very low excess water according to the Thornthwaite climate classification. Average annual temperatures at the mine site fluctuate from approximately 12.5°C to 18.3°C based on data from four meteorological stations. The average annual precipitation is 69.1 mm and the average annual potential evaporation is 1,500 mm. Relative

humidity varies from 37% in July to 92% in March. The predominant wind direction is from the southwest.

Higher rainfall occurs between December and March and lower rainfall is typically from May to September. April, October, and November are transition months. The seasonality of precipitation is less pronounced in the area where the desalination plant is located relative to the mine site.

Air Quality. Concentrations of the air quality parameters (particulate matter, gases, and metals [As, Pb]) that were evaluated through 2010 to 2016 were found to be below the Peruvian environmental quality standards (ECA for its acronym in Spanish). The same conclusion applies to non-ionizing radiation for the monitoring period 2010 to 2016.

Ambient Noise. Noise levels evaluated through 2009 to 2016 were found to be below the Peruvian environmental quality standards for industrial areas in both day and night monitoring periods.

Surface Water Quality. The mining operation is located at the upper Topará Creek basin. The Topará Creek flows seasonally, with higher flow during the period from January to March. Since there is not much flow available, farming activities in the valley typically rely on groundwater. Flow monitoring is conducted in six stations located along the creek bed, upstream and downstream of the mine facilities.

Concentrations of the water quality parameters (pH, dissolved oxygen, conductivity, Weak Acid Dissociable [WAD] cyanide, and metals [As, Cd, Cu, Fe, Mn, Pb, Zn]) that were evaluated through 2010 to 2016 were found for the most part to be below the values stated in the Peruvian environmental quality standards (ECA Category 3 according to water use). The water quality analysis included in the 2018 EIA presented an individual discussion for each parameter explaining how the isolated exceedances in the data record are associated with transport of materials of the natural bed, and geological and mineralogical conditions inherent to the mine location. Parameter concentrations that exceeded the standards were also detected at monitoring stations outside the area of influence of the mine.

Sediment loads monitored at the same water quality stations were compared against the Canadian Interim Sediment Quality Guidelines (ISQG) and Probable Effect Level (PEL)

standards in absence of Peruvian standards. Data show that arsenic, cadmium, mercury, lead, and zinc were consistently above the ISQG limits. The concentrations of these parameters in the sediments are associated with two factors: i) mineralization and hydrothermal alteration, and ii) external geodynamic processes mainly related to sediment transport (e.g., natural slides). A study by Amphos 21 Consulting Peru S.A.C. (Amphos 21, 2016) confirmed that the elements noted were the result of natural erosive and weathering processes from the surrounding lithologies and were not sourced from the mine.

Surface water quality is also monitored at 15 stations in Jahuary beach where the desalination plant is located. Concentrations of the water quality parameters (pH, dissolved oxygen, biochemical oxygen demand, conductivity, salinity, total suspended solids (TSS), total dissolved solids (TDS), chlorides, oil and grease, nitrites, nitrates, and phosphates) that were evaluated through 2013 to 2016 were found for the most part to be below the values stated in the Peruvian environmental quality standards (ECA Categories 1 and 2 according to water use). The water quality analysis included in the 2018 EIA presented an individual discussion for each parameter explaining how the isolated exceedances in the data record are associated with factors not related to the operation of the desalination plant.

Groundwater Quality. Monitoring of groundwater quality was conducted by Vector in 2011 at five locations, and by Nexa Peru (formerly Milpo) from 2013 through 2015 at four locations. Results were referentially compared against the Peruvian environmental quality standards (ECA Category 3 according to water use) given that Peru does not currently have standards for groundwater quality. Registered exceedances are the result of the mineralogic characteristics of the deposit.

Flora and Fauna. The results of the biological monitoring campaigns include the identification of endemic, migratory, native, naturalized, exotic and/or threatened (according to national and international criteria), economic, ecological and/or socio-culturally important species, as well as the respective characterization indices. Periodic monitoring of terrestrial fauna and flora has been carried out since 2010. Monitoring of aquatic fauna and flora has been carried out since 2013. There are no natural protected areas within the mine's area of influence.

A total of 20 species of terrestrial flora were identified in the mine area as having conservation status: 10 are endemic, nine species are included in Appendix II of CITES (2017), nine species are included in the 2017 International Union for Conservation of Nature (IUCN) annual report

(IUCN, 2017), and thirteen species are registered in the Peruvian Ministry of Environment's Supreme Decree (D.S.) No. 043-2006-AG.

A total of 20 species of terrestrial flora were identified in the desalination plant area as having conservation status: eleven are endemic, eight species are included in Appendix II of CITES (2017), seven species are included in IUCN (2017), and 10 species are registered in D.S. No. 043-2006-AG.

A total of 10 species of fauna were identified in the mine area as having conservation status: two are mammals, four belong to birdlife, and four belong to herpetofauna. A total of 17 species of fauna were identified in the desalination plant area as having conservation status: five are mammals, six belong to birdlife, and six belong to herpetofauna.

Social and Heritage Considerations. As reported in Amec Foster Wheeler plc's NI 43-101 report (Amec, 2017), approximately 1,096 people, based on 2007 census figures, live in the Chavín district, and 98% of the population is classified as rural. Due to the elevation and rugged topography, much of the land is classified as unsuitable for agriculture. The primary land use is nomadic cattle grazing, with herds being constantly moved to locations where there is sufficient grass for food.

Chavín village is not regularly used, with most villagers residing in Chincha. The indirect mine influence area is considered to be the entire province of Chincha and the general Ica region, as these areas benefit from mine royalty and taxation payments.

Archaeological surveys were conducted as part of the EIA process, and Nexa Peru holds the following Non-existence of Archaeological Remains certificates (CIRA):

- CIRA No. 2006-0110, for the Jahuay–Cerro Lindo road, which confirms that there are no archaeological remains in the 60 km long road easement.
- CIRA No. 2007-253 (July 2007), for the mining operations, desalination plant area, and the powerline, which confirms that there are no archaeological remains in the 443.92 ha mine direct influence area (area also includes a buffer zone around the operations). One small (2.16 ha) archaeological site, Patahuasi, was identified within the area reviewed for the CIRA permit.
- CIRA No. 2010-381 (September 2010), for the power transmission line easement.

MINE WASTE MANAGEMENT

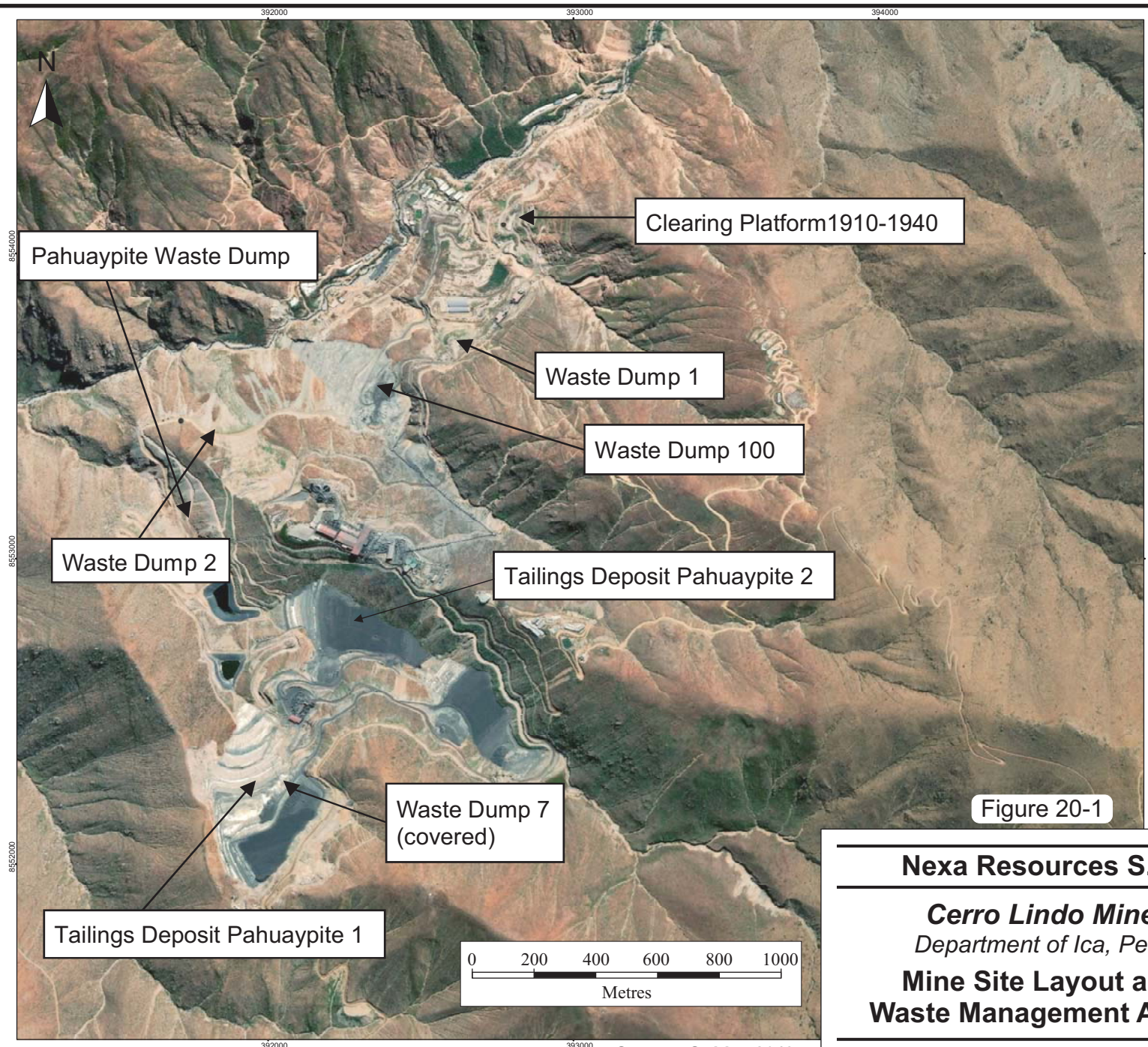
TAILINGS MANAGEMENT

Tailings produced in the process plant are thickened and piped to two possible streams. Approximately 50% of the tailings are further dewatered to 84% solids, mixed with cement and used as paste backfill in the underground workings. The remaining 50% of tailings are thickened separately to a solids content of 88%, loaded onto trucks, and dumped on top of the tailings dry stacks Pahuaypite 1 and 2. Once on the stacks the tailings are allowed to dry for three to four days to reduce their moisture content to 6% to 7%; the tailings are then spread in lifts of 300 mm and compacted to 95% standard proctor maximum dry density. The location of the dry stacks is illustrated in Figure 20-1.

As of May 2019, Pahuaypite 1 has accumulated 5.4 Mm³ of tailings of the total design capacity of 6.3 Mm³, with 0.9 Mm³ capacity remaining. Pahuaypite 2 has accumulated 4.8 Mm³ of tailings of 11.3 Mm³, with 6.5 Mm³ capacity remaining. A total of 7.4 Mm³ of tailings capacity remains within the existing design of the surface tailings dry stack, which provides approximately 5.9 years of tailings storage (assuming production continues at a rate of 20,600 tpd, 50% of the tailings is deposited on the surface, and the in-place tailings density is 3.0 t/m³).

It is noted that approval for 10% expansion of the Pahuaypite 1 tailings dry-stack storage capacity has been granted by the authorities. A similar plan is in place for 10% expansion of the Pahuaypite 2 tailings dry-stack storage capacity. The design studies to support the expansion of Pahuaypite 2 are underway.

The tailings have been identified as having a high acid generating potential, and metal leaching is anticipated. Acid generation in the tailings is a result of the presence of sulphides in the tailings, mainly in the form of pyrite. Laboratory testing identified high concentrations of the following metals from leach tests: aluminum, arsenic, cadmium, cobalt, copper, iron, manganese, and zinc (Golder, 2019). Water quality concerns are mitigated by the relative lack of precipitation at the mine site and managed by the infrastructure in place for seepage collection.



December 2019

Source: Golder, 2019.

Nexa Resources S.A.
Cerro Lindo Mine
Department of Ica, Peru
**Mine Site Layout and
Waste Management Areas**

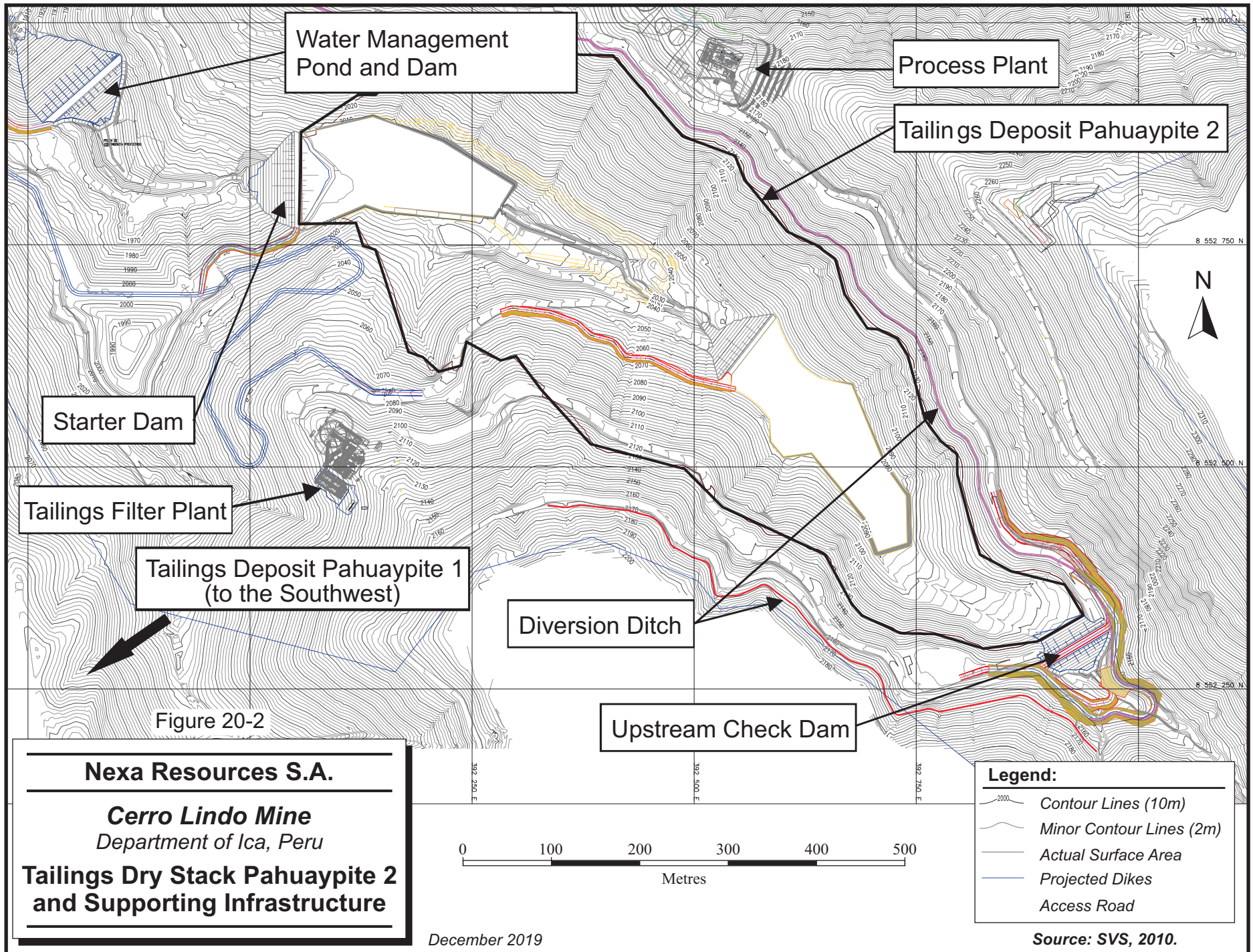
TAILINGS STORAGE FACILITY

Tailings from the mine are stored in two dry-stack deposits, Pahuaypite 1 and 2. These dry stacks are each equipped with a starter dam at the toe of the facility, a foundation drain that runs through the base of the valley(s) under the facility, an intermediate dike or platform to increase the initial working area, and a geomembrane lined water management pond downstream. The foundation drains from the dry stacks continue under the starter dams and report to their respective water management ponds at the base of the facility. The water management ponds downstream of Pahuaypite 1 and 2 were both designed with emergency spillways to safely convey the probable maximum precipitation. However, the emergency spillway for the Pahuaypite 2 water management pond, which is downstream of both tailings dry stacks and the Pahuaypite 1 pond, has been removed to allow for the construction of a new waste rock dump downstream of the pond. According to Ausenco (2017), the tailings dry stacks are classified as “significant” hazard classification according to the Canadian Dam Association (CDA) (2013).

The tailings dry stacks are mostly comprised of filtered tailings which are air dried on the working surface of the stack, spread in lifts of approximately 300 mm thickness, and compacted to 95% standard proctor dry density. Quality control data for the compaction and moisture content of the tailings is regularly taken and satisfies the design.

Pahuaypite 1 is planned up to elevation 2,190 m for a total height of approximately 180 m (before the 10% capacity expansion). This deposit has a relatively small upstream catchment area and therefore does not have diversion channels. Surface runoff from the facility is graded to one side of the facility where it can flow down to the water management pond via a pair of pipes 4” and 6” in diameter.

Pahuaypite 2 is planned up to elevation 2,130 m for a total height of approximately 130 m (before the 10% capacity expansion). This deposit has two upstream diversion channels and an upstream check dam that is intended to help separate non-contact water from tailings. The upstream check dam is a water retaining dam with an upstream concrete face connected to a concrete plinth with curtain grouting. Tailings dry stack Pahuaypite 2 and supporting infrastructure are illustrated in Figure 20-2.



The tailings dry stacks were designed for a 1:500-year return period earthquake, however, Ausenco (2017) identified a need to evaluate the facility design for the maximum credible earthquake, which is between a 1:475- and 1:1,000-year return period event. Given the relatively high seismic activity of the region and the relatively high likelihood of the maximum credible earthquake, Ausenco's recommendation appears to be warranted.

Pahuaypite 1 and 2 are monitored using Casagrande type piezometers, inclinometers, and survey monuments. Inclinometers in Pahuaypite 1 have indicated a deformation between the natural ground and the dry stack of approximately 35 mm, or 10 mm per year. This deformation should continue to be monitored. Piezometers indicate that the stack is unsaturated. A cross-check of the tailings deposits conducted by Ausenco in 2017, and more recent annual inspection reports by Geoconsultoria (2018), indicate that there are no unusual trends in the tailings movement and that the phreatic surface of the dry stacks is near or below the interface between natural ground and tailings.

WASTE ROCK DUMPS

Waste rock from the underground mining operations is either used as backfill underground or stockpiled on the surface. Waste rock is stockpiled in six locations on the mine site, illustrated in Figure 20-1:

- Clearing Platform 1910-1940,
- Waste dump No. 1,
- Waste dump No. 2,
- Waste dump No. 7,
- Waste dump No. 100, and
- Pahuaypite waste dump.

The capacity of the clearing platform 1910-1940 is unknown, however, waste rock dumps Nos. 1, 2, 7, and 100 have a cumulative capacity of approximately 2.3 Mm³, although waste dump No. 100 is by far the largest at 1.8 Mm³. Pahuaypite waste dump is the newest and only operating waste rock dump for the mine operation; it has a waste rock storage capacity of 4.4 Mm³ and is located immediately downstream of the Pahuaypite 1 water management dam. Since this waste rock dump is relatively new within the mine plan, several water management features associated with the tailings dry stacks will be adjusted to work with the dump design. Notably, the dry-stack facility diversion channel must be rerouted to further downstream and

the water management pond downstream of tailings dry stack Pahuaypite 2 will not have an emergency spillway while the new waste dump is in operation. At the closure of the new dump, a new spillway will be established to convey water in the valley around the waste rock dump.

Geochemical testing completed by Golder (2019) identified most of the waste rock to be potentially acid generating (PAG) with exception of some neutral to uncertain results from waste dump No. 2. Acid generation in the waste rock is a result of the presence of sulphides in the rock, mainly in the form of pyrite. Metal leaching laboratory testing identified high concentrations of cadmium, copper, and zinc. Water quality concerns are mitigated by the relative lack of precipitation at the mine site and managed by the seepage collection infrastructure in place for the larger waste rock dumps.

CLOSURE

At closure the geometry of the tailings dry stacks will be checked to conform with the design of 2H:1V bench slopes with 20 m tall benches. The dry stacks will be covered with geomembrane placed between resistant non-woven geotextile to promote geochemical stability of the acid generating tailings. The geosynthetics will be covered by 0.3 m of sand and gravel to protect the geomembrane and promote drainage. Upstream hydraulic structures such as the diversion channels and check dam will be maintained. The water management (contingency) pond will be partially backfilled with inert materials to achieve a surface with stable slopes.

The closure concept for the Pahuaypite waste rock dump and waste dump No. 100 is similar to the tailings dry stacks. The dumps will be covered with a geosynthetic clay liner protected on both sides by a layer of geotextile. The geosynthetic materials will be covered with sand and gravel 0.35 m thick on the slopes and 0.55 m thick on the dump crest. Closure concept details for the other waste rock dumps were not available for review.

Post-closure monitoring of the rehabilitated areas will continue for at least five years to confirm physical and geochemical stability. Seepage collection and treatment at the waste rock dumps might need to continue post-closure depending on water quality conditions (geochemistry analysis of waste rock samples showed high acidity generation potential).

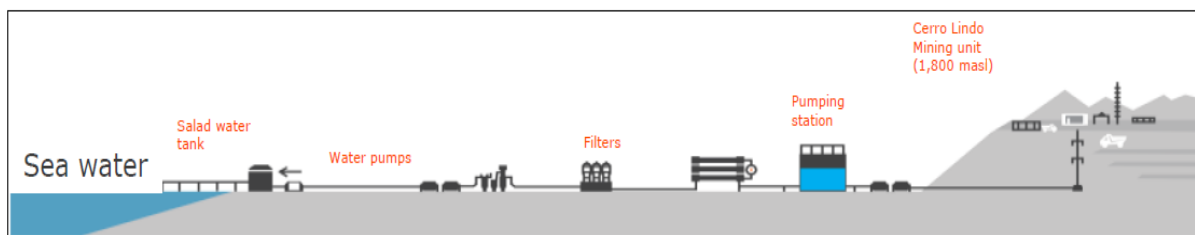
WATER MANAGEMENT

The primary objective for water management is to provide enough availability of water to meet the mine operation water demands, and to ensure that the water quality and quantity of water bodies on the environmental influence area of the Cerro Lindo Mine site are not impacted by the operation.

Water conservation is a primary objective in Cerro Lindo due to the limited water availability in the area. Water is recycled and re-used as much as possible. Recycled water is obtained from the thickening process, tailings thickening process, and the filtration process. A permit to recycle a total annual volume of 3,689,712 m³ of industrial wastewater has been granted (Directorate Resolution (D.R.) No. 1382/2007/DIGESA/SA dated May 2007). This permit remains in effect as long as Nexa does not amend or change any of the activities that were allowed under the permit, which also makes reference to the zero-discharge commitment. If an unscheduled discharge was required, Cerro Lindo must obtain authorization from Dirección General de Salud Ambiental (DIGESA) for such discharge. Quarterly monitoring reports to the national authorities in compliance with Article 9 of R.M. No. 011-96-EM/VMM are not applicable to the Cerro Lindo operations due to the zero-discharge commitment for industrial and domestic water.

Service water is primarily used underground for drilling water, cooling, dust control, and concrete/shotcrete service. Service water is provided from a central plant-wide source and distributed underground via a system of pipelines to all working areas. The mine makes very little water from geological sources. Service water is collected and pumped to the surface where it is treated for re-use.

Industrial fresh water is supplied from a desalination plant located at the coast to meet site (e.g., dust suppression) and process water make-up requirements (Figure 20-3). In addition, groundwater extraction from five groundwater wells/boreholes for a combined maximum annual flow of 48 L/s is authorized by various permits. There is no fresh water withdrawal from natural water bodies at the mine site. Approximately 60% of the total freshwater supply to the mine site is taken from the ocean with approximately 40% taken from groundwater wells.

FIGURE 20-3 WATER SUPPLY SYSTEM FOR CERRO LINDO MINE

(Source: Nexa Resources S.A.)

The pumping system from the desalination plant is divided into three stages to transport the water approximately 45 km to an elevation of 2,200 m. Three pump stations are located along the six-inch pipeline route from the desalination plant to the mine site. The desalination plant takes water from the ocean with an approved maximum rate of 100 L/s (3,153,600 m³/yr) according to D.R. No. 033-2012-ANA-ALA/MOC (SRK, 2018). The desalination plant discharges residual water from the treatment process to Jahuay Beach, which was approved by D.R. No. 002-2015-ANA-DGCRH for an annual flow of 72 L/s (SRK 2018). D.R. No. 008-2019-ANA-DCERH grants renewed authorization for effluent discharge from the desalination process. D.R. No. 0706-2012-MGP/DCG grants authorization of aquatic area usage for the submarine pipelines required for water intake and effluent discharge from the desalination process.

The mine has implemented three water treatment plants for industrial water, potable water, and domestic water (sewage). The industrial effluent treatment plant consists of a basic system of mine water clarification using three ponds. The first pond promotes settling sediments by their own weight; the second pond is used to control pH (target between 7 and 8) through lime addition and control conductivity to regulate initial metal elements present in the water; the third pond assists with precipitation of fines and water clarification prior to the water being recirculated to the process plant. There is no discharge of industrial or treated sewage water to the environment (zero-discharge commitment).

Clean water is diverted around the mine infrastructure, TSFs, and waste rock dumps where possible. Contact water resulting from surface runoff within the mine complex footprint is managed through channels and a check dam located at the head of the valley of the Pahuaypite 2 TSF. The flows are directed to lined contingency ponds at the base of the deposits. Water collected in the contingency ponds is pumped to the industrial treatment plant.

An underdrain system was constructed at the foundation/base of the TSFs (basal drainage) to conduct surface flows from the foundation toward the contingency ponds. The waste rock dumps are also equipped with an underdrain system to capture infiltration.

The most recent geochemical evaluation was conducted in 2019 on five tailings samples collected from the TSFs (Pahuaypite 1, Pahuaypite 2), and nine rock samples collected from waste rock dumps Nos. 1, 2, 7, and 100. Static geochemical testing included acid base accounting (ABA), elemental rock analysis, net acid generation (NAG) and metal leaching tests, and shake flask extraction (SFE) test. According to the results, in general, the tailings and waste rock samples showed high acidity generation potential. Tailings and waste rock at Cerro Lindo come from volcanic rocks, rich in massive sulphides mainly comprised of pyrite (50% to 95%). Pyrite oxidation generates acidity and could promote contact water with high concentrations of aluminum, arsenic, cadmium, cobalt, copper, iron, manganese, and zinc. Water quality concerns are mitigated by the relative lack of precipitation at the mine site and managed by the infrastructure in place for seepage collection.

It is noted that a water management protocol developed by Nexa for the Cerro Lindo Mine documents a glossary of terms and definitions associated with water management, and outlines procedures and responsibilities addressing risk evaluation, legal commitments, objectives and target, operational controls, monitoring, and performance indicators.

ENVIRONMENTAL STUDIES

RPA has been provided with and reviewed the following documents and reports:

- Modification of the Cerro Lindo Environmental Impact Assessment for Expansion of the Process Plant to 22,500 Metric Tonnes per Day prepared by SRK Consulting dated January/February 2018
 - Physical Baseline
 - Biological Baseline
 - Social Baseline
 - Characterization of Environmental Impacts
 - Environmental Management Plan
- Study of Contaminated Areas – Geochemical Characterization in Support of the Confirmatory Environmental Investigation. Technical memorandum prepared by Golder Associates dated May 17, 2019
- Description of the Recirculation System of Domestic and Industrial Water – Zero-Discharge. Memorandum prepared by Nexa dated March 26, 2019

- Quarterly reports for monitoring of surface water and groundwater quality in 2018 prepared by SGS del Perú
- Quarterly reports for participatory monitoring of air quality in 2018 prepared by SGS del Perú
- Quarterly reports for monitoring of ambient noise in 2018 prepared by SGS del Perú
- Diagnostic of Compliance with ECAs in the Topará Creek – Study of Hydrogeochemistry and Water Quality prepared by Amphos 21 dated June 2016
- Cerro Lindo Management Plan for Water and Liquid Effluents developed by Nexa (PGU-CL-SSMA-MA-E)
- Cerro Lindo Preparedness and Emergency Response Plan developed by Nexa (CL-SSO-PL-01)
- Modification of the Cerro Lindo Mine Closure Plan prepared by Geoservice Ingeniería dated March 2016
- Independent Technical Report pursuant to National Instrument 43-101 of the Canadian Securities Administrators for Cerro Lindo Mine, Perú. Report prepared by SRK Consulting issued on June 30, 2017

The key project effects and associated management strategies, as described in the 2018 EIA, are shown in Table 20-1. The Environmental Management Plan, which addresses mitigation measures and monitoring programs, was prepared as part of EIA development with the most recent update presented in the 2018 EIA. The Environmental Management Plan includes industrial and domestic effluent discharges, surface water quality and sediment, groundwater quality, surface flow, air quality (particulate matter and gas emissions), non-ionizing radiation, noise, vibrations, soil quality, terrestrial and aquatic flora, terrestrial and aquatic fauna.

The Environmental Management Plan states that no environmental compensation plan is required because the proposed mitigation measures ensure the preservation of the ecosystem and biodiversity of the mine site area, and all the potential environmental effects were characterized as no significant in the EIA (SRK, 2018).

**TABLE 20-1 SUMMARY OF KEY ENVIRONMENTAL EFFECTS AND
MANAGEMENT STRATEGIES
Nexa Resources S.A. – Cerro Lindo Mine**

| Environmental Component | Potential Impact | Management Strategies |
|--------------------------------|--|--|
| Soils | Changes to soil uses Changes to soil quality | <p>Implementation of spills management plan for hazardous materials.</p> <p>Implementation of spill containment at potential accidental spill sources, as applicable.</p> <p>Relocation of soils contaminated as a result of hazardous materials spills in appropriate facilities.</p> <p>Provision of oil and grease traps at vehicle maintenance facilities.</p> <p>Tire washing of hauling trucks following concentrate loading.</p> <p>Adequate management of industrial and domestic waste.</p> <p>Development of appropriate topsoil deposits equipped with erosion controls.</p> <p>Timely rehabilitation of disturbed areas.</p> <p>Annual monitoring at five locations following R.M. No. 085-2014-MINAM (national guideline for soils monitoring) and the national environmental quality standards applicable to soils (D.S. No. 002-2013-MINAM and D.S. No. 002-2014-MINAM) for industrial zones.</p> |
| Geochemistry | Changes to surface water quality and/or groundwater quality | <p>Geochemistry sampling evaluation program for tailings and waste rock.</p> |
| Surface water | Changes to surface water flows Changes to surface water quality | <p>Maximize water recirculation and re-use at the mine.</p> <p>Zero water discharge to the environment at the mine site.</p> <p>No freshwater withdrawal from natural water bodies at the mine site.</p> <p>Treatment of domestic sewage water prior to reusing it in the process plant.</p> <p>Desalination plant equipped with reverse osmosis water treatment plant.</p> <p>Regular inspections and maintenance program for water management infrastructure.</p> <p>Implementation of oil and grease traps.</p> <p>Inherent design measures such as design of discharge pipes from the desalination plant to promote brine dilution in a short distance.</p> <p>Protection of river and creek beds (e.g. controlled traffic of vehicles, no earth movements near stream beds, no washing of vehicles or machinery in stream beds, etc.).</p> <p>Quarterly water quality monitoring at one effluent discharge location at Jahuay beach for parameters listed in D.S. No. 010-2010-MINAM (national maximum permissible limits for liquid effluents from mining and metallurgic activities).</p> <p>Monthly water quality monitoring of natural streams at six stations located at the mine site area following the national protocol for surface water quality monitoring (R.J. No. 010--2016-ANA) for water bodies classified as Category 3.</p> |

| Environmental Component | Potential Impact | Management Strategies |
|-------------------------|--|---|
| | | <p>Monthly monitoring of maritime surface water quality at nine stations located in Jahuay beach following the national protocol for surface water quality monitoring (R.J. No. 010-2016-ANA), and using D.S. No. 004-2017-MINAM (national environmental water quality standards) for categories 1 and 2 as the reference to determine compliance.</p> <p>In absence of national sediment quality standards, the Canadian Environmental Quality Guidelines (2003) are used as the reference to evaluate the environmental performance for both continental and maritime surface water.</p> |
| Groundwater | <p>Changes to phreatic level</p> <p>Changes to groundwater quality</p> | <p>Implementation of seepage collection systems for waste management facilities for water re-use (and treatment if necessary).</p> <p>Identification of natural recharge zones due to fractures or faults.</p> <p>Monthly groundwater quality monitoring in eight piezometers located upstream of the mine site and downstream of waste rock dumps, TSFs and landfill. In the absence of national groundwater quality standards, the Canadian Water Quality Guidelines for the Protection of Aquatic Life issued by the Canadian Council of Ministers of the Environment (2003) are used as the reference to evaluate the environmental performance.</p> |
| Air quality | Changes from particulate and gas emissions | <p>Regular preventive maintenance of vehicles and motorized equipment.</p> <p>Regular irrigation of access roads with tanker trucks and sprinkler systems.</p> <p>Irrigation of areas where mobile grinders are operated.</p> <p>Speed limit of 30 km/hr for vehicles circulating within the mine site according to the internal traffic regulations of Cerro Lindo.</p> <p>Transportation of materials in covered hoppers.</p> <p>Monitoring of particulate matter (PM₁₀ and PM_{2.5}), metals (arsenic and lead), and gases (SO₂, NO₂, CO). Quarterly monitoring at nine stations at the mine site, and biannual monitoring at five stations at the desalination plant area.</p> <p>Compliance is determined according to applicable national air quality standards from D.S. No. 003-2017-MINAM. The selected parameters are consistent with R.D. No. 239-2011-MEM/AAM (08/08/11).</p> <p>Biannual monitoring of non-ionizing radiation at three stations located at the mine site and 13 stations located along the service corridors following the national environmental quality standards for non-ionizing radiation (D.S. No. 010-2005-PCM).</p> |
| Noise and vibration | Disturbances resulting from changes to ambient noise levels and generation of vibrations | <p>Use of hearing protection devices.</p> <p>Appropriate planning and optimization of machinery and equipment usage.</p> <p>Avoid simultaneous usage of transportation, demolition, and excavation vehicles.</p> <p>Avoid honking vehicle horns except for safety practices to prevent accidents.</p> <p>Regular vehicle maintenance.</p> <p>Implementation of blasting controls.</p> |

| Environmental Component | Potential Impact | Management Strategies |
|-----------------------------|---|---|
| | | <p>Quaternary noise monitoring at three stations located at the mine site and biannual noise monitoring at 17 stations located along the service corridors (seven along the transmission line, nine along the water supply pipeline, and one at the road near Jahuay beach). Compliance is determined according to the maximum permissible limits from the national environmental quality standards for noise (D.S. No. 085-2003-PCM) for industrial zones.</p> <p>There are no inhabitants living close enough to the mine site to be potentially affected by vibrations. Hence, vibrations monitoring was not included in the monitoring program.</p> |
| Aquatic flora and fauna | Changes in abundance and diversity of aquatic species | <p>Environmental controls for protection of local flora and fauna (several measures are outlined in the 2018 EIA).</p> <p>Respecting the ecosystem when carrying out any activities associated with the mine operation and closure.</p> <p>Zero discharge of industrial or sewage water to the environment at the mine site.</p> <p>Meeting water quality standards at points of effluent discharge to the environment (i.e., brine concentration from desalination plant discharge in Jahuay beach).</p> <p>Prohibition to dispose of solid or liquid waste in natural water bodies.</p> <p>Prohibition to capture fish in the mine concession areas and surroundings.</p> <p>Prohibition to introduce non-native species.</p> <p>Personnel training.</p> <p>Biannual monitoring (dry and wet seasons).</p> |
| Terrestrial flora and fauna | <p>Changes to vegetation cover and diversity of terrestrial flora</p> <p>Changes to sensitive species of wild flora</p> | <p>Environmental controls for protection of local flora and fauna (several measures are outlined in the 2018 EIA).</p> <p>Respecting the ecosystem when carrying out any activities associated with the mine operation and closure.</p> <p>Prohibition to collect flora.</p> <p>Prohibition to introduce non-native species.</p> <p>Prohibition of hunting, fishing, and capture of fauna within the mine concession areas and surroundings.</p> <p>Personnel training.</p> <p>Rescue or relocation of species, if required, in agreement with methods outlined in the 2018 EIA.</p> <p>Consideration of location of endemic species tagged for conservation when deciding on location of mine facilities.</p> <p>Prohibition to dispose of solid or liquid waste in the mine site area outside of the spots designated for this purpose.</p> <p>Biannual monitoring (dry and wet seasons).</p> |
| Landscape | Changes in landscape's visual quality | <p>Mine planning to minimize and control relief alterations.</p> <p>Slope physical stability.</p> <p>Smoothing of ground surface where applicable with implementation of banks to facilitate re-vegetation and prevent erosion.</p> <p>Re-vegetation.</p> |

PROJECT PERMITTING

Cerro Lindo complies with applicable Peruvian permitting requirements. The approved permits address the authority's requirements for operation of the underground mine, TSFs, waste rock dumps, process plant, water usage and effluents discharge. Cerro Lindo maintains an up to date record of the legal permits obtained to date, documenting the validity period, renewal date (if applicable), and status (current, canceled or superseded). The list of approved legal permits for Cerro Lindo provided by Nexa for review addresses the following aspects:

- Environmental impact assessment
- Domestic water treatment
- Industrial water treatment (Process Plant)
- Groundwater wells for exploration drilling
- Use of aquatic area
- Air and water quality monitoring locations
- Mine closure planning
- Beneficiation concessions
- Mine operation certificates
- Mine plans for mineral extraction
- Infrastructure
- Regulated chemical product supplies
- Use of fuel
- Licenses for use of explosives
- Absence of archaeological remains

Nexa uses an ISO 14001 compliant environmental management system at Cerro Lindo to support environmental management, monitoring and compliance with applicable regulatory requirements during operation.

SOCIAL OR COMMUNITY REQUIREMENTS

GENERAL CONTEXT

The Cerro Lindo Mine is located in the District of Chincha in the Department of Ica, Peru. The underground mine is located approximately 240 km southeast of Lima, the capital city of Peru and 75 km northeast of Chincha, the closest major urban settlement area. The Cerro Lindo Mine is located inland and upland from both Lima and Chincha and is accessible by road.

This section presents the results of the social review based on a review of Nexa's policies, programs, social risk management systems, and/or social performance against relevant International Finance Corporation (IFC) Performance Standards (PS). This social review does not represent a detailed audit of Nexa's compliance with IFC PSs or specific guidelines. Nexa's social performance is benchmarked against the following IFC 2012 PSs:

- **PS1: Social and Environmental Assessment and Management Systems** requires that companies identify, assess, and mitigate the social and environmental impacts and risks they generate throughout the lifecycle of their projects and operations. From a social perspective, the requirement includes: a comprehensive social assessment; identification of critical social impacts and risks; community consultation and engagement; information disclosure; mitigation plans to address impacts and risks; and development of an organizational structure with qualified staff and budgets to manage the overall social management system.
- **PS2: Labour and Working Conditions** incorporates the International Labour Organization conventions that seek to protect basic worker rights and promote effective worker/management relations.
- **PS4: Community Health and Safety** declares the project's duty to avoid or minimize risks and impacts to community health and safety and addresses priorities and measures to avoid and mitigate project related impacts and risks that might generate community exposure to risks of accidents and diseases.
- **PS5: Land Acquisition and Involuntary Resettlement** considers the need for land acquisition or involuntary resettlement of any individual, family or group; including the potential for economic displacement.
- **PS7: Indigenous Peoples** considers the presence of Indigenous groups, communities, or lands in the area that may be directly or indirectly affected by projects or operations.
- **PS8: Cultural Heritage.** This standard is based on the Convention on the Protection of the World Cultural and Natural Heritage. The objectives are to preserve and protect irreplaceable cultural heritage during a project's operations, whether or not it is legally protected or previously disturbed and promote the equitable sharing of benefits from the use of cultural heritage in business activities.

It is noted that **PS3 Resource Efficiency and Pollution Prevention** and **PS6 Biodiversity Conservation** correspond to environmental performance standards. Environmental management and performance are discussed at the beginning of Section 20.

PS1: SOCIAL AND ENVIRONMENTAL ASSESSMENT AND MANAGEMENT SYSTEMS

At a corporate level, Nexa has adopted the guidelines of the International Integrated Reporting Council (IIRC) and the standards for the Global Reporting Index (GRI). The IIRC guidelines promote a cohesive and integrated approach to reporting on organizational activities. The GRI

standards provide best practices for public reporting on economic, environmental, and social impacts in order to help Nexa and its shareholders and stakeholders understand their corporate contribution to sustainable development. These standards were reported on in the most recent (2018) Nexa Annual Report. With respect to social issues, the 2018 Annual Report provided details of corporate activities aligning with the following GRI Standards:

1. Employment
2. Occupational health and safety (OHS)
3. Non-discrimination
4. Training and education
5. Diversity and equal opportunities
6. Freedom of association and collective bargaining
7. Child labour
8. Forced or compulsory labour
9. Human rights assessment
10. Local communities
11. Social assessment of suppliers
12. Socio-economic compliance

Nexa's 2018 Annual Report also includes reporting on corporate progress towards several sustainable development goals. With respect to social environment issues, these include:

1. Gender equality
2. Decent work and economic growth
3. Good health and well-being
4. Peace, justice, and strong institutions
5. Quality education
6. Reduced inequalities
7. Sustainable cities and communities
8. Responsible consumption and production
9. Life below water

Nexa has a corporate compliance policy (PC-RCC-CCI-005-EN) meant to guide Nexa representatives and third parties. The compliance policy includes the following policies and procedures:

1. Code of Conduct
2. Anti-Corruption Policy

3. Money Laundering and Financing Terrorism Prevention Policy
4. Antitrust/Competition Policy
5. Insider Trading Policy
6. Disclosure Policy
7. Compliance Program Manual
8. Money Laundering and Financing Terrorism Prevention Manual
9. Gifts and Hospitality Procedure
10. Relationships with Government Representatives Procedure
11. Travel and Entertainment Procedure
12. Integrity Due Diligence Procedure
13. Conflict of Interests Procedure

With respect to Cerro Lindo operations, Nexa has developed and utilizes a number of social management programs and tools to help the company work with the nearby communities. These include:

1. Fulfilling Commitments and Obligations
 - Compliance matrix of commitments and obligations
 - Execution matrix
2. Impact and Expectation Matrix
 - Local employability program
 - Local supply program
 - Local development program
 - Volunteering program
3. Community Relationship and Social Responsibility
 - Stakeholder matrix
 - Interactions matrix
 - Reporting tools
4. Social Conflict Management
 - Social conflict management and reporting program
 - Complaint resolution and care system

In order to better understand community-specific issues and address concerns that arise at Cerro Lindo, Nexa implements a complaint register guided by Nexa's Order and Complaint Procedure, which details roles, responsibilities, and commitments to gather and respond to complaints from the public in a fair and equitable way. All communications and complaints are recorded, investigated, evaluated, and resolved according to the Order and Complaint Procedure. The process is meant to provide Nexa with a better understanding of the local

population and related issues. Nexa also maintains a compliance matrix, which is a database of relevant stakeholders and a matrix/listing of interactions with each stakeholder.

Nexa is currently seeking to extend and complete additional installations at Cerro Lindo. In order to understand the potential effects of the Cerro Lindo Mine, Nexa is relying on impact assessment studies completed in 2018 by a third-party consultant. This assessment includes a social environment impact assessment, comprised of a Social Baseline, an Environmental Impact Characterization, and an Environmental Management Strategy, which are all generally consistent with Social Impact Assessment Practices.

The Social Baseline includes a description of:

- The social areas of influence;
- The social, economic, and cultural characteristics of the population of the areas of influence of the project;
- Social-economic variables that might be affected by the project;
- Potential indicators to assess impacts of the project;
- Identification of the main social and environmental issues of relevance to the population;
- Perceptions and expectations of members of the public and other stakeholders regarding Cerro Lindo mining activities and socio-economic development; and
- The foundation for a social impact management plan to mitigate potential negative impacts and maximize potential positive benefits.

The preceding was accomplished through a variety of methods including both primary and secondary data collection. Primary data collection included field investigations such as surveys and interviews. Secondary data collection included reviews of legal documentation, information related to the areas of influence and inhabited areas, and other permits and approved studies relevant to the Cerro Lindo Mine.

The Environmental Impact Characterization assesses the potential impacts of the Cerro Lindo Mine at the various stages and includes an assessment of potential negative and positive impacts of the Mine on the social environment. These variables include:

1. Health
2. Education

3. Local Economy and Trade
4. Demographics
5. Cultural
6. Quality of Life and Human Development

The Environmental Management Strategy includes an Environmental Management Plan and Social Management Plan to mitigate negative impacts and maximize positive benefits of the Cerro Lindo Mine. The Social Management Plan includes a description of community needs and expectations, social projects and community benefits, and recommendations to improve the social and economic environments in the areas of influence. The Social Management Plan includes the following sub-plans:

1. Communications Plan
2. Social Concertation Plan
3. Community Development Plan

Each plan is based on the empirical research and document review from the Social Baseline and Environmental Impact Characterization reports, and includes detailed descriptions of activities, budgets, timeframes, as well as measures and indicators.

The studies employed targeted surveys, interviews, and outreach with members of the public, government officials, and other stakeholders to inform the social impact assessment. The information was reviewed to understand trends and commonalities in the main social and environmental issues perceived by the public and other stakeholders. The data and reports provide a thorough account of Nexa's approach to identify, assess, and mitigate social risks related to the Cerro Lindo Mine.

PS2: LABOUR AND WORKING CONDITIONS

Corporately, Nexa reports that 100% of its workers in Brazil are covered by collective bargaining units but does not report on the status in Peru. Nexa also reports corporately on the freedom of association and collective bargaining. Some of the Sustainable Development Targets identified by Nexa include (but are not limited to):

- By 2030 achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value; and

- Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular migrant women, and persons in precarious employment.

The most recent information from the Milpo (2016) annual report states that 356 of 593 workers at Cerro Lindo were unionized. At the time of this writing, two workers' organizations were in place at Cerro Lindo, including the Unitary Mining Worker's Union of the Milpo Unit and the Workers' Union of the Milpo Cerro Lindo Mining Company – Chavín – Topará. Updated statistics on the number of unionized workers or the current status of any collective agreements were not available.

Nexa has adopted OHS policies to ensure the protection and promotion of the safety, human health, and welfare of employees. Corporately, Nexa reports on its health and safety performance and highlights safety as its "greatest asset". Several corporate initiatives are aimed at promoting safety, ensuring workers and contractors are trained, and that processes are in place to address any incidents that arise. In Peru, Nexa has advanced its Peru Safety Plan, which was reported to be 80% complete in the 2018. The Peru Safety Plan includes eight pillars:

1. Leadership training and awareness
2. Strengthening the OHS team
3. Implementation of the Outsourcing Management Program
4. Improvement of wellness and work regime conditions in the units
5. Standardization of processes and procedures, and improvements in Peru's mining units contingency plans
6. Team training and awareness
7. Synergy with Digital Mining actions measures
8. Industrial Automation Master Plan

At the time of this writing, site-specific information for OHS plans and operations at Cerro Lindo were unavailable for review. The total recordable injury frequency rate for the past five years varied between 2.05 (2015) and 4.85 (2014). In 2018, the rate was 3.59. Initiatives promoted at Cerro Lindo by Nexa since 2018 include the implementation of the Prevention of Fatalities and Critical Controls program for high risk management, leadership training in the roles of Risk Management and Influence Safety, and the first safety meeting with strategic suppliers with the aim of strengthening long term relationships and effective communication.

Corporately, Nexa has stated its commitment to internationally recognized human rights and prohibits any violation of human rights in its operations and suppliers. Suppliers are asked to provide information regarding both social responsibility and human rights preservation. Nexa reported that in 2018, there were no complaints of non-compliance with any requirements related to human rights impacts, across all of its operations.

There are procedures in place for employees and contractors to report grievances and ethical violations, including directly to management, via telephone and online. At the time of this writing, there were no specific reports on the number of grievances or ethical violations relevant to Cerro Lindo.

There are two scheduled shifts (day and night) and three rotations (five shifts on, two shifts off; nine shifts on, five shifts off; and 14 shifts on, seven shifts off). This provides staff with sufficient opportunities to rest between scheduled work activities. Nexa has tried to hire from the local workforce when possible, both for skilled and unskilled workers. Outreach is conducted to the local community through social and employment programs.

Employees have access to a number of benefits including paid vacations and holidays, financial bonuses, health, education, overtime, living allowance, and other employment bonuses.

PS4: COMMUNITY HEALTH AND SAFETY

Corporately, Nexa has made several commitments to improve community health and safety, as well as the overall well-being of community members. The general area already experiences poor water quality, which can affect human health through the transmission of disease. In the EIA for the expansion and additional installations at Cerro Lindo, it was concluded that the project's air, noise, and vibration effects were insignificant and would not cause any increased public health effects in nearby communities. Despite this, the impact assessment raised the potential for negative perceptions of health effects at various stages of the project, including perceived impacts to water quality and respiratory illnesses. To mitigate this, the assessment recommends ongoing communication to raise awareness and inform the public of project impacts. It is anticipated that any negative perception will decrease over time.

The impact assessment also describes health promotion activities to improve community health and safety, outside of direct project effects. This includes a program to improve dental care in the areas of direct social influence.

Nexa has also committed resources to improving overall community health, safety, and well-being for the communities in the areas of influence of the Cerro Lindo Mine. These ongoing activities include:

1. Organic Agriculture and Irrigation Project
2. Safe Water Project
3. Local Supply Project
4. Women Leaders Network Project
5. Local Training and Employability Project
6. Local Scholarship Project

Nexa has also undertaken several municipal improvements in the nearby communities including drinking water infrastructure, waste water infrastructure, and roads and transportation improvements. Nexa also encourages its employees and community members to participate in volunteer initiatives such as Christmas shows, gender equity, and equal opportunity workshops, recycling programs, and various educational programs.

The 2016 annual report from Milpo describes community participation in ongoing environmental and water quality monitoring. These programs allow for community members to learn about the Cerro Lindo Mine environmental performance as well as receive training. Nexa has continued with this participatory monitoring for water quality.

Collectively, these programs seek to improve local socio-economic conditions and support a more diverse and educated workforce.

The EIA concluded that there would be one negative environmental effect on the social environment. During the construction and operation and maintenance stages of the project, job expectations from the local community may exceed the number and type of new jobs available. This impact was found to be moderately significant for both stages of the Project. In order to mitigate these impacts, the assessment recommends ongoing communication with the community and sharing of information on project phases, impacts, and economic opportunities as detailed in the Environmental Management Strategy.

The EIA also identifies positive benefits for the nearby communities. Continuation with the social programs and activities was determined to be a moderately significant contributor to positive impacts.

PS5: LAND ACQUISITION AND INVOLUNTARY RESETTLEMENT

The proposed expansion and additional installations at Cerro Lindo will not require any resettlement of the population as all work will be completed in the existing industrial area of the Mine. Therefore, PS5 is not applicable.

PS7: INDIGENOUS PEOPLES

The community of Chavín is not on the list of communities that have Indigenous people. Therefore, PS7 does not appear to be applicable.

PS8: CULTURAL HERITAGE

The EIA for the proposed expansion and additional installations at Cerro Lindo concluded that there was no presence of archaeological remains or evidence in the mine operation related areas. At the time of this writing, no information was available on Chance Find Procedures, which might be applicable as the proposed expansion undergoes construction and expanded operations commence.

MINE CLOSURE REQUIREMENTS

A formal Mine Closure Plan was prepared in 2009 for the mine components within the context of the Peruvian legislation and has subsequently been amended or updated four times. The Closure Plan addresses temporary, progressive and final closure actions, and post-closure inspection and monitoring. Under Article 20 of the Peruvian mine closure regulations, the first update of the Closure Plan must be submitted to the Peruvian Ministry of Energy and Mines (the Ministry) three years after approval of the initial Closure Plan, and every five years thereafter. Two years before final closure, a detailed version of the Mine Closure Plan will have to be prepared and submitted to the Ministry for review and approval. The following is a summary of the Cerro Lindo Mine Closure Plan updates to date:

- Initial Closure Plan from 2009 approved by R.D. No. 326-2009-MEM/AAM, which incorporated closure measures for the components approved in the 2004 EIA under R.D. No. 325-2004/MEM/AAM.

- First amendment of the Closure Plan from 2012 approved by R.D. No. 432-2012-MEM-AAM, which addressed operational changes approved in the 2010 EIA under R.D. No. 168-2010-MEM/AAM for the production expansion to 10,000 tpd, and the subsequent EIA modification approved in 2011 under R.D. No. 239-2011-MEM/AAM.
- Update to the Closure Plan from 2012 approved by R.D. No. 084-2013-MEM/AAM in compliance with D.S. No. 033-2005-EM, which addressed a modification of the beneficiation concession for the production expansion to 14,990 tpd (R.D. No. 298-2011-MEM-DGM/V).
- Second Closure Plan amendment from 2016 approved by R.D. No. 287-2016-MEM-DGAAM, which addressed the operational changes included in the supporting technical assessment reports approved under R.D. No. 069-2014-MEM-DGAAM (expansion to 10,000 tpd) and R.D. No. 391-2014-MEM-AAM (expansion to 17,988 tpd). Under article 2 of R.D. 287-2016-MEM-DGAAM, an annual financial assurance must be provided to the Ministry, using estimation factors set out by the Ministry.
- A new amendment of the Mine Closure Plan must be submitted to the Ministry for approval to address operational changes included in the modification of the EIA completed in 2018 for the production expansion to 22,500 tpd. The amended Closure Plan has been prepared by Nexa and it is under internal corporate review prior to submission to the Ministry.

The 2016 Mine Closure Plan (Geoservice Ingeniería 2016) and the conceptual closure plan included in the 2018 EIA (SRK 2018) were available for review.

The approved period for implementing closure and post-closure in the initial Mine Closure Plan was 18 years. Post-closure monitoring, assumed to extend for five years after closure, will include monitoring of physical, geochemical, hydrological, biological, and social stability.

The specific objectives of the Cerro Lindo Mine Closure Plan are as follows:

- Health and safety – The closure activities should substantially eliminate or reduce the risks associated with public health and safety within the mine site area. In the event of residual risks, appropriate controls must be implemented to minimize the exposure. The closure activities should guarantee the health and safety of the workers.
- Physical stability – Identify and evaluate technical and environmental measures to maintain the physical stability of mine components in the short and long term (for example, resilience against seismic events and extreme hydrologic events).
- Geochemical stability – Long term closure design and measures to prevent acid rock drainage and/or metal leaching that could impact natural water bodies in compliance with requirements of the Peruvian environmental legislation related to effluents from mine facilities. The closure measures must protect human health and prevent

migration of mine effluents that are not in compliance with the national legislation requirements.

- Land use – Consider possible uses of the mine site area during post-closure for agricultural, recreational, and touristic activities given the availability of water supply and distribution system and re-vegetated areas following mine closure.
- Water body use – Prevent degradation of water quality and reduction of water quantity of water bodies taking into consideration the existing conditions of receiving water bodies as the referential baseline.
- Social objectives – Develop social programs for post-closure that mitigate social effects resulting from cessation of mine operations. Measures to mitigate socio-economic effects should be addressed during the mine life. The program for community development should reinforce skills development and sustainable projects without mine support to the extent feasible. The closure plan should be aligned with local land uses and development objectives.
- Other – Implement closure activities aimed to passive care where active treatment, maintenance, and monitoring are not required in the long term.

In general, closure activities include mobilization of equipment, machinery and personnel; physical, geochemical and hydrological stabilization; dismantling of surface components; demolition, removal and disposal; and levelling and contouring of ground surface. Waste materials will be decontaminated (if required), recycled when cost effective, and disposed of at a licensed facility. Facilities containing petroleum products, chemicals, solid waste, hazardous waste, and/or contaminated soil or materials will be dismantled and managed according to regulatory requirements. All hazardous waste will need to be managed according to existing laws and regulations and will be transported off site.

The geographical area where the Cerro Lindo facilities are located is arid, characterized by very low precipitation and high evaporation. Development of vegetation is difficult in these conditions. Accordingly, no re-vegetation of the disturbed areas is proposed although a topsoil layer will be placed at closure. Rehabilitation of the aquatic habitat is not proposed either since no detrimental effects on the aquatic environment are anticipated as a result of mine operations and closure.

A summary of the main proposed closure activities is presented in Table 20-2.

TABLE 20-2 SUMMARY OF MAIN CLOSURE ACTIVITIES
Nexa Resources S.A. – Cerro Lindo Mine

| Mine Component | | Closure Activities |
|---------------------------|--|--|
| Mine | Underground mine (portals, shafts and drilling platforms) | <ul style="list-style-type: none"> • Dismantling and removal of equipment • Installation of concrete plugs (stability of crown pillars must be assured) and backfilling with waste rock between the plugs and the exit points • Recontouring of terrain at ground surface level to match original surface and promote adequate natural drainage • Placing of topsoil |
| | Waste dumps (Pahuaypite, No. 1, No. 2, No. 7, and No. 100) Temporary ore stockpile Landfills | <ul style="list-style-type: none"> • Contouring of slope (physical stability) • Installation of low permeability cover on waste rock dumps to limit infiltration • Preservation of existing perimeter channels for management of surface runoff • Construction of drainage channels • Compaction and neutralization of landfill with lime |
| Waste disposal facilities | | <ul style="list-style-type: none"> • Levelling and recontouring • Installation of low permeability cover to limit infiltration • Construction of drainage channels • Removal of geosynthetic materials and demolition of concrete structures from water management (contingency) ponds • Partial backfilling of water management (contingency) ponds with inert materials to achieve surface with stable slopes |
| | TSFs (Pahuaypite 1 and 2) | |
| Other infrastructure | Process plant Conveyors Tailings filter plant Paste backfill plant Water management infrastructure Shops Transmission lines and electrical substations Warehouse and auxiliary buildings Laydown areas Access roads Desalination plant | <ul style="list-style-type: none"> • De-energization and cleaning • Removal of equipment • Dismantling, demolition, salvaging, and disposal of structures • Demolition of concrete structures • Transportation to authorized disposal or collection areas • Recontouring of terrain and placement of ground cover layer typical of the mine site area • Implementation of natural drainage and/or construction of drainage channels as applicable • Removal of contaminated soils • Cleaning and purification of tanks and deposits |
| | Mine camp Administrative buildings Potable water and sewage systems | <ul style="list-style-type: none"> • Dismantling and removal of structures and equipment to authorized disposal areas • Removal of prefabricated elements • Demolition of concrete slabs • Recontouring of terrain and placement of ground cover layer typical of the mine site area • Implementation of natural drainage |

Physical, chemical, biological, and social stability conditions following closure will be verified through implementation of the post-closure maintenance and monitoring program. Monitoring will also support the evaluation and verification of compliance with closure activities, and the

identification of deviations leading to the adoption of corrective measures. The monitoring activities will be carried out considering the Peruvian Environmental Quality Standards and Maximum Permissible Limits, as well as criteria set in the Mine Closure Plan for physical, chemical, biological, and social stability.

Post-closure maintenance activities mainly involve the development and implementation of inspection programs, and the execution of physical repair activities of mine closure infrastructure as required (for example, repairs to low permeability covers and drainage system).

Post-closure monitoring activities involve the following:

- Physical – Inspection of mine facilities, mainly the waste rock dumps to identify cracking, displacements, and settlements on slopes; the monitoring frequency will be biannually for five years.
- Geochemical – Surface water quality monitoring in natural water bodies and receiving water bodies in order to evaluate the effectiveness of the measures established; inspection of low permeability covers; the monitoring frequency will be biannually for five years.
- Hydrological – Technical inspections of the drainage systems to identify possible erosion, settlement, collapses and obstructions; the monitoring frequency will be biannually for five years.
- Biological – Monitoring of terrestrial and aquatic biota in the surrounding areas of locations of mine components as a reference to verify biological conditions in non-disturbed areas, which are considered areas of control; the monitoring frequency will be biannually for five years (dry and wet season).
- Social – Development of a set of actions that will allow to verify the efficiency and effectiveness of the social programs at mine closure in accordance with established objectives, and adoption of corrective measures as required.

A closure cost estimate was developed and included in the Mine Closure Plans. The total value estimated in 2016 stated in R.D. No. 287 2016-MEM-DGAAM for the remaining life of mine at the time of preparing the closure plan (approximately six years) is US\$36,188,875 including local taxes. This amount accounts for progressive closure, final closure, and maintenance and monitoring activities during post-closure. The total financial assurance up to year 2022 is US\$18,205,228 as stated in R.D. No. 287 2016-MEM-DGAAM.

21 CAPITAL AND OPERATING COSTS

CAPITAL COSTS

Sustaining capital was estimated by Nexa, with the majority consisting of mine development and sustaining costs. Sustaining capital is summarized in Table 21-1.

TABLE 21-1 SUSTAINING CAPITAL COST ESTIMATE
Nexa Resources S.A. – Cerro Lindo Mine

| Area | Category | Sustaining Costs (US\$ millions) |
|---------------------------|---------------------|-------------------------------------|
| Mine | Primary Development | 48.3 |
| Plant & Infrastructure | Sustaining | 88.7 |
| | Other | 50.5 |
| Closure | | 36.2 |
| Total Capital Cost | | 187.5 |

OPERATING COSTS

Operating costs, averaging US\$225 million per year at full production, were estimated for mining, processing, and general and administration (G&A). Operating cost inputs such as labour rates, consumables, and supplies were based on Nexa operating data. A summary of operating costs is shown in Table 21-2.

TABLE 21-2 OPERATING COST ESTIMATE
Nexa Resources S.A. – Cerro Lindo Mine

| Parameter | Total LOM (US\$ millions) | Average Year (US\$ millions/yr) | LOM Unit Cost (US\$/t) |
|--------------|------------------------------|------------------------------------|------------------------------|
| Mining | 830 | 122 | 8.28 |
| Processing | 565 | 83 | 11.28 |
| G&A | 138 | 20 | 2.76 |
| Total | 1,533 | 225 | 30.59 |

22 ECONOMIC ANALYSIS

This section is not required as Nexa is a producing issuer, the property is currently in production, and there is no material expansion of current production.

RPA has reviewed a cash flow at the stated metal prices, which confirms the economic viability of the Mineral Reserve estimate.

23 ADJACENT PROPERTIES

There are no adjacent properties to report in this section.

24 OTHER RELEVANT DATA AND INFORMATION

No additional information or explanation is necessary to make this Technical Report understandable and not misleading.

25 INTERPRETATION AND CONCLUSIONS

RPA offers the following conclusions by area:

GEOLOGY AND MINERAL RESOURCES

- Measured Mineral Resources are estimated to total 3.1 Mt at 2.58% Zn, 0.33% Pb, 0.69% Cu, and 27.87 g/t Ag. Indicated Mineral Resources are estimated to total 2.27 Mt at 1.64% Zn, 0.28% Pb, 0.68% Cu, and 29.66 g/t Ag. In addition, Inferred Mineral Resources are estimated to total 5.14 Mt at 2.43% Zn, 0.53% Pb, 0.53% Cu, and 43.12 g/t Ag.
- Cerro Lindo is a Kuroko-style VMS deposit that comprises a number of lens-shaped massive and semi-massive sulphide bodies.
- Three massive sulphide units and one semi-massive sulphide unit have been recognized.
- The control of mineralization is lithological, mineralogical, and structural. Most copper mineralization is located in a pyritic massive sulphide unit and most zinc mineralization is located in baritic massive sulphide units, with lesser disseminated mineralization as patches or stringers in the semi-massive sulphide and mineralized volcanic units.
- Protocols for drilling, sampling, analysis, verification, and security meet industry standard practices. The drill hole database was verified by RPA and is suitable for Mineral Resource estimation.
- The geological models are reasonably constructed using available geological information and are appropriate for Mineral Resource estimation.
- The assumptions, parameters, and methodology used for the Cerro Lindo Mineral Resource estimate are appropriate for the style of mineralization and proposed mining methods.

MINING AND MINERAL RESERVES

- The Mineral Reserve estimate is consistent with the CIM (2014) definitions as incorporated by reference into NI 43-101.
- Estimation procedures for the current mining method are well-established, and the outcomes are consistent with the design inputs.
- A new layout for drill drifts within the stopes involves slightly higher costs, however, has shown worthwhile improvements in dilution reduction and increased extraction for secondary stopes.

- Going forward, a greater proportion of the stopes will be on the edges of the orebodies, where past dilution and extraction results may be less indicative of future performance. Dilution from adjacent disseminated mineralization is likely to carry low grades, and edge stope results will not necessarily match up with those of more centrally located stopes.
- Sill pillar recovery through CAF mining (comprising 10% of Mineral Reserves) represents a change in mining method for Cerro Lindo, and is likely to be less productive, higher cost, and requires high quality backfill placement.
- There may be opportunities to do better than planned in sill pillar recovery, through use of a longhole retreat sequence.
- There may be opportunities for additional disposal of tailings underground, by targeting voids left in areas of unstable ground.

PROCESSING

- Operating costs for the near future are forecast to remain in line with recent historical operating costs, which, in RPA's opinion, is reasonable.
- Based on recent processing plant performance, the forecast recoveries and concentrate qualities for the near future are reasonable. However, with Zn and Pb head grades at the end of the LOM being well below the historical ranges and consequently the lack of data on processing material with these head grades, there is a risk that actual recoveries may be lower than forecast.
- A small amount of transition or supergene ore has been identified in two stopes. Since large quantities of this ore fed to the concentrator negatively affect recoveries and concentrate quality, the proportion of this ore allowed in the concentrator feed blend is limited. Currently, this material does not form part of the feed blend, and test work is being conducted to determine the most economical method of processing this ore.
- As mining has progressed, the distance that paste backfill is pumped has increased, and this has led to limitations in the amount of paste backfill that can be pumped to the furthest points in the mine. This in turn means that dry-stack tailings filtration is fully utilized. The paste backfill pumping and piping system is strained, and any breakdowns in the system result in throughput reductions in the processing plant, as there is no tailings surge capacity other than limited space in the tailings thickener. There is therefore a risk that processing capacity can be constrained by continued or worsening paste backfill system down-time. Nexa plans to install an additional belt filter for dry-stack tailings filtration, which will allow for additional tailings to be diverted to dry-stacking in the event that the paste backfill system is down and will help to minimize the impact on the processing plant.

ENVIRONMENT

- No known environmental issues were identified from the site visit and documentation review. The Cerro Lindo Mine operation complies with applicable Peruvian permitting requirements. The approved permits address the authority's requirements for

operation of the underground mine, TSFs, waste rock dumps, process plant, water usage, and effluents discharge. There is no discharge of industrial or domestic water to the environment at the mine site.

- There is a comprehensive EMP in place, which includes a complete monitoring program for effluent discharges, gas emissions, air quality, non ionizing radiation, noise, surface water quality, groundwater quality, soil quality, terrestrial biology (vegetation and wildlife), and aquatic biology. Cerro Lindo reports the results of the monitoring program to the authorities according to the frequency stated in the approved resolutions and no compliance issues have been raised by the authorities.
- Regarding the tailings dry-stack storage facilities, some movement of the tailings relative to the foundation has been noted from the tailings monitoring data, however, phreatic levels in the tailings are very low and the range of movement is considered to be within normal parameters. It is noted that the likelihood of the mine site experiencing a severe seismic event is relatively high given the mine site proximity to a major tectonic plate subduction zone.
- Water management involves complete recirculation of water at the mine site where there is no fresh water withdrawal from natural water bodies and there is no discharge of industrial or treated sewage water to the environment. Fresh water is being supplied from a desalination plant located at the coast to meet site and process water make-up requirements. Water quality monitoring is carried out monthly at stations located along the Topará Creek at the mine site and in Jahuay beach at the discharge location from the desalination plant.
- A Mine Closure Plan has been developed for all the Mine components within the context of Peruvian legislation and is periodically updated.
- The social due diligence review indicates that, at present, Nexa's operations at the Cerro Lindo site in Peru are a positive contribution to sustainability and community well-being. Nexa has established and continues to implement its various Corporate policies, procedures, and practices in a manner consistent with relevant IFC Performance Standards. Nexa has, and continues to make, a positive contribution to the communities most affected by the Mine and has done a thorough job in collecting information to support its environmental effects assessment. Information regarding the outcomes of the complaints and grievances reports and site-specific health and safety practices was not provided at the time of this review, however, the corporate policies that guide these activities are clear and aligned with IFC Performance Standards.
- The water quality concerns outside of the mine site that communities express from time to time remain a risk for the operations at Cerro Lindo.

26 RECOMMENDATIONS

RPA offers the following recommendations:

GEOLOGY AND MINERAL RESOURCES

- Improve reconciliation processes by implementing a formal procedure and by forming a multi-disciplinary team to organize and analyze reconciliation results so that production data can be used to calibrate future resource and reserve models.
- Consider reducing the insertion of control samples from 20% to 15% for infill drilling.
- Take density measurements for SOP, SOB, SSL, and SLB domains.
- Investigate building copper and zinc mineralization domains separately using geological controls (lithology and mineralogy) and grades and including channel samples. Incorporate high grade domains to control continuous high grade zones.
- Post-mineralization dike modelling should be improved to capture more of the logged intercepts and core angles, as well as contacts based on the underground mapping. Dikes are important to delimit internal waste and to guide the local interpolation strategy as some of them are behaving like faults by controlling the mineralization trends.
- Build a more detailed structural model and structural domains to customize local search anisotropies and directions. It appears that there are at least four main structural trends present (northwest-southeast dipping northeast, northwest-southeast dipping southwest, northeast-southwest dipping northwest, and west-northwest/east-southeast dipping northwest and plunging west-northwest) that should be investigated further. Some mineralization domains appear to have mineralization trending in various directions due to local faulting and folding and further sub-domaining may be warranted.
- Complete the 2020 exploration program, consisting of a 35,000 m drill program to explore new targets and continue with advanced exploration, including geological mapping, and geochemical and geophysical surveys. The 2020 exploration program budget is approximately US\$5.5 million (US\$2.3 million will be spent on mine area exploration, and approximately US\$3.2 million will be expended on regional exploration).

MINING AND MINERAL RESERVES

- Continue to collect and analyze the stope performance data, and consider further segregation of the stope dataset, to assess differences in performance for edge stopes.
- Consider slashing the walls of the mucking drifts to establish a better mucking floor and improve breakage to the corners of the stopes.

- Investigate alternate mining methods for sill pillar recovery, including geotechnical review.

PROCESSING

- Investigate mitigating actions to ensure that the reliability and capacity of the paste backfill system does not constrain processing plant capacity. (Nexa plans to install an additional belt filter for dry-stack tailings filtration, which will allow for additional tailings to be diverted to dry-stacking in the event that the paste backfill system is down and will help to minimize the impact on the processing plant.)
- Conduct test work to further assess the negative effects of transition and supergene ores on the flotation process and evaluate methods for maximizing recoveries from these ores. Test work that is currently in progress to evaluate economical alternatives for the treatment of this material should continue.

ENVIRONMENT

- Continue to implement the EMP, which monitors and manages potential environmental impacts resulting from the mine operations to inform future permit applications and the Mine Closure Plan.
- Continue identifying and comparing solutions for storing tailings for the remainder of the LOM.
- Evaluate the long term environmental impacts of allowing the tailings valley runoff to pond against and seep through the Pahuaypita waste rock dump.
- Continue with participatory monitoring of water quality and implement social commitments to help improve access to water and water quality in the area.
- Sourcing local employment may be difficult with expanded and continued operations as Nexa has already reported that sourcing local employees has, at times, been challenging. Continue with commitments in educating, training, recruitment, and diversity targeted to the local workforce.
- Improve social and employment policies and procedures by developing mechanisms to communicate the outcomes of the employee and community focused activities with stakeholders and the public, particularly with a focus on access to water and perception about water quality.

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28 DATE AND SIGNATURE PAGE

This report titled “Technical Report on the Cerro Lindo Mine, Department of Ica, Peru” and dated December 3, 2019 was prepared and signed by the following authors:

(Signed and Sealed) Rosmery J. Cárdenas Barzola

Dated at Toronto, ON
December 3, 2019

Rosmery J. Cárdenas Barzola, P.Eng.
Principal Geologist

(Signed and Sealed) Jason J. Cox

Dated at Toronto, ON
December 3, 2019

Jason J. Cox, P.Eng.
Principal Mining Engineer

(Signed and Sealed) Brenna J.Y. Scholey

Dated at Toronto, ON
December 3, 2019

Brenna J.Y. Scholey, P.Eng.
Principal Metallurgist

(Signed and Sealed) Luis Vasquez

Dated at Toronto, ON
December 3, 2019

Luis Vasquez, M.Sc., P.Eng.
Senior Hydrotechnical Engineer
SLR Consulting (Canada) Ltd.

29 CERTIFICATE OF QUALIFIED PERSON

ROSMERY J. CÁRDENAS BARZOLA

I, Rosmery J. Cárdenas Barzola, P.Eng., as an author of this report entitled "Technical Report on the Cerro Lindo Mine, Department of Ica, Peru" prepared for Nexa Resources S.A. and dated December 3, 2019, do hereby certify that:

1. I am Principal Geologist with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of Universidad Nacional de Ingenieria, Lima, Peru, in 2002 with a B.Sc. degree in Geological Engineering.
3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #100178079). I have worked as a geologist for a total of 16 years since my graduation. My relevant experience for the purpose of the Technical Report is:
 - Resource estimation, geological modelling, and QA/QC experience ranging from greenfield projects to operating mines, including open pit and underground.
 - Review and report as a consultant on numerous exploration, development, and production mining projects around the world for due diligence and regulatory requirements.
 - Evaluation Geologist and Resource Modelling Geologist with Barrick Gold Corporation at Pueblo Viejo Project (Dominican Republic) and Lagunas Norte Mine (Peru).
 - Geologist at a polymetallic underground mine in Peru in charge of exploration and definition drilling.
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 Cerro Lindo Mine from June 4 to 7, 2019.
6. I am responsible for Sections 3 to 12, 14, and 23 and related disclosure in Sections 1, 2, and 25 to 27 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 3 to 12, 14, and 23 and related disclosure in Sections 1, 2, and 25 to 27 of the Technical Report contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 3rd day of December, 2019

(Signed and Sealed) Rosmery J. Cárdenas Barzola

Rosmery J. Cárdenas Barzola, P.Eng.

JASON J. COX

I, Jason J. Cox, P.Eng., as an author of this report entitled "Technical Report on the Cerro Lindo Mine, Department of Ica, Peru", prepared for Nexa Resources S.A. and dated December 3, 2019, do hereby certify that:

1. I am Principal Mining Engineer and Executive Vice President, Mine Engineering, with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of the Queen's University, Kingston, Ontario, Canada, in 1996 with a Bachelor of Science degree in Mining Engineering.
3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #90487158). I have worked as a mining engineer for more than 21 years since my graduation. My relevant experience for the purpose of the Technical Report is:
 - Review and reporting as a consultant on many mining operations and projects around the world for due diligence and regulatory requirements
 - Engineering study work (PEA, PFS, and FS) on many mining projects around the world, including commodities such as precious metals, base metals, bulk commodities, industrial minerals, and rare earths
 - Operational experience as Planning Engineer and Senior Mine Engineer at three North American mines
 - Contract Co-ordinator for underground construction at an American mine
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 Cerro Lindo Mine from June 4 to 7, 2019.
6. I am responsible for Sections 15, 16, 18, 19, 21, 22, and 24 and related disclosure in Sections 1, 2, and 25 to 27 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 15, 16, 18, 19, 21, 22, and 24 and related disclosure in Sections 1, 2, and 25 to 27 of the Technical Report contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 3rd day of December, 2019

(Signed and Sealed) Jason J. Cox

Jason J. Cox, P.Eng.

BRENNA J.Y. SCHOLEY

I, Brenna J.Y. Scholey, P.Eng., as an author of this report entitled "Technical Report on the Cerro Lindo Mine, Department of Ica, Peru" prepared for Nexa Resources S.A. and dated December 3, 2019, do hereby certify that:

1. I am Principal Metallurgist with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of The University of British Columbia in 1988 with a B.A.Sc. degree in Metals and Materials Engineering.
3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #90503137) and British Columbia (Reg. #122080). I have worked as a metallurgist for a total of 31 years since my graduation. My relevant experience for the purpose of the Technical Report is:
 - Reviews and reports as a metallurgical consultant on numerous mining operations and projects for due diligence and regulatory requirements.
 - Senior Metallurgist/Project Manager on numerous base metals and precious metals studies for an international mining company.
 - Management and operational experience at several Canadian and U.S. milling, smelting and refining operations treating various metals, including copper, nickel, and precious metals.
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 did not visit the Cerro Lindo Mine.
6. I am responsible for Sections 13 and 17 and related disclosure in Sections 1, 2, and 25 to 27 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 13 and 17 and related disclosure in Sections 1, 2, and 25 to 27 of the Technical Report contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 3rd day of December, 2019

(Signed and Sealed) Brenna J.Y. Scholey

Brenna J.Y. Scholey, P.Eng.

LUIS VASQUEZ

I, Luis Vasquez, M.Sc., P.Eng., as an author of this report entitled "Technical Report on the Cerro Lindo Mine, Department of Ica, Peru" prepared for Nexa Resources S.A. and dated December 3, 2019, do hereby certify that:

1. I am a Senior Hydrotechnical Engineer with SLR Consulting (Canada) Ltd. at 36 King St. East 4th Floor in Toronto, ON, M5C-1E5.
2. I am a graduate of Universidad de Los Andes, Bogotá, Colombia, in 1998 with a B.Sc. degree in Civil Engineering.
3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #100210789). I have worked as a as a civil engineer on mining related projects for a total of 14 years since my graduation. My relevant experience for the purpose of the Technical Report is:
 - Preparation of numerous environmental impact assessments for mining projects located in Canada, and Perú for regulatory approval.
 - Preparation of multiple mine closure plans for mining projects in Canada and Perú.
 - Preparation of several scoping, prefeasibility, feasibility and detailed design level studies for projects located in North America, South America, the Caribbean and Asia with a focus on planning, design and safe operation of water management systems and waste disposal facilities.
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 Cerro Lindo Mine from June 18 to 20, 2019.
6. I am responsible for Section 20 and parts of Section 18 and related disclosure in Sections 1 and 25 to 27 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Section 20 and parts of Section 18 and related disclosure in Sections 1 and 25 to 27 of the Technical Report contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 3rd day of December, 2019

(Signed and Sealed) Luis Vasquez

Luis Vasquez, M.Sc., P.Eng.

30 APPENDIX 1

MATERIAL GOVERNMENT CONSENTS

TABLE 30-1 LIST OF MATERIAL GOVERNMENT CONSENTS FOR CERRO LINDO MINE
Nexa Resources S.A. – Cerro Lindo Mine

| # | Government Consent | Resolution | Approval Date |
|---|---|-----------------------------|---------------|
| Environmental Certification | | | |
| 1 | Cerro Lindo Environmental Impact Assessment | DR 325-2004-MEM-AAM | 02/07/2004 |
| 2 | Environmental Impact Assessment for water and energy supply, and for the desalination plant. | DR 134-2007-MEM-AAM | 02/04/2007 |
| 3 | First Amendment to Cerro Lindo Environmental Impact Assessment (Components Relocation) | DR 204-2007-MEM-AAM | 08/06/2007 |
| 4 | Second Amendment to Cerro Lindo Environmental Impact Assessment (Expansion of Beneficiation Plant Capacity) | DR 168-2010-MEM-AAM | 17/05/2010 |
| 5 | Amendment to the EIA for the production expansion to 10,000 MT/day, and for water and energy supply and desalination plant. | DR 239-2011- MEM/AAM | 08/08/2011 |
| 6 | First Technical Report to RD 239-2011-MEM-AAM (Expansion of processing capacity to 14,990 TMD) | DR 069-2014-MEM/DGAAM | 03/01/2014 |
| 7 | Second Technical Report to RD 239-2011-MEMAAM (Expansion of processing capacity to 17,988 TMD) | DR 391-2014-MEM-AAM | 31/07/2014 |
| 8 | Third Technical Report to RD 239-2011-MEMAAM (Expansion of Pahuaypite 1 storage capacity (10%)) | DR 48-2016-SENACE/DCA | 14/07/2016 |
| 9 | Detailed Technical Report | DR 258-2016-MEM-DGAAM | 31/08/2016 |
| 10 | Environmental Impact Assessment for the access road to the project. | DR 37-2006-MTC/16 | 03/05/2006 |
| 11 | Modification to the Environmental Impact Assessment (MEIA) of Cerro Lindo | DR 039-2018-SENACE-JEF/DEAR | 13/03/2018 |
| 12 | Technical Report to the MEIA DR 039-2018-SENACE | DR 001-2009-SENACE-PE/DEAR | 3/01/2019 |
| 13 | Technical Report to the MEIA DR 039-2018-SENACE | DR 134-2009-SENACE-PE/DEAR | 22/08/2019 |
| Mine Closure Plan | | | |
| 1 | Cerro Lindo Mine Closure Plan | DR 326-2009-MEM-AAM | 20/10/2009 |
| 2 | First Mine Closure Plan Update | DR 84-2013-MEM-AAM | 22/03/2013 |
| 3 | First Amendment to the Mine Closure Plan | DR 432-2012-MEM-AAM | 19/12/2012 |
| 4 | Second Amendment to the Mine Closure Plan | DR 287-2016-MEM-DGAAM | 29/09/2016 |
| Mine and Waste Rock Facilities | | | |
| 1 | Authorization to start the underground mining activities and the approval of the Mining Plan | DR 139-2007-MEM/DGM | 17/08/2007 |
| 2 | Authorization to construct and operate Pahuaypite waste dump | R 0587-2018-MEM-DGM/V | 04/07/2018 |
| Beneficiation Plant and Tailing Storage Facilities | | | |
| 1 | Beneficiation Concession Title | DR 119-2007-MEM/DGM | 13/07/2007 |
| 2 | Authorization to operate the beneficiation plant at 7,490 Mt/day | R 10-2010-MEM-DGM/V | 14/01/2010 |
| 3 | Authorization to operate additional components for the beneficiation plant without extending the processing capacity | R 77-2011-MEM-DGM/V | 01/03/2011 |

| # | Government Consent | Resolution | Approval Date |
|--|---|-------------------------|---------------|
| 4 | Authorization to operate additional components for the beneficiation plant without extending the processing capacity | R 182-2011-MEM-DGM/V | 07/06/2011 |
| 5 | Authorization to operate the contingency deposit for temporal storage of tailings | R 138-2012-MEM-DGM/V | 03/05/2012 |
| 6 | Authorization to operate "Pahuaypite 2" tailings deposit, and the contingency deposit | R 323-2012-MEM-DGM/V. | 10/10/2012 |
| 7 | Authorization to operate additional components to operate the beneficiation plant at 14,990 Mt/day | R 337-2012-MEM-DGM/V. | 18/10/2012 |
| 8 | Expansion of the Beneficiation Concession to 518.78 Ha | DR 002-2013-MEM/DGM | 10/01/2013 |
| 9 | Authorization to operate additional components for the beneficiation plant without extending the processing capacity | R 117-2014-MEM-DGM/V. | 01/04/2014 |
| 10 | Authorization to operate additional components for the beneficiation plant without extending the processing capacity | R 412-2014-MEM-DGM/V. | 04/09/2012 |
| 11 | Authorization to operate additional components to operate the beneficiation plant at 17,988 MT/day | R 567-2014-MEM-DGM/V. | 12/12/2012 |
| 12 | Authorization to operate additional components for the beneficiation plant without extending the processing capacity | R 541-2015-MEM-DGM/V. | 05/11/2015 |
| 13 | Authorization to operate additional components for the beneficiation plant without extending the processing capacity | R 72-2016-MEM-DGM/V. | 08/03/2016 |
| 14 | Approval of a Technical Mining Report for the project "Extension of Pahuaypite 1 tailing deposit and auxiliary components", without extending the processing capacity | R 543-2016-MEM-DGM/V. | 06/09/2016 |
| 15 | Authorization to operate additional components to operate the beneficiation plant at 20,000 MT/day | R 0615-2017-MEM-DGM/V | 05/07/2017 |
| 16 | Authorization to construct stage 1 of tailings deposit Pahuaypite 1 | R 0260-2018-MEM-DGM/V | 21/03/2018 |
| Water Abstraction and Transportation Facilities | | | |
| 1 | Sea Water license | AR 33-2012-ANA-ALA. | 02/03/2012 |
| 2 | Groundwater license for IRHS 182 well | AR 57-2009-ANA-ALACH.P. | 08/04/2009 |
| 3 | Groundwater license for IRHS 183 well | AR 58-2009-ANA-ALACH.P. | 08/04/2009 |
| 4 | Groundwater license for IRHS 179 well | AR 26-2011-ANA-ALAS.J. | 29/04/2011 |
| 5 | Groundwater license for IRHS 180 well | AR 27-2011-ANA-ALAS.J. | 29/04/2011 |
| 6 | Groundwater license for IRHS 181 well | AR 28-2011-ANA-ALAS.J. | 29/04/2011 |
| 7 | Authorization to use aquatic area. | DR 466-2008/DCG. | 09/07/2008 |
| 8 | Modification to the Authorization to use aquatic area. | DR 706-2012- MGP/DCG. | 23/07/2012 |
| Effluent Discharge to the Environmental | | | |
| 1 | Effluent Discharge Authorization | DR 008-2019-ANA-DGCRH. | 16/02/2019 |
| Power Transmission Lines | | | |
| 1 | Power Transmission Concession | SR 4-2008-EM. | 07/02/2008 |
| | Modification to the Power Transmission Concession | SR 6-2012-EM. | 21/01/2012 |
| Use of Explosives | | | |
| 1 | Certificate of Mining Operation | Certificate 107-2019-C. | 01/01/2019 |

| # | Government Consent | Resolution | Approval Date |
|---|--|----------------------------|---------------|
| 2 | Global Authorization of Explosives | R 418-2019-SUCAMEC-DGPP. | 04/02/2019 |
| 3 | Authorization to operate an underground explosive magazine located on the Chincha – Cerro Lindo highway | R 126-2015-SUCAMEC-GEPP. | 20/01/2015 |
| 4 | Authorization to operate an underground magazine located in the Cerro Lindo Operation (currently in process of renovation) | R 02347-2018-SUCAMEC-GEPP. | 11/09/2018 |
| 5 | Authorization to operate an underground magazine located in the Cerro Lindo Operation (currently in process of renovation) | R 02348-2018-SUCAMEC-GEPP. | 11/09/2018 |
| 6 | Authorization to operate an underground magazine located in the Cerro Lindo Operation (currently in process of renovation) | R 02349-2018-SUCAMEC-GEPP. | 11/09/2018 |