Newmont™

Nevada Operations
Nevada, USA
Technical Report Summary

Report current as of:
December 31, 2021

Qualified Person:
Mr. Donald Doe, RM SME.

NOTE REGARDING FORWARD-LOOKING INFORMATION

This Technical Report Summary contains forward-looking statements within the meaning of the U.S. Securities Act of 1933 and the U.S. Securities Exchange Act of 1934 (and the equivalent under Canadian securities laws), that are intended to be covered by the safe harbor created by such sections. Such forward-looking statements include, without limitation, statements regarding Newmont's expectation for its mines and any related development or expansions, including estimated cashflows, production, revenue, EBITDA, costs, taxes, capital, rates of return, mine plans, material mined and processed, recoveries and grade, future mineralization, future adjustments and sensitivities and other statements that are not historical facts.

Forward-looking statements address activities, events, or developments that Newmont expects or anticipates will or may occur in the future and are based on current expectations and assumptions. Additionally, forward-looking statements regarding Nevada Gold Mines are based largely upon information provided by the Operating Manager, Barrick, to Newmont. Although Newmont's management believes that its expectations are based on reasonable assumptions, it can give no assurance that these expectations will prove correct. Such assumptions, include, but are not limited to: (i) there being no significant change to current geotechnical, metallurgical, hydrological and other physical conditions; (ii) permitting, development, operations and expansion of operations and projects being consistent with current expectations and mine plans, including, without limitation, receipt of export approvals; (iii) political developments in any jurisdiction in which Newmont operates being consistent with its current expectations; (iv) certain exchange rate assumptions being approximately consistent with current levels; (v) certain price assumptions for gold, copper, silver, zinc, lead and oil; (vi) prices for key supplies being approximately consistent with current levels; and (vii) other planning assumptions.

Important factors that could cause actual results to differ materially from those in the forward-looking statements include, among others, risks that estimates of mineral reserves and mineral resources are uncertain and the volume and grade of ore actually recovered may vary from our estimates, risks relating to fluctuations in metal prices; risks due to the inherently hazardous nature of mining-related activities; risks related to the jurisdictions in which we operate, uncertainties due to health and safety considerations, including COVID-19, uncertainties related to environmental considerations, including, without limitation, climate change, uncertainties relating to obtaining approvals and permits, including renewals, from governmental regulatory authorities; and uncertainties related to changes in law; as well as those factors discussed in Newmont's filings with the U.S. Securities and Exchange Commission, including Newmont's latest Annual Report on Form 10-K for the period ended December 31, 2021, which is available on newmont.com.

Newmont does not undertake any obligation to release publicly revisions to any "forward-looking statement," including, without limitation, outlook, to reflect events or circumstances after the date of this document, or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws. Investors should not assume that any lack of update to a previously issued "forward-looking statement" constitutes a reaffirmation of that statement. Continued reliance on "forward-looking statements" is at investors' own risk.

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

This technical report summary (the Report) was prepared for Newmont Corporation (Newmont) on the Nevada Operations (Nevada Operations or the Project) that are located in Nevada.

The Project is operated as a joint venture (JV) through Nevada Gold Mines, LLC (NGM). Barrick Gold Corporation (Barrick) is the JV operator and owns 61.5%, with Newmont owning the remaining 38.5% JV interest.

1.2 Terms of Reference

The Report was prepared to be attached as an exhibit to support mineral property disclosure, including mineral resource and mineral reserve estimates, for the Nevada Operations in Newmont's Form 10-K for the year ending December 31, 2021.

The Nevada Operations consist of 10 underground and 12 open pit active mining operations, two autoclave facilities, two roasting facilities, two oxide mills, two flotation plants and nine heap leach facilities, forming five major mining/processing complexes centered at Carlin, Cortez, Long Canyon, Phoenix and Turquoise Ridge.

Active open pit mining operations include Crossroads, Gold Quarry, Goldstrike, Goldstar, Long Canyon, Phoenix, Pipeline, and Vista. Two deposits, the Mega Pit at Turquoise Ridge and the South Arturo deposit at Carlin that are planned to be mined using open pit methods, are not currently active, but are planned to be mined in 2022–2023. Active underground mining operations include Cortez Hills underground, Exodus, Goldstrike, El Niño, Leeville, Pete Bajo, Turquoise Ridge Underground, and Vista. Underground exploration development is underway at the Goldrush deposit.

Unless otherwise indicated, all financial values are reported in United States (US) currency (US$). Units may be in either metric or US customary units as identified in the text. Mineral resources and mineral reserves are reported using the definitions in Subpart 229.1300 – Disclosure by Registrants Engaged in Mining Operations in Regulation S–K 1300 (SK1300). The Report uses US English. The Report contains forward-looking information; refer to the note regarding forward-looking information at the front of the Report.

1.3 Property Setting

The Nevada Operations are centered on northern Nevada, and are bisected by Interstate 80 (I-80), which provides access to most of the Project area.

Access for the Carlin Complex is generally from Elko, 26 miles west on I-80 to Carlin which is the closest town to the mine sites. In addition, various alternate access routes use Nevada State Route 766, and Elko and Eureka County roads. These roads are well maintained, and most are paved.

The Cortez Complex is reached by travelling approximately 32 miles east from the town of Battle Mountain on the I-80. Alternative access is from Elko, Nevada, approximately 45 miles west to the Beowawe exit, then approximately 35 miles south on Nevada State Route 306, which extends southward from I-80.

The Long Canyon Complex is accessed from either the I-80 east-bound route through Wells or I-80 west-bound through Wendover, with the main entrance just off the Oasis/Montello interchange. The mine area is within one mile of the freeway with the pit area about four miles west.

The Phoenix Complex is accessed from I-80 at Battle Mountain, traveling approximately 12 miles south on the paved Nevada State Route 305, and then west a short distance on a paved/gravel county access road.

The Turquoise Ridge Complex is accessed from a turnoff at the settlement of Golconda, 25 miles east of Winnemucca, then following a paved road for a further 25 miles, and thereafter by an improved gravel road to the mine gates. It is then 10 miles to the west mine gate and 25 miles to the east mine gate.

The Nevada operations are crossed by a network of gravel roads, providing easy access to various portions of the sites. The majority of the roads are suitable for all-weather conditions; however, in extreme winter conditions, roads may be closed for snow removal.

The Union Pacific Rail line runs parallel to I-80. NGM operates the Dunphy Rail Terminal, which is located 27 miles west of Carlin, for the transportation of bulk commodities such as lubricants, fuel, and ball mill consumables. These bulk commodities are road-transported from the Dunphy Rail Terminal to each site using commercial trucking services. Elko is serviced by commercial flights to Salt Lake City, Utah.

The Nevada Operations are located in a high desert region. Operations are conducted year-round.

The Project is located in a major mining region and local resources including labor, water, power, natural gas, and local infrastructure for transportation of supplies are well established. Mining has been an active industry in northern Nevada for more than 150 years. Elko (pop. 20,300) is a local hub for mining operations in northern Nevada and services necessary for mining operations are readily available.

1.4 Ownership

NGM is a JV between Barrick and Newmont. Barrick is the JV operator and has a 61.5% interest, with Newmont owning the remaining 38.5% interest. The JV area of interest (AOI) covers a significant portion of northern Nevada.

1.5 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

The Nevada Operations currently includes 15 plans of operations (PoOs) and eight exploration PoOs. The area includes private land (surface and minerals) owned or controlled by NGM, and land owned by the federal government that is administered by the Bureau of Land Management (BLM).

Within the operations PoO areas are 9,205 lode, millsite, placer and patented claims covering an area of approximately 163,214 acres. Within the exploration PoO areas, 2,180 lode, millsite, placer and patented claims cover an area of approximately 43,363 acres. Between the operations and the exploration PoOs, NGM holds a total of 11,385 claims covering an area of approximately 206,578 acres.

In addition, NGM holds a number of fee properties, within the operations and exploration PoOs. Collectively, these cover an area of approximately 78,621 acres.

On 11 March, 2019, Barrick and Newmont announced the formation of the NGM JV. Newmont, Barrick, and their respective affiliates that held properties in the AOI contributed to NGM the respective rights, titles and interests in, to, or under, all properties located in the AOI and any other assets, properties or rights located in Nevada. Newmont and Barrick excluded certain development and exploration properties that the companies held within the AOI from the JV; these included Newmont's Fiberline and Mike projects, and Barrick's Fourmile project. The JV has a mechanism for the potential contribution of the excluded properties to NGM in the future.

A number of agreements exist with federal, state, and third-party entities and these are monitored using a land management database.

NGM holds all necessary surface rights for the current mining operations. Additional surface rights will be required, for future mining projects. The Goldrush PoO is currently moving through the National Environmental Policy Act (NEPA) process (see discussion in Chapter 1.17.3).

NGM currently maintains a combination of approximately 1,250 active surface and groundwater rights within 38 hydrographic basins. NGM holds all necessary water rights for the LOM plan envisaged in this Report.

There are numerous royalties that pertain to the active mines within the Nevada Operations. Royalty payments vary, as the payments depend upon actual tonnages mined, the amount of gold recovered from that mined material, the deposit being mined, the receiving entity, and the type of royalty. A number of the claims have inactive royalties attached, which are not currently triggered as the claims are not being mined. In connection with the formation of Nevada Gold Mines, each of Barrick and Newmont was granted a 1.5% net smelter returns royalty over the respective properties they contributed to the NGM JV. Each of these "retained royalties" is only payable once the aggregate production from the properties subject to the royalty exceeds the publicly reported mineral reserves and mineral resources as of December 31, 2018. The state of Nevada imposes a 5% Net Proceeds of Minerals Tax on the value of all minerals severed in the State. This tax is calculated and paid based on a prescribed net income formula. Separately, a Nevada Mining Education Tax based on gross revenue, was introduced during 2021.

1.6 Geology and Mineralization

The deposits that comprise the Nevada Operations are considered to be examples of Carlin-style carbonate-hosted disseminated gold–silver deposits and intrusion-related gold–copper–silver skarn deposits.

The geology of northern Nevada displays a complicated sequence of orogeny and tectonism. Within the Project area, the mineralization is reported based on five mining complexes, Carlin, Cortez, Long Canyon, Phoenix and Turquoise Ridge.

Mineralization is hosted in lower Paleozoic sedimentary rocks or associated with Late Jurassic–Eocene intrusions. The majority of the deposits have some structural control, with mineralization commonly associated with the Roberts Mountains thrust. Pervasiveness and intensity of alteration varies both within and between gold deposits, depending on magnitude of the mineralizing system, nature of the host rock, and structural preparation.

Carlin Trend-style mineralization consists primarily of micrometer-sized gold and sulfides disseminated in zones of siliciclastic and decarbonated calcareous rocks and commonly associated with jasperoids. Mineralization is predominantly in the form of oxides, sulfides, or sulfide minerals in carbonaceous rocks, and the ore type determines how and where it is processed. Copper oxide mineralization locally contains minor amounts chalcanthite, malachite, chrysocolla, azurite, and lesser cuprite. In hypogene mineralization, chalcopyrite occurs as disseminations and bedded replacements with skarn and silicate minerals, and in conjunction with pyrite.

1.7 History and Exploration

Early-stage exploration included geological mapping, geochemical samples (stream sediment, soil, and rock chip samples), geophysical surveys (airborne and ground magnetics; radiometrics and electromagnetics; gravity, resistivity, and controlled-source audio-frequency telluromagnetics and magnetotellurics (MT); self-potential; induced-polarization (IP); time domain pole-dipole IP; time domain MT/IP using a distributed assay system; electrical logging of drill holes; and downhole IP. The majority of the surface-based grass roots exploration tools are superseded by mining and drill data.

Exploration potential exists adjacent to many of the deposits, along strike and at depth along favorable mineralized structures and within the favorable host lithologies.

1.8 Drilling and Sampling

Across the entire AOI, drilling totals over 203,000 drill holes for >82 Mft of drilling. Over the Project history, drilling included reverse circulation (RC), core, air rotary, mud rotary, and Cubex methods.

Logging conducted depended on the operator of the complex at the time the information was collected, and the drill type. Typically, logging collected information such as lithology, stratigraphy, basic structural data, recovery, alteration, and mineralization. For mining operations, logging could also record metallurgical type, intensity codes for metallurgy and alteration, and geotechnical parameters.

Collar surveys have used optical surveys, field estimates, Brunton compass and pacing, compass-and-string distance measurements, and for underground operations, measurements from surveyed control points, face, ribs and sill to triangulate each collar location. Down-hole surveys included downhole single-shot or multi-shot film camera (typical for most underground surveys), use of a downhole precession gyroscopic survey tool, a gyroscopic tool requiring initial orientation with a compass, and north-seeking or conventional gyroscopic tools.

Sampling is variable by mining complex and mineralization style. Air-rotary and mud-rotary drill holes were sampled on 5–100 ft intervals. Cubex drilling was sampled on 5–10 ft intervals. RC drill holes were typically sampled on 5 ft intervals. Core samples were nominally taken at 5 ft intervals, but could vary to a minimum of 1 ft to respect lithological contacts.

The majority of the density data were from measurements collected by exploration or mine site personnel using the water displacement method.

Given the long history of the Nevada Operations, there are numerous laboratories that were used over the Project history. Laboratories were both independent and non-independent. In the earlier stages of Project testwork, the idea of laboratory accreditation had not been developed. In later assay campaigns, accreditations were not typically recorded in the database. Currently, all independent laboratories used for chemical analysis are accredited for selected analytical techniques.

Sample preparation has varied over the 60 years of modern Project history, in line with advancing scientific knowledge, changes in equipment, and operational experience. Currently, sample preparation procedures include drying, crushing and pulverizing. As with sample preparation, analytical methods have changed over the Project history. Currently, sample analytical procedures include:

- ALS Chemex: fire assays (FA) and atomic absorption (AA) finish for gold; samples reporting >0.1 oz/st Au on the initial assay re-assayed by FA with gravimetric finish; cyanide leach gold assays for initial FAs >0.008 oz/st Au; cyanide leach and preg rob capacity; LECO testing; multi-element analyses by aqua regia digestion/inductively coupled plasma-atomic emission spectroscopy (ICP-AES)/ICP-mass spectroscopy (ICP-MS), 51 elements or 48 element analyses by four acid and ICP-AES/ICP-MS; other analyses may be requested, and include arsenic, total carbon, total sulfur, sulfide sulfur, carbonate carbon, and organic carbon;
- AAL: 1 assay ton fire assays with an AA finish for gold;
- Mine laboratories: 1 assay ton fire assays with an AA finish for gold; samples with gold grade >0.438 oz/st are completed by a ½ assay ton fire assay with a gravimetric finish. If the sample gold grade is above the open pit cut-off grade, the samples are analyzed for cyanide leach, % preg rob, total carbon, total sulfur, sulfide sulfur, carbonate, and organic carbon for ore characterization purposes. On request, underground muck samples can be equal weight composited for further ore characterization analyses including total carbon, total sulfur, sulfide sulfur, carbonate carbon, organic carbon, and arsenic.

Prior to the mid-1990s, few companies had rigorous quality assurance and quality control (QA/QC) programs in place. QA/QC had typically consisted, where undertaken, of reanalysis of drill core or other samples when later sampling indicated a potential problem. In the case of the NGM Operations, QA/QC samples were submitted for RC and core samples from about 1990. Typical QA/QC measures include submission of blank materials, certified or standard reference materials (standards), and field duplicate samples. Check assays may not be routinely performed. Typical checks were undertaken on pulps and coarse reject samples to test the analytical processes and preparation procedure, respectively.

Project geologists review the assay results and periodically request a batch re-run and/or entire hole based on expected versus actual results. Analyses that appear to be outside best practice guidelines for exploration of two standard deviations will result in a request of the laboratory that completed the original analysis to undertake a re-run of the sample batch that the failed control was in. Check assay programs are the responsibility of the individual geologists.

Several systems and programs are used to control and ensure assay data quality. These include standards for technician training, periodic process checks, equipment preventive maintenance, centralized reagent/standard preparation, control samples (reference materials) and blanks assayed with the samples, data verification, periodic check assays, and participation in industry round-robin programs.

1.9 Data Verification

Validation checks are performed by NGM operations personnel on data used to support estimation comprise checks on surveys, collar coordinates, lithology data (cross-checking from photographs), and assay data. Errors noted are rectified in the database prior to data being flagged as approved for use in resource estimation.

A number of third-party consultants have performed external data reviews. These external reviews were undertaken in support of acquisitions, support of feasibility-level studies, and in support of technical reports, producing independent assessments of the database quality. No significant problems with the database, sampling protocols, flowsheets, check analysis program, or data storage were noted.

The QP visited the Nevada Operations on many occasions, most recently to the Carlin Complex in 2019, and visited the Goldrush project during 2021. He inspected the underground workings at Leeville and Pete Bajo, viewed the open pit operations, and toured the Gold Quarry roaster. During the Goldrush visit he inspected the underground workings, reviewed core, and met with project representatives. The QP also toured the planned locations for some of the surface infrastructure. The QP's personal inspection supports the use of the data in mineral resource and mineral reserve estimation, and in mine planning.

1.10 Metallurgical Testwork

During the 60+ year history of Nevada Operations mine development, a significant number of metallurgical studies and accompanying laboratory-scale and/or pilot plant tests have been completed. Either internal metallurgical research facilities or external consultants undertake the research. Recent external testwork was performed at McClelland Laboratories, Hazen Research, Macpherson Laboratories, McGill University, Svedala, and Outukumpu. Internal testwork facilities included the Goldstrike Metallurgical Laboratory, Gold Quarry Metallurgical Laboratory, Newmont Metallurgical Services in Englewood, Colorado and the AuTec Metallurgical Laboratory located in Vancouver, British Columbia, Canada.

Metallurgical testwork included: mineralogy; head grades and screen analyses; bottle roll, bench and column cyanide leaching; carbon adsorption/activation tests; direct cyanide leach testwork; carbon-in-leach tests; agglomeration tests; cyanide amenability tests; bench or circulating fluidized bed roasting tests; calcine tests; magnetic separation testwork; bench-top roaster followed by CIL testwork; bench-top alkaline pressure leach tests followed by CIL tests; calcium thiosulfate and resin leach tests; bench-top alkaline pressure leach tests followed by thiosulfate resin in leach testwork; sulfidization acidification re-neutralization and thickening or SART testwork; reagent consumption reviews; impurity reviews; standard autoclaving and leach tests; grindability (comminution) tests (SMC, breakage parameter, Bond work index, drop weight index, rod work index, unconfined compressive strength, semi-autogenous grind (SAG) power index); thickener testwork; batch and pilot plant tests

These test programs were sufficient to establish the optimal processing routes for the non-refractory and refractory ores, and the weathering state of the ores (oxide, leached, enriched, transition, sulfide), and was performed on mineralization that was typical of the deposits. The results obtained supported estimation of recovery factors for the various ore types depending on the process method selected.

Numerous processing methods are used within the Nevada Operations, including CIL for higher-grade oxide ore, heap leaching for lower-grade oxide ore, roasting for carbonaceous refractory ore, and pressure oxidation (POX) for higher-grade sulfidic ore.

Future ore testing is completed according to the needs of the optimized blend planning for the combined NGM operations. Current ore testing is completed monthly by performing testwork on feed stockpile samples.

Gold recovery is a function of the processing method (e.g., heap leaching, CIL, roasting, and arsenic concentration for refractory ore) and the lithology of the mineralization being processed. As applicable, recovery estimates include consideration of the head grade, cyanide-soluble gold to fire assay gold ratio, sulfide sulfur concentration, total organic carbon concentration, and silica concentration.

Copper recovery models were derived from a statistical review of the metallurgical data and range in complexity from simple, fixed recoveries to complex, multi-variable equations. The following input variables were available as possible drivers of recovery: head grade, copper leach ore type, alteration type, formation, and various trace elements.

Recovery ranges projected for the LOM operations include:

- Gold:
  - Oxide leach: 57–75%;
  - Oxide mill: 73–88%;
  - Goldstrike roaster: 84–92%;
  - Goldstrike autoclave: 50–96%;
  - Gold Quarry roaster: 84–92%;
  - Sage (Turquoise Ridge) autoclave: average 84%;
  - Phoenix mill: average 70%;
- Copper:
  - Phoenix mill: average 71%;
  - Copper leach: average 49%;
- Silver:
  - Phoenix mill: average 38%.

Samples selected for metallurgical testing during feasibility and development studies were representative of the various styles of mineralization within the different deposits. Samples were selected from a range of locations within the deposits. Sufficient samples were taken, and tests were performed using sufficient sample mass for the respective tests undertaken. Variability assessments are supported by production and extensive open pit and underground exposures.

Depending upon the specific processing facility, several processing factors or deleterious elements could have an economic impact on extraction efficiency of a certain ore source, based either on the presence, absence, or concentration of the following constituents in the processing stream:

- Organic carbon;
- Sulfide sulfur;
- Carbonate carbon;
- Arsenic
- Mercury;
- Antimony;
- Copper.

However, under normal ore routing and blending practices at NGM where material from several sites may be processed at one facility, the above list of constituents is typically not a concern.

1.11 Mineral Resource Estimation

1.11.1 Estimation Methodology

Estimation was typically performed by Nevada Operations personnel. All mineralogical, drilling, and background data and information were provided to the estimators by the geological staff at the operations or by exploration staff.

Exploratory data analysis was undertaken on sample and composite data, as required, to understand the statistical features within and between geologic and mineralization domains. High-grade anomalous values were controlled through the use of top-cutting and/or high-grade estimation restrictions, applied by deposit and domain. Composite lengths varied by complex and planned mining method, ranging from 2.5–20 ft. Variographic analyses were completed by domain.

Estimation and interpolation methods varied by deposit. The following methods were used: ordinary kriging, indicator kriging (IK), local indicator kriging (LIK), inverse distance weighting to the second power (ID2), inverse distance weighting to the third power (ID3), and inverse distance weighting to the fifth power (ID5). Typically, alternate grade interpolations (including nearest neighbor) were performed for use in model validation and sensitivity testing. Depending on the deposit, interpolation was performed in multiple (up to eight) passes. Search neighborhoods were based on variography, mineralization geometry, or on selected drill spacings. Minimum and maximum numbers of informing samples varied by deposit, as did the number of samples allowed to be used from a single drill hole. Dynamic anisotropy could be used to allow for a localized change in the strike, dip, and plunge orientation of the mineralization. Block models were flagged for mining depletion.

Mineralization solids were checked for conformity to drill hole data, continuity, similarity between sections, overlaps, appropriate terminations between holes and into undrilled areas. Validation procedures were undertaken on the estimations. These could include comparison of global mean grades, visual comparisons to composite grades, comparisons to reconciliation (when available), change of support corrections estimated using a discrete Gaussian model under a diffusion model assumption, grade-tonnage curves, slope of regression calculations, comparison to NN analysis and swath plots.

Blocks were classified in the model, based on relative confidence in the estimated grades, into measured, indicated, and inferred. Criteria for classification were defined within each deposit, and based on various combinations of: proximity to nearby drilling data (distances to nearest 1, 2, or 3 drill holes); geostatistical drill spacing studies; qualitative assessment of confidence in the underlying geologic interpretations; historical classification assignments; and classification smoothing algorithms.

Mineralization considered potentially amenable to open pit mining methods was constrained within a conceptual pit shell using the Lerchs–Grossmann (LG) algorithm within Vulcan software. Mineralization considered potentially amenable to underground methods was constrained within mineable shapes generated using Mineable Stope Optimizer (MSO) software.

Commodity prices used in resource estimation are based on long-term analyst and bank forecasts. An explanation of the derivation of the commodity prices is provided in Chapter 16.2. The estimated timeframe used for the price forecasts is the 24-year LOM that supports the mineral reserve estimates.

The resources are reported at varying cut-off values, which are based on the material type being mined, the mining method and the designated process facility. As a result, cut-off values can vary significantly by material type.

1.11.2 Mineral Resource Statement

Mineral resources are reported using the mineral resource definitions set out in SK1300. The reference point for the estimate is in situ. Mineral resources are reported exclusive of those mineral resources converted to mineral reserves.

Mineral resources are reported on a 100% basis. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest.

The mineral resource estimates for the Nevada Operations are provided as follows:

- Gold: Table 1-1 (measured and indicated) and Table 1-2 (inferred);
- Silver: Table 1-3 (measured and indicated) and Table 1-4 (inferred);
- Copper: Table 1-5 (measured and indicated) and Table 1-6 (inferred).

Tonnages in the tables are metric tonnes.

1.11.3 Factors That May Affect the Mineral Resource Estimate

Factors that may affect the mineral resource estimate include: changes to long-term metal price assumptions; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological and grade shape and geological and grade continuity assumptions; changes to input parameters used in the pit shells and stope outlines constraining the mineral resources; changes to the cut-off grades used to constrain the estimates; variations in geotechnical, mining, and processing recovery assumptions; and changes to environmental, permitting and social license assumptions.

Table 1-1: Measured and Indicated Mineral Resource Statement (Gold)

Complex	Measured Mineral Resources			Indicated Mineral Resources			Measured and Indicated Mineral Resources		
	Tonnage (x 1,000 t)	Grade (g/t Au)	Cont. Gold (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Au)	Cont. Gold (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Au)	Cont. Gold (x 1,000 oz)
Carlin	45,400	3.56	5,210	140,100	1.73	7,780	185,500	2.18	12,980
Cortez	700	7.02	170	99,500	1.20	3,850	100,300	1.25	4,010
Long Canyon	500	3.47	60	9,800	4.05	1,280	10,400	4.02	1,340
Turquoise Ridge	15,300	3.10	1,530	33,700	3.57	3,870	49,100	3.42	5,400
Phoenix	7,600	0.53	130	218,200	0.45	3,140	225,800	0.45	3,270
Total	***69,600***	***3.17***	***7,090***	***501,300***	***1.24***	***19,910***	***571,000***	***1.47***	***27,000***

Table 1-2: Inferred Mineral Resource Statement (Gold)

Complex	Inferred Mineral Resources		
	Tonnage (x 1,000 t)	Grade (g/t Au)	Cont. Gold (x 1,000 oz)
Carlin	110,700	2.1	7,510
Cortez	124,400	1.6	6,380
Long Canyon	2,600	3.6	300
Turquoise Ridge	18,200	2.0	1,200
Phoenix	49,200	0.4	580
Total	***305,000***	***1.6***	***15,970***

Table 1-3: Measured and Indicated Mineral Resource Statement (Silver)

Complex	Measured Mineral Resources			Indicated Mineral Resources			Measured and Indicated Mineral Resources		
	Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)
Phoenix	7,600	5.57	1,360	218,200	5.54	38,860	225,800	5.54	40,220
Total	***7,600***	***5.57***	***1,360***	***218,200***	***5.54***	***38,860***	***225,800***	***5.54***	***40,220***

Table 1-4: Inferred Mineral Resource Statement (Silver)

Complex	Inferred Mineral Resources		
	Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)
Phoenix	49,200	5.6	8,840
Total	***49,200***	***5.6***	***8,840***

Table 1-5: Measured and Indicated Mineral Resource Statement (Copper)

Area	Measured Mineral Resources			Indicated Mineral Resources			Measured and Indicated Mineral Resources		
	Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)	Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)	Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)
Phoenix	8,000	0.14	20	289,600	0.14	880	297,600	0.14	910
Total	***8,000***	***0.14***	***20***	***289,600***	***0.14***	***880***	***297,600***	***0.14***	***910***

Table 1-6: Inferred Mineral Resource Statement (Copper)

Area	Inferred Mineral Resources		
	Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)
Phoenix	51,600	0.1	150
Total	***51,600***	***0.1***	***150***

Notes to Accompany Mineral Resource Tables:

1. Mineral resources are current as at December 31, 2021, using the definitions in SK1300. The Qualified Person responsible for the estimate is Mr. Donald Doe, RM SME, Group Executive, Reserves, a Newmont employee.
2. The reference point for the mineral resources is in situ.
3. Mineral resources are reported on a 100% basis. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest.
4. Mineral resources are reported exclusive of mineral reserves. Mineral resources that are not mineral reserves do not have demonstrated economic viability.
5. Mineral Resources that are potentially amenable to open pit mining methods are constrained within a designed pit shell. Mineral Resources that are potentially amenable to underground mining methods are constrained within conceptual stope designs. Parameters used are summarized in Table 11-1 and Table 11-2.
6. Tonnages are metric tonnes rounded to the nearest 100,000. Gold and silver grades are rounded to the nearest 0.01 gold grams per tonne. Copper grade is in %. Gold and silver ounces and copper pounds are estimates of metal contained in tonnages and do not include allowances for processing losses. Contained (cont.) gold and silver ounces are reported as troy ounces, rounded to the nearest 10,000. Copper is reported as pounds and rounded to the nearest 10 million pounds. Rounding of tonnes and contained metal content as required by reporting guidelines may result in apparent differences between tonnes, grade and contained metal content. Due to rounding, some cells may show a zero ("0"). Totals may not sum due to rounding.

1.12 Mineral Reserve Estimation

1.12.1 Estimation Methodology

Measured and indicated mineral resources were converted to mineral reserves. Mineral reserves in the Nevada Operations area are estimated for the Carlin, Cortez, Long Canyon, Phoenix and Turquoise Ridge complexes using open pit mining, and the Carlin, Cortez, and Turquoise Ridge complexes using underground mining. Stockpiled material is also included in the mineral reserve estimates. All Inferred blocks are classified as waste in the cashflow analysis that supports mineral reserve estimation.

Mineral Reserves are supported by a mine plan, an engineering analysis, and the application of modifying factors.

For the open pits, optimization work involved floating cones at a series of gold prices. The generated nested pit shells were evaluated using the reserve gold price of US$1,200/oz (and $2.75/lb Cu and $16.50/oz Ag for Phoenix) and a 5% discount rate. The pit shells with the highest net present value (NPV) were selected for detailed engineering design work. A realistic schedule was developed in order to determine the optimal pit shell for each deposit; schedule inputs include the minimum mining width, and vertical rate of advance, mining rate and mining sequence. The block models were constructed to include the expected dilution based on mining methods, bench height and other factors. The current mine and process reconciliation data appear to support this assumption.

Underground mines are designed using zones that are amenable to different mining methods based on geotechnical and access considerations, the deposit shape, orientation and grade, and mining depths.

Cut-off grades were determined based on a combination of the selected metal price, applicable royalty payments, mining costs, process operating costs, and on-site (and off-site) metal recoveries by material type, and selected process method. Operational cut-off grades ranged from:

- Carlin Complex: 0.20–7.06 g/t Au;
- Cortez Complex: 0.17–3.41 g/t Au;
- Long Canyon: 0.24 g/t Au;
- Turquoise Ridge Complex: 0.17–7.99 g/t Au.

Revenue from the Phoenix Complex is generated from three products: gold, silver, and copper. A revenue cut-off, rather than a grade cut-off, is used that integrates the economics (recovery, metal prices, and costs) of all three metals. The revenue calculation only includes incremental mining costs beyond the pit rim. The mineral reserves for the Phoenix Complex are reported using a zero-dollar net revenue cut-off.

The mine plans assume use of a number of different mining methods and variants including: long-hole stoping; long-hole stope retreat; underhand drift-and-fill; and overhand drift-and-fill.

Stopes were created using Mineable Stope Optimizer (MSO) software at the required stope height, length and cut-off criteria based on the mine area. The stope widths depend on the stope cut-off and dilution (over-break) added to stope design, and the mining method used. A set of marginal stopes could also be considered in the reserve process.

Blocks that were modelled as waste or low-grade were included in a designed stope shape as internal dilution. Additional tonnage dilution percentages could be added by site personnel, where required, based on historical reconciliation data for a particular mining method. Cut-off grades are determined based on a combination of the selected metal price, applicable royalty payments, mining costs, process operating costs, and on-site (and off-site) metal recoveries by material type, selected process method, and mining method.

Stockpile estimates were based on mine dispatch data; the grade comes from closely-spaced blasthole sampling and tonnage sourced from truck factors. The stockpile volumes were typically updated based on monthly surveys. The average grade of the stockpiles was adjusted based on the material balance to and from the stockpile.

Commodity prices used in mineral reserve estimation are based on long-term analyst and bank forecasts. An explanation of the derivation of the commodity prices is provided in Chapter 16.2. The estimated timeframe used for the price forecasts is the 24-year LOM that supports the mineral reserve estimates.

1.12.2 Mineral Reserve Statement

Mineral reserves have been classified using the mineral reserve definitions set out in SK1300. The reference point for the mineral reserve estimate is the point of delivery to the process facilities. Mineral reserves are reported on a 100% basis. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest.

The mineral resource estimates for the Nevada Operations are provided as follows:

- Gold: Table 1-7;
- Silver Table 1-8;
- Copper: Table 1-9.

Tonnages in the table are metric tonnes.

Newmont

Table 1-7: Proven and Probable Mineral Reserve Statement (Gold)

Area	Proven Mineral Reserves			Probable Mineral Reserves			Proven and Probable Mineral Reserves		
	Tonnage (x 1,000 t)	Grade (g/t Au)	Cont. Gold (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Au)	Cont. Gold (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Au)	Cont. Gold (x 1,000 oz)
Carlin	38,300	6.01	7,400	129,800	2.70	11,280	168,000	3.46	18,670
Cortez	3,500	4.43	500	103,000	4.16	13,780	106,500	4.17	14,290
Long Canyon	300	1.43	20	600	1.06	20	1,000	1.18	40
Turquoise Ridge	42,900	5.09	7,030	32,600	6.59	6,920	75,600	5.74	13,940
Phoenix	13,500	0.72	310	155,800	0.59	2,960	169,300	0.60	3,270
Total	***98,500***	***4.82***	***15,260***	***421,800***	***2.58***	***34,960***	***520,300***	***3.00***	***50,220***

Table 1-8: Proven and Probable Mineral Reserve Statement (Silver)

Area	Proven Mineral Reserves			Probable Mineral Reserves			Proven and Probable Mineral Reserves		
	Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)
Phoenix	13,500	7.40	3,200	155,800	6.35	31,810	169,300	6.43	35,010
Total	***13,500***	***7.40***	***3,200***	***155,800***	***6.35***	***31,810***	***169,300***	***6.43***	***35,010***

Table 1-9: Proven and Probable Mineral Reserve Statement (Copper)

Area	Proven Mineral Reserves			Probable Mineral Reserves			Proven and Probable Mineral Reserves		
	Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)	Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)	Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)
Phoenix	17,800	0.17	70	208,300	0.17	770	226,100	0.17	830
Total	***17,800***	***0.17***	***70***	***208,300***	***0.17***	***770***	***226,100***	***0.17***	***830***

Notes to Accompany Mineral Reserve Tables:

1. Mineral reserves are current as at December 31, 2021. Mineral reserves are reported using the definitions in SK1300. The Qualified Person responsible for the estimate is Mr. Donald Doe, RM SME, Group Executive, Reserves, a Newmont employee.
2. The point of reference for the estimates is the point of delivery to the process facilities.
3. Mineral reserves are reported for Nevada Gold Mines on a 100% basis. Barrick owns a 61.5% joint venture interest, with Newmont owning the remaining 38.5% joint venture interest.
4. Mineral reserves that will be mined using open pit mining methods are constrained within a designed pit shell. Mineral reserves that will be mined by underground mining methods are constrained within conceptual stope designs. Parameters used are summarized in Table 12-1 and Table 12-2.
5. Tonnages are metric tonnes rounded to the nearest 100,000. Gold and silver grades are rounded to the nearest 0.01 gold grams per tonne. Copper grade is in %. Gold and silver ounces and copper pounds are estimates of metal contained in tonnages and do not include allowances for processing losses. Contained (cont.) gold and silver ounces are reported as troy ounces, rounded to the nearest 10,000. Copper is reported as pounds and rounded to the nearest 10 million pounds. Rounding of tonnes and contained metal content as required by reporting guidelines may result in apparent differences between tonnes, grade and contained metal content. Due to rounding, some cells may show a zero (“0”). Totals may not sum due to rounding.

1.12.3 Factors That May Affect the Mineral Reserve Estimate

Factors that may affect the mineral reserve estimates include: changes to long-term metal price assumptions; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological and grade shape and geological and grade continuity assumptions; changes to input parameters used in the pit shells and stope outlines constraining the mineral reserves; changes to the cut-off grades used to constrain the estimates; variations in geotechnical, mining, and processing recovery assumptions; and changes to environmental, permitting and social license assumptions.

1.13 Mining Methods

Open pit mining is conducted using conventional techniques and an Owner-operated conventional truck and shovel fleet. Underground mining is currently conducted using conventional stoping methods, and conventional mechanized equipment.

Nevada Operations personnel and external consultants completed geotechnical studies and provided geotechnical recommendations that form the basis for pit designs. Ground control management plans were developed, and are regularly updated.

The Nevada Operations have hydrological models constructed for key operational areas, used to predict the rate of dewatering and for well-location planning. The models are regularly updated.

Ultimate open pit designs were developed based on pit optimization analysis. The pit limits incorporate geotechnical and hydrological recommendations into final high walls and are designed to include ramps and access to haulage routes to waste rock storage facilities (WRSFs) and processing facilities. Some deposits include phased pit designs which are used to sequence the mining operation. Phases are designed to optimize the economics of the operation and/or provide access to selected ore for blending purposes. Haul road effective widths for two-way travel range from 98–141 ft with a maximum grade of 10%. For single-lane haul roads, a minimum road width of 80 ft could be used for the bottom benches of the pit. Bench heights vary from 20–40 ft, and can be 60 ft where triple-benching is employed. Blast patterns are laid out according to material type using rock type designations.

Underground mining is mechanized, using large-scale equipment. The most common mining methods are a combination of cut-and-fill mining variants with cemented rock (CRF) or paste backfill, and long-hole stoping with, depending on ground conditions, either cemented or uncemented backfill. Depending on the operation, material is loaded into haul trucks and hauled to surface using declines, or hoisted via shafts.

The currently active and proposed waste rock storage facilities (WRSFs) have adequate capacity for the LOM. The management of waste rock is based on categorizing by waste rock types based on analytical parameters, with additional refining of waste polygons based on geologic interpretation.

The open pit production schedules have significant variation in ore delivery over time and there is a high proportion of the ore that is stockpiled after mining and before processing. There are several stockpile options, all of which are based upon the grade of material and varying from leach ore to mill ore. Leach material is generally delivered directly to the leach pads.

The number of loading and hauling units allocated to each deposit varies depending on the operational needs from the open pit mine plans. The equipment list also includes the auxiliary equipment needed to support mining and the re-handling of the ore from the stockpile pad into the mill feeders. Underground equipment requirements include large-scale load–haul–dump (LHD) vehicles and haulage trucks, jumbos, and auxiliary equipment.

The LOM plan assumes 577 Mt of ore and 1,202 Mt of waste will be mined.

1.14 Recovery Methods

The designs of the process facilities design were based on a combination of metallurgical testwork, previous study designs, and previous operating experience. The designs are generally conventional to the gold industry. The Goldstrike autoclave uses a thiosulfate–resin-in-leach process which is not conventional, but is successful in processing high alkaline, preg-robbing ore from the Carlin Complex. The Goldstrike autoclave is planned to be converted to CIL in 2022–2023 when the high alkaline, preg-robbing, low-grade, double refractory stockpiles are consumed.

The gold heap leach process consists of a conventional run-of-mine leach pad, followed by leaching, solution collection, and pumping. Solution is collected in the leach pad drain system and then pumped to activated carbon columns (CIC) where gold loads onto activated carbon. Gold-laden carbon is reclaimed from the CIC circuit and transported to a centralized carbon stripping system where the gold is stripped from the carbon and recovered by electro-winning. Stripped carbon is recycled and reused. The gold heap leach produces doré.

The Phoenix copper leach process consists of a conventional run-of-mine leach pad designed to facilitate the stacking of copper oxide and transition ores as well as the subsequent leaching, solution collection, and pumping. The copper heap leach produces copper cathode.

The Gold Quarry concentrator (formerly referred to as Mill 5) relies on oxide pit, oxide stockpile, low-carbonate sulfide material, and high-carbonate sulfide material. The Gold Quarry concentrator uses a combination of flotation and cyanide leaching to recover gold. Gold recovery from the flotation process is dependent upon the application of the appropriate amount of grinding to liberate the pyrite and enable the sulfide mineral(s) to be selectively floated away from the bulk of the ore. Gold recovery from the carbon-in-leach (CIL) process is typically a function of the ease of solution access to gold particles.

The Gold Quarry roaster (formerly referred to as Mill 6) is fed with refractory ores from open pit and underground ores from Cortez, Gold Quarry, Goldstar, stockpile material and flotation concentrates from the Gold Quarry concentrator. Because the final processing steps are the same as in the oxide mill, the performance of a roasting facility is similarly driven by the same parameters with the addition of sufficient retention time in the roaster in contact with sufficient oxygen to complete the oxidizing process.

The Pipeline mill treats material from the Crossroads/Pipeline open pit, Cortez Pits open pit, Cortez Hills underground, and historical stockpiles derived from mining of the Pipeline and Cortez Hills open pits. The process consists of crushing and grinding, a CIL circuit, carbon stripping and reactivation circuits, and doré refining. The final product is doré.

Run-of-mine higher-grade oxide ore from the Turquoise Ridge Surface sources are blended for gold grade, hardness, and carbonate content and fed to the Juniper oxide mill. The process consists of grinding, a CIL circuit, elution and electrowinning. The final product is doré.

The Phoenix solvent extraction–electrowinning (SX/EW) plant is fed with material derived from the Fortitude and Bonanza open pits. The SX plant consists of leaching, solvent extraction, and copper electrolysis, to produce cathode copper.

The Phoenix mill treats material from open pit sources at the Phoenix Complex. The plant has a copper/gold specific flotation system designed to provide concentrate products for sale to an outside smelter. The process consists of crushing and grinding, flotation, conventional CIP processing, to produce copper concentrates. Gold is also recovered by gravity separation.

The Goldstrike autoclave treats material from Goldstrike Betze Open Pit. The process consists of crushing and grinding, pressure oxidation using autoclaves, thiosulfate–resin-in-leach circuits, elution and electrowinning. The autoclave is planned to be converted to CIL in 2022–2023 once all of the high alkaline, preg-robbing, low-grade, double refractory stockpiles are depleted. The final product is doré.

The Sage autoclave treats material from Turquoise Ridge Underground and open pit sources, plus historical stockpiles. The process consists of crushing and grinding, pressure oxidation using autoclaves, a CIL circuit, elution and electrowinning. The final product is doré.

The Goldstrike roaster treats open pit and underground material from numerous sources including the South Arturo open pits, El Niño underground, Goldstrike underground, Goldstrike open pit, historical stockpiles derived from mining of the Goldstrike open pit, Goldstar open pit, Leeville underground, Pete Bajo underground, Exodus underground, Cortez Crossroads/Pipeline open pit, Cortez Hills underground, historical stockpiles derived from mining of the Cortez Hills and Crossroads/Pipeline open pits, and Goldrush underground. The process includes crushing and grinding, roasting, and a roaster CIL circuit. The product is transferred to the Goldstrike autoclave circuit for elution and electrowinning to produce doré.

The major consumables in the gold heap leach facilities are antiscalant, cyanide and lime. The copper heap leach pads use sulfuric acid. The Phoenix SX/EW plant uses sulfuric acid (electrolyte), cobalt, diluent, extractant, diatomaceous earth, clay, and starch. Mill facilities use grinding media, balls for ball mills, lime, cyanide, collector, frother, and hydrogen peroxide. The Goldstrike autoclave requires calcium thiosulfate and resin. Both autoclaves use grinding media, balls for ball mills, lime, and cyanide. The roasters require oxygen, grinding steel, cyanide, lime and sulfur.

Metallurgical facilities comprise nine heap leach facilities, two oxide plants, two flotation plants, two autoclave facilities and two roaster facilities.

Gold recovery from heap leaching is a function of solution application and management, particle size distribution, time, and mineralogy. Cyanide leach kinetics in the heap leach pads is most strongly affected by ore characteristics.

1.15 Infrastructure

The majority of the key infrastructure to support the Nevada Operations mining activities envisaged in the LOM is in place. New infrastructure is required to support the proposed

Goldrush operations in the Cortez Complex. A third shaft at the Turquoise Ridge Complex is under construction.

There are nine heap leach pads in the Project area, all of which are actively being leached. There is sufficient capacity in the heap leach pads and planned heap leach pad expansions for LOM planning purposes.

There are 67 WRSFs in the Project area, of which 36 are inactive and undergoing reclamation, and 31 are active. A total of 24 pits are permitted for partial or full waste backfill. There is sufficient capacity in the existing WRSFs and planned WRSF expansions for LOM planning purposes.

There are 19 TSFs in the Project area, of which 11 are inactive and undergoing reclamation, and eight are active. There is sufficient capacity in the active TSFs and planned TSF expansions for LOM planning purposes.

Water supply for processing operations is sourced, depending on the facility, from well fields, TSF reclaim, storm run-off water, and pit dewatering. Potable water is provided by permitted water wells and supporting treatment and infrastructure facilities. The current water sources, assuming similar climate conditions to those experienced by the operations in the past, will be sufficient for the LOM plan.

Water management operations include systems of dewatering wells, water gathering and conveyance facilities, water storage, water use, and various management options for discharge of excess water. Water not used for mining or milling can be pumped to storage reservoirs. Rapid infiltration basins are used to capture storm run-off water to avoid that water coming into contact with mining operations. The NDEP allows selected complexes within the Nevada Operations, through discharge permits, to discharge groundwater from pumping operations to groundwater vis percolation, infiltration, and irrigation. The current water management practices are expected to be applicable for the LOM plan.

There are no accommodation facilities at any of the complexes. Personnel reside in adjacent settlements including Battle Mountain, Carlin, Elko, Golconda, Wells, West Wendover and Winnemucca.

Electrical power for the Carlin, Cortez, Turquoise Ridge, and Phoenix Complexes is obtained via TS Power Plant and from the Western 102 power plant (both of which are owned and operated by NGM) with transmission by NV Energy. Power for Gold Quarry, Long Canyon, and Goldrush is supplied via the Wells Rural Electric Power Company.

1.16 Markets and Contracts

1.16.1 Market Studies

NGM has established contracts and buyers for the gold bullion and copper concentrate and cathode products from the Nevada Operations, and has an internal marketing group that monitors markets for its key products. Together with public documents and analyst forecasts, these data support that there is a reasonable basis to assume that for the LOM plan, that the key products will be saleable at the assumed commodity pricing.

1.16.2 Commodity Pricing

Barrick, as operator of the NGM JV, provides the commodity price guidance. Barrick uses a combination of historical and current contract pricing, contract negotiations, knowledge of its key markets from a long operations production record, short-term versus long-term price forecasts prepared by the company's internal marketing group, public documents, and analyst forecasts when considering long-term commodity price forecasts.

Higher metal prices are used for the mineral resource estimates to ensure the mineral reserves are a sub-set of, and not constrained by, the mineral resources, in accordance with industry-accepted practice.

The long-term commodity price and exchange rate forecasts are:

Mineral reserves:

- Gold: US$1,200.00/oz;
- Silver: US$16.50/oz;
- Copper: US$2.75/lb;

Mineral resources:

- Gold: US$1,500.00/oz;
- Silver: US$20.50/oz
- Copper: US$3.50/lb.

1.16.3 Contracts

NGM has contracts in place for the majority of the copper concentrate. The terms contained within the concentrate sales contracts are typical and consistent with standard industry practice for high-gold, low-copper concentrates. NGM's bullion is sold on the spot market, by marketing experts retained in-house by NGM/Barrick. NGM provides Newmont with the date and number of ounces that will be credited to Newmont's account, and invoices Newmont for how much NGM is owed, such that Newmont receives credits for the ounces (based on the JV interest) and Newmont pays NGM for the ounces. The terms contained within the sales contracts are typical and consistent with standard industry practice and are similar to contracts for the supply of bullion elsewhere in the world.

The largest in-place contracts other than for product sales cover items such as bulk commodities, operational and technical services, mining and process equipment, and administrative support services. Contracts are negotiated and renewed as needed.

1.17 Environmental, Permitting and Social Considerations

1.17.1 Environmental Studies and Monitoring

Baseline and supporting environmental studies were completed to assess both pre-existing and ongoing site environmental conditions, as well as to support decision-making processes during operations start-up. Characterization studies were completed for climate, air quality, hydrology and surface water quality, hydrogeology, flora, fauna, soils, agriculture and land use, and the socioeconomic environment.

The Goldrush project is situated in a culturally- and biologically sensitive area, with numerous cultural sites and within sage grouse habitat. Major study areas in support of the planned mining operation include air quality, hazardous material and solid waste, noise, waste rock characterization, soils, biological resources, wildlife, special status species, visual and cultural resources, Native American Traditional Values, social and economic values, and environmental justice.

Plans were developed and implemented to address aspects of operations such as waste and fugitive dust management, spill prevention and contingency planning, water management, and noise levels. These plans will be extended to Goldrush as they become operational.

As part of its permitting requirements, NGM has submitted and received approval on numerous PoOs and Reclamation Plans for each area. NGM has additionally submitted and/or provided information to support Environmental Assessments (EA) or Environmental Impact Statements (EIS) for each area containing public lands. The additionally submitted information includes various baseline and supporting studies on various natural resources. Existing operations were reviewed by the BLM and Nevada Division of Environmental Protection Bureau of Mining Regulation and Reclamation (NDEP–BMRR). BLM NEPA analysis under an EA or EIS can result in a Determination of NEPA Adequacy (DNA), Findings of No Significant Impacts (FONSI), or a Record of Decision (ROD). These determinations are issued by the BLM for those operations where PoOs contain public lands. The PoOs are updated and amended, as necessary, to allow for continuation of mining or additional mine development.

1.17.2 Closure and Reclamation Considerations

Initial closure planning is included within all proposals and reclamation plan documents during the permitting process. Closure planning is integrated with mine and reclamation planning to the extent practicable during active operations. Concurrent reclamation of lands as mining progresses is a primary consideration for NGM. Reclamation plans are regularly reviewed and revised at a minimum of every three years to ensure adequate financial assurances have been put in place for required reclamation activities. Approvals are required from both the BLM and NDEP for reclamation and closure plan amendments and bond adjustments.

Various mine facilities are located within the PoO boundaries on both private lands and the federal lands administered by the BLM. Only approved facility disturbance can be constructed within PoO boundaries. All PoO boundaries and private lands within the PoO are under the jurisdiction of the NDEP–BMRR. The reclamation boundaries define limits of approved disturbance for mining within each PoO boundary. A Nevada industry-standard method or Standard Reclamation Cost Estimator (SRCE) model is used by NGM to calculate the liabilities.

NGM currently has posted approximately US$2.14 B in financial assurances in the form of letters of credit and surety bonds to cover mine closure costs. Additionally, there are several trusts associated with closure cost planning.

Estimated closure costs used in the cashflow analysis total US$0.9 B. This cost estimate is based on the actual disturbance.

The Goldrush project will require development of a temporary closure plan, a tentative plan for permanent closure/interim closure plan, a plan of operations that includes a reclamation plan and reclamation surety estimate, and a plan for monitoring the post-closure stability of the site.

1.17.3 Permitting

As part of its permitting requirements, NGM has submitted PoOs and Reclamation Plans for each operation. NGM has submitted and/or provided information to support NEPA evaluation for each area containing public lands. The PoOs are updated and amended as necessary to allow for continuation of mining or additional mine development. The Nevada Operations have the required permits to operate or will be applying for the permits as they are required for mine development.

Additional permits will be required to support planned operations at Goldrush, with about 20 key permits required. The permitting approach assumes off-site transport of ore for processing at Goldstrike and Gold Quarry. Goldrush is going through NEPA review. This will result in completion of an Environmental Impact Statement which will be followed by Record of Decision from the BLM. The start of the NEPA process is completion of baseline studies and submission of a PoO to the BLM.

1.17.4 Social Considerations, Plans, Negotiations and Agreements

Nevada Gold Mines is one of the largest direct employers in the area and also generates significant indirect employment.

Stakeholder engagement is a primary pillar of that strategy and includes participation in local civic activities; city/town council and county commission meetings; serving on boards and committees; town hall meetings; and one-to-one engagement. From this engagement, NGM listens to, and partners with, local organizations to identify a social investment strategy. Education, health, economic development and cultural heritage are key areas for community investments. NGM has also partnered with local law enforcement on public safety initiatives and conservation groups on environmental conservation programs.

Also as part of the community affairs program, NGM engages with 10 tribal communities. Engagement with partner tribes includes regularly-held meetings called “Dialogue Meetings”; tribal council meetings; community committees; one-to-one engagements and sponsorship of several community-driven initiatives. Through this engagement, NGM works with tribal councils to identify and support community priorities in programs aimed at improving community health and well-being, education attainment, cultural heritage preservation, and economic development.

The Cortez Complex, including the Goldrush project, operates on lands traditionally used by the Western Shoshone tribes and bands. As the Goldrush project develops, NGM will hold public meetings (and advertise a local grievance mechanism according to the Grievance Management Procedure) if internal strategy deems appropriate so that citizens in the surrounding areas may come to learn more about the project and express their support or concerns.

1.18 Capital Cost Estimates

Capital costs were based on recent prices or operating data and are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%.

Capital costs included funding for infrastructure, pit dewatering, development drilling, and permitting as well as miscellaneous expenditures required to maintain production. Mobile equipment re-build/replacement schedules and fixed asset replacement and refurbishment schedules were included. Sustaining capital costs reflected current price trends.

The LOM capital cost estimate is US$2.6 B (Table 1-10).

Table 1-10: Capital Cost Estimate

Area	Unit	Value
Mine	US$ B	1.3
Process	US$ B	0.8
General and administrative	US$ B	0.2
Goldrush pre-production	US$ B	0.4
Total	***US$ B***	***2.6***

Note: Numbers have been rounded; totals may not sum due to rounding.

1.19 Operating Cost Estimates

Operating costs were based on actual costs seen during operations and are projected through the LOM plan, and are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%.

Historical costs were used as the basis for operating cost forecasts for supplies and services unless there are new contract terms for these items. Labor and energy costs were based on budgeted rates applied to headcounts and energy consumption estimates.

The LOM operating costs are estimated at US$34.9 B (Table 1-11). The average mining costs (open pit and underground) over the LOM are US$10.47/t mined, autoclave costs are US$34.01/t processed, roaster costs are US$24.12/t processed, oxide mill costs are US$10.46/t processed, heap leach costs are US$3.53/t processed, and general and administrative costs (inclusive of transport costs) are US$5.78/t processed.

1.20 Economic Analysis

1.20.1 Economic Analysis

The financial model that supports the mineral reserve declaration is a standalone model that calculates annual cashflows based on scheduled ore production, assumed processing recoveries, metal sale prices, projected operating and capital costs and estimated taxes.

The financial analysis is based on an after-tax discount rate of 5%. All costs and prices are in unescalated “real” dollars. The currency used to document the cashflow is US$.

All costs are based on the 2022 budget. Revenue is calculated from the recoverable metals and long-term metal price and exchange rate forecasts.

Taxes assume a rate of 21% plus the Nevada Net Proceeds Tax of 5% and the Nevada Mining Education Tax.

The economic analysis is based on 100% equity financing and is reported on a 100% project ownership basis. The economic analysis assumes constant prices with no inflationary adjustments. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest.

Table 1-11: Operating Cost Estimate

Item	Units	Value
Mining	US$B	18.6
Rehandle	US$B	0.8
Autoclaves	US$B	4.8
Roasters	US$B	5.2
Oxide Mill	US$B	0.4
Leach	US$B	0.6
G&A	US$B	3.3
Transport	US$B	1.1
Total	***US$B***	***34.9***

Note: Numbers have been rounded; totals may not sum due to rounding.

Within the NGM JV, copper sales are generally in the form of concentrate, which is sold to smelters for further treatment and refining, and cathode. Copper is sold in either concentrate or cathode form. These sales are to third party customers. Generally, if a secondary metal expected to be mined is significant to the NGM JV, co-product accounting is applied. When the NGM JV applies co-product accounting at an operation, revenue is recognized for each co-product metal sold, and shared costs applicable to sales are allocated based on the relative sales values of the co-product metals produced. Generally, if a secondary metal expected to be mined is not significant to the Joint Venture, by-product accounting is applied. As copper and silver production at each of the NGM operations is not significant to the NGM JV, production from copper and silver are accounted for as by-product sales. Revenues from by-product sales are credited by NGM and Barrick as a by-product credit.

For the purposes of showing a complete cashflow analysis for the Nevada Operations as a whole, silver was treated as a by-product credit.

The economic analysis is based on 100% equity financing and is reported on a 100% project ownership basis. The economic analysis assumes constant prices with no inflationary adjustments.

The $NPV_{5\%}$ is $4.2 B. Due to the profile of the cashflow, considerations of payback and internal rate of return are not relevant.

A summary of the financial results is provided in Table 1-12.

1.20.2 Sensitivity Analysis

The sensitivity of the Project to changes in metal prices, grade, sustaining capital costs and operating cost assumptions was tested using a range of 20% above and below the base case values (Figure 1-1).

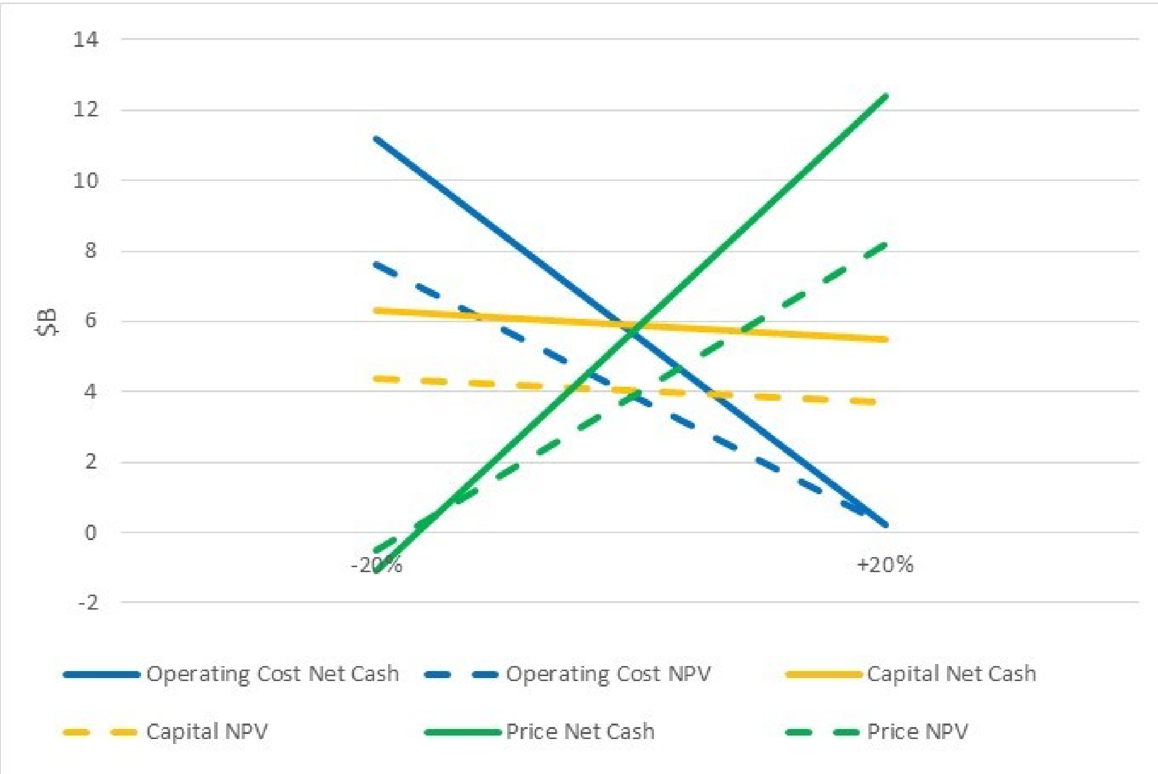
The Project is most sensitive to changes in the metal price, followed by operating cost changes and the least sensitive to capital cost changes. Grade is not shown, as the grade sensitivity mirrors the metal price sensitivity.

Table 1-12: Cashflow Summary Table (100% basis)

Item	Unit	Value
Metal prices		
Gold	US$/oz	1,200
Copper	US$/lb	2.75
Silver	US$/oz	16.5
Total ore		
Gold tonnage	Mt	520
Gold grade	g/t	3.00
Copper tonnage	Mt	226
Copper grade	%	0.17
Silver tonnage	Mt	169
Silver grade	g/t	6.43
Gold ounces	Moz	50
Copper pounds	Blb	0.8
Silver ounces	Moz	35
Capital costs	US$B	2.6
Operating cashflow	US$B	34.2
Discount rate	%	5
Free cashflow	US$B	5.9
Net present value	US$B	4.2

Note: Numbers have been rounded; totals may not sum due to rounding. Tonnes are metric tonnes. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest. Table 1-12 contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, which are intended to be covered by the safe harbor created by such sections and other applicable laws. Please refer to the note regarding forward-looking information at the front of the Report. The cashflow is only intended to demonstrate the financial viability of the Project. Investors are cautioned that the above is based on a high-level mine plan and certain assumptions which may differ from Newmont's long-term outlook or actual financial results, including, but not limited to commodity prices, escalation assumptions and other technical inputs. For example, Table 1-12 uses the price assumptions stated in the table, including a gold commodity price assumption of US$1,200/oz, which varies significantly from current gold prices and the assumptions that Newmont uses for its long-term guidance. Please be reminded that significant variation of metal prices, costs and other key assumptions may require modifications to mine plans, models, and prospects.

Figure 1-1: NPV Sensitivity



Note: Figure prepared by Newmont, 2021. NPV = net present value.

1.21 Risks

The risks associated with the Nevada Operations are generally those expected with open pit and underground mining operations and include the accuracy of the resource models, unexpected geological features that cause geotechnical issues, and/or operational impacts.

Other risks noted include:

- Commodity price increases for key consumables such diesel, electricity, tires and chemicals would negatively impact the stated mineral reserves and mineral resources;
- Labor cost increases or productivity decreases could also impact the stated mineral reserves and mineral resources, or impact the economic analysis that supports the mineral reserves;
- Geotechnical and hydrological assumptions used in mine planning are based on historical performance, and to date historical performance has been a reasonable predictor of current conditions. Any changes to the geotechnical (seismicity) and hydrological assumptions could affect mine planning, affect capital cost estimates if any major rehabilitation is required due to a geotechnical or hydrological event, affect operating costs due to mitigation

measures that may need to be imposed, and impact the economic analysis that supports the mineral reserve estimates;

- The mineral resource estimates are sensitive to metal prices. Lower metal prices require revisions to the mineral resource estimates;
- The LOM plan assumes that new TSFs can be permitted based on envisaged timelines. If the permitting schedule is delayed, this could impact costs and proposed production;
- Updated industry standards for TSFs may have an impact on the envisaged TSF costs;
- The LOM plan assumes that ore is sent to the process facility that will provide optimal results (costs, metallurgical recoveries). Should, for operational reasons, a different process facility be selected, then higher operating costs and/or lower recoveries may result;
- The LOM plan envisages blending of numerous ore sources at the various process facilities. Non-optimal blends could impact operating costs, plant throughputs, and metallurgical recoveries. There may be potential for exceedances on environmental monitoring limits if such blends are not well controlled;
- Stockpiled materials can undergo degradation over time, and the metallurgical recoveries assumed for stockpiled materials may be lower than that assumed in the LOM plan;
- Management of threatened and endangered species may delay permits and increase capital and/or operating costs. Although there are site-specific management plans, either planned or in place, if there is a major impact seen on the populations from mining activities, the environmental permits for the operations could be revised or even revoked. The social license to operate could also be impacted;
- Regulatory approval of the Goldrush project is still pending, and the project is in the EIA process. If conditions are imposed by the regulators as a result of the process, this could impact the project schedule and cost estimates;
- On-highway transport of ore or concentrate could be impacted by changes to regulations on the number of trucks that can be used;
- Exceedances of permit conditions have historically occurred at certain of the process facilities. Should such exceedances recur, there could be social and regulatory impacts to operations, mine plans, and the forecast economic analyses;
- Climate changes could impact operating costs and ability to operate;
- The long-term reclamation and mitigation of the Nevada Operations are subject to assumptions as to closure timeframes and closure cost estimates. If these cannot be met, there is a risk to the costs and timing;
- Newmont is the minority partner in the NGM JV and does not exercise day-to-day control over NGM’s operations;
- Political risk from challenges to the current state or federal mining laws.

1.22 Opportunities

Opportunities include:

- Conversion of some or all of the measured and indicated mineral resources currently reported exclusive of mineral reserves to mineral reserves, with appropriate supporting studies;
- Upgrade of some or all of the inferred mineral resources to higher-confidence categories, such that this higher-confidence material could potentially be converted to mineral reserve estimates;
- Higher metal prices than forecast could present upside sales opportunities and potentially an increase in predicted Project economics;
- NGM holds a significant ground package within the AOI that retains significant exploration potential:
  - Exploration potential around current and historical open pits;
  - Potential for new underground operations proximal to the current mineral resource and mineral reserve estimates, with the support of additional studies.

1.23 Conclusions

Under the assumptions presented in this Report, the Nevada Operations have a positive cashflow, and mineral reserve estimates can be supported.

1.24 Recommendations

As the Nevada Operations are a complex of operating mines, the QP has no material recommendations to make.

2.0 INTRODUCTION

2.1 Registrant

This technical report summary (the Report) was prepared for Newmont Corporation (Newmont) on the Nevada Operations (Nevada Operations or the Project) that are located in Nevada (Figure 2-1).

The Project is operated as a joint venture (JV) through Nevada Gold Mines, LLC (NGM). Barrick Gold Corporation (Barrick) is the JV operator and owns 61.5%, with Newmont owning the remaining 38.5% JV interest.

2.2 Terms of Reference

2.2.1 Report Purpose

The Report was prepared to be attached as an exhibit to support mineral property disclosure, including mineral resource and mineral reserve estimates, for the Nevada Operations in Newmont's Form 10-K for the year ending December 31, 2021.

Deposits and zones for which mineral resources and mineral reserves are reported are summarized in Table 2-1.

2.2.2 Terms of Reference

The Nevada Operations consist of 10 underground and 12 open pit active mining operations, two autoclave facilities, two roasting facilities, two oxide mills, two flotation plant and five heap leach facilities, forming five major mining/processing complexes centered at Carlin, Cortez, Long Canyon, Phoenix and Turquoise Ridge.

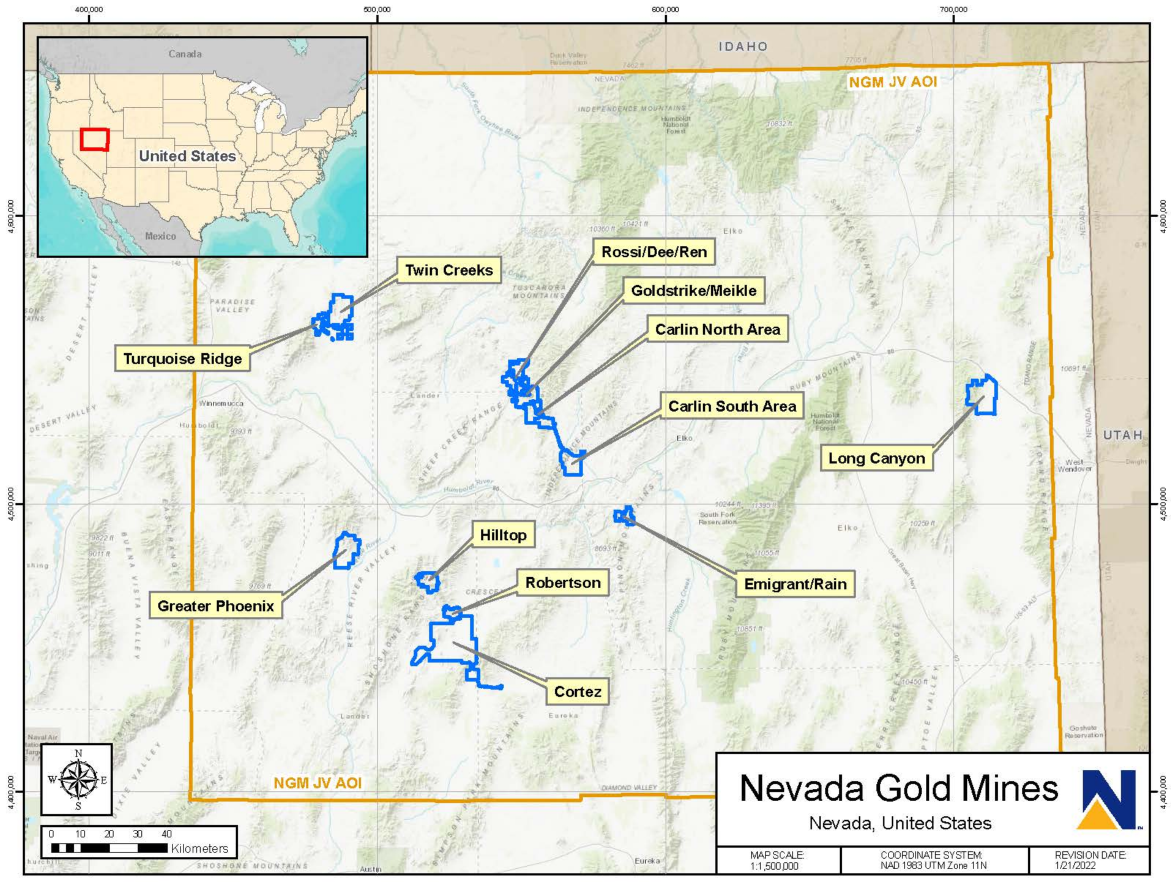
Active open pit mining operations include Crossroads, Gold Quarry, Goldstrike, Goldstar, Long Canyon, Phoenix, Pipeline, and Vista. Two deposits, the Mega Pit at Turquoise Ridge and the South Arturo deposit at Carlin that are planned to be mined using open pit methods, are not currently active, but are planned to be mined in 2022–2023. Active underground mining operations include Cortez Hills underground, Exodus, Goldstrike, El Niño, Leeville, Pete Bajo, Turquoise Ridge Underground, and Vista. Underground exploration development is underway at the Goldrush deposit.

Figure 2-1 shows the locations of the major mining complexes in relation to the JV area of interest (AOI) covers a significant portion of northern Nevada. Note that the AOI area includes ground that is held by third parties and is not part of the NGM mineral title holdings.

Table 2-1: Deposits/Zones Hosting Mineral Resources and Mineral Reserves

Complex	Deposit/Zone	Mining Method
Carlin	Emigrant	Open pit
	Exodus	Underground
	Gold Quarry	Open pit
	Goldstar	Open pit
	Goldstrike	Open pit
	Goldstrike	Underground
	Green Lantern	Open pit
	Leeville	Underground
	North Leeville	Underground
	Perry	Open pit
	Pete Bajo	Underground
	Ren	Underground
	Rita K	Underground
	South Arturo	Open pit
	El Niño (South Arturo)	Underground
Cortez	Cortez Hills Underground (CHUG)	Underground
	Cortez Pits	Open pit
	Crossroads	Open pit
	Gold Acres	Open pit
	Goldrush	Underground
	Pipeline	Open pit
	Robertson	Open pit
Long Canyon	Phase 1	Open pit
	Phase 2	Open pit
	Phase 3	Underground
Phoenix	Bonanza	Open pit
	Fortitude	Open pit
Turquoise Ridge	Mega Cut 25	Open pit
	Mega Cut 40	Open pit
	Mega Cut 55	Open pit
	Turquoise Ridge Underground	Underground
	Vista 8	Open pit
	Vista 9	Open pit
	Vista Underground	Underground

Figure 2-1: Mining Complex and Plan of Operations Location Plan



Unless otherwise indicated, all financial values are reported in United States (US) currency (US$).

Units may be in either metric or US customary units as identified in the text.

Mineral resources and mineral reserves are reported using the definitions in Subpart 229.1300 – Disclosure by Registrants Engaged in Mining Operations in Regulation S–K 1300 (SK1300).

The Report uses US English.

The Report contains forward-looking information; refer to the note regarding forward-looking information at the front of the Report.

2.3 Qualified Persons

The following Newmont employee serves as the Qualified Person (QP) for the Report:

- Mr. Donald Doe, RM SME., Group Executive, Reserves, Newmont.

Mr. Doe is responsible for all Report Chapters.

2.4 Site Visits and Scope of Personal Inspection

Mr. Doe visited the Nevada Operations on many occasions, most recently on February 5, 2019, to the Carlin Complex. He inspected the underground workings at Leeville and Pete Bajo, viewed the open pit operations, and toured the Gold Quarry roaster.

Mr. Doe performed a site visit in May 5–6, 2021 to the Goldrush project. During that visit he inspected the underground workings, reviewed core, and met with project representatives. Mr. Doe also toured the planned locations for some of the surface infrastructure.

2.5 Report Date

Information in the Report is current as at December 31, 2021.

2.6 Information Sources and References

The reports and documents listed in Chapter 24 and Chapter 25 of this Report were used to support Report preparation.

2.7 Previous Technical Report Summaries

Newmont has not previously filed a technical report summary on the Project.

3.0 PROPERTY DESCRIPTION

3.1 Introduction

The Nevada Operations are centered on the Carlin South Plan of Operations, which is the approximate center of the Area of Interest (AOI), see Figure 2-1 and discussion in Chapter 3.3. The centroid locations of the current Plans of Operations (PoOs) are summarized in Table 3-1.

3.2 Property and Title in Nevada

3.2.1 Mineral Title

Federal (30 USC and 43 CFR) and Nevada (NRS 517) laws concerning mining claims on Federal land are based on an 1872 Federal law titled "An Act to Promote the Development of Mineral Resources of the United States." Mining claim procedures still are based on this law, but the original scope of the law has been reduced by several legislative changes.

The Mineral Leasing Act of 1920 (30 USC Chapter 3A) provided for leasing of some non-metallic materials; and the Multiple Mineral Development Act of 1954 (30 USC Chapter 12) allowed simultaneous use of public land for mining under the mining laws and for lease operation under the mineral leasing laws. Additionally, the Multiple Surface Use Act of 1955 (30 USC 611-615) made "common variety" materials non- locatable; the Geothermal Steam Act of 1970 (30 USC Chapter 23) provided for leasing of geothermal resources; and the Federal Land Policy and Management Act of 1976 (the "BLM Organic Act," 43 USC Chapter 35) granted the Secretary of the Interior broad authority to manage public lands. Most details regarding procedures for locating claims on Federal lands have been left to individual states, providing that state laws do not conflict with Federal laws (30 USC 28; 43 CFR 3831.1).

Mineral deposits are located either by lode or placer claims (43 CFR 3840). The locator must decide whether a lode or placer claim should be used for a given material; the decision is not always easy but is critical. A lode claim is void if used to acquire a placer deposit, and a placer claim is void if used for a lode deposit. The 1872 Federal law requires a lode claim for "veins or lodes of quartz or other rock in place" (30 USC 26; 43 CFR 3841.1), and a placer claim for all "forms of deposit, excepting veins of quartz or other rock in place" (30 USC 35). The maximum size of a lode claim is 1,500 ft (457 m) in length and 600 ft (183 m) in width, whereas an individual or company can locate a placer claim as much as 20 acres (8 ha) in area.

Claims may be patented or unpatented. A patented claim is a lode or placer claim or mill site for which a patent has been issued by the Federal Government, whereas an unpatented claim means a lode or placer claim, tunnel right or mill site located under the Federal (30 USC) act, for which a patent has not been issued.

Table 3-1: Operations Plan of Operations Centroid Location Summary Table

Plan Of Operations Name	Easting	Northing	Projection Datum
Arturo	547693.67	4542375.40	UTM NAD83 Zone 11N
Bootstrap	549530.93	4540070.80	UTM NAD83 Zone 11N
Carlin	558233.17	4528248.53	UTM NAD83 Zone 11N
Cortez	527007.17	4451450.13	UTM NAD83 Zone 11N
Dee	546666.01	4542000.35	UTM NAD83 Zone 11N
Emigrant	587023.17	4495607.30	UTM NAD83 Zone 11N
Genesis-Bluestar	553286.53	4531560.79	UTM NAD83 Zone 11N
Gold Quarry	567325.95	4514448.36	UTM NAD83 Zone 11N
Goldstrike	551906.11	4537120.53	UTM NAD83 Zone 11N
Phoenix	489152.32	4483634.77	UTM NAD83 Zone 11N
Leeville	556455.63	4531494.14	UTM NAD83 Zone 11N
Long Canyon	710085.96	4537424.11	UTM NAD83 Zone 11N
Rain	583602.96	4495804.12	UTM NAD83 Zone 11N
Turquoise Ridge	482164.33	4560820.78	UTM NAD83 Zone 11N
Twin Creeks	487331.39	4566477.34	UTM NAD83 Zone 11N

3.2.2 Surface Rights

About 85% of the land in Nevada is controlled by the Federal Government; most of this land is administered by the US Bureau of Land Management (BLM), the US Forest Service (USFS), the US Department of Energy, or the US Department of Defense. Much of the land controlled by the BLM and the USFS is open to prospecting and claim location. The distribution of public lands in Nevada is shown on the BLM “Land Status Map of Nevada” (1990) at scales of 1:500,000 and 1:1,000,000.

Bureau of Land Management regulations regarding surface disturbance and reclamation require that a notice be submitted to the appropriate BLM Field Office for exploration activities in which five acres or fewer are proposed for disturbance (43 CFR 3809.1-1 through 3809.1-4). A Plan of Operations (PoO) is needed for all mining and processing activities, plus all activities exceeding five acres of proposed disturbance. A PoO is also needed for any bulk sampling in which 1,000 or more tons of presumed mineralized material are proposed for removal (43 CFR 3802.1 through 3802.6, 3809.1-4, 3809.1-5). The BLM also requires the posting of bonds for reclamation for any surface disturbance caused by more than casual use (43 CFR 3809.500 through 3809.560). The USFS has regulations regarding land disturbance in forest lands (36 CFR Subpart A). Both agencies also have regulations pertaining to land disturbance in proposed wilderness areas.

3.2.3 Water Rights

In the State of Nevada, “the water of all sources of water supply within the boundaries of the State whether above or beneath the surface of the ground, belongs to the public” (NRS 533.025). Furthermore, “except as otherwise provided in NRS 533.027 and 534.065, any person who wishes to appropriate any of the public waters, or to change the place of diversion, manner of use or place of use of water already appropriated, shall, before performing any work in connection with such appropriation, change in place of diversion or change in manner or place of use, apply to the State Engineer for a permit to do so" (NRS 533.325).

3.2.4 Government Mining Taxes, Levies or Royalties

The state of Nevada imposes a 5% net proceeds tax on the value of all minerals severed in the State. This tax is calculated and paid based on a prescribed net income formula.

A Nevada Education funding tax, AB 495, was passed in July 2021, and is based on gold and silver gross revenue and is calculated as follows:

- First $20 M of gross revenue: exempt;
- >$20 M to $150 M of gross revenue: taxed at a flat rate of 0.75%;
- >$150 M of gross revenue: taxes at a flat rate of 1.1%.

3.3 Ownership

NGM is a JV between Barrick and Newmont. Barrick is the JV operator and has a 61.5% interest, with Newmont owning the remaining 38.5% interest. The JV area of interest (AOI) covers a significant portion of northern Nevada (Figure 3-1). Barrick operates the JV.

3.4 Joint Ventures

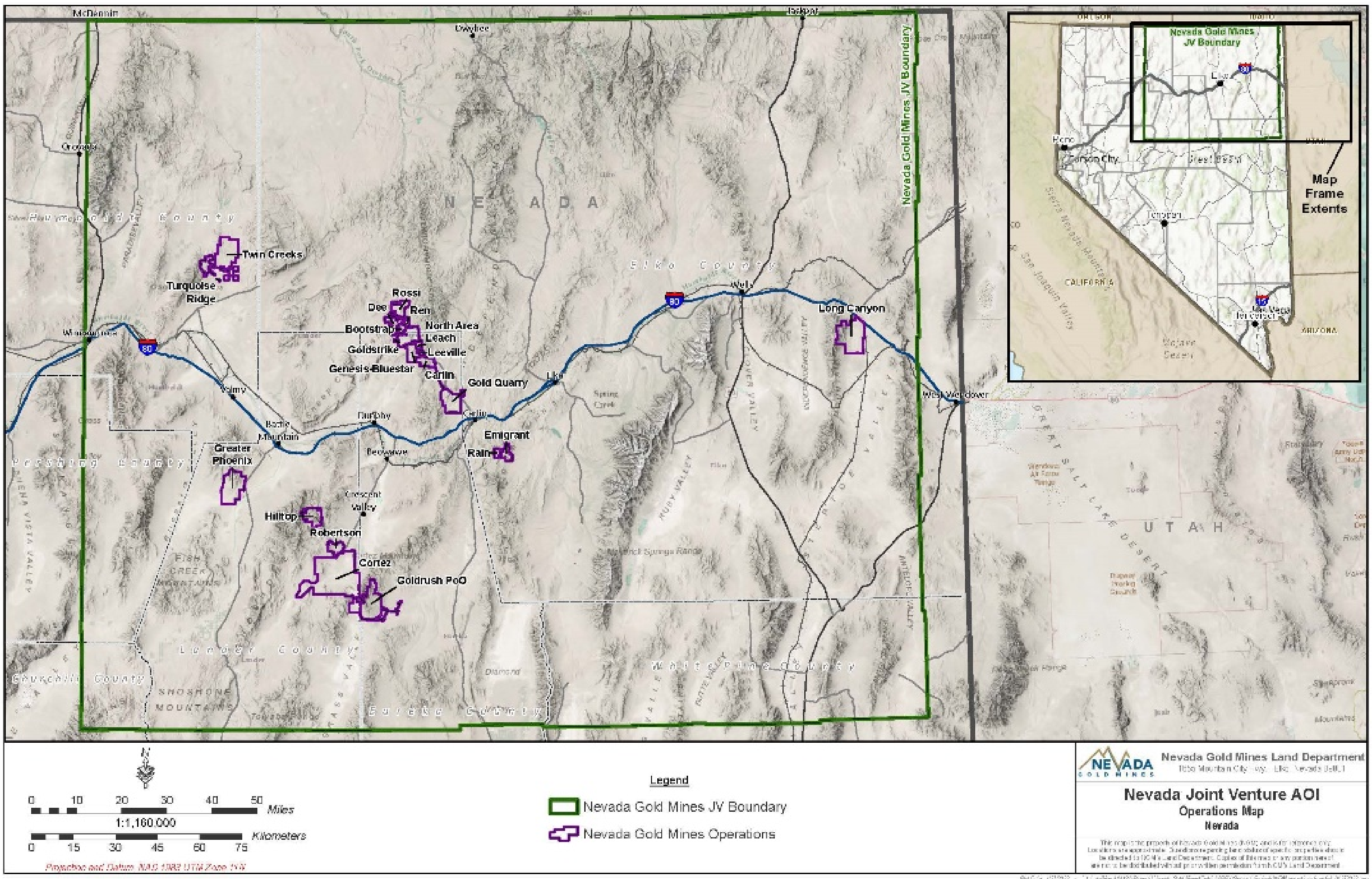
On 11 March, 2019, Barrick and Newmont announced the formation of the NGM JV. Newmont, Barrick, and their respective affiliates that held properties in the AOI contributed to NGM the respective rights, titles and interests in, to, or under, all properties located in the AOI and any other assets, properties or rights located in Nevada.

Barrick has the right to appoint three NGM Board members; Newmont can appoint two.

Newmont and Barrick each have a right of first refusal over any proposed transfer by the other JV participant of its membership interest in NGM, other than transfers to a wholly-owned subsidiary of the transferring JV participant.

The JV agreement requires that Newmont and Barrick purchase 100% of the refined doré that NGM produces on a pro rata basis, according to the individual company's JV interest.

Figure 3-1: NGM Area of Interest



Newmont and Barrick excluded certain development and exploration properties that the companies held within the AOI from the JV; these included Newmont's Fiberline and Mike projects, and Barrick's Fourmile project. The JV has a mechanism for the potential contribution of the excluded properties to NGM in the future.

3.5 Agreements

A number of agreements exist with federal, state, and third-party entities and these are monitored using a land management database. The data managed includes contractual obligations, leases, associated payments, parties to agreements, and locations and details of the properties that the agreements cover. All mining leases and subleases are managed and reviewed on a monthly basis and all payments and commitments are paid as required by the specific agreements.

The database covers both monetary obligations such as lease payments and non-monetary obligations such as third-party required reporting, work commitments, taxes, and contract expiry dates. The agreements that NGM has with third parties within the PoOs are monitored using this database.

Across the AOI, there are currently 294 agreements that have been concluded, and 168 easements that are in place.

3.6 Mineral Title

The Nevada Operations currently includes 15 operations PoOs and eight exploration PoOs. The area includes private land (surface and minerals) owned or controlled by NGM, and land owned by the federal government that is administered by the BLM.

NGM provided a claims list, fee property list, and location plans for the PoOs. The areas in the claims tables that follow reflect the staked claim area; the areas have not been modified for claim overlaps. In some instances, where the same claims are reported within two or more PoOs; the claims are included in the claims list for the individual PoO for completeness, but have been removed for area and claim number totaling purposes.

Within the operations PoO areas are the claims summarized in Table 3-2, which collectively total 9,205 lode, millsite, placer and patented claims covering an area of 163,214.40 acres. Within the exploration PoO areas are the claims summarized in Table 3-3, which collectively total 2,180 lode, millsite, placer and patented claims covering an area of 43,363.94 acres. Between the operations and the exploration PoOs, NGM holds a total of 11,385 claims covering an area of 206,578.34 acres (Table 3-4). Figure 3-2 to Figure 3-6 show the locations of the major PoOs that host the mineral reserves.

In addition, NGM holds a number of fee properties, within the operations and exploration PoOs (Table 3-5 and Table 3-6). Collectively, these cover an area of 78,620.56 acres.

Patented ground or claims are surveyed by a certified mineral surveyor, and appropriate monuments are placed in the ground. Each unpatented claim is marked on the ground and does not require a mineral survey.

Unpatented mining and mill site claims that are located on public lands are held subject to the paramount title of the federal government. The claims are maintained on an annual basis, and do not expire as long as the maintenance fee payments are timely filed with the BLM.

Patented and fee lands require annual payment of tax assessments to the relevant Nevada county.

Table 3-2: Claims Summary Table, Operations PoOs

PoO Name	Lode		Millsite		Placer		Patented		Total	
	Claims	Acres	Claims	Acres	Claims	Acres	Claims	Acres	Claims	Acres
Arturo	236	4,539.04	98	453.32					334	4,992.36
Bootstrap	123	2,399.72					13	253.42	136	2,653.14
Carlin	102	1,959.89							102	1,959.89
Cortez	2,917	55,998.37	555	2,563.30	2	320.00	145	1,020.98	3,619	59,902.65
Dee	343	6,552.88	102	473.28					445	7,026.16
Genesis–Bluestar	203	3,856.97	3	12.92					206	3,869.89
Gold Quarry	309	6,346.75	225	1,125.00					534	7,471.75
Goldrush (proposed PoO)	1,047	20,847.65	17	337.85					1,064	21,185.50
Goldstrike	245	4,555.88	52	249.71			60	1,016.87	357	5,822.46
Leeville	45	912.71							45	912.71
Long Canyon	734	14,478.43							734	14,478.43
Phoenix	533	10,940.85	60	300.00	21	2,680.66	228	2,441.20	842	16,362.71
Rain–Emigrant	139	2,809.45							139	2,809.45
Ren	91	1,596.73							91	1,596.73
Rossi	388	7,585.40	22	103.32			11	221.25	421	7,909.97
Turquoise Ridge	803	16,254.76	40	194.94					843	16,449.70
Sub-total Operations	*8,258*	*161,635.48*	*1,174*	*5,813.64*	*23*	*3,000.66*	*457*	*4,953.72*	*9,912*	*175,403.50*
Claims reported in two PoOs; second claim listing area excluded	583	11,348.61	101	466.24					684	11,814.85
Claims reported in three PoOs; second and third claim listing areas excluded	23	374.25							23	374.25
Total Operations	***7,652***	***149,912.62***	***1,073***	***5,347.40***	***23***	***3,000.66***	***457***	***4,953.72***	***9,205***	***163,214.40***

Table 3-3: Claims Summary Table, Exploration PoOs

PoO Name	Lode		Millsite		Placer		Patented		Total	
	Claims	**Acres**	**Claims**	**Acres**	**Claims**	**Acres**	**Claims**	**Acres**	**Claims**	**Acres**
Antler Peak	5	103.30							5	103.30
Chevas	108	2,231.28							108	2,231.28
Chimney North	1,196	24,659.14							1,196	24,659.14
Emigrant	47	970.75							47	970.75
High Desert	118	2,362.31					4	62.46	122	2,424.77
Hilltop	189	3,637.36			25	510.96	18	315.02	232	4,463.34
Robertson	445	7,938.58					9	168.86	454	8,107.44
Woodruff Creek	203	4,135.56							203	4,135.56
Sub-total Exploration	*2,311*	*46,038.28*	*0*	*0.00*	*25*	*510.96*	*31*	*546*	*2,367*	*47,096*
Claims reported in two PoOs; second claim listing area excluded	174	3,483.72							174	3,483.72
Claims reported in three PoOs; second and third claim listing areas excluded	13	247.92							13	247.92
Exploration Total	***2,124***	***42,363.94***	***0***	***0.00***	***25***	***510.96***	***31***	***546.34***	***2,180***	***43,363.94***

Note: Within the Robertson PoO, there were five claims in the claims table that had separate entries for each different owner, where the claims were entered into the NGM database as having four registered owners. The claims table was adjusted to reflect a single claim rather than multiple claims.

Table 3-4: Claims Totals

PoO Name	Lode		Millsite		Placer		Patented		Total	
	Claims	**Acres**	**Claims**	**Acres**	**Claims**	**Acres**	**Claims**	**Acres**	**Claims**	**Acres**
Total Operations	7,652	149,912.62	1,073	5,347.40	23	3,000.66	457	4,953.72	9,205	163,214.40
Total Exploration	2,124	38,669.28	0	0.00	0	0.00	31	546.34	2,180	43,363.94
Grand Total	***9,776***	***188,581.90***	***1,073***	***5,347.40***	***23***	***3,000.66***	***488***	***5,500.06***	***11,385***	***206,578.34***

Table 3-5: Operations Fee Property Totals

Plan of Operation	Acres
Arturo	37.38
Bootstrap	887.64
Carlin	3,347.22
Cortez	2,782.84
Dee	0.00
Genesis–Bluestar	3,980.60
Gold Quarry	8,187.98
Goldrush	518.48
Goldstrike	8,089.36
Leeville	137.60
Long Canyon	14,774.62
North Area Leach	1,705.38
Phoenix	6,828.60
Rain–Emigrant	3,455.88
Ren	0.00
Rossi	0.00
Robertson	0.00
Turquoise Ridge	5,585.51
Total	***60,319.10***

Table 3-6: Exploration Fee Property Totals

Plan of Operations	Acres
Antler Peak	3,382.38
Chevas	1,020.40
Chimney North	0.00
Emigrant	1,075.24
Four Corners	1,301.04
High Desert	54.98
Hilltop	3,956.94
Mike	242.99
Pearl	1,992.87
Richmond	1,989.43
Robertson	0.0
Tara	355.68
Woodruff Creek	2,929.51
Total	***18,301.46***

Figure 3-2: Carlin Complex Plans of Operation

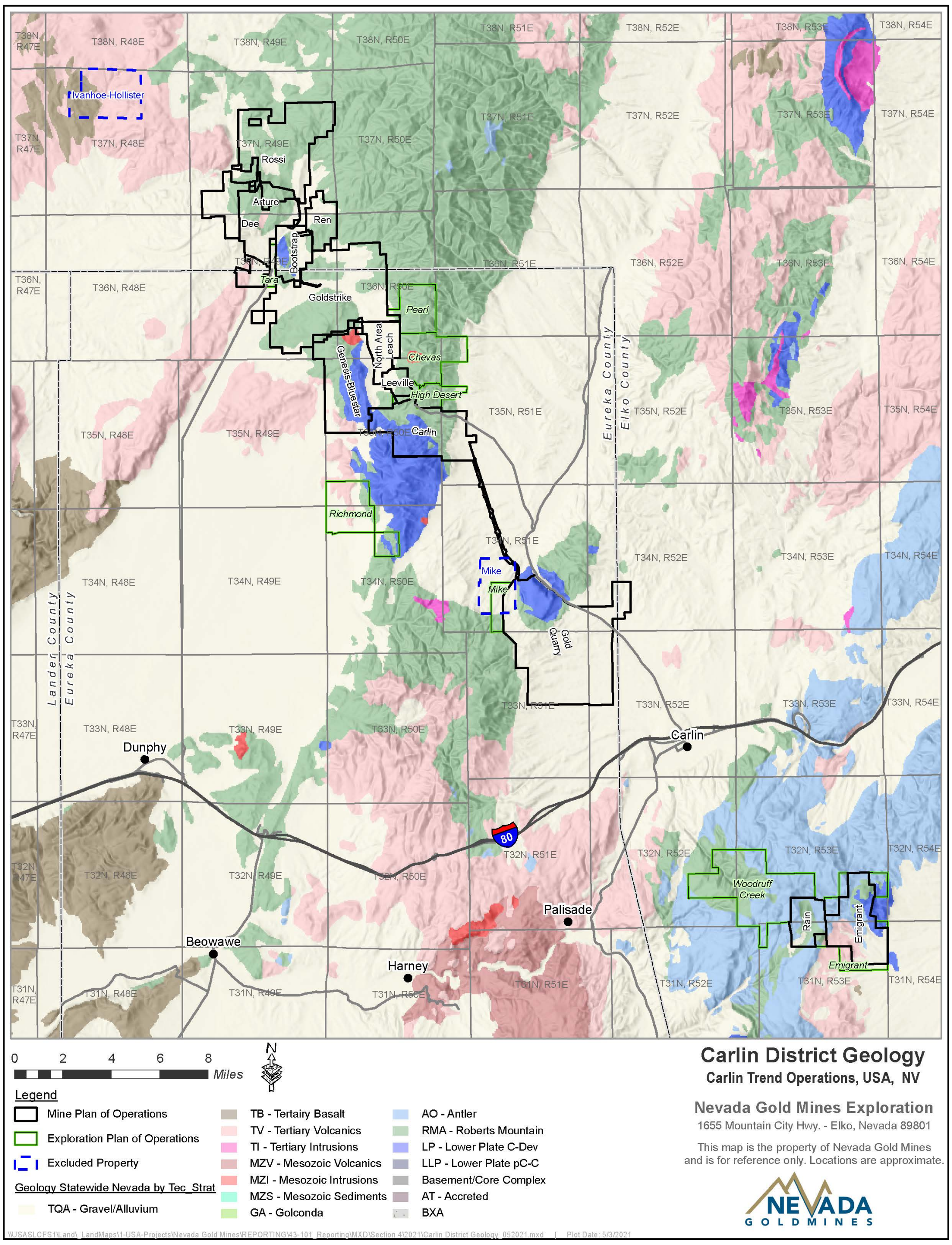


Figure 3-3: Cortez Complex Plans of Operation

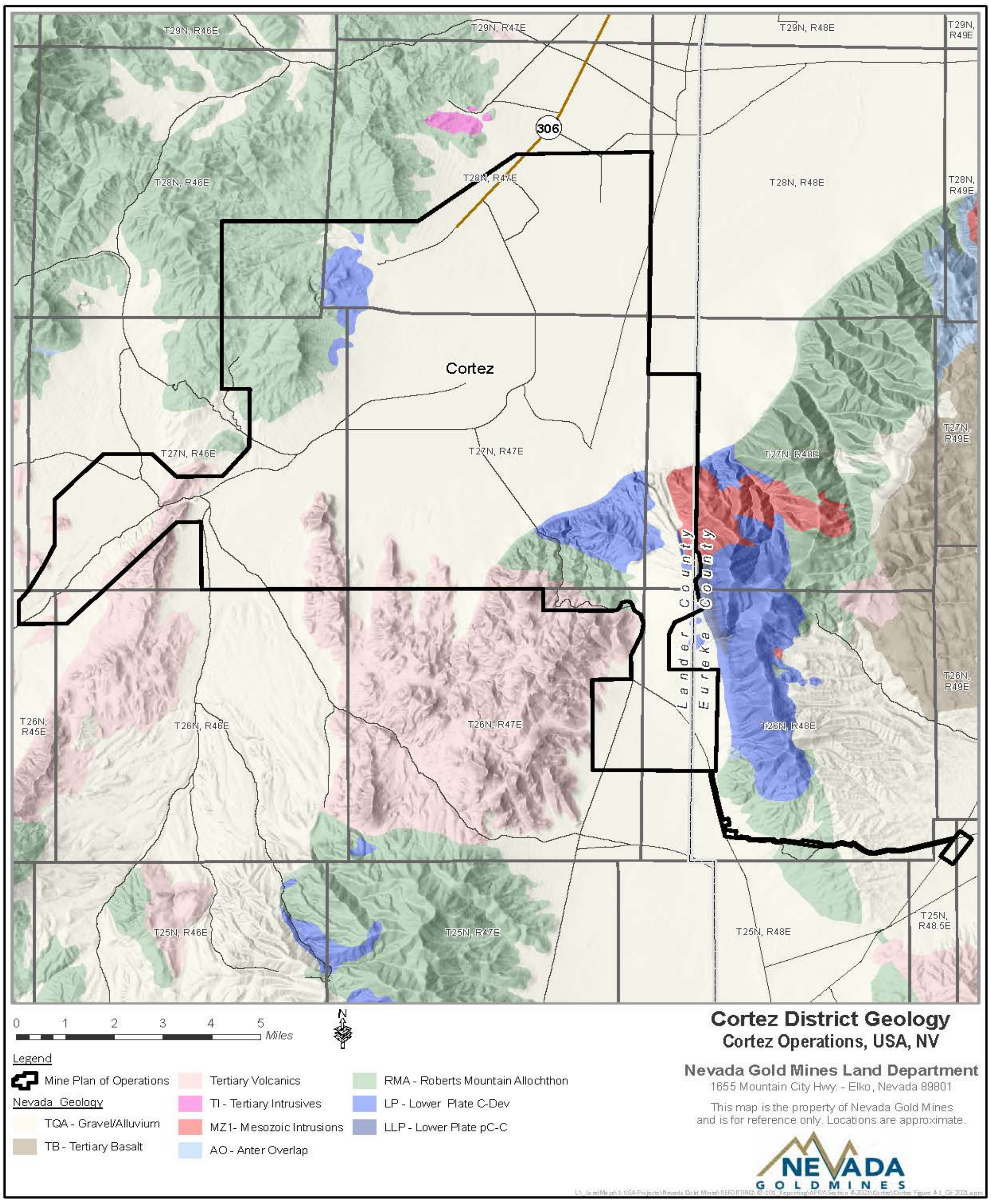
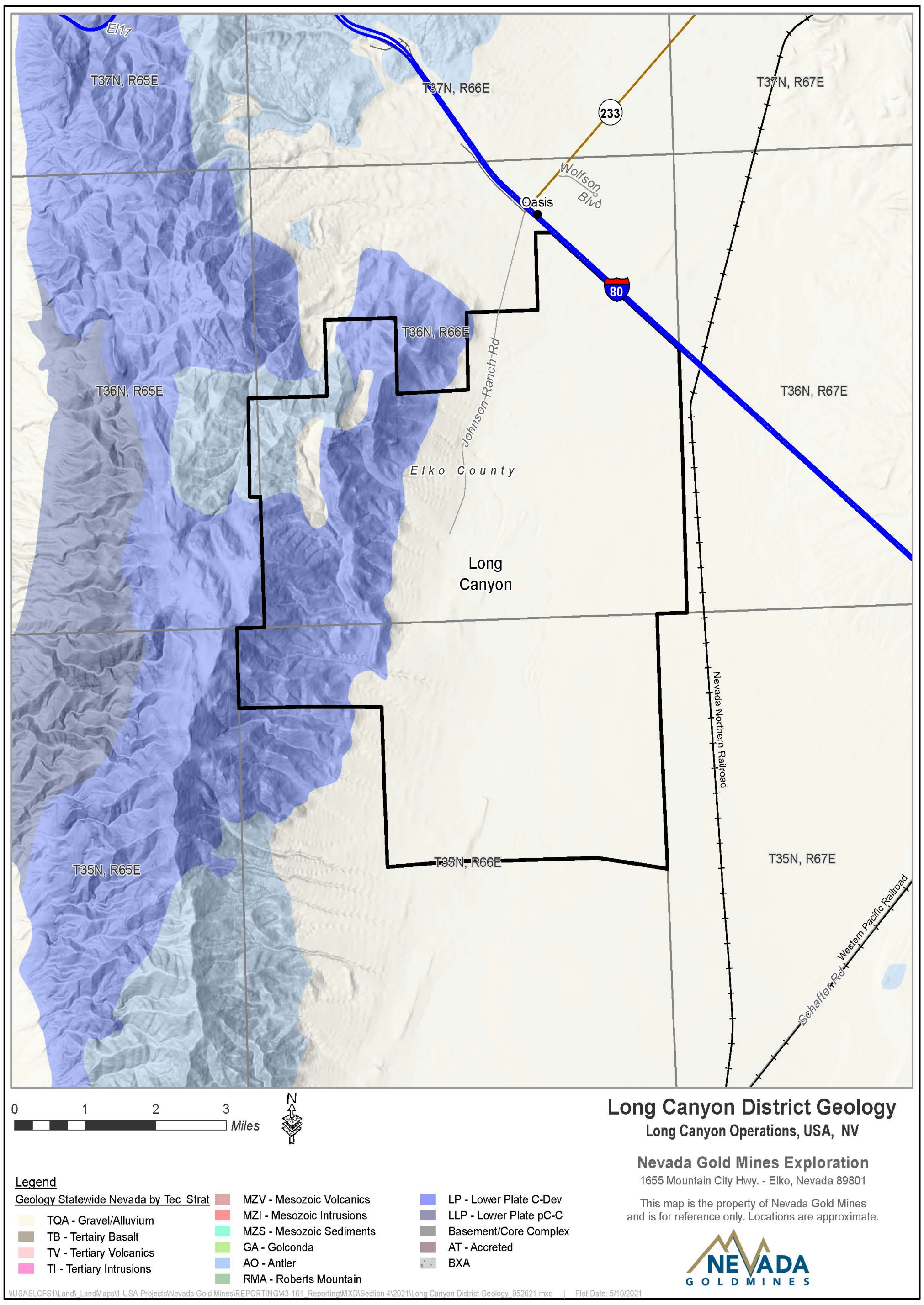


Figure 3-4: Long Canyon Complex Plan of Operations



Newmont

Figure 3-5: Phoenix Complex Plan of Operation

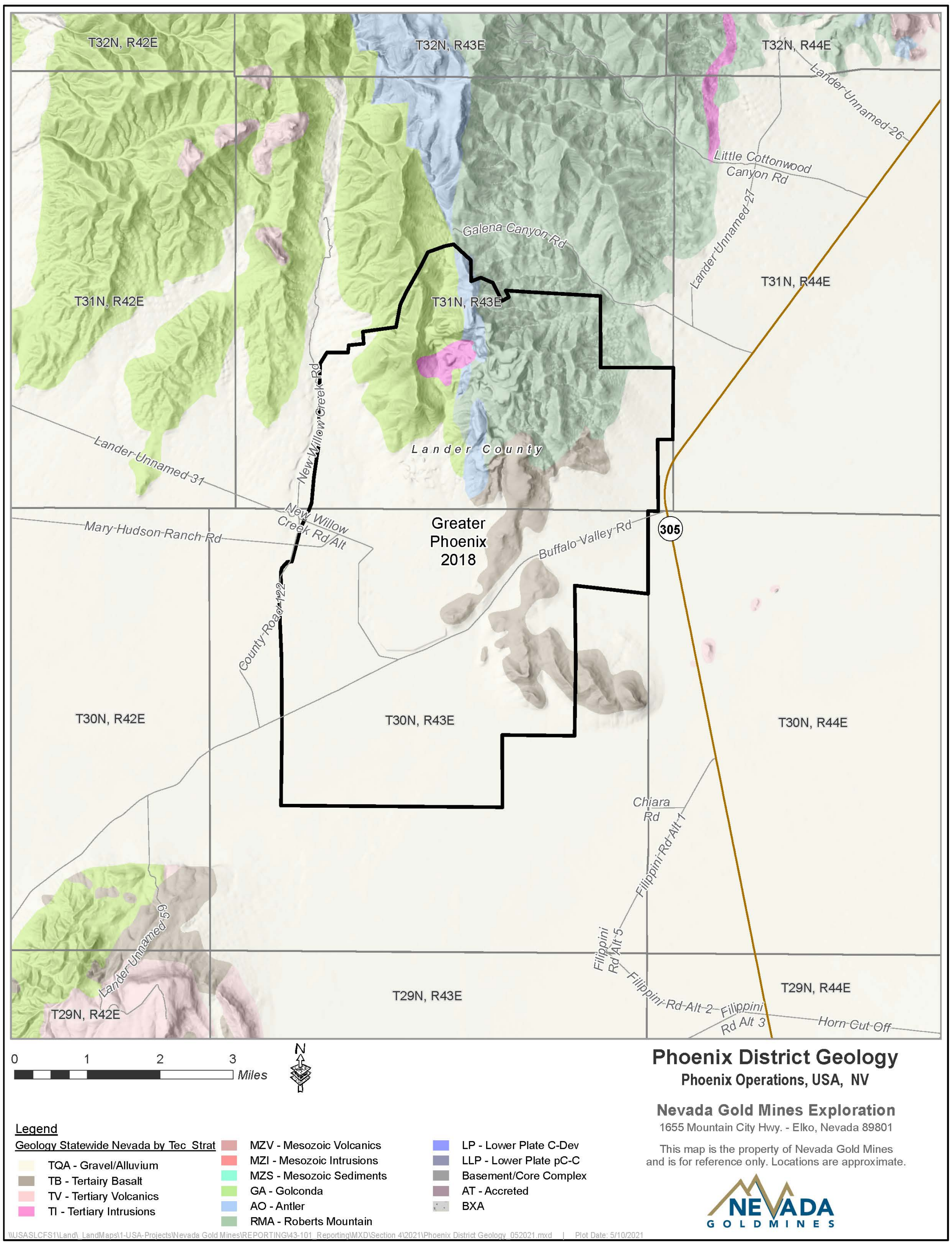
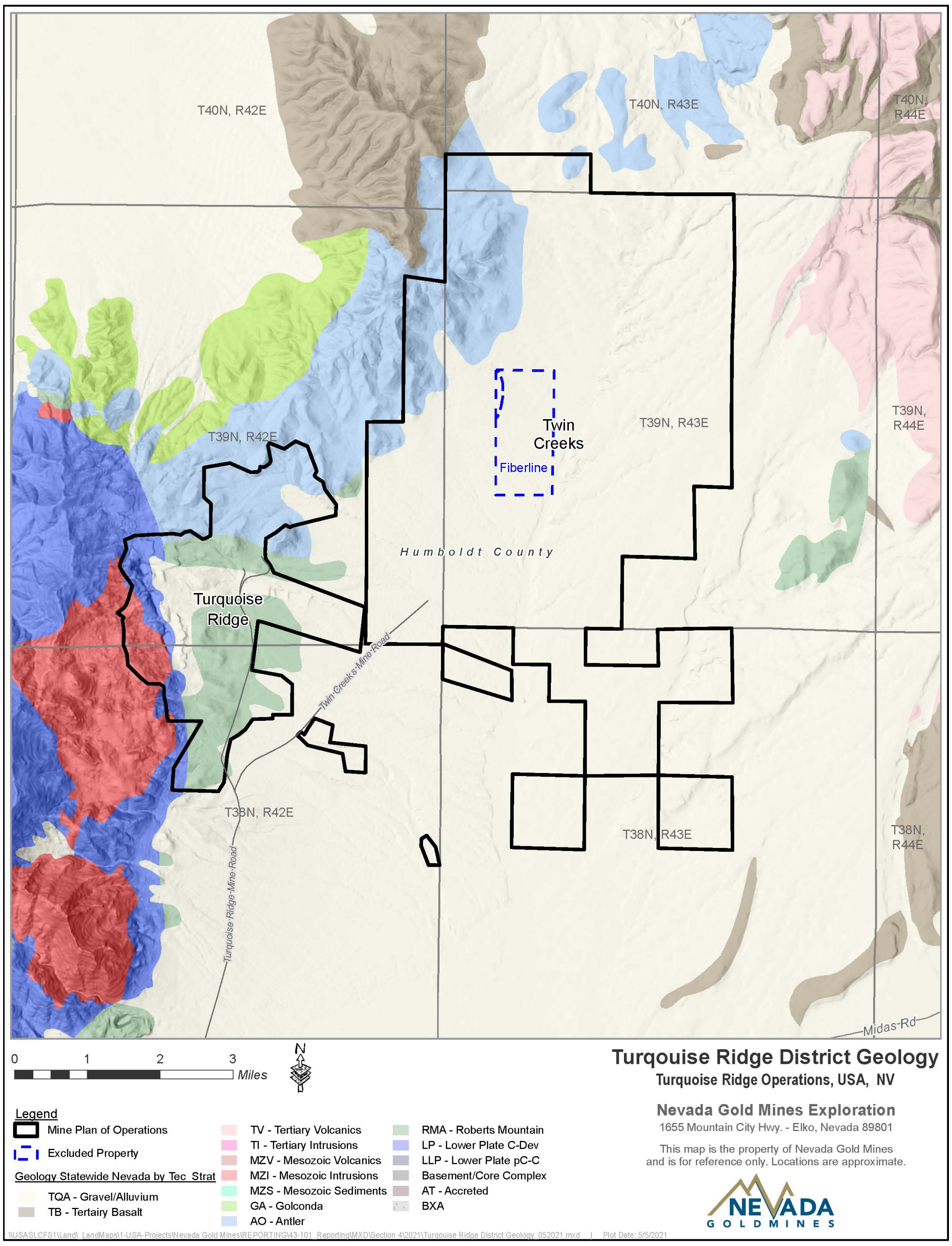


Figure 3-6: Turquoise Ridge Complex Plans of Operation



3.7 Surface Rights

NGM holds all necessary surface rights for the current mining operations. Additional surface rights will be required, for future mining projects.

The Goldrush PoO is currently moving through the National Environmental Policy Act (NEPA) process (see discussion in Chapter 17.4.2).

3.8 Water Rights

NGM currently maintains a combination of approximately 1,250 active surface and groundwater rights within 38 hydrographic basins. Permitted manners of use include stockwater, mining and milling, storage, irrigation, environmental, quasi-municipal, commercial, industrial, wildlife, domestic, construction, and dewatering. These water rights are required by NRS 533 for all water management activities at NGM's various mining and ranching operations.

NGM holds all necessary water rights for the LOM plan envisaged in this Report.

3.9 Royalties

3.9.1 Claims Royalties

There are numerous royalties that pertain to the active mines within the Nevada Operations. Royalty payments vary, as the payments depend upon actual tonnages mined, the amount of gold recovered from that mined material, the deposit being mined, the receiving entity, and the type of royalty. A number of the claims have inactive royalties attached, which are not currently triggered as the claims are not being mined.

The major royalties for each deposit are summarized in Table 3-7. Royalties listed can pertain to single claim, or to a group of claims, and therefore can apply to only a portion of a deposit, or to the overall deposit area.

3.9.2 NGM Royalty

In connection with the formation of Nevada Gold Mines, each of Barrick and Newmont was granted a 1.5% net smelter returns royalty over the respective properties they contributed to the NGM JV.

For the properties contributed by Barrick, the 1.5% net smelter returns royalty is payable on all gold produced from these properties after 47,301,000 ounces of gold have been produced from the properties from and after July 1, 2019. For the properties contributed by Newmont, the 1.5% net smelter returns royalty is payable on all gold produced from these properties after 36,220,000 ounces of gold have been produced from the properties from and after July 1, 2019, and (ii) a separate and independent net smelter returns royalty on all copper produced from the Properties after 1,520,000,000 pounds of copper have been produced from these Properties from and after the July 1, 2019.

Each of these "retained royalties" is only payable once the aggregate production from the properties subject to the royalty exceeds the publicly-reported Mineral Resources and Mineral Reserves as of December 31, 2018.

Table 3-7: Royalties

Deposit	Royalty
South Arturo	Franco-Nevada U.S. Corp.: South Arturo, 4–9% variable GSR
Cortez	Ward: Cortez, 5% NRR
	Prochnau: Cortez, 2% NRR
	Royal Gold: Cortez, 0.71250075% + sliding scale 0.4–5% GSR; 3.75% NVR; 0.7125075% and a sliding scale 0.72–9% GSR
	Rio Tinto: Cortez, 0–3% sliding scale royalty based on gold price on 40% of production
	Idaho Royalty Holders: Cortez, 1.28595% ORR, 0.78749925% GR
	Denver Mining Finance Company: Cortez, 3.75% GR
	Royal Crescent Valley: Cortez, 0.8545875% NVR; 1.25% NVR
	Kelly and Moloney: Cortez, $0.5–$0.65/ton sliding scale (based on ore type and price)
	Duerr & Prochnau: Cortez, 2% NSR
	McCoy: Cortez, 4% NSR on hard rock and 1/6 production on coal, oil and gas; geothermal production royalty
	Filippini: Cortez, 5% NSR on hard rock and 1/6 production on coal, oil and gas; geothermal production royalty
	Robertson: Cortez, 4% NSR on hard rock and 1/6 production on coal, oil and gas; geothermal production royalty
Genesis–Bluestar	RG Royalties LLC: Genesis-Bluestar, 2% NVR
	Franco-Nevada U.S. Corp.: Genesis–Bluestar, 6% NPI; 5% NPI; 4% NSR
Goldstrike	Franco-Nevada U.S. Corp.: Goldstrike, 2–4% NSR; 2.4–6% NPI
	Royal Gold Inc.: Goldstrike, 1% NSR
	Rhoads: Goldstrike, 5% NSR (net 2.5%)
	Kennecott Nevada Company: Goldstrike, 5% NSR
	White: Goldstrike, 9% NPI
	Bilbao, Alcor Inc., Alloyed Associates, Inc: Goldstrike, 5% NSR
Gold Quarry	Various: Gold Quarry, 8% NSR and 62.7% of 8% NSR Mill and 68.7% of 8% NSR Leach
	Tomera: Gold Quarry, 50% of 8% NSR
	Jones: Gold Quarry, 50% of 8% NSR
	Pacini: Gold Quarry, 1% NSR
	Ash Danko Hanna & Co: Gold Quarry, 22.5% of 18% NSR
	Roy Ash: Gold Quarry, 22.5% of 18% NSR
	Franco-Nevada U.S. Corp.: Gold Quarry, 40.5% of 18% NSR
	Gold Quarry Royalty Trust: Gold Quarry, 4.5% of 18% NSR
Goldrush	Idaho Royalty Holders: 1.28595% ORR
	Keleher and McLeod et al: 2-5 at 8.33% Variable NSR based on Gold Price
	Teck American Incorporated: 10% NPR from Production
	Englebright: 2% NPR
	Genesis Gold: 3% NRR
	Steiner: 0.2083% - 0.4167% Variable Production Royalty based on Gold Price
	Royal Gold: 1% Net Reserves
	Damele: 3% NSR
	Royal Gold: 15%NPI
	Idaho Resources Corporation: 0.75% GVR
	TeckCominco: 3% NSR

Deposit	Royalty
Leeville	RG Royalties LLC: Carlin, Leeville 2% NVR
	EMX Inc. (Bullion Monarch Mining Inc.): Leeville, 1% GSR
	Quest U.S.A. Resources, Inc., et al: Leeville, 1% NSR (unpatented); 0.775% NSR (patented)
Long Canyon	Pittston Mineral Ventures International, Ltd: Long Canyon, 3% NSR
	Mobil Exploration: Long Canyon, 0.15625% NSR
Phoenix	Flowery Gold Mines Company: Phoenix, 3% NVR capped at $50,000
Rain–Emigrant	Premier Gold: Emigrant/Rain, 1.5% NSR
	Premier Gold/Boyack/Montrose: Rain/Emigrant 2.5% NSR
	Boyack: Rain, 1% NSR
	Tomera: Rain, 3% GPR
	Jay Valcarce: Emigrant net 0.625% NSR
	Tomera Stonehouse 50% and Tomera Clan 50%: Emigrant, net 2.5% NSR
Ren	VEK: Ren, 3–5% NSR based on PPI
	Wallace: Ren, 3.5% NPR
	Weiss: Ren, 4% GPR
Robertson	Idaho Royalty Holders: 1.28595% ORR
	Billie Filippini: 3% GR
	Northern Nevada Au, Inc.: 4% GR
Turquoise Ridge Complex	RG Royalties LLC: 2% based on production
	UMETCO Minerals: 2% NSR

Note: Royalties listed can pertain to single claim, to a group of claims, and therefore can apply to only a portion of a deposit, or to the overall deposit area. There is a process for Premier Gold to assign the royalty interests in Rain–Emigrant to i-80 Gold; however the process is not complete, and Premier Gold remains the official royalty holder. GSR = Gross Smelter Royalty; NRR = Net Revenue Royalty; NPR = Net Profit Royalty; NSR = Net Smelter Royalty; NVR = Net Value Royalty; NPI = Net Profit Interest; GPR = Gross Proceeds Royalty; NPR = Net Proceeds Royalty; GR = Gross Royalty; ORR = Over Riding Royalty; PPI = Producer Price Index; GVR = Gross Value Royalty.

3.9.3 Nevada State Royalty

The State of Nevada levies royalties and taxes as outlined in Chapter 3.2.4.

3.10 Encumbrances

Permitting and permitting conditions are discussed in Chapter 17.9 of this Report. The operations as envisaged in the LOM plan are either fully permitted, or the processes to obtain permits are well understood and similar permits have been granted to the operations in the past, such as tailings storage facility (TSF) raises.

3.11 Violations and Fines

NGM advised the QP that as at December 31, 2021, no material violations or fines were imposed during 2021 by any regulatory authority that would affect the planned LOM for the Nevada Operations as presented in this Report.

3.12 Significant Factors and Risks That May Affect Access, Title or Work Programs

To the extent known to the QP, there are no other known significant factors and risks that may affect access, title, or the right or ability to perform work on the properties that comprise the Nevada Operations that are not discussed in this Report.

4.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

4.1 Physiography

The Nevada Operations are within the Great Basin, a part of the Basin and Range geologic province, which is dominated by north–south-trending mountain ranges, flanked by flat, arid valleys that may host playa lakes.

Operations are located between elevations of about 4,400–6,800 ft above mean sea level.

Vegetation is typically sparse, and can include shrubs such as sagebrush, rabbitbrush, and a variety of grasses. Juniper trees, pinion pine, and mountain mahogany can be found at higher elevations.

The most common current land use is for livestock grazing.

4.2 Accessibility

The Nevada Operations are bisected by Interstate 80 (I-80), which provides access to most of the Project area (refer to Figure 2-1).

Access for the Carlin Complex is generally from Elko 26 miles west on I-80 to Carlin which is the closest town to the mine sites. In addition, various alternate access routes use Nevada State Route 766, and Elko and Eureka County roads. These roads are well maintained, and most are paved.

The Cortez Complex is reached by travelling approximately 32 miles east from the town of Battle Mountain on the I-80. Alternative access is from Elko, Nevada, approximately 45 miles west to the Beowawe exit, then approximately 35 miles south on Nevada State Route 306, which extends southward from I-80.

The Long Canyon Complex is accessed from either the I-80 east-bound route through Wells or I-80 west-bound through Wendover, with the main entrance just off the Oasis/Montello interchange. The mine area is within one mile of the freeway with the pit area about four miles west.

The Phoenix Complex is accessed from I-80 at Battle Mountain, traveling approximately 12 miles south on the paved Nevada State Route 305, and then west a short distance on a paved/gravel county access road.

The Turquoise Ridge Complex is accessed from a turnoff at the settlement of Golconda, 25 miles east of Winnemucca, then following a paved road for a further 25 miles, and thereafter by an improved gravel road to the mine gates. It is then 10 miles to the west mine gate and 25 miles to the east mine gate.

The AOI is crossed by a network of gravel roads, providing easy access to various portions of the mining complexes and exploration areas. The majority of the roads are suitable for all-weather conditions; however, in extreme winter conditions, roads may be closed for snow removal.

The Union Pacific Rail line runs parallel to I-80. NGM operates the Dunphy Rail Terminal, which is located 27 miles west of Carlin, for the transportation of bulk commodities such as lubricants, fuel, and ball mill consumables. These bulk commodities are road-transported from the Dunphy Rail Terminal to each site using commercial trucking services.

Elko is serviced by commercial flights to Salt Lake City, Utah.

4.3 Climate

The Nevada Operations are located in the high desert region of the Basin and Range physiographic province. There are warm summers and generally mild winters; however, overnight freezing conditions are common during winter.

Precipitation averages six inches per year, primarily derived from snow and summer thunderstorms. Typically, the months with the greatest precipitation are March, May and November. During the winter months at elevations above about 5,500 ft above sea level, precipitation generally occurs as snow. Evaporation is estimated at 42–44 inches per year.

Operations are conducted year-round.

4.4 Infrastructure

The Nevada Operations are located in a major mining region and local resources including labor, water, power, natural gas, and local infrastructure for transportation of supplies are well established. Mining has been an active industry in northern Nevada for more than 150 years. Elko (pop. 20,300) is a local hub for mining operations in northern Nevada and services necessary for mining operations are readily available.

There are adequate schools, medical services and businesses to support the work force. A skilled and semi-skilled mining workforce has been established in the region as a result of on-going mining activities. Workers live in the surrounding communities.

The Nevada Operations currently have all infrastructure in place to support mining and processing activities (see also discussions in Chapter 13, Chapter 14, and Chapter 15 of this Report). These Report chapters also discuss water sources, electricity, personnel, and supplies.

5.0 HISTORY

A summary of the exploration and development history of the Nevada Operations from 1959 onwards is provided in Table 5-1.

Historical mining and exploration activity in the period from 1860–1950 included small underground and surface mines exploiting gold, copper, lead, antimony, barite and turquoise. Modern exploration activity by Newmont and Barrick and their predecessor companies, commenced in the late 1950s.

Table 5-1: Exploration and Development History Summary Table, Carlin Complex

Year	Operator	Comment
1959	American Exploration & Mining Co. (AMEX)	Wholly-owned US subsidiary of Placer Development Ltd. (subsequently Placer Dome Inc. (Placer Dome) Lease-option agreement on the properties of the Cortez Metals Co. Explored mine workings and surrounding area.
	American Smelting and Refining Company (Asarco)	Purchased claims in Copper Canyon area from US Government
1961	Newmont	Evaluated Bluestar mine and Maggie Creek claims
1962	Atlas Minerals (Atlas)	Discovered low-grade gold mineralization in Goldstrike area
1962–1964	Duval Corporation (Duval)	Joint ventured Copper Canyon land package from Asarco; property transferred outright in 1964
	Newmont	Explored jasperoid outcrops located 4.5 km southeast of Bluestar, subsequently delineating the Carlin deposit
1963	AMEX	Joint venture with Idaho Mining Corp
1964	AMEX	Formed the Cortez Joint Venture (Cortez JV) with the added participation of the Bunker Hill Co., Vernon F. Taylor, Jr., and Webb Resources Inc.
1965	Newmont	Commenced mining operations at Carlin
1966	USGS	Noted anomalous gold in altered outcrops at the base of the Cortez Range
	Cortez JV	Discovered Cortez deposit
1966–1978	Duval	Commenced copper and gold mining at Copper Canyon feeding a heap leach and mill. Converted mill to gold only in 1976.
1969	Cortez JV	Exploration drilling in Gold Acres area Construction of Cortez Mill No. 1
1972	Newmont	Acquired Bluestar and Bootstrap deposits
1974	Nevada Syndicate	Outlined shallow mineralization in the Long Lac and Winston areas
1975–1977	Polar Resources (Polar)/Pancana Minerals Ltd (Pancana)	Delineated the Number 9 deposit and several low-grade zones within the Goldstrike intrusion to the east of Nevada Syndicate property. From 1975 to 1977, Polar and Pancana operated a small open pit and heap leach
1976	Cortez JV	Discovered Horse Canyon deposit
1977	Newmont	Northstar deposit discovered. Mill 1 in operation
1978	Western States Minerals Corporation (Western States)	Entered into a JV with Pancana. Open pit mining operations continued, with the bulk of the production from oxidized zones, chiefly from the Long Lac, Bazza, and West Bazza deposits, plus some production from deposits within the Goldstrike intrusion
	Duval	Commenced mining of Tomboy and Minnie deposits
1980	Newmont	Emigrant and Gold Quarry deposits discovered
Early 1980s	Duval	Discovered Northeast Extension (NEX), Upper Fortitude, and Lower Fortitude deposits

Year	Operator	Comment
1982	Western States	Post deposit discovered
1984	First Mississippi Corporation/FRM Minerals Inc.	Purchases Getchell property.
	Gold Fields Mining Corporation (Gold Fields)	Discovers Chimney Creek gold deposit.
1985	Newmont	Commissions Mill 2 at Gold Quarry
	Duval	Battle Mountain created to hold assets in Copper Canyon area
1986	Western States	Deep Post deposit discovered
	First Mississippi Corporation/FRM Minerals Inc.	Heap leaching of historic Getchell dumps, drill programs to identify additional mineralization in historic workings. Completed feasibility study on Getchell deposit.
1986–1987	American Barrick Resources Corporation (American Barrick)	Acquired Western States, and acquired Pancana's interests in the Goldstrike area
1987	ECM, Inc. (ECM)	Overstaked Cortez JV placer claims with lode claims in Pipeline South area; leased claims to Royal Gold Inc. (Royal Gold)
	Royal Gold/Cortez JV	Formed the Royal/Cortez Joint Venture to resolve claim conflict
	Gold Fields	Commences gold production from Chimney Creek.
	Santa Fe	Discovers Rabbit Creek gold deposit.
1987–1988	American Barrick	Betze, Screamer, Deep Star, Rodeo, Meikle (previously named Purple Vein), South Meikle, and Griffin deposits/zones discovered
1987–1995	First Miss Gold Inc. (First Miss)	Subsidiary of First Mississippi Corporation created to conduct mining operations at Getchell. Open pit mining began in 1989. Getchell Main underground deposit identified in 1993, with production beginning in 1995. Turquoise Ridge Underground deposit discovered in 1993.
1987–1989	Royal Gold	Conducted geophysical surveys and drilling programs, identifying low-grade gold mineralization
1988	Newmont	Commissioned Mill 3 at Rain and Mill 5 (now referred to as the Gold Quarry concentrator) at Gold Quarry
1989	Newmont	Commissioned Mill 4 in the North Area
	Santa Fe	Commences gold production from Rabbit Creek.
1990	American Barrick	Autoclave operations begin at Goldstrike
	Royal Gold	Addition of roasting circuit to Cortez Mill No. 1
1991	Cortez JV	Royal/Cortez Joint Venture terminated. Cortez JV leased Pipeline South area directly from ECM Discovered Pipeline and Gap deposits
	Hanson Natural Resources Company (Hanson)	Acquires Gold Fields.
1993	Santa Fe	Acquires Chimney Creek operations following an asset exchange with Hanson. Consolidates Rabbit Creek and Chimney Creek into the Twin Creeks operations
1994	Newmont	Commissioned Mill 6 (now Gold Quarry) roaster at Gold Quarry
1994–1999	Pittston Nevada Gold Corporation (Pittston)	Geochemical sampling and RC drilling on west side of Pequop Mountains identified gold anomalies in the Long Canyon area.
1996	Cortez JV	Construction of Cortez Mill No. 2 Used geochemical and geophysical surveys to guide deep reverse circulation (RC) drilling, initially focusing on an area immediately west of the Cortez Fault

Year	Operator	Comment
1996–1998	Getchell Gold Corporation (Getchell Gold)	First Miss changes name to Getchell Gold. Construction started on Turquoise Ridge Underground mine.
1997	Newmont	Acquires Santa Fe. Open pit portion of the Rabbit Creek deposit renamed to the Mega pit. Open pit portion of the Chimney Creek deposit renamed to the Vista pit. Pinon mill associated with the Mega pit, treating oxide ore. Sage and Juniper mills associated with Vista pit treating refractory and oxide ore, respectively.
1998	Placer Dome Inc. (Placer Dome)	Announces merger with Getchell Gold. Suspends Turquoise Ridge Underground operations in 1999, and closes entire property in 2002. Operations restart at Turquoise Ridge Underground in 2003.
	Cortez JV	Discovered Crossroads and Pediment deposits
1999	American Barrick/Newmont	Asset exchange to rationalize the ownership and control of both the surface and subsurface estates that were jointly owned by the parties and to reduce the number of complex agreements that were needed to permit efficient operation and development of properties owned by both companies
	Cortez JV	Cortez Mill No. 1 placed on care and maintenance
2000	American Barrick	Roaster operations begin at Goldstrike
2001	Newmont	Merged with Battle Mountain
2002	Cortez JV	Discovered Cortez Hills deposit
2003	Placer Dome/Newmont	Form the Turquoise Ridge Joint Venture, 75% Placer Dome interest, 25% Newmont interest.
2004	Cortez JV	Discovered Cortez Hills Lower Zone
2005	Pittston	Sold Long Canyon area land package to AuEx
2006	Barrick	Acquired Placer Dome, obtained 60% interest in Cortez JV; obtained interest in Turquoise Ridge Joint Venture
2006	Newmont	Commenced mining at Copper Canyon; renamed to Phoenix
2007	NewWest Gold	Joint venture with AuEx.
2007–2011	Fronteer Gold	Acquired NewWest Gold. Completes major drill program
2009–2018	Barrick	Closes Getchell underground mine. Evaluation drilling of Vista underground area. North Portal developed 2011. South Portal developed 2013, after which Vista underground put on care and maintenance. Mining recommenced at Vista underground in 2018.
2011	Barrick	Discovered Goldrush deposit
	Newmont	Acquired Fronteer Gold
2016	Newmont	Commenced mining at Long Canyon
2019	Barrick/Newmont	Established NGM JV
2021	NGM	Completed updated feasibility study on the Goldrush deposit

6.0 GEOLOGICAL SETTING, MINERALIZATION, AND DEPOSIT

6.1 Deposit Type

The deposits that comprise the Nevada Operations are considered to be examples of Carlin-style carbonate-hosted disseminated gold–silver deposits and intrusion-related gold–copper–silver skarn deposits.

Host rocks for Carlin-style deposits are most commonly thinly-bedded silty or argillaceous carbonaceous limestone or dolomite, commonly with carbonaceous shale. Although less mineralized, non-carbonate siliciclastic and rare metavolcanic rocks can locally host gold that reaches economic grades. Felsic plutons and dikes may also be mineralized at some deposits. Deposits typically have a tabular shape, are stratabound, localized at contacts between contrasting lithologies, but can also be discordant or breccia-related. Mineralization consists primarily of micrometer-sized gold and sulfide grains disseminated in zones of siliciclastic and decarbonated calcareous rocks and are commonly associated with jasperoids. Major ore minerals include native gold, pyrite, arsenopyrite, stibnite, realgar, orpiment, cinnabar, fluorite, barite, and rare thallium minerals. Gangue minerals typically comprise fine-grained quartz, barite, clay minerals, carbonaceous matter, and late-stage calcite veins.

Host rocks for intrusion-related gold–copper–silver skarn deposits include sedimentary carbonates, calcareous clastic rocks, volcaniclastic rocks or (rarely) volcanic flows. They are commonly related to high to intermediate-level stocks, sills, and dykes of gabbro, diorite, quartz diorite, or granodiorite composition. Mineralization frequently displays strong stratigraphic and structural controls. Deposits can form along sill–dike intersections, sill–fault contacts, bedding–fault intersections, fold axes, and permeable faults or tension zones. Pyroxene-rich Au skarns typically contain a sulfide mineral assemblage comprising native gold ± pyrrhotite ± arsenopyrite ± chalcopyrite ± tellurides ± bismuthinite ± cobaltite ± native bismuth ± pyrite ± sphalerite ± maldonite. Garnet-rich Au skarns can contain native gold ± chalcopyrite ± pyrite ± arsenopyrite ± sphalerite ± magnetite ± hematite ± pyrrhotite ± galena ± tellurides ± bismuthinite.

6.2 Regional Geology

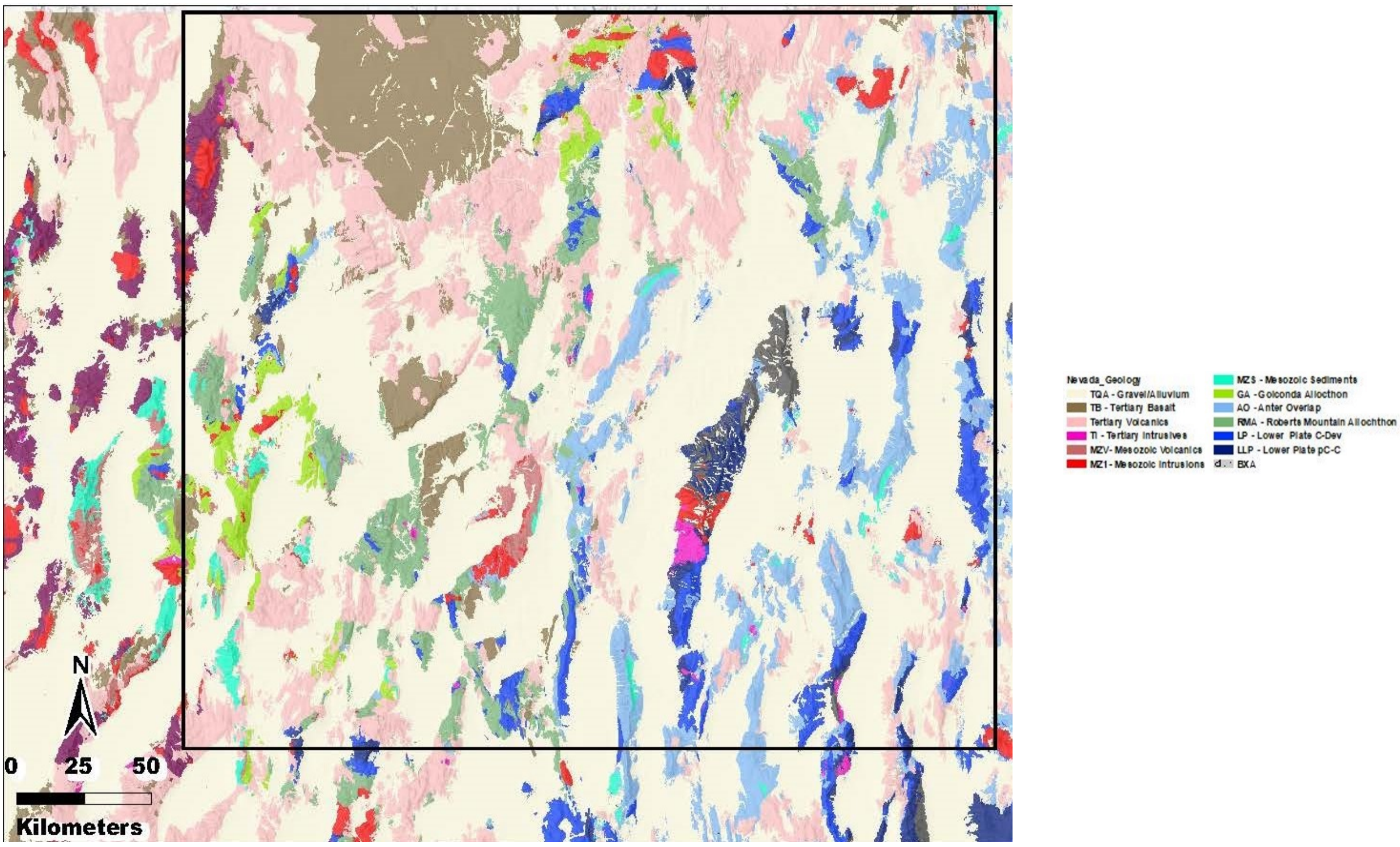
The geology of northern Nevada displays a complicated sequence of orogeny and tectonism, summarized from oldest to youngest (Stewart (1980) and Jory (2002)) in Table 6-1. A summary map showing the key regional features is included as Figure 6-1.

Figure 3-2 to Figure 3-6 included summary property geology maps for each of the major mining complexes.

6.2.1 Carlin Complex

Gold deposits within or adjacent to the Carlin Complex are hosted by lower Paleozoic sedimentary rocks that are subdivided into three major packages, as summarized in Table 6-2.

Figure 6-1: Regional Geology Plan



Note: Figure provided by NGM, 2021. Black outline is the outline of the AOI.

Table 6-1: Regional Geology

Age	Comment
Miocene	14–20 Ma basin-and-range extension occurred with north–south faulting, deposition of volcaniclastic and sedimentary rocks in basins, and exposure of lower Paleozoic rocks.
Eocene	Extension and magmatism. Emplacement during the Tertiary of felsic to intermediate dikes and associated small epizonal intrusions; some associated volcanism
Late Jurassic	Late/post-Elko Orogeny plutonism, stocks/dikes emplaced, and contact metamorphism
Mesozoic	Late Paleozoic tectonism during Early to Middle Pennsylvanian time (Humboldt Orogeny) followed by deposition of shelf carbonate sequences during the Middle Mississippian to Early Pennsylvanian. A third period of resumed uplift and folding, possibly related to the Early Triassic Sonoma Orogeny, was followed by the Early Cretaceous Sevier Orogeny, a period of eastward-directed folding and thrusting. These uplifts were accommodated by the development of north–northwest-striking faults and associated north–northwest-trending upright folds
Late Devonian to Early Mississippian	Compressional tectonism associated with the Late Devonian to Middle Mississippian Antler Orogeny resulted in regional-scale folding and east-directed imbricate thrusting of the westernmost siliciclastic package over the eastern carbonate package along the Roberts Mountains Thrust. The accreted mass formed the Antler highlands. Erosion of the highlands during the Middle Mississippian to Early Pennsylvanian shed an easterly-directed overlap assemblage of clastic rocks
Lower Paleozoic	From the Cambrian to Early Mississippian, the northern portion of Nevada was situated along a stable paleo-continental margin. A westward-thickening, prism-shaped sedimentary package was deposited from the outer margins of the paleo-continental shelf into an adjacent oceanic basin. The western sedimentary package predominantly consisted of siliciclastic rocks whereas the eastern portion of the sedimentary package consisted primarily of silty carbonate rocks

Table 6-2: Lithological Setting, Carlin Complex

Assemblage	Formation	Description	Notes	Example Deposits
Eastern	Roberts Mountains Formation	Silty, fossiliferous, and laminated limestones; sedimentary breccias	Fossiliferous debris flows and 3–15 cm (1–6 inch) thick calcarenite beds are common in the uppermost 120 m (400 ft) Lower 240 m (800 ft) of planar laminated silty limestone grading upward into wavy ("wispy") laminated silty limestone with abundant bioclastic debris	Carlin, Betze, West Leeville, Pete, Screamer, Deep Post, Goldbug–Post, and Mike
	Popovich Formation	Limestones, limey mudstones and sedimentary breccias	Informally named Bootstrap limestone is as much as 390 m (1,300 ft) thick at the north end of the Carlin trend. Fossiliferous debris flows occur proximal to the Bootstrap limestone	Betze–Post, Genesis–Blue Star, Gold Quarry (Deep West), Meikle, Goldbug–Rodeo, Deep Star, Bootstrap-Capstone, and Dee-Storm
	Rodeo Creek Formation	Siltstones and argillites; containing basal and internal sandstone horizons	Upper portion may be removed by Roberts Mountains thrust Flat-lying, 73–91 m (250–300 ft) thick silty to sandy facies informally named the Bazza Sands or Sandstone in the Goldstrike area Basal calcarenite thins northward, and is mostly absent north of Betze-Post area	Portions of Leeville and Goldstrike underground (Upper Rodeo)
Western	Vinini Formation	Siltstones, mudstones, and cherts		Capstone, Big Six, Crow, and Antimony Hill
	Slaven Formation	Siltstones, mudstones, and cherts		
	Elder Formation	Siltstones, mudstones, and cherts		
Overlap	Chainman Formation	Sandstone and conglomerate		
	Pilot Formation	Mudstones		Rain, Emigrant
	Guilmette Formation	Limestones; micritic and stomatoporoid-bearing		

Strata on the Carlin trend record at least three styles and orientations of contractional structures which form a consistent regional-scale deformation sequence (Rhys et al., 2015). Phase 1 deformation is associated with the Roberts Mountains thrust. Phase 2 deformation comprises development of north to northeast-trending, east-vergent folds, and Phase 3 deformation consists of northwest-trending, upright folds and reverse faults.

Replacement and breccia mineralization styles may be associated with decalcification and clay alteration, dissolution breccias, silicification, development of silicified or jasperoidal breccias, cataclastic breccias and disseminated replacement in Jurassic dikes. The alteration styles can occur together, can zone outwards from faults, and can occur singly, preferentially affecting stratigraphic horizons lateral to faults.

Pervasiveness and intensity of alteration varies both within and between gold deposits, depending on magnitude of the mineralizing system, nature of the host rock, and structural preparation.

Carlin Trend-style mineralization consists primarily of micrometer-sized gold and sulfides disseminated in zones of siliciclastic and decarbonated calcareous rocks and commonly associated with jasperoids. Mineralization is predominantly in the form of oxides, sulfides, or sulfide minerals in carbonaceous rocks, and the ore type determines how and where it is processed.

6.2.2 Cortez Complex

The principal lithologies of the Cortez Complex are summarized in Table 6-3.

Most of the largest gold deposits within the Cortez Complex lie within approximately 300 ft of the Roberts Mountain Thrust at the base of the allochthonous upper plate. The stratigraphy is cut by a series of north–northwest, northwest, northeast, and north–northeast-striking high- and low-angle faults with extensive fracturing, brecciation, and folding. These faults both control and displace mineralization, with evidence for both dip-slip and oblique-slip displacements.

The alteration style at Cortez is similar to that described for the Carlin Complex.

Weathering has affected those deposits that are exposed on surface, resulting in oxide ores, which overlie the refractory sulfides. Weathering extends to about 60 m depth at Cortez.

Mineralization consists primarily of submicrometer- to micrometer-sized gold particles, very fine sulfide grains, and gold in solid solution in pyrite. Gold mineralization occurs disseminated throughout the host rock matrix in zones of silicified and decarbonatized, argillized, silty calcareous rocks, and associated jasperoids. Gold may occur around limonite pseudomorphs of pyrite and arsenopyrite.

6.2.3 Long Canyon Complex

The major lithologies of the Long Canyon Complex are summarized in Table 6-4.

Three sets of faults have been identified. The earliest structures are northwest-vergent reverse faults. Two generations of normal faults are present, the earlier normal fault set trends roughly north–south to 020°, while the later set of normal faults has a moderate to steep dip, both to the east and west, and strike between due north and 040°. The third fault set consists of subvertical, northwest striking strike-slip faults.

Table 6-3: Lithological Setting, Cortez Complex

Assemblage	Formation	Age	Description
Eastern (autochthonous lower plate)	Horse Canyon Formation (Rodeo Creek Formation equivalent)	Devonian	Siltstone, mudstone, chert and argillite
	Wenban Formation	Early Devonian	Limestone
	Roberts Mountains Formation	Silurian-Devonian	Silty, fossiliferous, and laminated limestones; sedimentary breccias
	Hanson Creek Formation	Ordovician	Dolomite and silty limestone
	Eureka Formation	Ordovician	Quartzite
	Hamburg Dolomite	Cambrian	Limestones and dolomites
Western (allochthonous upper plate)	Slaven Formation	Devonian	Chert with occasional thin interbeds of carbonaceous shale and limestone
	Fourmile Canyon Formation	Silurian	Chert, siltstone, argillite, and shale with a few thin beds of sandstone
	Elder Formation	Silurian	Feldspathic silty sandstone, with interbeds of siltstone, tuffaceous shale, and thin chert
	Valmy Formation	Ordovician	Massive quartzite and sandstone interbedded with chert, shale, siltstone, greenstone, and minor limestone
	Vinini Formation	Ordovician	Bedded chert and interbedded quartzite and shale, alternating carbonaceous shale and quartz siltstone, and irregularly interbedded shale, siltstone, sandstone, and limestone, and tholeiitic volcanic rocks
Intrusive	Dikes	Pliocene–Pleistocene	Rhyolite
	Dikes	Pliocene	Andesite
	Dikes	Oligocene	Biotite–quartz–sanidine porphyry
	Porphyry	Eocene	
	Dikes and sills	Tertiary	Dacite and rhyodacite
	Dikes	Jurassic–Cretaceous	Felsic and mafic intrusions
	Gold Acres Stock	Jurassic–Cretaceous	
	Granodiorite		
	Mill Canyon Stock	Jurassic	Biotite–quartz monzonite
Extrusive/Volcaniclastic	Flows	Pliocene–Pleistocene	Rhyolite
	Flows	Pliocene	Andesite
	Caetano Tuff	Oligocene	Water laid rhyolitic tuffs, together with lesser amounts of andesitic tuff, sandstone and conglomerate

Table 6-4: Lithological Setting, Long Canyon Complex

Age	Unit	Subunit	Note
Quaternary	Alluvium		Mixed lithology gravels
Mesozoic	Lamprophyre		Intrusive dikes and sills
Ordovician	Pogonip Group	LC0	Strongly lenticular laminated limestone.
		LC1	Non-laminated or indistinctly-laminated limestone
		LC2	Well-laminated limestone
		LC3	Mottled, stylolitic limestone, or locally dolomitized limestone, is typical and may display local wavy lamination
Cambrian	Notch Peak Formation	LC4	Typically dolomite, non-laminated, and commonly contains abundant Nuia (fossil algae)
		LC5	Upper portion has a distinctive zebra dolomite texture; lower portion is oolitic.
		LC6	Limestone, locally can be hydrothermally dolomitized
		LC7	Stylolitic limestone with coarse-grained fossiliferous intervals

Typical alteration assemblages include decalcification, argillization, oxidation, hydrothermal dolomitization and local silicification.

Gold mineralization is concentrated in Notch Peak and Pogonip limestone at the margins of the Notch Peak dolomite. Mineralization is both stratigraphically and structurally controlled. Mineralization occurs most commonly at the upper and lower margins of the dolomite, but primarily within the limestone units.

Gold occurs primarily in zones of polyphase dissolution breccias that are localized in minor faults and fold hinges in the structurally-complex areas along and adjacent to dolomite block margins. Two general phases of brecciation are present, including calcareous breccias and later, Fe ± As oxide-rich breccias, which carry the highest gold grades. Breccias are accompanied by variable pervasive silicification.

Mineralization consists primarily of sub-micrometer-sized gold particles along the margins of oxidized pyrite grains. Some gold grains were observed encapsulated in silica. Gold was also detected by scanning electron microscopy within an arsenical rim on one pyrite grain.

6.2.4 Phoenix Complex

The main geological units of the Phoenix Complex area are provided in Table 6-5.

Table 6-5: Lithological Setting, Phoenix Complex

Age	Unit	Note
Cenozoic	Volcanic rocks and alluvium	Includes 3 Ma Pliocene olivine basalt flows and Quaternary–Tertiary alluvium
Tertiary	Tuff	33 Ma Caetano welded siliceous tuff
Cretaceous	Granodiorite porphyry	38 Ma Copper Canyon stock
Mississippian, Pennsylvanian and Permian	Havallah sequence (formerly Pumpernickel Formation)	Radiolarian ribbon chert, and argillite associated with variable, but generally subordinate, siliciclastic, calc-arenitic, and volcaniclastic turbidites and slump deposits
Pennsylvanian and Permian	Edna Mountain Formation	Chert–pebble conglomerate and calcareous sandstone and siltstone
	Antler Peak Limestone	Limestone unit, now recrystallized and metasomatized to marble or skarn
	Battle Formation	interbedded calcareous to siliceous conglomerate and sandstone with lesser calcareous siltstone and shale
Upper Devonian to Mississippian	Scott Canyon Formation	Bedded chert, marine siliciclastic sedimentary rocks, and massive to pillowed metabasalt with minor limestone and carbonaceous black chert
Cambrian	Harmony Formation	Poorly-sorted feldspathic and micaceous sandstone, with lesser limestone and shale, which accumulated in a submarine fan setting

Two major regional scale north–south-striking faults demark the Phoenix mineralization corridor. The west boundary is the Copper Canyon fault zone (also known as the Canyon fault) and to the east, is the Virgin fault zone. Numerous subsidiary faults are developed in the vicinity of these main faults.

Hydrothermal alteration in the Project is centered on the Copper Canyon stock, which has produced about 4,200 acres of hornfels and skarn. Skarn alteration is hosted by all sedimentary rock units adjacent to the Copper Canyon granodiorite, with the reactive calcareous protoliths of the Edna Mountain Formation, Antler Peak Limestone and Battle Formation hosting the bulk of the skarn alteration. Alteration of the Copper Canyon stock consists of quartz–sericite–pyrite argillic, or propylitic, alteration.

Preferred host lithologies for gold mineralization are the Antler Peak Limestone and Battle Formation. Copper mineralization hosts include the Copper Canyon stock and Havallah sequence.

Gold mineralization occurs freely at gangue–gangue or at sulfide–gangue grain boundaries, and only rarely as inclusions within gangue minerals. Some inclusions were noted in quartz, pyroxene, epidote, and orthoclase. The remaining gold occurred as inclusions totally encapsulated by sulfide minerals including pyrite, pyrrhotite, and to a lesser extent arsenopyrite, chalcopyrite, and sphalerite. Silver minerals are dominantly electrum, hessite, and lesser argentite.

Copper oxide mineralization locally contains minor amounts chalcanthite, malachite, chrysocolla, azurite, and lesser cuprite. Enriched copper mineralization typically has chalcopyrite ± covellite present. Covellite locally rims chalcocite grains where the effects of oxidation are more advanced. In hypogene mineralization, chalcopyrite occurs as disseminations and bedded replacements with skarn and silicate minerals, and in conjunction with pyrite.

6.2.5 Turquoise Ridge Complex

The key lithologies of the Turquoise Ridge Complex are summarized in Table 6-6.

The Getchell Fault is a major north–south striking fault, and is a master fault to a number of steeply-dipping, north-striking faults to the east of, and antithetic to it. A series of high-angle normal faults strike northeast and dip steeply northwest in the Turquoise Ridge deposit area.

Contact metamorphic alteration is associated with the Osgood stock, forming skarns in carbonate-rich lithologies. Alteration not associated with the granodiorite consists of decalcification, argillization, silicification, and development of jasperoid bodies. Overprinting clay alteration is related to weathering processes.

Preferred host lithologies for gold mineralization are the Comus and Prebble Formations, followed by the Valmy and Etchart Formation

Sub-microscopic gold mineralization is associated with pyrite, arsenopyrite, quartz, calcite, realgar and orpiment. Gold-bearing zones can be located close to granodiorite dikes and beneath basaltic intrusions.

6.3 Property Geology

6.3.1 Carlin Complex

Carlin Complex deposits include the following zones or area:

- South Arturo: South Arturo open pit, El Niño underground. Deposit length is about 1,970 ft, the deposit width is approximately 394 ft wide, and averages about 50 ft in thickness;
- Betze–Post: Deep Post, Post, Betze, North Betze, West Betze, Screamer North Screamer, and West Barrel. Deposit lengths range from 2,000–5,300 ft, deposit widths are 1,000–4,500 ft, and deposit thicknesses range from 80–250 ft;
- Meikle–Rodeo: East Banshee, West Banshee, Meikle, South Meikle, East Griffin, Extension, West Griffin, Rodeo, Barrel, West Rodeo, and North Post. Deposit lengths range from 1,500–3,100 ft, deposit widths are 200–2,300 ft, and deposit thicknesses range from 250–1,400 ft;
- North Carlin: Tri-Star/Genesis (Silverstar, Bobstar, Goldstar, and Payraise), Perry, Lantern/Green Lantern, Exodus. Deposit lengths range from 900–10,000 ft, deposit widths are 550–6,000 ft, and deposit thicknesses range from 30–550 ft;
- Carlin–Gold Quarry: Quarry Main, Deep West, Deep Sulfide Feeder, Chukar North, Chukar South, and Carlin. The Good Hope, Mac, Magpie, Southwest, Wedge areas do not have estimated mineral resources or mineral reserves. Deposit lengths range from 4,500–12,000 ft, deposit widths are 950–8500 ft, and deposit thicknesses range from 100–2000 ft;
- Leeville: West Leeville, Turf, and Four Corners. Deposit lengths range from 2,000–4,600 ft, deposit widths are 300–5,200 ft, and deposit thicknesses range from 30–300 ft;

Table 6-6: Lithological Setting, Turquoise Ridge Complex

Age	Unit/Lithology	Comment
Quaternary and Tertiary		Alluvials, gravels and minor tuff in low-lying fault-bounded graben areas.
Tertiary		Basaltic and andesitic lavas and poorly-exposed silicic tuff. Age date of c. 22 Ma.
Cretaceous	Osgood Mountains pluton	Medium-grained equigranular to porphyritic granodiorite stock and related dikes and sills of dacite porphyry.
		c. 114 Ma dacite dikes
Mississippian-Permian	Havallah Formation	Siliciclastic and basaltic rocks
Pennsylvanian-Permian	Etchart Formation	Variably sandy/silty limestone, calcareous siltstone/sandstone and conglomerate.
Mid-Pennsylvanian (?)	Battle Formation	Gray quartzite cobble conglomerate, with a gray sandy matrix.
Ordovician	Valmy Formation	Pillow basalt flows with subordinate amounts of hyaloclastite, chert and argillite.
Cambrian–Ordovician (?)	Comus Formation	Black shale, siltstone, and silty to fine-grained carbonate rocks. Basalt flows and ash to lapilli tuff and debris flows of basaltic composition. Abundant mafic and ultramafic alkalic sills intrude the laminated and thin-bedded sedimentary rocks.
Cambrian	Preble Formation	Black to gray, laminated silty mudstone, locally phyllitic. Siltstone, and shale with subordinate carbonate lenses.
Cambrian	Osgood Mountain Formation	Quartz arenite, quartzite

- South Carlin: Pete Bajo, Fence, Full House. Deposit lengths range from 2,000–4,000 ft, deposit widths are 500–900 ft, and deposit thicknesses range from 10 to 60 ft;
- Emigrant: Emigrant. The deposit is 12,000 ft long, 3,300 ft wide, and has a thickness range from 10–330 ft.

Example cross-sections of deposits in the Carlin Complex are included as Figure 6-2 to Figure 6-6. A cross-section through the Meikle–Rodeo deposit is provided in Figure 6-7.

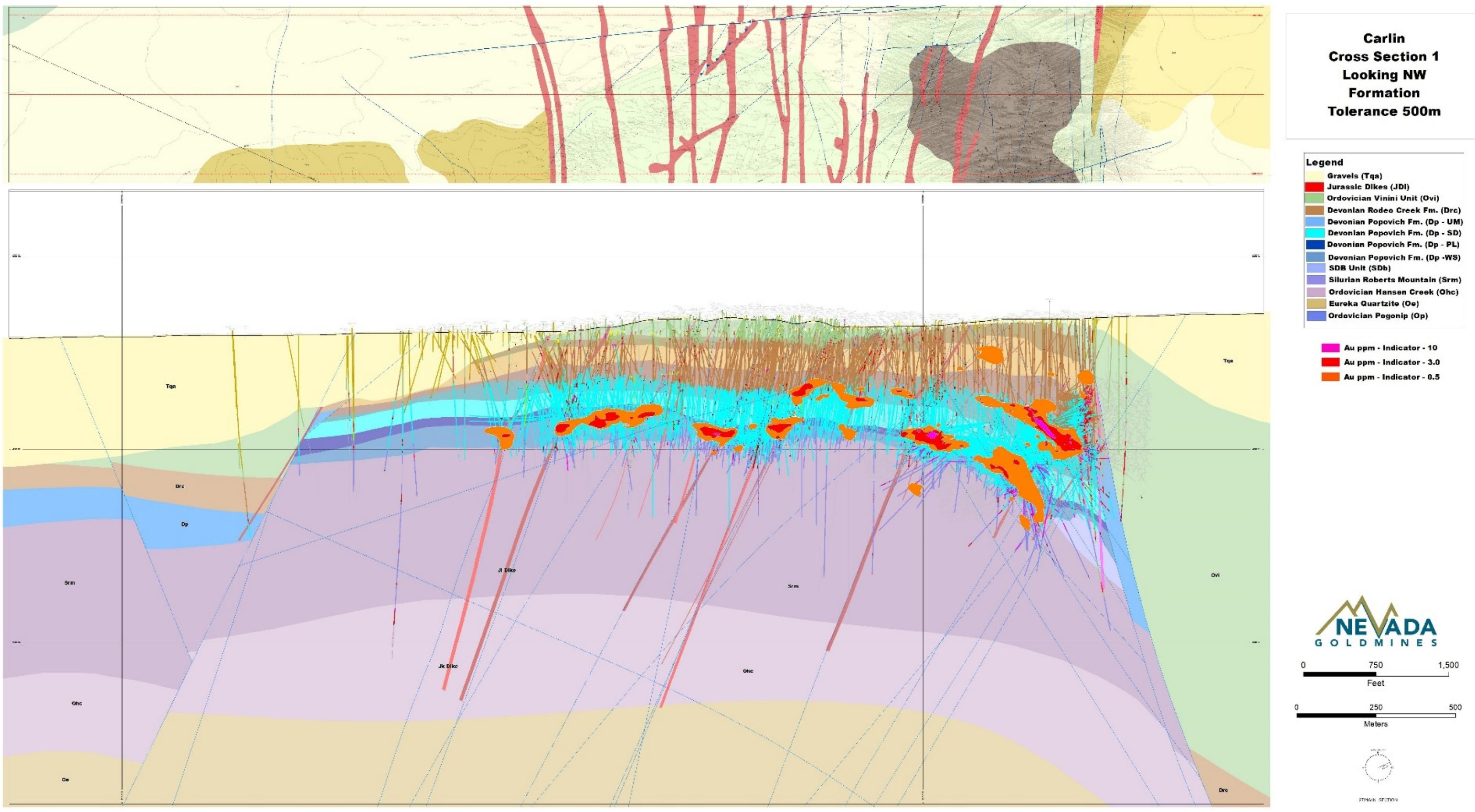
Geological, structural, alteration and mineralization descriptions were included in Chapter 6.3.1.

6.3.2 Cortez Complex

Cortez Complex deposits include the following deposits:

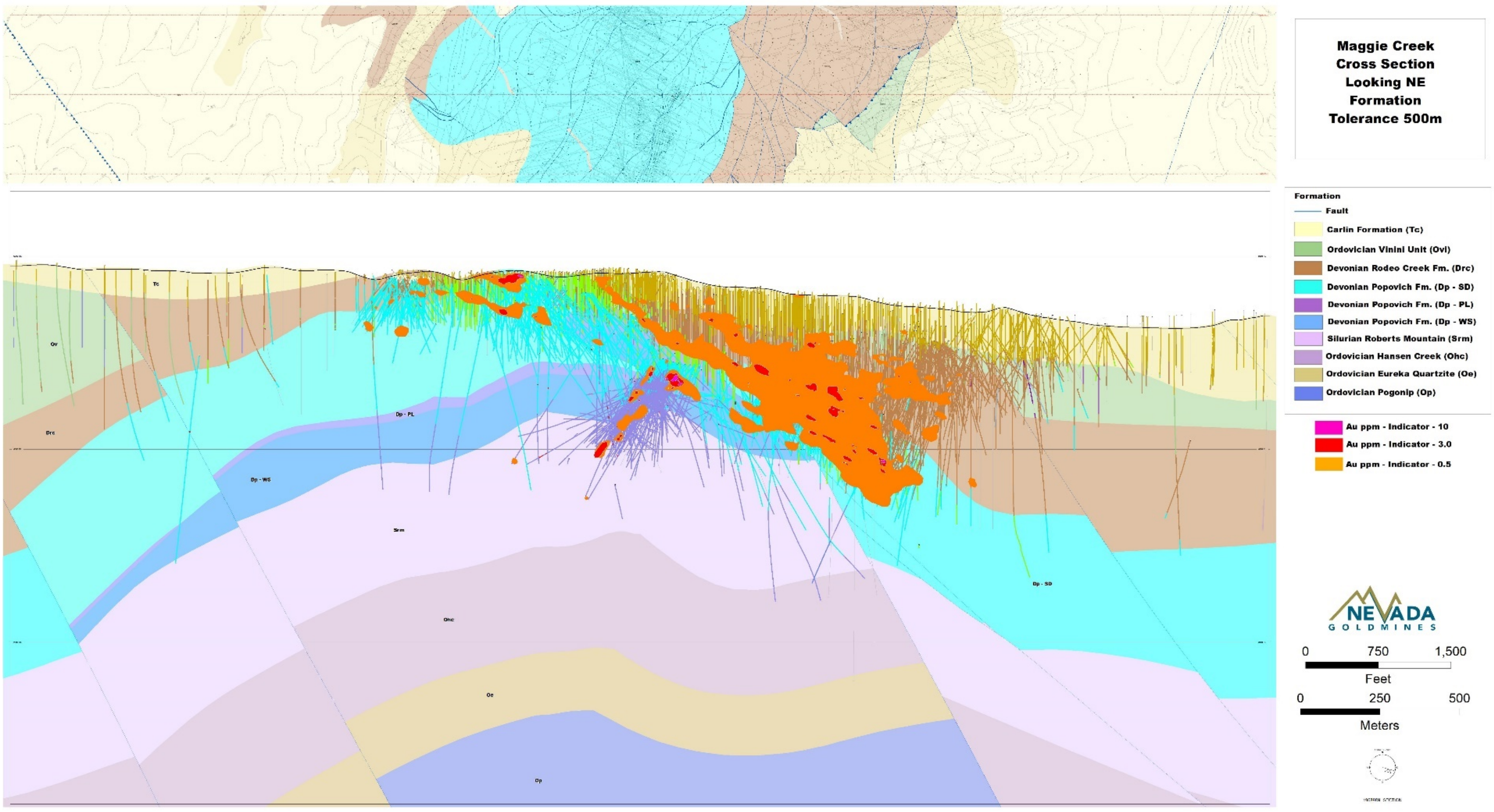
- Cortez NW Deep and Cortez Hills open pit and underground: combined deposit lengths are 6,800 ft, 4,000 ft wide, and deposit thicknesses range from 10–350 ft;
- Crossroads and Pipeline: deposit length is 11,000 ft, 3,400 ft wide, and deposit thicknesses range from 50–1,400 ft;

Figure 6-2: Geological Cross-Section, Goldstrike Area



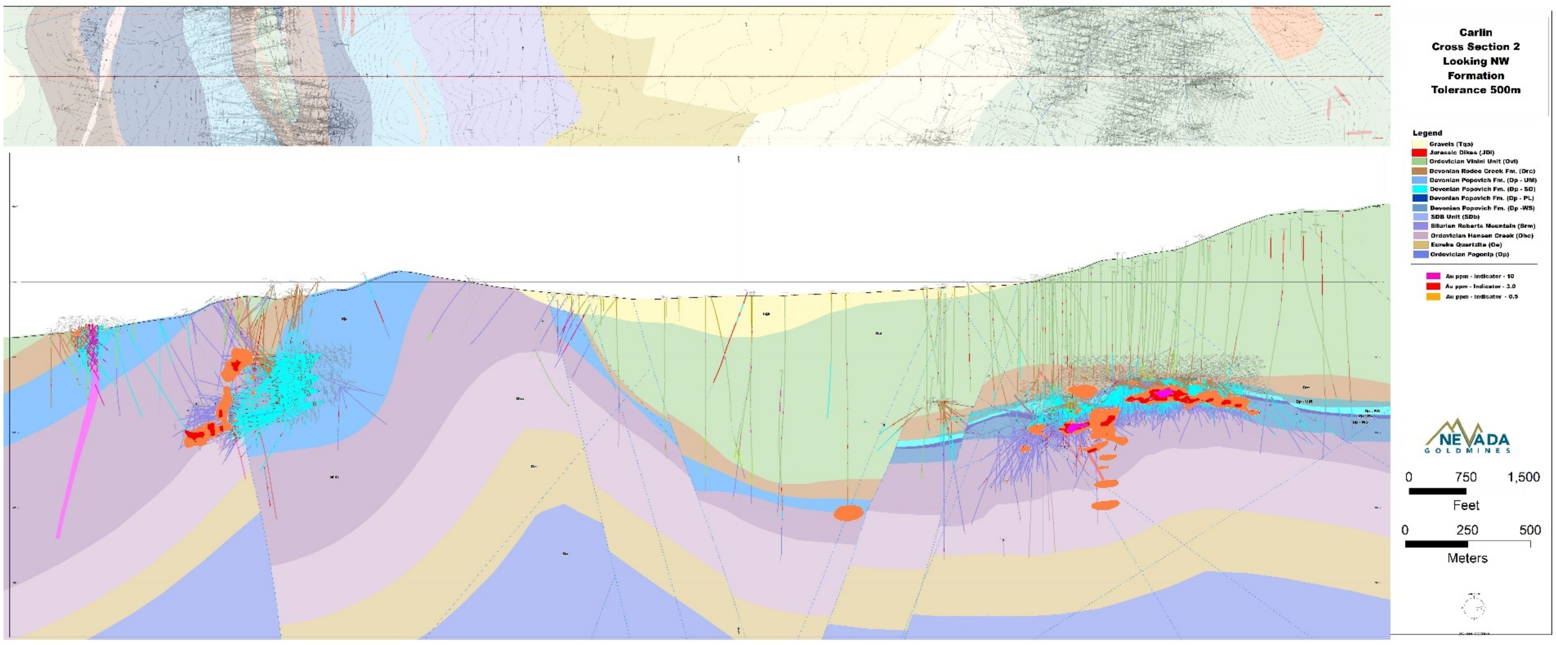
Note: Deposits shown in Goldstrike open pit area.

Figure 6-3: Geological Cross-Section, Gold Quarry Area



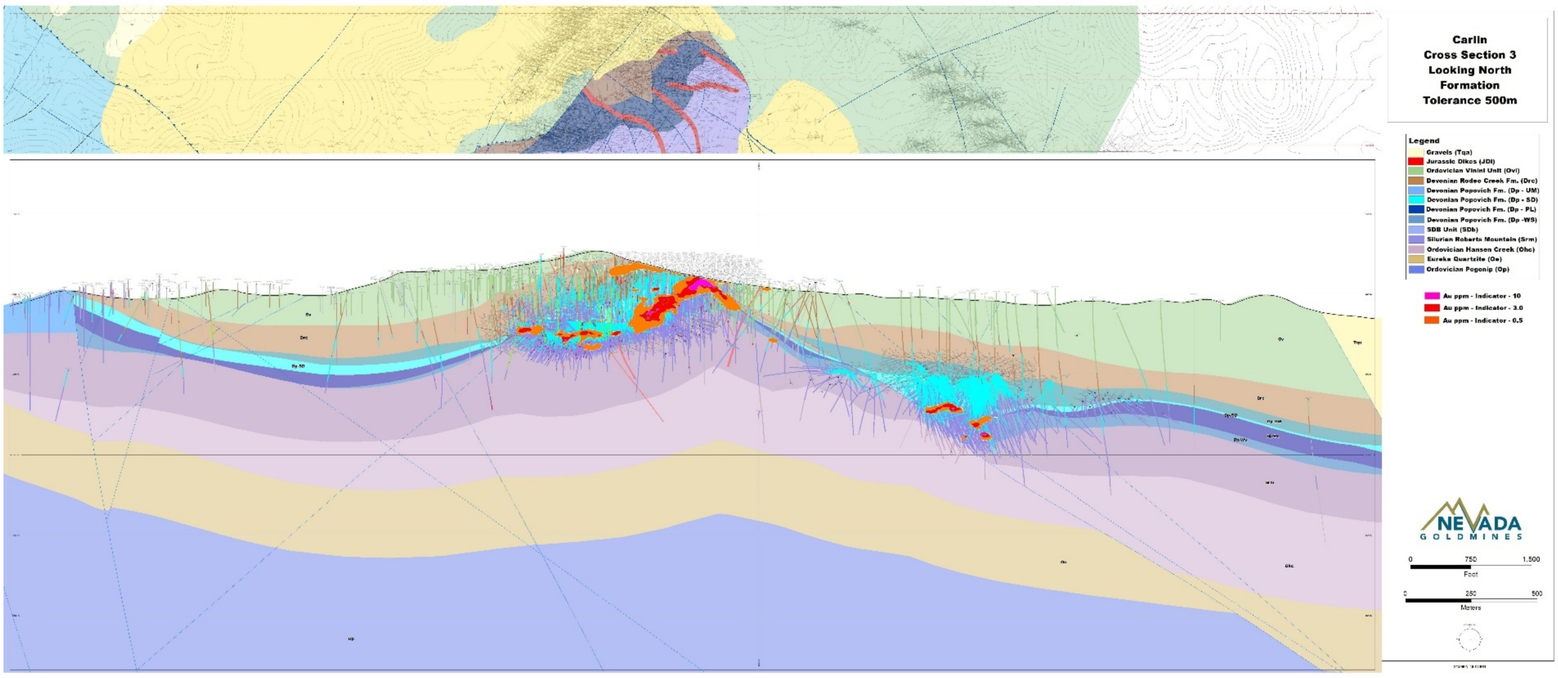
Newmont

Figure 6-4: Geological Cross-Section, Exodus–Leeville Area



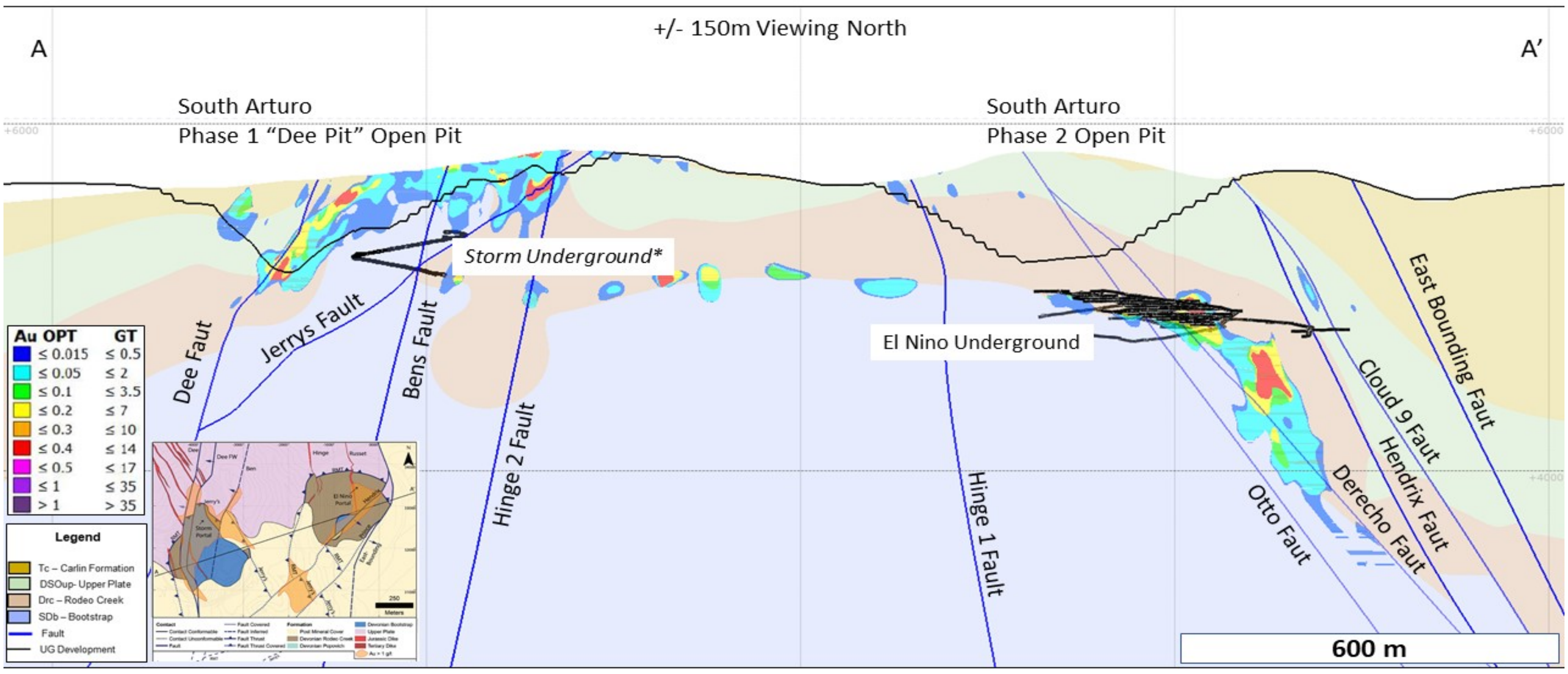
Note: Deposits shown are Exodus (left) and Leeville (right)

Figure 6-5: Geological Cross-Section, Carlin–Pete Bajo Area



Note: Deposits shown are Carlin (left) and Pete Bajo (right)

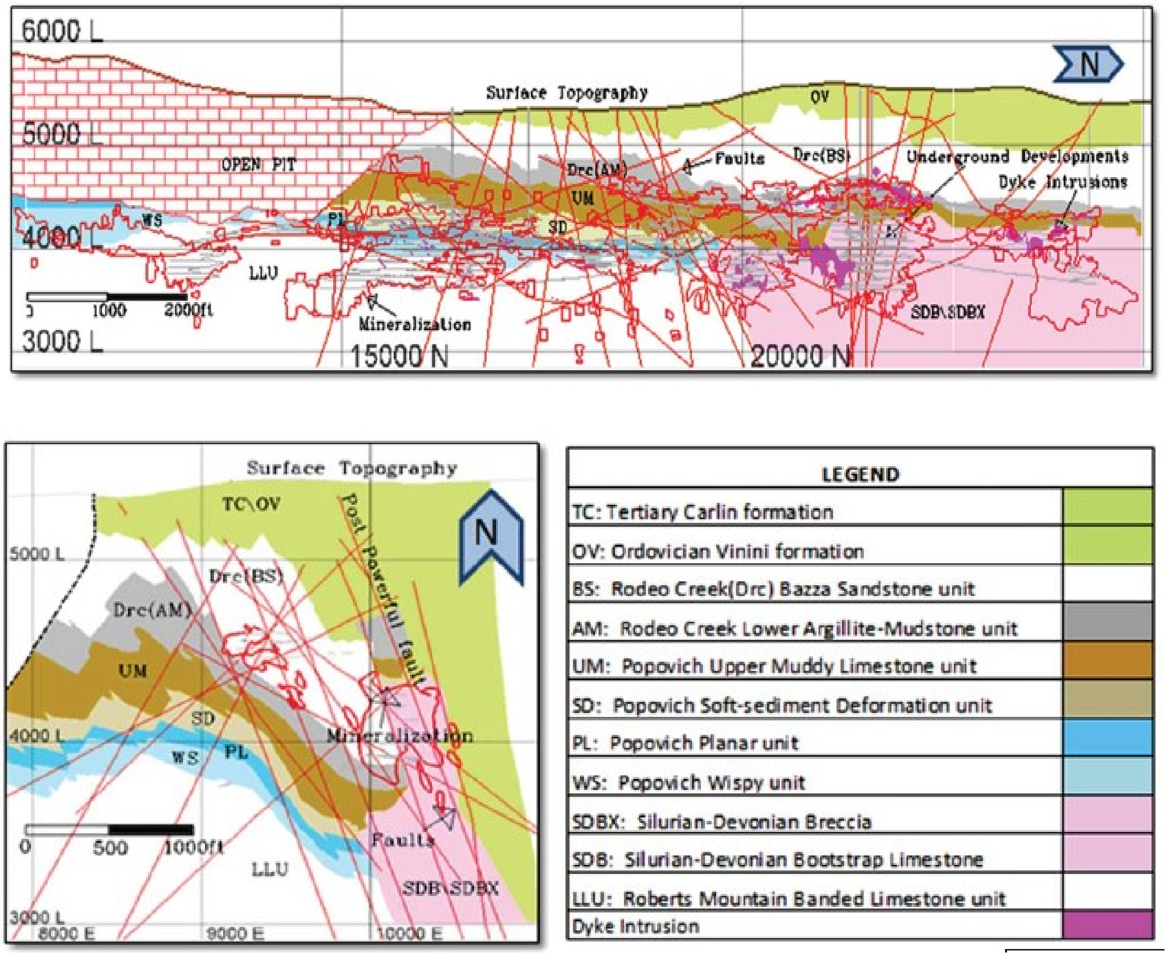
Figure 6-6: Geological Cross-Section, South Arturo Area



Storm Underground has not been mined in the last +10 years and no plans to re-access.

Note: Figure prepared by NGM, 2021.

Figure 6-7: Cross-Section, Meikle–Rodeo Deposit



Note: Figure prepared by Barrick, 2017.

- Gold Acres: deposit length is 7,000 ft, 2,600 ft wide, and deposit thicknesses range from 25–600 ft;
- Goldrush: deposit length is 17,300 ft, 1,400 ft wide, and deposit thicknesses range from 10–350 ft;
- Robertson: combined deposit lengths are 7,500 ft, 3,000 ft wide, and deposit thicknesses range from 150–1,400 ft.

Example cross- or long-sections of deposits in the Cortez Complex are included for Pipeline (Figure 6-8), Gold Acres (Figure 6-9), Goldrush (Figure 6-10), Robertson (Figure 6-11).

Geological, structural, alteration and mineralization descriptions were included in Chapter 6.3.2.

6.3.3 Long Canyon Complex

The Long Canyon complex consists of the Long Canyon deposit, which has a 13,000 ft strike length, is about 2,500 ft. wide, with mineralized zones varying in thickness from 20–250 ft.

An example geological section is provided in Figure 6-12.

Geological, structural, alteration and mineralization descriptions were included in Chapter 6.3.3.

6.3.4 Phoenix Complex

Phoenix Complex deposits include the following deposits:

- Fortitude, Bonanza and Greater Phoenix: combined deposit lengths are 16,000 ft long, 3,900 ft wide, and the deposits have a thickness range from 20–550 ft.

An example geological section is provided in Figure 6-13.

Geological, structural, alteration and mineralization descriptions were included in Chapter 6.3.4.

Figure 6-8: Cross-Section Pipeline

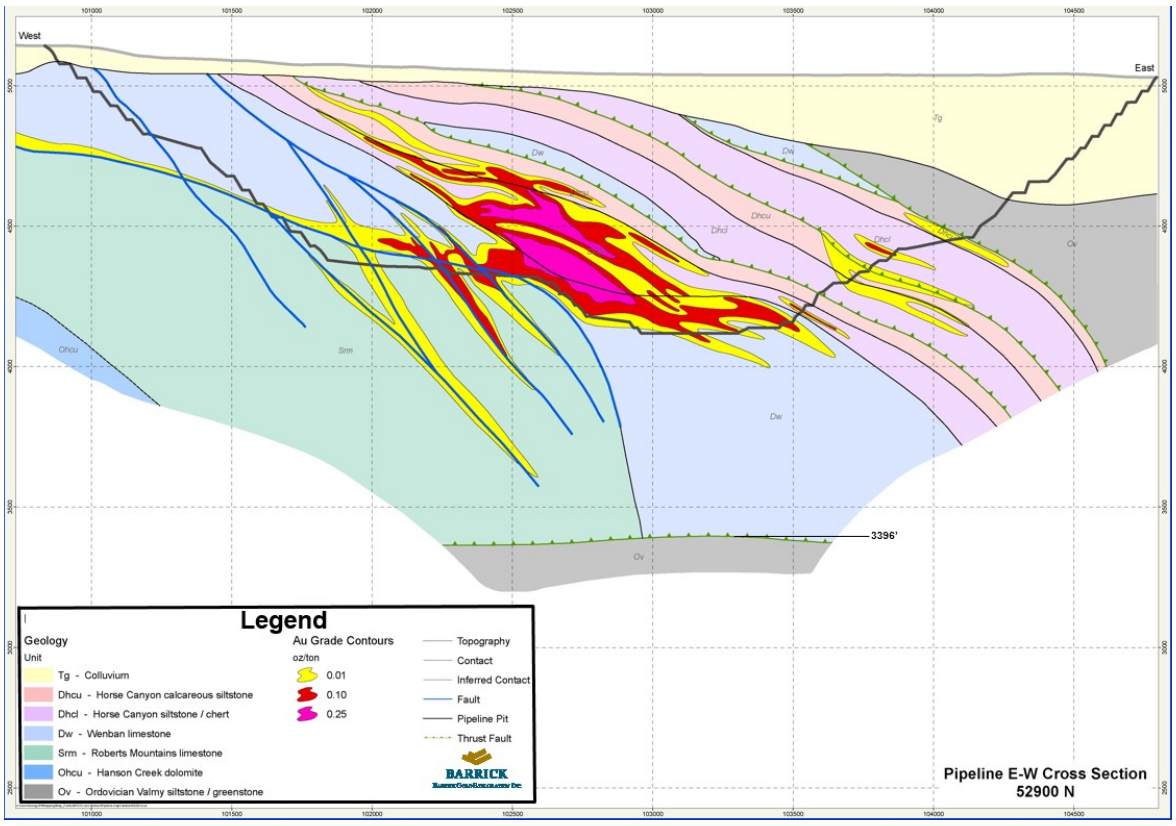


Figure 6-9: Cross-Section Gold Acres

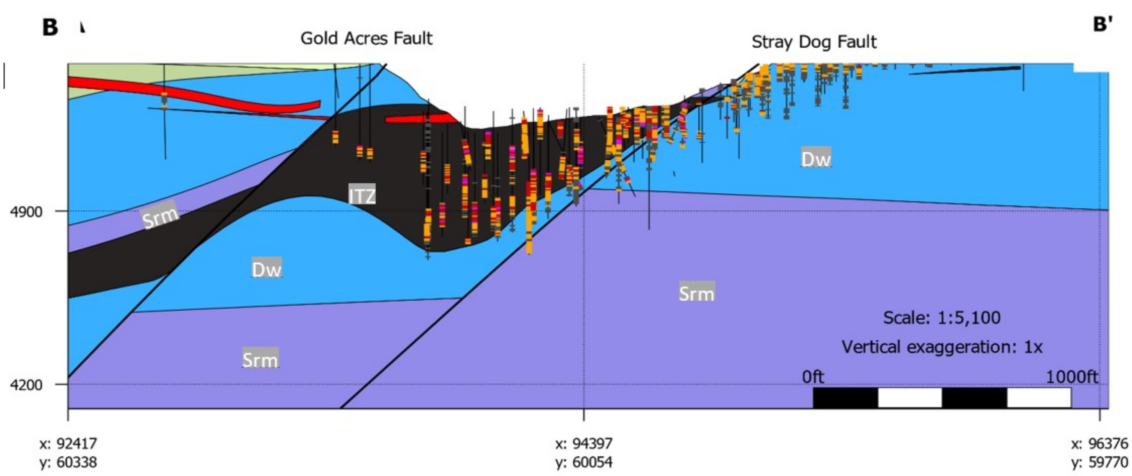
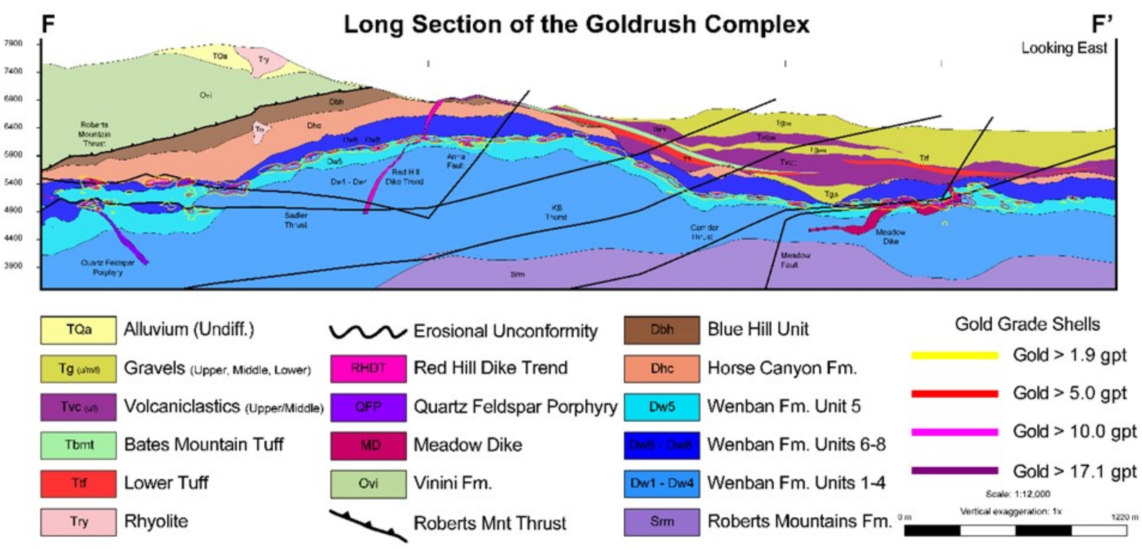


Figure 6-10: Long-Section Goldrush



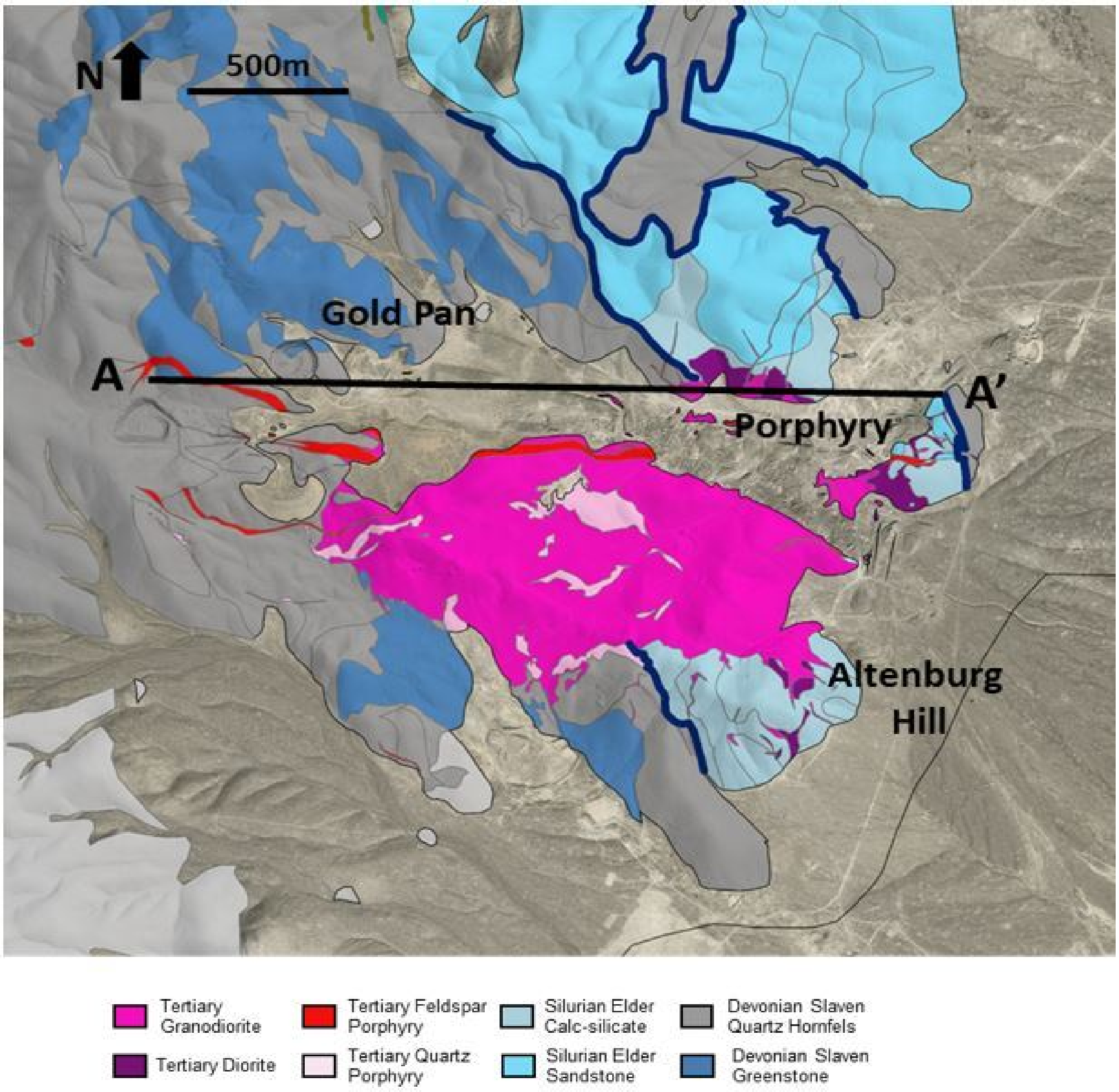

N
500m
Gold Pan
A
A'
Porphyry
Altenburg
Hill
Tertiary Granodiorite
Tertiary Diorite
Tertiary Feldspar Porphyry
Tertiary Quartz Porphyry
Silurian Elder Calc-silicate
Silurian Elder Sandstone
Devonian Slaven Quartz Hornfels
Devonian Slaven Greenstone

Figure 6-11: Cross-Section Robertson

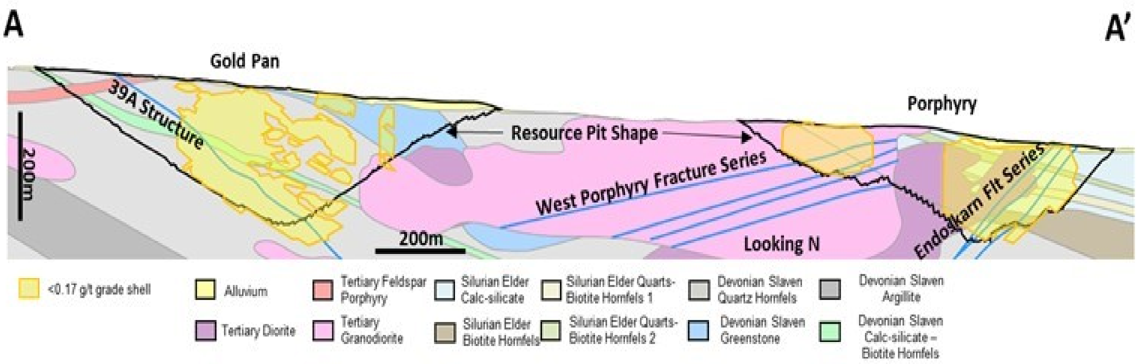


Figure 6-12: Cross-Section, Long Canyon Deposit

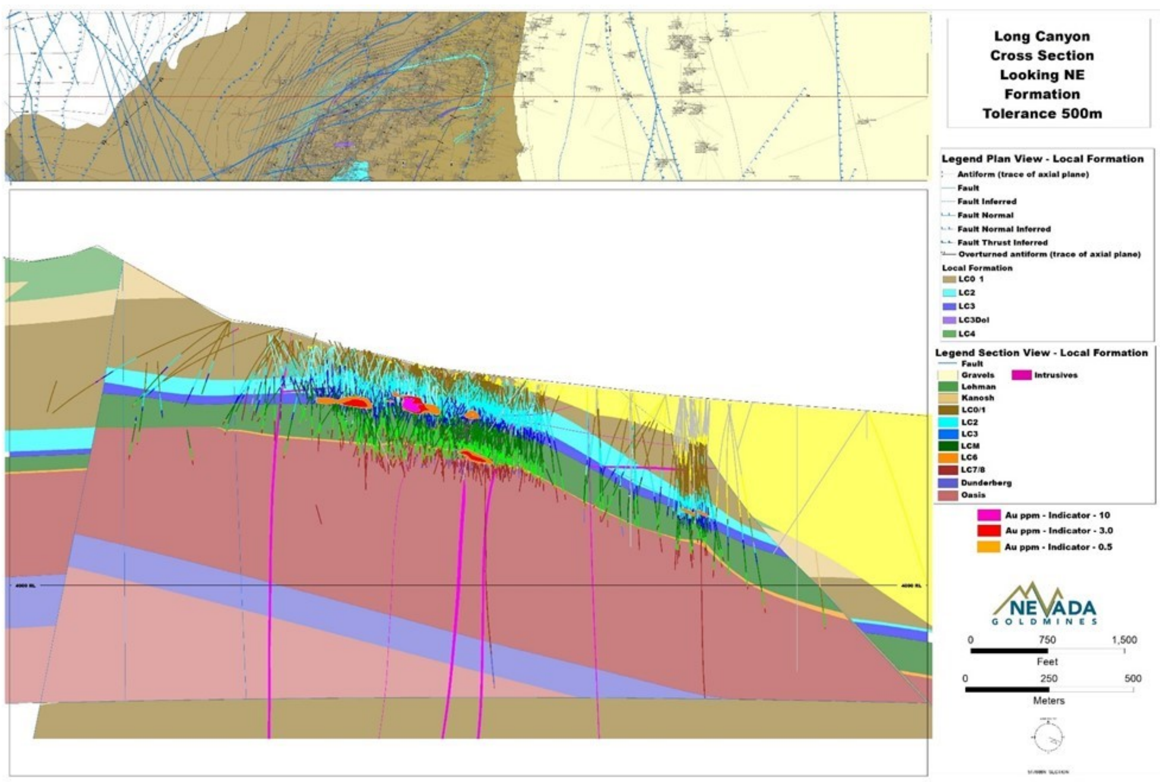
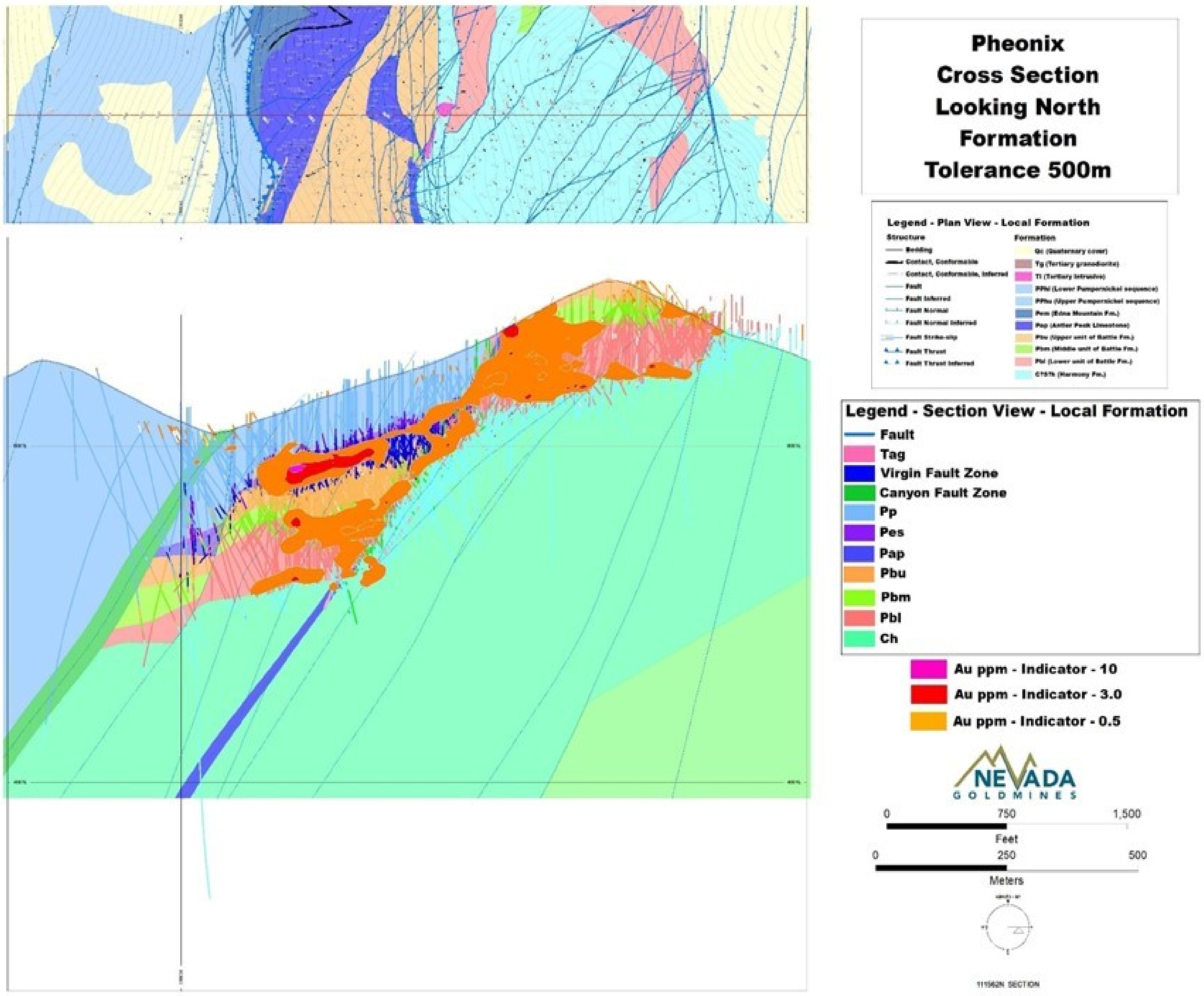


Figure 6-13: Cross-Section, Phoenix Deposit



6.3.5 Turquoise Ridge Complex

Turquoise Ridge Complex deposits include the following deposits:

- Turquoise Ridge Surface (Mega, Vista), Turquoise Ridge Underground (North and South), Vista Underground: deposit lengths range from 2,600–4,593 ft, deposit widths range from 984–2,600 ft, and deposit thicknesses range from 10 ft–98 ft.

An example geological section is provided for the Turquoise Ridge Underground in Figure 6-14 and for Vista underground in Figure 6-15.

Geological, structural, alteration and mineralization descriptions were included in Chapter 6.3.5.

Figure 6-14: Cross-Section, Turquoise Ridge Underground Deposit

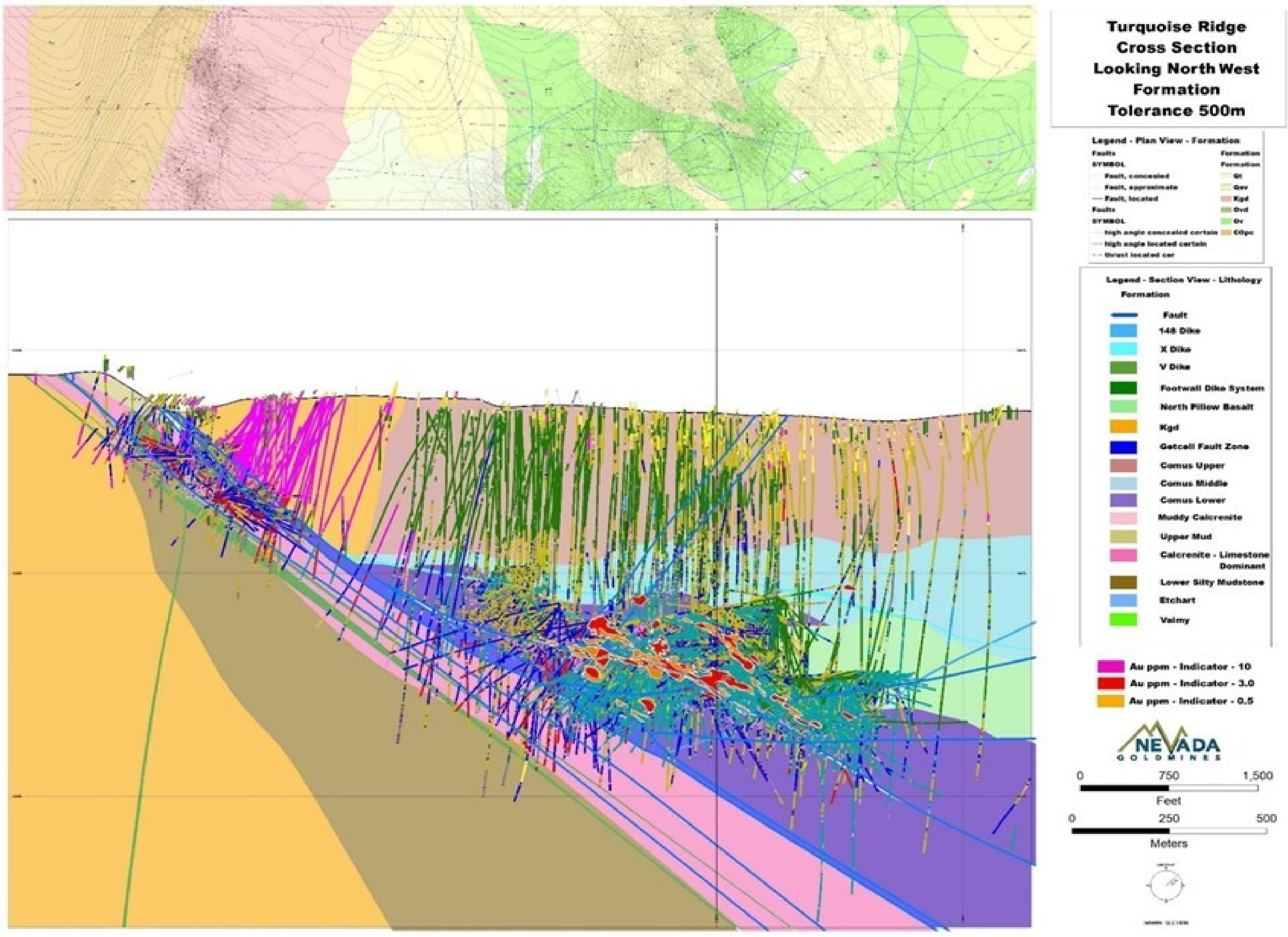


Figure 6-15: Cross-Section and Plan, Vista Underground Deposit

Note: Figure prepared by NGM, 2021.

7.0 EXPLORATION

7.1 Exploration

7.1.1 Grids and Surveys

Prior to about 1985, surveys were completed by registered surveyors, using United States Geological Survey (USGS) base-stations, and optical instruments to survey collar locations and pit topography using angles and distances. Pre-mine topographic surveys were based on surface surveys, or alternatively, on airborne topographic surveys.

Current topographic surveys are completed on an as-needs basis. During operations, surveys may be completed daily; where no work is currently being undertaken, surveys may be years apart.

The datum used for each mine varies and could include mine grids, truncated State Plane NAD83 or NAD27, and truncated Universal Transverse Mercator. All sites have been translated to a NAD83 Zone 11 vertical datum 88 ft, which is used for regional programs.

7.1.2 Geological Mapping

Pre-mine geologic mapping was completed in eastern Nevada by geologists from the United States Geological Survey (USGS) and previous operators. From 1961 to date, surface-mapping was conducted at various scales, ranging from pit wall (1:1,200) to district (1:25,000) scales. Underground mapping is completed at scales ranging from 1:20 to 1:100.

7.1.3 Geochemistry

Geochemical samples were collected early in the Project history, and included stream sediment, soil, and rock chip samples. Owing to the long mining history within the AOI, geochemical sampling techniques used for grassroots exploration purposes have been typically superseded by data from drilling and open pit and underground mining. Current exploration typically does not use surface sampling methods, as the majority of the recent exploration successes are based on a combination of structural modelling and drilling to explore for mineralization at depth.

7.1.4 Geophysics

Geophysical methods have been used in Barrick, Newmont and NGM work programs within the AOI since 1973. From 1973–1993, geophysical tools were primarily regarded as support tools due to the initial discoveries cropping out on surface, or only having a thin veneer of cover, and the inability of the early methods to directly detect the deposits. Methods employed over the Project history included airborne and ground magnetics; radiometrics and electromagnetics (EM); gravity, resistivity, and controlled-source audio-frequency telluromagnetics (CSAMT) and magnetotellurics (MT); self-potential (SP); induced-polarization (IP); time domain pole-dipole IP; time domain MT/IP using a distributed assay system; electrical logging of drill holes; and downhole IP.

Key uses of the geophysical survey data were to delineate intrusive rocks and thermal metamorphic halos, identify remnant-magnetized volcanic rocks and fault/structures, outline zones of pyrite at depth, and define zones of decalcification.

7.1.5 Petrology, Mineralogy, and Research Studies

Since 1961, a significant number of structural, petrology, mineralogy, lithogeochemical, and research studies have been completed on the gold and copper deposits within Northern Nevada, making the area one of the more intensively studied geologic provinces in the world. NGM maintains a database of such research as a reference tool for exploration purposes.

7.1.6 Qualified Person's Interpretation of the Exploration Information

The exploration information was used to vector into potential mineralized zones. The exploration information has typically been superseded by the active mining operations.

7.1.7 Exploration Potential

Exploration potential exists adjacent to many of the deposits, along strike and at depth along favorable mineralized structures, and within favorable host lithologies.

7.2 Drilling

7.2.1 Overview

7.2.1.1 Drilling on Property

Across the entire AOI, drilling totals over 203,000 drill holes for >82 Mft of drilling.

Between 1905 and 1965–1966, drilling was completed primarily for early-stage, exploration-focused programs and for initial gold resource estimates. From 1966 onward, drilling was used to support advanced-stage project evaluation as well as deposit, pit, and underground delineation.

A drill summary table for the Project is provided in Table 7-1. Drill totals are broken out by complex in Table 7-2 to Table 7-6.

A drill collar location plan for the Project area is included in Figure 7-1. Drill collar locations for each mining complex are included as Figure 7-2 to Figure 7-7.

Table 7-1: Drill Summary Table, Mining Complexes

Complex	Number of Drill Holes	Drilled Metreage (m)
Carlin	108,985	8,444,159
Cortez	22,822	4,109,018.7
Long Canyon	3,485	758,971
Phoenix	7,591	853,541
Turquoise Ridge	24,278	3,332,890
Total	***167,161***	***17,498,579.7***

Note: Metreage has been rounded; totals may not sum due to rounding.

Table 7-2: Carlin Complex Drill Summary Table

Deposit/Area	Drill Type	Number of Drill Holes	Drilled Footage (ft)	Drilled Metreage (m)
Betze–Post	Core	2,747	1,551,289	472,833
	Cubex	—	—	—
	RC	19,976	4,713,271	1,436,605
	Sub-total	*22,723*	*6,264,560*	*1,909,438*
Meikle–Rodeo	Core	6,006	2,709,801	825,947
	Mud-rotary	29	23,844	7,268
	RC	32,915	7,013,156	2,137,610
	Sub-total	*38,950*	*9,746,802*	*460.2*
Tristar	Air-rotary	1,697	462,514	140,974
	Core	965	595,179	181,411
	Mud-rotary	35	50,079	15,264
	RC	3,527	1,951,985	594,965
	Sub-total	*6,224*	*3,059,757*	*932,614*
Perry	Core	5	1,776	541
	RC	244	100,595	30,661
	Sub-total	*249*	*102,371*	*31,203*
Green Lantern	Air-rotary	238	76,454	23,303
	Core	451	355,762	108,436
	Mud-rotary	20	39,003	11,888
	RC	1,248	772,498	235,457
	Sub-total	*1,957*	*1,243,717*	*379,085*
Exodus/Northwest Exodus	Underground RC	607	111,660	36,168
	Underground core	847	696,159	212,189
	Surface RC and core	830	634,742	193,469
	Sub-total	*2,284*	*1,449,561*	*441,826*
Gold Quarry	Air-rotary	1,412	654,604	199,523
	Core	1,889	1,069,366	325,943
	Cubex	1,665	151,317	46,121
	Mud-rotary	221	260,775	79,484
	RC	4,445	2,918,072	889,428
	Sub-total	*9,632*	*5,054,134*	*1,540,499*

Deposit/Area	Drill Type	Number of Drill Holes	Drilled Footage (ft)	Drilled Metreage (m)
Leeville *	Underground conventional	1,724	110,477	33,682
	Underground RC	9,121	1,270,049	387,210
	Underground core	4,396	1,906,229	586,532
	Surface RC and core	317	735,956	224,377
	Sub-total	15,558	4,022,711	1,231,801
Pete Bajo	Underground conventional	1,252	44,536	13,575
	Underground RC	4,123	509,294	155,238
	Underground core	2,320	1,167,553	355,882
	Surface RC and core	1,411	702,565	214,142
	Sub-total	9,106	2,423,949	738,843
South Arturo UG	Underground RC	166	32,735	9,978
	Underground core	53	19,003	5,792
	Surface RC	303	261,712	79,770
	Surface Core	116	63,692	19,416
	Subtotal	*638*	*377,141*	*114,953*
South Arturo OP*	Underground RC	772	107,609	32,799
	Underground Core	375	134,350	40,950
	Surface RC	1,548	1,041,650	317,495
	Surface Core	306	385,679	116,945
	Rotary	536	219,737	66,976
	Subtotal	*3,537*	*1,887,024*	*575,165*
Emigrant	Air-rotary	71	29,855	9,100
	Core	41	12,007	3,660
	RC	1,311	416,565	126,969
	Sub-total	*1,425*	*458,427*	*139,728*
Ren *	Underground RC and Core	*7,960*	*1,593,070*	*485,568*
	Surface RC and core	*769*	*1,335,691*	*407,119*
	Sub-total	*8,729*	*2,928,761*	*892,686*
North Leeville	Underground conventional	—	—	—
	Underground RC	—	—	—
	Underground core	—	—	—
	Surface RC and core	*112*	*216,007*	*65,874*
	Sub-total	*112*	*216,007*	*65,874*
Totals		***108,985***	***37,430,407***	***8,444,159***

Notes: Note: Metreage has been rounded; totals may not sum due to rounding. Leeville includes Rita K, Ren includes part of Meikle-Rodeo, South Arturo open pit includes part of South Arturo underground

Table 7-3: Cortez Complex Drill Summary Table

Drill Type	Number of Drill Holes	Drilled Feet (Mft)	Drilled Meters (Mm)
Air rotary	170	36,592	11,153.2
Core	3,259	1,848,861	563,532.9
Mud rotary	146	105,681	32,211.6
Reverse circulation and Cubex	18,674	9,488,670	2,892,146.5
Other *	3,029	2,001,229	609,974.5
Total	***22,822***	***13,481,032***	***4,109,018.7***

Note: Metreage has been rounded; totals may not sum due to rounding.

Table 7-4: Long Canyon Complex

Drill Type	Number of Drill Holes	Drilled Meters
Core	2,096	558,509
RC	1,373	193,960
RC pre collar/core tail	16	6,501
Total	***3,485***	***758,971***

Note: Metreage has been rounded; totals may not sum due to rounding.

Table 7-5: Phoenix Complex

Drill Type	Number of Drill Holes	Drilled Meters
Core	743	98,616
RC	5,045	595,706
RC pre collar/core tail	594	159,219
Unknown	1,209	98,165
Total	***7,591***	***853,541***

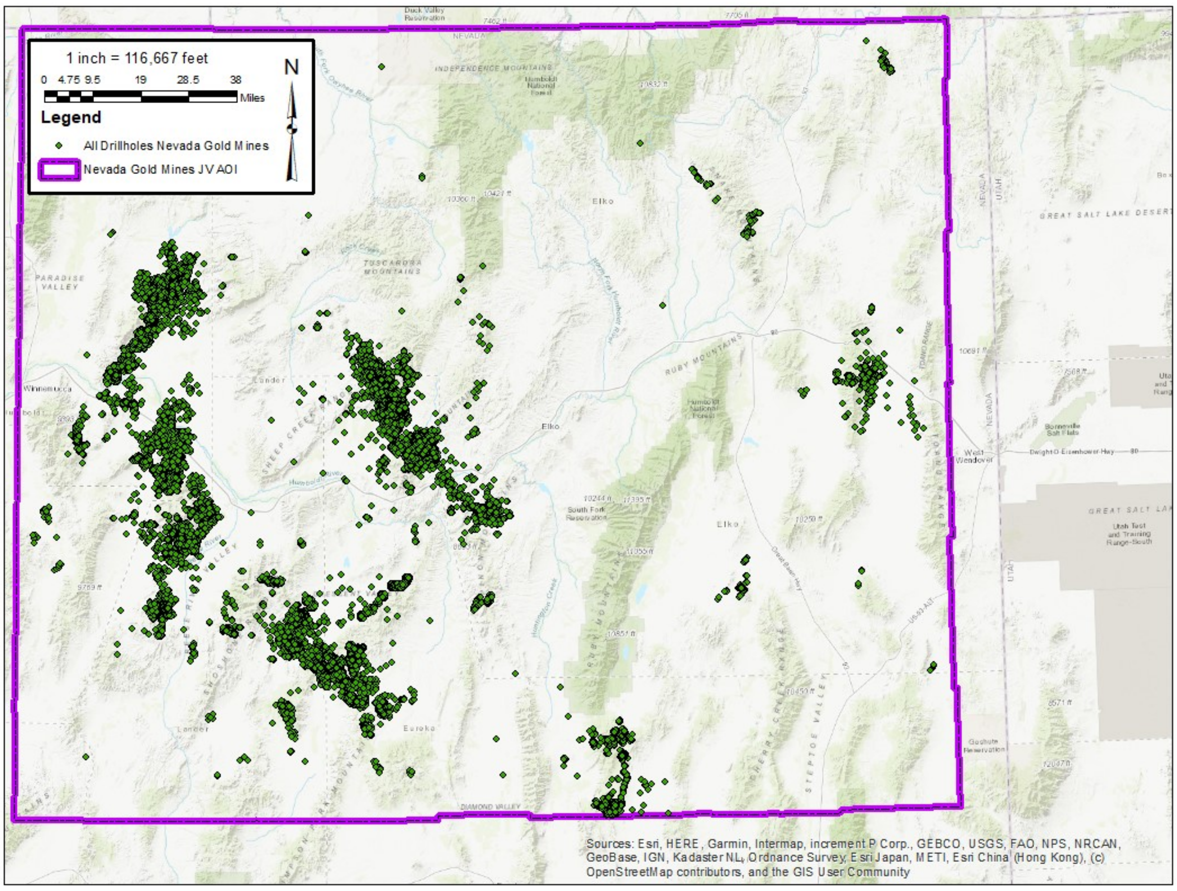
Note: Metreage has been rounded; totals may not sum due to rounding.

Table 7-6: Turquoise Ridge Complex

Drill Type	Number of Drill Holes	Drilled Meters
Core	8,610	1,412,297
RC and Cubex	15,668	1,920,593
Total	***24,278***	***3,332,890***

Note: Metreage has been rounded; totals may not sum due to rounding.

Figure 7-1: Drill Collar Location Plan, AOI



Note: Figure prepared by Newmont, 2021.

Figure 7-2: Carlin Complex Drill Collar Location Plan, North Area

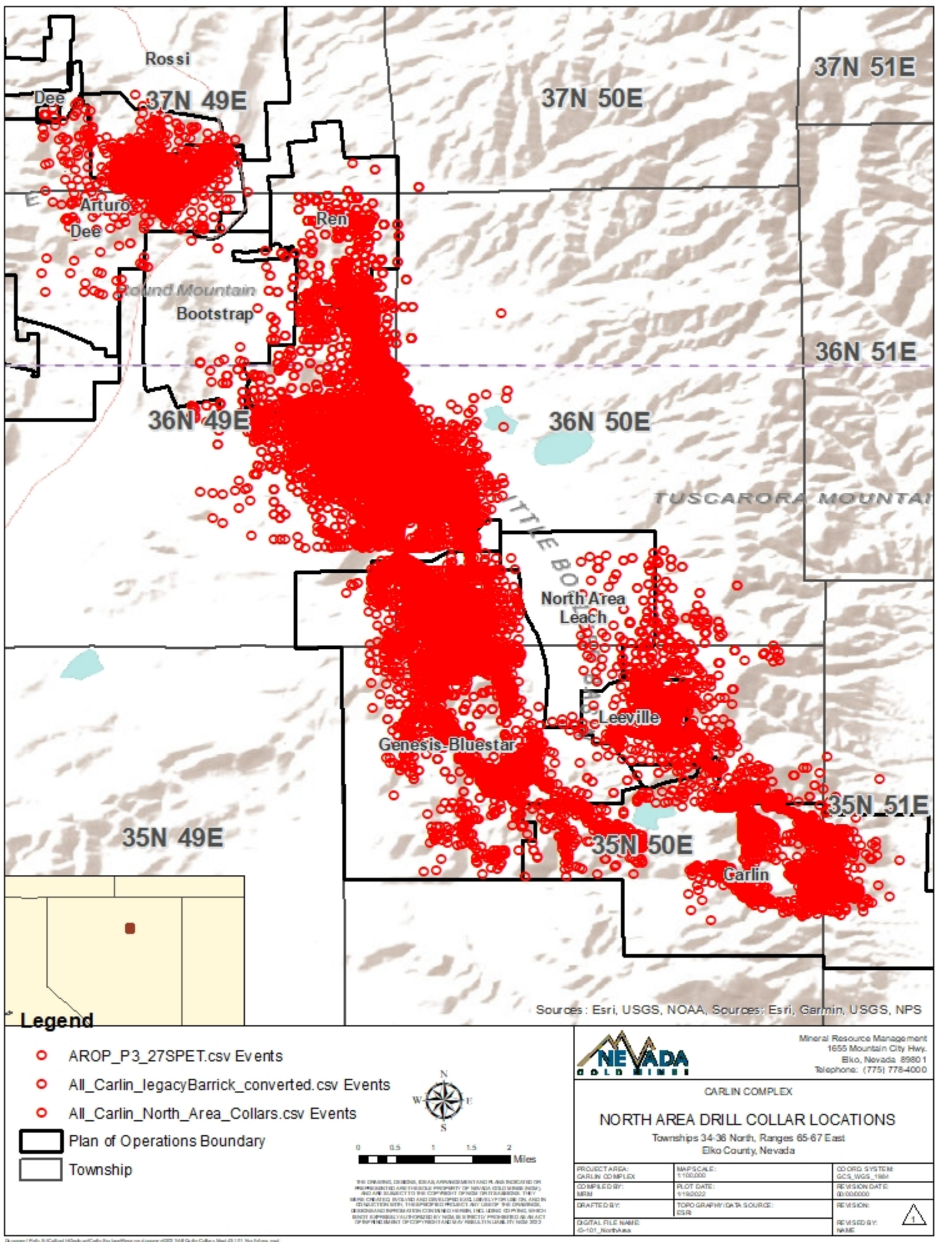


Figure 7-3: Carlin Complex Drill Collar Location Plan, South Area

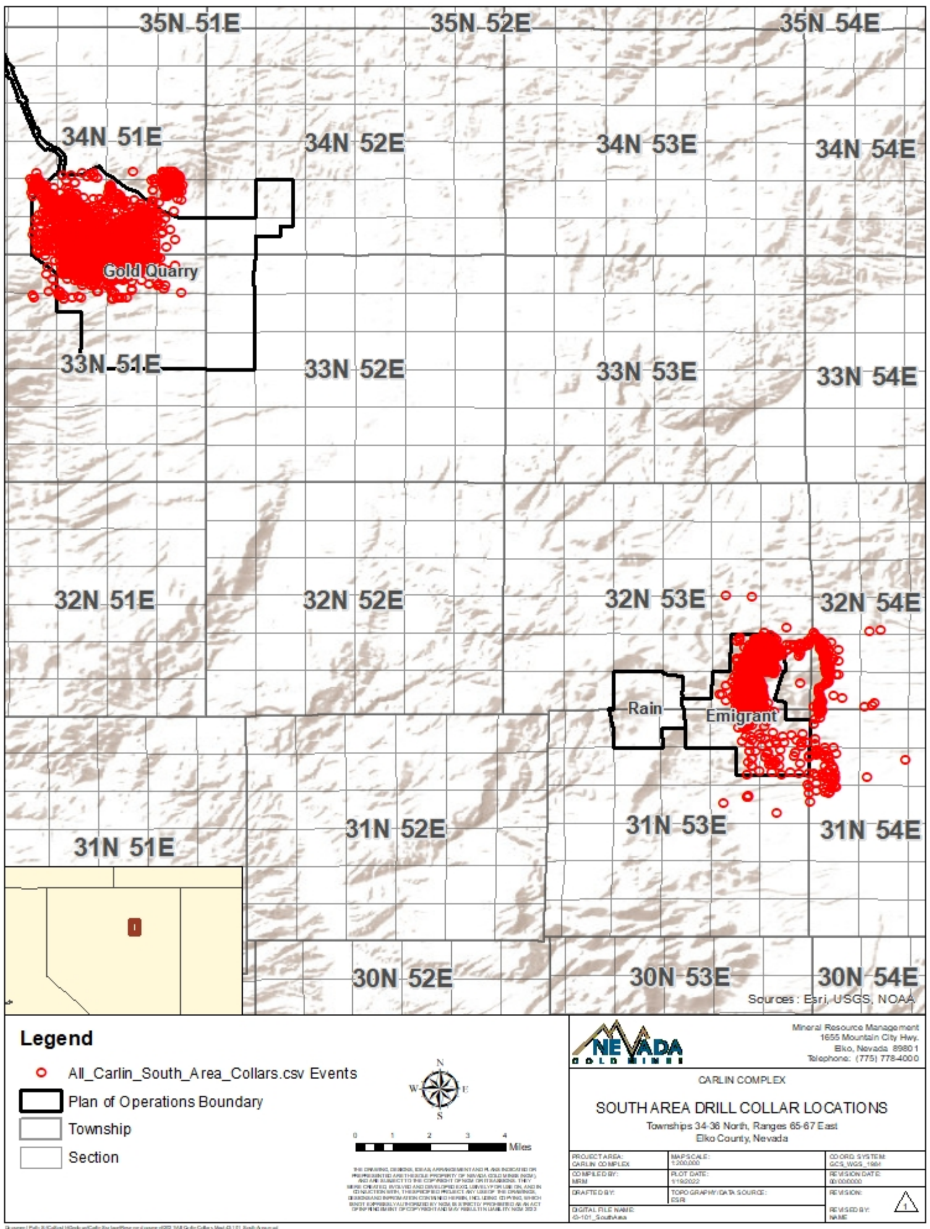
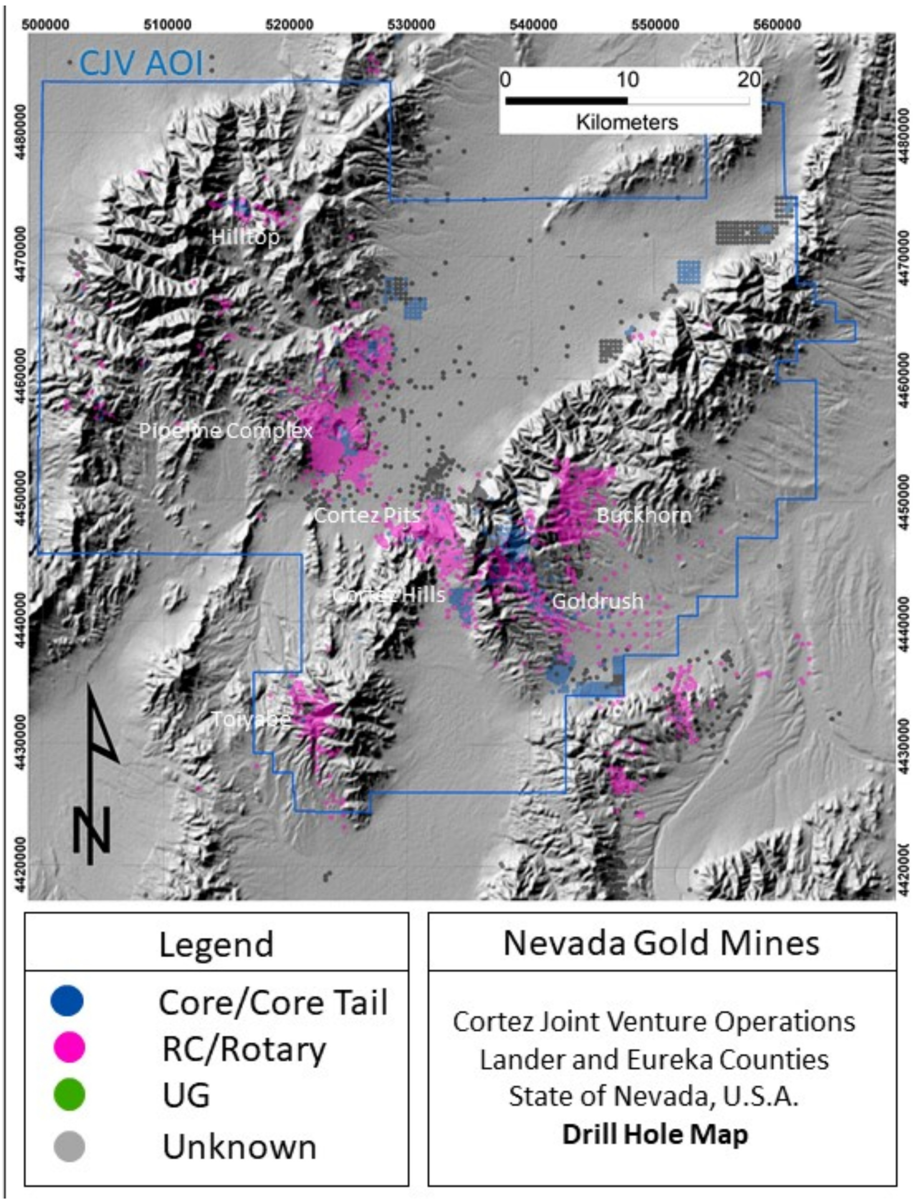
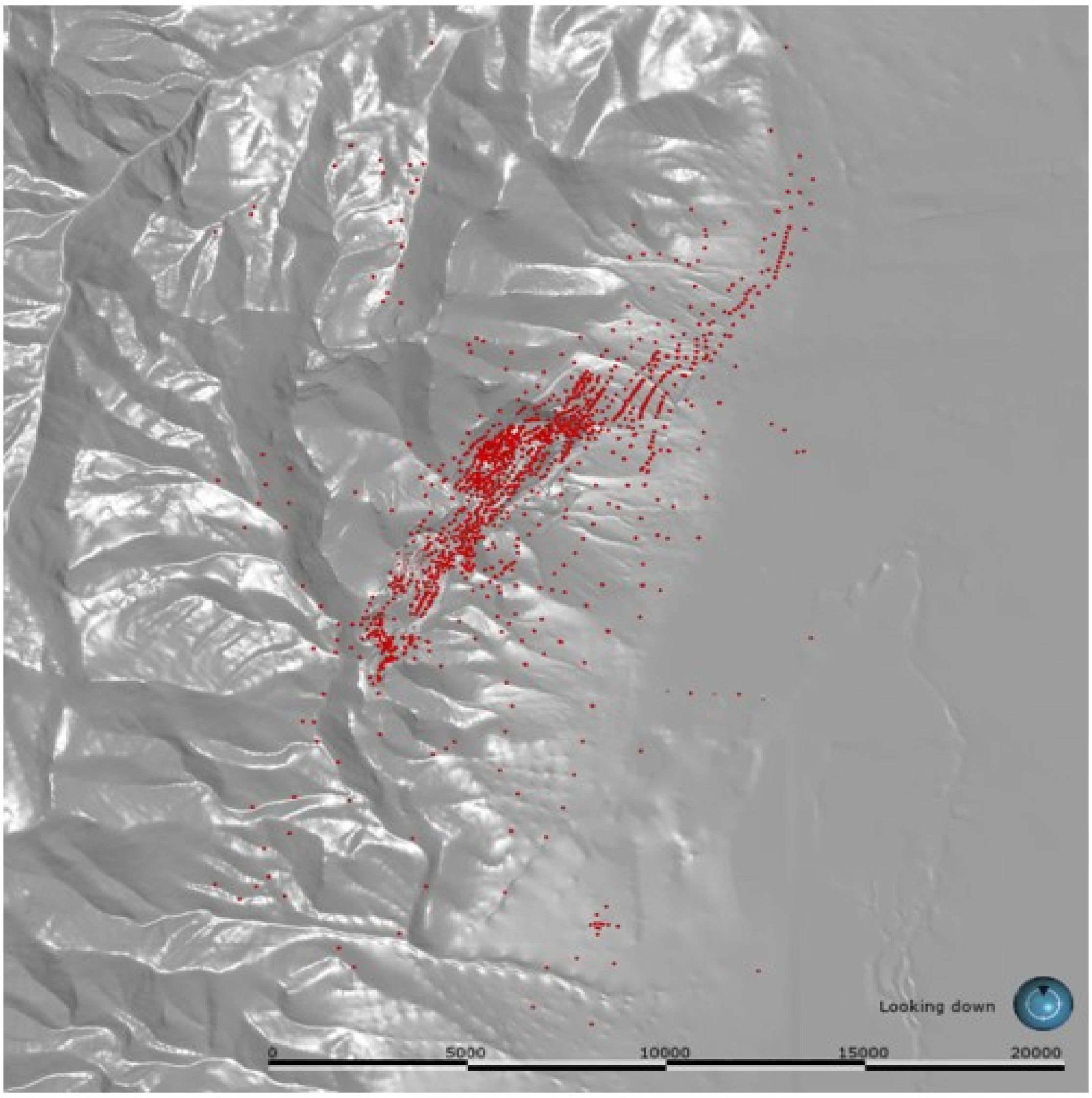


Figure 7-4: Cortez Complex Drill Collar Location Plan



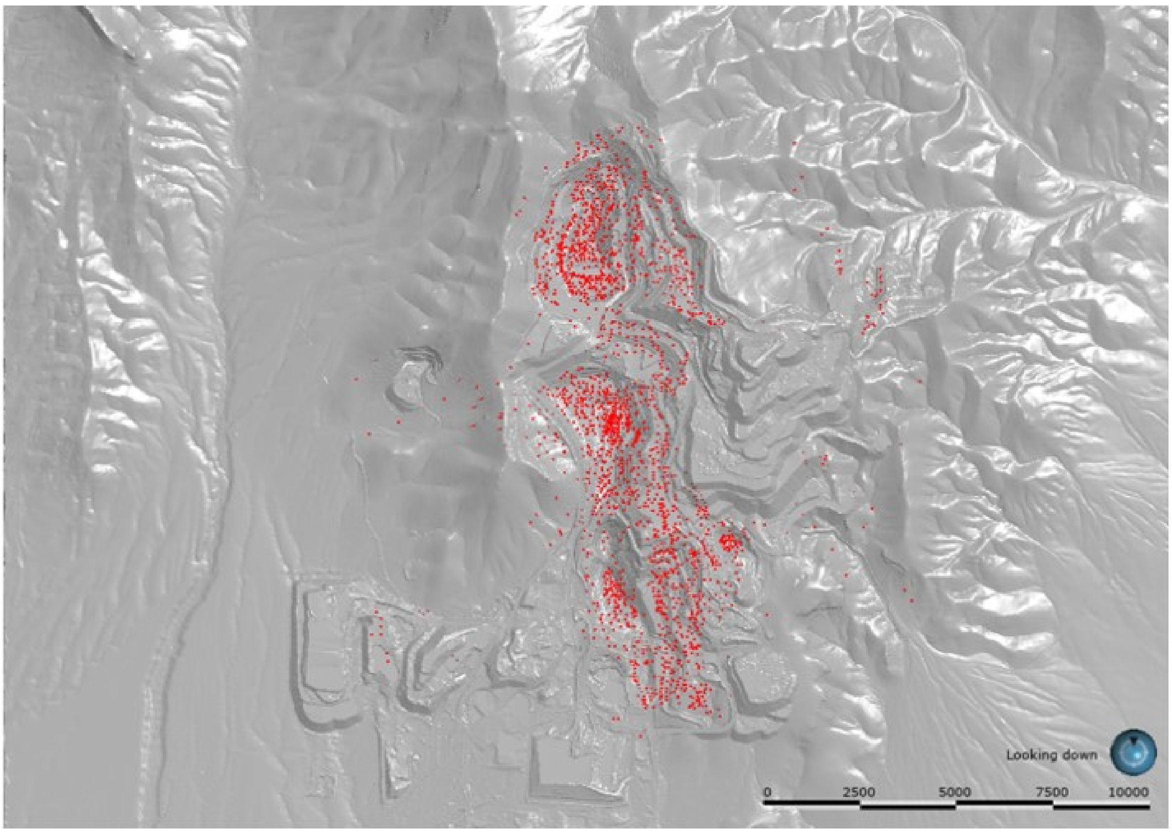
Note: Figure prepared by NGM, 2021.

Figure 7-5: Long Canyon Complex Drill Collar Location Plan



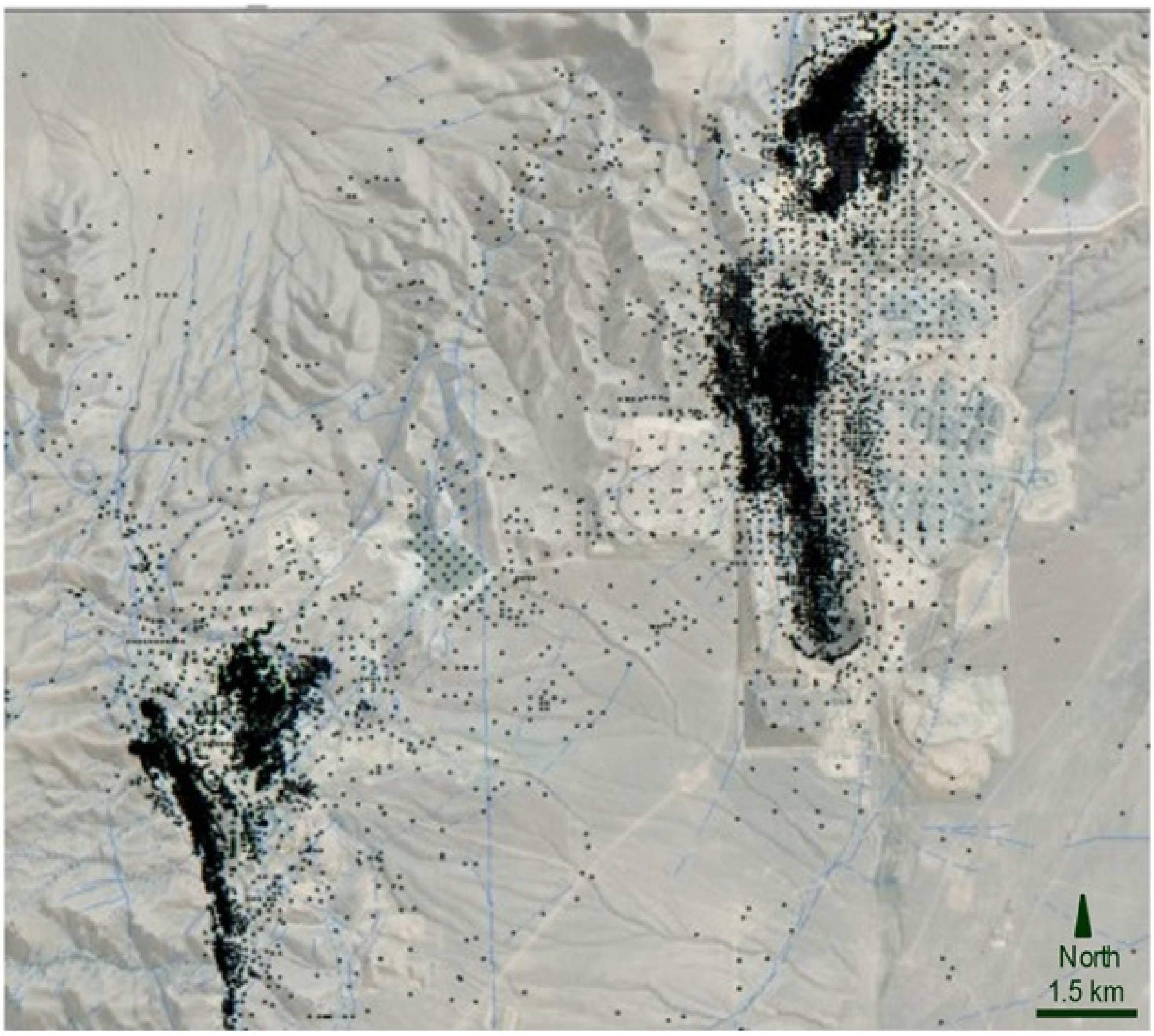
Note: Figure prepared by NGM, 2021. Map north is to top of illustration.

Figure 7-6: Phoenix Complex Drill Collar Location Plan



Note: Figure prepared by NGM, 2021. Map north is to top of illustration.

Figure 7-7: Turquoise Ridge Complex Drill Collar Location Plan



Note: Figure prepared by NGM, 2021.

7.2.1.2 Drilling Supporting Mineral Resource Estimates

Any of the drill types noted in Chapter 7.2.2 can be used in estimation; however, the majority of the current estimates are supported by RC and core drilling.

7.2.1.3 Drilling Excluded For Estimation Purposes

Drill holes can be excluded from supporting estimates if there is sufficient uncertainty in location or orientation, or quality of assays. Where drill holes intersect the interpreted mineralization at significantly oblique angles, they may be excluded at the discretion of the modeler.

7.2.2 Drill Methods

Over the Project history, drilling included reverse circulation (RC), core, air rotary, mud rotary, and Cubex methods. Churn drilling was used in areas was completed in areas known to host placer gold. The majority of the areas where air rotary, mud rotary, Cubex and churn methods were used are mined out.

RC diameters were typically 5.5–6.5 in. Core sizes are typically HQ (2.5 in diameter) for surface drilling. Occasionally, surface core holes were reduced from HQ size to NQ (1.9 in) size if difficult drilling conditions were encountered. Surface metallurgical core included PQ (3.3 in), and SHR series (3.3 in; 4 in or 6 in) core.

7.2.3 Logging

Logging conducted depended on the operator of the complex at the time the information was collected, and the drill type. Typically, logging collected information such as lithology, stratigraphy, basic structural data, recovery, alteration, and mineralization. For mining operations, logging could also record metallurgical type, intensity codes for metallurgy and alteration, and geotechnical parameters such as rock quality designation (RQD) and number of fractures per foot, and comments by the geologist.

7.2.4 Recovery

Recoveries have been measured for the majority of the core holes. Procedures are in place to mitigate instances where core recovery becomes poor. Conversely, in areas of competent hard mineralization, core recoveries are at 95–100%.

7.2.5 Collar Surveys

During early operations, exploration and development drill programs, collar grid coordinates were determined by optical surveys, field estimates, Brunton compass and pacing, compass-and-string distance measurements, and for underground operations, measurements from surveyed control points, face, ribs and sill to triangulate each collar location.

Currently, the operations typically make use of laser survey or digital geographic positioning system (GPS) measurements to locate drill hole collars.

7.2.6 Down Hole Surveys

Determination of the hole trace was historically accomplished by projection of the initial collar orientation, using a downhole single-shot or multi-shot film camera (typical for most underground surveys), use of a downhole precession gyroscopic survey tool, or a gyroscopic tool requiring initial orientation with a compass.

Either north-seeking or conventional gyroscopic tools, or a combination, are used currently for down-hole survey purposes. Gyroscopic surveys are typically reported at 25 or 50 ft intervals.

7.2.7 Comment on Material Results and Interpretation

Drill spacing varies by complex, depending on deposit type and assumed or actual mining method:

- Carlin: approximately 6–21 m in the better drilled deposit areas to about 30–134+ m spacing on the less well drilled portions of the deposits;
- Cortez: approximately 9–15 m in the better drilled deposit areas to about 31–98+ m spacing on the less well drilled portions of the deposits;
- Long Canyon: approximately 8–11 m in the better drilled deposit areas to about 23–46+ m spacing on the less well drilled portions of the deposits;
- Phoenix: approximately 5–6 m in the better drilled deposit areas to 67+ m spacing on the less well drilled portions of the deposits;
- Turquoise Ridge: approximately 6–13 m in the better drilled deposit areas to about 30–91+ m spacing on the less well drilled portions of the deposits.

Drilling and surveying were conducted in accordance with industry standard practices at the time the information was collected, and provide suitable coverage of the zones of gold ± copper mineralization. Drilling methods provide reasonable core recovery. Logging procedures provide consistent descriptions.

These data are considered to be acceptable for mineral resource and mineral reserve estimation. There are no drilling or core recovery factors known to the QP that could materially impact the accuracy and reliability of the results.

7.3 Hydrogeology

Information obtained during early-stage hydrological and hydrogeological evaluations is superseded by data obtained from many years of mining activities.

In areas where new mining activity is planned in stand-alone projects, such as at Goldrush, additional hydrological and hydrogeological data collection is underway.

Dewatering is performed where required in the operations, using dewatering wells, or advanced development (normally with drain holes) which may later be used for mining purposes, drain holes drilled from existing excavations, or development headings and sumps.

7.3.1 Sampling Methods and Laboratory Determinations

Hydrogeology data, including pore pressure distribution and ground-water flow, were normally collected from geotechnical investigations in pre-construction studies and later from on-going programs in operating mines.

The primary method for collection of hydrology data is a large network of vibrating wire piezometers. These vibrating wire piezometers provide water level data. QA/QC is achieved by redundancy in network and annual audits of sensor parameters and performance.

Another source of data is hydrologic testing. Most wells that are drilled are subjected to extensive hydrologic testing to establish aquifer parameters. These tests are typically injection (slug) tests, spinner tests, step test, packer tests, short-term pump tests and long-term pump tests. These tests are analyzed using classical hydrology methods. Most of the aquifers on site are in fractured bedrock and therefore, fracture-flow controlled, in-situ testing is relied upon more heavily than laboratory testing; however, in some of the alluvial aquifers additional logging/laboratory testing of sonic cores is done. The laboratory tests are completed to establish a detailed log (USGS Soil Classification), moisture content, Atterberg limit, grain size distribution, specific gravity and permeability (flex-wall permeability tests). Numeric models have been developed using parameters from above-mentioned methods and geological modelling.

7.3.2 Comment on Results

A combination of historical and current hydrological and hydrogeological data, together with mining experience, are used to prepare the mine designs, dewatering plans and monitoring for existing and planned operations.

7.3.3 Groundwater Models

Where hydrological conditions warranted, groundwater models were prepared using industry-standard water modelling software.

7.4 Geotechnical

Information obtained during early-stage geotechnical evaluations is superseded by data obtained during mining activities.

7.4.1 Sampling Methods and Laboratory Determinations

Geotechnical core logging and in-situ geotechnical mapping are the principal data collection methods. Geotechnical core logging is directly inputted into the digital logging database, acQuire. If surface access (e.g., open pit) or underground access (e.g., mine workings) is available, then the geotechnical core logging results may be confirmed or supplemented with in situ assessment of geotechnical domains using geotechnical mapping of active development and/or window or scanline mapping.

Typical data collected in logging and mapping programs include physical rock properties and joint wall conditions used to determine rock mass characterization. Data collected can include RQD, joint frequency, number of joint sets, joint roughness, joint alteration, joint in-filling, point load tests, rock mass fabric characterization and information on discrete structural features. Rock mass characterization systems employed can include rock tunnelling quality index (Q system), rock mass rating (RMR), mining rock mass rating (MRMR) and geological strength index (GSI).

Typical structural characterization consists of documenting joint sets (including bedding, foliation), faults, shear zones, and dikes through core intercepts, televiewer surveys or in situ mapping. Data collected can include observations such as dip, dip direction, spacing, thickness and persistence.

Laboratory testing samples are taken from diamond core during logging efforts and sent to independent rock testing laboratories for testing. Intact rock properties are characterized through field and laboratory testing as required. Properties to be quantified can include Unconfined Compressive Strength (UCS), Young's modulus, Poisson's ratio, tensile tests and direct shear tests. Multiple samples are taken for each rock unit to account for any irregularities within the core specimens.

Field stress characterization is conducted using documented observations (disking and breakouts), documented back analysis, field measurements and regional stress models. Observation of disking in geological core logging is used to identify zones of stress differential within the rock mass. Stress differential is typically encountered where there is a mechanical contrast in material stiffness, typically between two geotechnical domains.

In active operations, data collection includes inspection of active headings on a basis stipulated by the individual mine site., and determinations if the support system installed is appropriate for the in-situ ground conditions.

Backfill is routinely tested to validate mix design and quality. Underground sites test backfill in on-site laboratories for unconfined compressive strength. External laboratories are utilized to conduct testing outside of the capacity of the site. These tests may include Young's Modulus, Poisson's ratio and tensile testing.

Ground support, used in the support of mine workings, is routinely tested to confirm quality of installed elements. Quality assurance and quality control (QA/QC) practices include pull testing of rock bolts to validate material and installation quality, and UCS testing of shotcrete/fibercrete to confirm batching and mix design.

A range of geotechnical monitoring systems are employed at the underground sites. These systems can include extensometers, either single-point or multi-point units, closure stations, load sensing instruments and sloughmeters. Microseismic arrays, consisting of both uniaxial and triaxial geophones, collect seismic data at mines where seismicity is identified as a geotechnical risk.

7.4.2 Comment on Results

A combination of historical and current geotechnical data, together with mining experience, are used to engineer ground support guidelines and procedures that all ground support designs must follow. These data and mining experience support the geotechnical operating considerations used in the mine plans in Chapter 13 of this Report.

8.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

8.1 Sampling Methods

Sampling is variable by mining complex and mineralization style.

Air-rotary and mud-rotary drill holes were sampled on 5–100 ft intervals. Cubex drilling was sampled on 5–10 ft intervals. RC drill holes were typically sampled on 5 ft intervals. Core samples were nominally taken at 5 ft intervals, but could vary to a minimum of 1 ft to respect lithological contacts.

8.2 Sample Security Methods

Sample collection from drill point to laboratory relied upon the fact that samples were either always attended to, or were stored in locked on-site preparation facility, or stored in a secure area prior to shipment to the external laboratory. Chain-of-custody procedures consisted of filling out sample submittal forms to be sent to the laboratory with sample shipments to ensure that all samples were received by the laboratory.

8.3 Density Determinations

The majority of the data were from measurements collected by exploration or mine site personnel using the water displacement method. These data were used to support mineral resource and mineral reserve estimates.

In some instances, verification of the site procedures was performed by external laboratories, using selected core pieces. Verification laboratories included, where known, Zonge Engineering in Tucson, AZ (Zonge); Elliot Geophysical Laboratories (Elliot); and AGRA Metallurgical Laboratory in Reno (AGRA).

8.4 Analytical and Test Laboratories

Given the long history of the Nevada Operations, there are numerous laboratories that were used over the Project history. These include, where known:

- Independent laboratories: ALS Chemex in Elko, Nevada, ALS Chemex in Winnemucca, ALS Chemex in Sparks, Nevada (ALS Reno) and Vancouver, Canada (ALS Vancouver); American Assay Laboratories in Sparks, Nevada (AAL Sparks); Analytical Services Laboratory; Barringer Laboratories in Reno, Nevada (now BSI Inspectorate); Bondar-Clegg Laboratory in Reno (now ALS Chemex); BSI Inspectorate Laboratory; Core Laboratory; Golden Giant Laboratory; GSI; Hazen Research Laboratories; Lakefield Metallurgical Consultants; Legend Laboratories; McClelland Laboratory; Monitor Hesperia, CA Laboratory; Monitor Geochemical Laboratory in Elko, Nevada; Rocky Mountain Geochemical Laboratory; SGS Mineral Services; Shasta Analytical; Skyline Laboratories in Tucson, Arizona; Treweek Laboratory; Universal Laboratory Inc.; Valmy Trend Arev Source; X-Ray Assay Laboratory Toronto, Canada;
- Non-independent laboratories: Cortez mine laboratory; Battle Mountain mine laboratory; Duval laboratory (became Battle Mountain); Lone Tree laboratory; Newmont Gold

Laboratories; Newmont Metallurgical Services; Placer Dome Research Centre, Vancouver, Canada; Turquoise Ridge Underground laboratory.

In the earlier stages of Project testwork, the idea of laboratory accreditation had not been developed. In later assay campaigns, accreditations were not typically recorded in the database.

Currently, the following laboratories are used by the Nevada Operations:

- The ALS Chemex Elko and ALS Chemex Reno facilities are used for sample preparation, and hold ISO 17025 accreditation for sample preparation. The ALS Chemex facilities in Reno and in Vancouver BC are used for analytical determinations and hold ISO 17025 accreditations for selected analytical techniques. ALS Chemex is independent.
- The AAL facility located in Sparks, Nevada is used for sample preparation, analysis, and check assaying. AAL holds ISO 17025 accreditations for selected analytical techniques and is independent;
- The mine laboratories are operated by NGM personnel, are not accredited, and are not independent.

8.5 Sample Preparation

Sample preparation has varied over the more than 60 years of modern Project history, in line with advancing scientific knowledge, changes in equipment, and operational experience. Currently, sample preparation procedures include:

- ALS Chemex: drying the sample, crushing to 70% minus 10 mesh, and then pulverizing to >85% minus 200 mesh;
- AAL: drying the sample, crushing to 95% passing 10 mesh, and then pulverizing to >90% passing 105 μm (150 mesh);
- Mine laboratories: drying the sample, crushing to 65% passing 10 mesh, and then pulverizing to 80% passing 200 mesh; or crushing to 95% passing 10 mesh and pulverizing to 95% passing 175 mesh; or crushing to minus 9.5 mm, and pulverizing to 90% passing 150 mesh.

8.6 Analysis

As with sample preparation, analytical methods have changed over the Project history. Currently, sample analytical procedures include:

- ALS Chemex: fire assays (FA) and atomic absorption (AA) finish for gold; samples reporting >0.1 oz/st Au on the initial assay re-assayed by FA with gravimetric finish; cyanide leach gold assays for initial FAs >0.008 oz/st Au; cyanide leach and preg rob capacity; LECO testing; multi-element analyses by aqua regia digestion/inductively coupled plasma-atomic emission spectroscopy (ICP-AES)/ICP-mass spectroscopy (ICP-MS), 51 elements or 48 element analyses by four acid and ICP-AES/ICP-MS; other analyses may be requested, and include arsenic, total carbon, total sulfur, sulfide sulfur, carbonate carbon, and organic carbon;
- AAL: 1 assay ton fire assays with an AA finish for gold;

- Mine laboratories: 1 assay ton fire assays with an AA finish for gold; samples with gold grade >0.438 oz/st are completed by a ½ assay ton fire assay with a gravimetric finish. If the sample gold grade is above the open pit cut-off grade, the samples are analyzed for cyanide leach, % preg rob, total carbon, total sulfur, sulfide sulfur, carbonate, and organic carbon for ore characterization purposes. On request, underground muck samples can be equal weight composited for further ore characterization analyses including total carbon, total sulfur, sulfide sulfur, carbonate carbon, organic carbon, and arsenic.

Additional assay methods, as recorded in the Project databases were typically used for exploration or other specialized purposes such as gas sampling and were not consistently requested. They include: gravimetric, sulfuric acid digest, total copper, neutron activation analysis, X-ray diffraction (XRD), X-ray fluorescence (XRF) and pH methods.

8.7 Quality Assurance and Quality Control

Prior to the mid-1990s, few companies had rigorous quality assurance and quality control (QA/QC) programs in place. QA/QC had typically consisted, where undertaken, of reanalysis of drill core or other samples when later sampling indicated a potential problem.

In the case of the NGM Operations, QA/QC samples were submitted for RC and core samples from about 1990. Typical QA/QC measures include submission of blank materials, certified or standard reference materials (standards), and field duplicate samples. Depending on the time period, the rate of insertion of field duplicates can range from 1–5% of a field program; standard and blank insertion rates can range from between 2–5%.

NGM purchased SRMs from well-known Canadian distributors. These could be commercial standards, or standards generated from bulk samples of deposits within the NGM Operations area. Standards typically represent very high-grade, high-, medium-, and low-grade in oxide and refractory gold mineralization. Blank materials came from a variety of sources, most recently gravel purchased from local hardware stores, landscape marble, and gravel sourced from quarry sites within the operations areas.

Check assays may not be routinely performed. Typical checks were undertaken on pulps and coarse reject samples to test the analytical processes and preparation procedure, respectively.

Project geologists review the assay results and periodically request a batch re-run and/or entire hole based on expected versus actual results. Analyses that appear to be outside best practice guidelines for exploration of two standard deviations will result in a request of the laboratory that completed the original analysis to undertake a re-run of the sample batch that the failed control was in. Check assay programs are the responsibility of the individual geologists.

Several systems and programs are used to control and ensure assay data quality. These include standards for technician training, periodic process checks, equipment preventive maintenance, centralized reagent/standard preparation, control samples (reference materials) and blanks assayed with the samples, data verification, periodic check assays, and participation in industry round-robin programs.

8.8 Database

Exploration data from a variety of sources are imported into acQuire databases using a variety of techniques and procedures to check the integrity of the data entered.

Since the mid-1990s, geological and geotechnical data have been validated by software routines and uploaded directly into the database from the field logging instruments. Analytical data are uploaded from digital sources provided by the analytical laboratories via website. Survey data are uploaded by the project geologist from digital survey files. Density data are imported by the database administrator from a spreadsheet sent from the internal mine laboratory or by download from the external laboratory website.

Verification is performed on all digitally collected data upon upload to the main database, and includes checks on surveys, collar co-ordinates, lithology data, and assay data. Data that were collected prior to the introduction of digital logging have been subject to validation, using built-in program triggers that automatically checked data upon upload to the database.

Database security and integrity are accomplished by restricting access and user level permissions that are set by the database managers. Once data entry and validation are completed for a drill hole, access is locked. There are procedures for updates that retain all the original information and prioritize use of the updates.

Digital back-up copies of the geologic logs are stored offsite. The majority of the hardcopy logs that were used prior to digital databases are archived. Some of the drill hole records have been digitally scanned and saved.

8.9 Qualified Person's Opinion on Sample Preparation, Security, and Analytical Procedures

The sample preparation, analysis, quality control, and security procedures used by the Nevada Operations have changed over time to meet evolving industry practices. Practices at the time the information was collected were industry-standard, and frequently were industry-leading practices. The data are acceptable for use in mineral resource and mineral reserve estimates and in mine planning.

9.0 DATA VERIFICATION

9.1 Internal Data Verification

Validation checks are performed by NGM operations personnel on data used to support estimation comprise checks on surveys, collar coordinates, lithology data (cross-checking from photographs), and assay data. Errors noted are rectified in the database prior to data being flagged as approved for use in resource estimation.

9.2 Reviews and Audits

Newmont conducted internal audits, termed Reserve and Resource Review or 3R audits, of all its operations prior to the incorporation of the NGM JV. These audits focused on:

- Reserves processes: geology and data collection; resource modelling; geotechnical; mine engineering (long term) for open pit and underground operations; mineral processing (development); sustainability and external relations; financial model;
- Operations process: ore control; geotechnical and hydrogeology (operational); mine engineering (operational) for open pit and underground operations; mineral processing (operational); reconciliation.

The reviews assessed these areas in terms of risks to the contained metal content of the mineral resource and mineral reserve estimates, or opportunities to add to the estimated contained metal content. Findings were by definition areas of incorrect or inappropriate application of methodology or areas of non-compliance to the relevant internal Newmont standard (e.g., such as documents setting out the standards that are expected for aspects of technical services, environmental, sustainability and governmental relations) or areas which are materially inconsistent with published Newmont guidelines (e.g., such as guidelines setting out the protocols and expectations for mineral resource and mineral reserve estimation and classification, mine engineering, geotechnical, mineral processing, and social and sustainability). The operation under review was expected to address findings based on the level of criticality assigned to each finding.

The most recent 3R audits on the former Newmont properties were conducted as follows:

- 2013: Emigrant, Phoenix, and Long Canyon;
- 2014: Leeville;
- 2015: Phoenix;
- 2016: Carlin, Twin Creeks;
- 2018: Carlin, Phoenix.

9.3 Subject Matter Expert Reviews

The QP requested that information, conclusions, and recommendations presented in the body of this Report be reviewed by Newmont experts or Newmont staff in each discipline area as a further level of data verification.

Reviewers were requested to cross-check, as applicable, numerical data, flag any data omissions or errors identified, review the manner in which the data were summarized and reported in the technical report summary, and check the interpretations arising from the data as presented in the Report. Reviewers were also asked to check that the QP's opinions stated as required in certain Report chapters were supported by the data.

Feedback from the reviewers was incorporated into the Report as required.

9.4 External Data Verification

A number of third-party consultants have performed external data reviews, as summarized in Table 9-1.

These external reviews were undertaken in support of acquisitions, support of feasibility-level studies, and in support of technical reports, producing independent assessments of the database quality. No significant problems with the database, sampling protocols, flowsheets, check analysis program, or data storage were noted.

9.5 Data Verification by Qualified Person

Mr. Doe performed site visits as outlined in Chapter 2.4. Observations made during the visits, in conjunction with discussions with site-based technical staff also support the geological interpretations, and analytical and database quality. The QP's personal inspection supports the use of the data in mineral resource and mineral reserve estimation, and in mine planning.

Mr. Doe has a long history of involvement with mining operations in Nevada, beginning in 1994. This consisted of site-based and corporate roles, including his current position as Group Executive Reserves.

In October 2021, Mr. Doe supervised a site-based review of the geological and geostatistical information supporting the mineral resources and mineral reserves as part of Newmont's 3R process. The review indicated that the estimates were performed used industry-standard practices.

A subsequent in-person review by the QP and mining, metallurgical, geotechnical and tailings engineers, and environmental experts was planned for November 2021. However, due to Covid-19 protocols, this review was performed remotely. The review indicated that there may be some risk to the permitting timelines for tailings expansion at the Turquoise Ridge Complex.

Table 9-1: External Data Reviews

Consultant	Year	Comment
Second Door Industries	2000	Review of Turquoise Ridge Underground database
AGRA Simons	2000	Review of Phoenix databases
J.M. Rendu	2002–2003	Review of Gold Quarry databases
AMEC Americas Ltd	2004–2005	Review of Cortez Hills databases
Ed Isaaks	2005	Review of Phoenix databases
AMEC Americas Ltd	2006–2007	Review of Phoenix databases
AMEC Americas Ltd	2009	Review of Leeville databases
Mine Development Associates	2009	Data review of Long Canyon database in support of NI 43-101 Technical Report
Roscoe Postle Associates	2011	Review of Leeville databases
	2012	Review of Cortez databases and mineral resource/mineral reserve estimates
Roscoe Postle Associates	2015	Review of Cortez databases
	2018	Data review of Cortez operations in support of NI 43-101 Technical Report
Mine Technical Services	2018	Review of Goldstrike databases
		Review of Cortez databases
Golder Associates	2018	Review of Goldstrike databases
Wood plc	2019	Review of estimation, geologic modelling and exploratory data analysis methods at Cortez
AB Global Mining	2020	Review of Cortez Hills underground, Crossroads, Cortez Pits and Robertson Mineral Resource models
Roscoe Postle Associates	2020	Mineral Reserve and Mineral Resource audit of the Goldstrike mine
SRK Consulting	2021	Quantified comparison and adequacy of NGM's digital database against original source data

9.6 Qualified Person's Opinion on Data Adequacy

The process of data verification for the Project has been performed by external consultancies and NGM personnel. The QP considers that a reasonable level of verification has been completed, and that no material issues would have been left unidentified from the programs undertaken.

The QP, who relies upon this work, has reviewed the reports and is of the opinion that the data verification programs completed on the data collected from the Project are consistent with industry best practices and that the database is sufficiently error-free to support the geological interpretations and mineral resource and mineral reserve estimation, and mine planning.

10.0 MINERAL PROCESSING AND METALLURGICAL TESTING

10.1 Test Laboratories

During the 60+ year history of Nevada Operations mine development, a significant number of metallurgical studies and accompanying laboratory-scale and/or pilot plant tests have been completed. Either internal metallurgical research facilities or external consultants undertake the research. Recent external testwork was performed at McClelland Laboratories, Hazen Research, Macpherson Laboratories, McGill University, Svedala, and Outukumpu. Internal testwork facilities included the Goldstrike Metallurgical Laboratory, Gold Quarry Metallurgical Laboratory, Newmont Metallurgical Services in Englewood, Colorado and the AuTec Metallurgical Laboratory located in Vancouver, British Columbia, Canada,

The laboratories perform metallurgical testing using industry-accepted procedures and to industry-accepted standards. There is no international standard of accreditation provided for metallurgical testing laboratories or metallurgical testing techniques.

10.2 Metallurgical Testwork

Metallurgical testwork included: mineralogy; head grades and screen analyses; bottle roll, bench and column cyanide leaching; carbon adsorption/activation tests; direct cyanide leach testwork; carbon-in-leach tests; agglomeration tests; cyanide amenability tests; bench or circulating fluidized bed roasting tests; calcine tests; magnetic separation testwork; bench-top roaster followed by CIL testwork; bench-top alkaline pressure leach tests followed by CIL tests; calcium thiosulfate and resin leach tests; bench-top alkaline pressure leach tests followed by thiosulfate resin in leach testwork; sulfidization acidification re-neutralization and thickening or SART testwork; reagent consumption reviews; impurity reviews; standard autoclaving and leach tests; grindability (comminution) tests (SMC, breakage parameter, Bond work index, drop weight index, rod work index, unconfined compressive strength, semi-autogenous grind (SAG) power index); thickener testwork; batch and pilot plant tests

These test programs were sufficient to establish the optimal processing routes for the non-refractory and refractory ores, and the weathering state of the ores (oxide, leached, enriched, transition, sulfide), and was performed on mineralization that was typical of the deposits. The results obtained supported estimation of recovery factors for the various ore types depending on the process method selected.

Numerous processing methods are used within the Nevada Operations, including CIL for higher-grade oxide ore, heap leaching for lower-grade oxide ore, roasting for carbonaceous refractory ore, and pressure oxidation (POX) for higher-grade sulfidic ore.

Future ore testing is completed according to the needs of the optimized blend planning for the combined NGM operations. A sampling matrix of ore types and grade/chemistry ranges is developed. The sampling matrix is used to perform an extraction on the resource model to determine tons in each matrix category. Core logs are used to build variability composites for each matrix category targeting a minimum of the one variability composite for every 1.5 Mt. All variability composites are laboratory-tested, and include: column testwork, roast and bottle roll leach testwork, and flotation and bottle roll leach testwork as applicable. Master composites are generated from the variability composites to identify any negative or positive synergies that could result from mixing ore types.

Current ore testing is completed monthly by performing testwork on feed stockpile samples. The stockpile samples are taken weekly and composited at the end of the month for column testwork, roast and bottle roll leach testwork, and flotation and bottle roll leach testwork as applicable. The stockpile metallurgical testwork is completed individually so that recovery results can be compared to budget/reserve recoveries and adjusted as needed.

10.3 Recovery Estimates

Gold recovery is a function of the processing method (e.g., heap leaching, CIL, roasting, and arsenic concentration for refractory ore) and the lithology of the mineralization being processed. As applicable, recovery estimates include consideration of the head grade, cyanide-soluble gold to fire assay gold ratio, sulfide sulfur concentration, total organic carbon concentration, and silica concentration.

Copper recovery models were derived from a statistical review of the metallurgical data and range in complexity from simple, fixed recoveries to complex, multi-variable equations. The following input variables were available as possible drivers of recovery: head grade, copper leach ore type, alteration type, formation, and various trace elements.

Recovery ranges projected for the LOM operations include:

- Gold:
  - Oxide leach: 57–75%;
  - Oxide mill: 73–88%;
  - Goldstrike roaster: 84–92%;
  - Goldstrike autoclave: 50–96%;
  - Gold Quarry roaster: 84–92%;
  - Sage (Turquoise Ridge) autoclave: average 84%;
  - Phoenix mill: average 70%;
- Copper:
  - Phoenix mill: average 71%;
  - Copper leach: average 49%;
- Silver:
  - Phoenix mill: average 38%.

10.4 Metallurgical Variability

Samples selected for metallurgical testing during feasibility and development studies were representative of the various styles of mineralization within the different deposits. Samples were selected from a range of locations within the deposits. Sufficient samples were taken, and tests were performed using sufficient sample mass for the respective tests undertaken.

Variability assessments are supported by production and extensive open pit and underground exposures.

10.5 Deleterious Elements

Depending upon the specific processing facility, several processing factors or deleterious elements could have an economic impact on extraction efficiency of a certain ore source, based either on the presence, absence, or concentration of the following constituents in the processing stream:

- Organic carbon;
- Sulfide sulfur;
- Carbonate carbon;
- Arsenic
- Mercury;
- Antimony;
- Copper.

However, under normal ore routing and blending practices at NGM where material from several sites may be processed at one facility, the above list of constituents is typically not a concern.

10.6 Qualified Person's Opinion on Data Adequacy

Industry-standard studies were performed as part of process development and facility designs. Subsequent production experience and focused investigations guided facility alterations and process changes where required.

Testwork programs, both internal and external, continue to be performed to support current operations and potential improvements. From time to time, this may lead to requirements to adjust cut-off grades, modify the process flowsheet, or change reagent additions and process parameters to meet production, and economic targets.

Based on these checks, the metallurgical testwork and reconciliation and production data support the estimation of mineral resources and mineral reserves, and the inputs to the economic analysis.

The facilities will produce variations in recovery due to the day-to-day changes in ore type or combinations of ore type being processed. These variations are expected to trend to the forecast recovery value for monthly or longer reporting periods.

11.0 MINERAL RESOURCE ESTIMATES

11.1 Introduction

Mineral resources were estimated for the deposits listed in Table 2-1. The close-out date for the databases used in the various mineral resource estimates depend on the deposit. Geology models were generally constructed by Nevada Operations personnel.

Estimation was typically performed by Nevada Operations personnel. All mineralogical, drilling, and background data and information were provided to the estimators by the geological staff at the operations or by exploration staff. Depending on the deposit, models were developed as follows:

- Vulcan: surface wireframes were constructed representing interpreted structure (faults) and stratigraphy units. Stratigraphic logging was the primary driver for the geological modelling; however, geological mapping, structural logging, and gold and sulfur assay data were also used to guide the interpretation;
- Leapfrog: major faults, stratigraphy units, weathering surfaces and mineralized grade shells were interpreted;

Block sizes were based on the drill hole spacing, deposit geometry, and the potential mining method. Parent block sizes for assumed open pit operations included: 30 x 30 x 20 ft, 40 x 40 x 20 ft, 50 x 50 x 20 ft; with sub-cells, where necessary, at, 11.5 x 11.5 x 11.5 ft. Underground parent block sizes included 10 x 10 x 2 ft, 10 x 10 x 10 ft, 20 x 20 x 20 ft, 30 x 30 x 20 ft, 30 x 30 x 50 ft; with sub-cells, where necessary, at 2.5 x 2.5 x 2 ft and 5 x 5 x 2 ft.

11.2 Exploratory Data Analysis

Exploratory data analytical methods varied by complex. Typically, data analysis was completed on raw and composited data to determine statistics for sample populations within domains, and the mean, maximum, minimum values, standard deviation and coefficients of variance were tabulated. Exploratory data analysis could be used to determine estimation domains, evaluate composite lengths, identify any grade outliers and to select optimum top cut values for each of the domains and to determine estimation parameters. The analysis tools applied could include for capping and estimation parameter investigation: histogram plots, log probability plots, mean and co-efficient of variation (CV) curves to look for the stability point, top 5% metal impact, indicator correlation, declustered mean plus two and three standard deviations, risk-hi analysis, contact analysis, visual checking and metal impact.

11.3 Geological Models

Geologic modeling included lithologies, structures, alteration and mineralization in order to build a 3D interpretation of the important features controlling the orebodies. These interpretations used all available information as a basis, including drill assays and logs, geochemical relationships, mapping, and current understanding of mineralization genesis in the region. Within the interpreted geologic framework, estimation domains were developed through collaboration between the project geologists and modelers.

11.4 Density Assignment

Density values were typically assigned based on lithology; alternatively, a tonnage factor could be applied to material designated as either ore or waste. Where sufficient local data were available, density was estimated using similar data analysis, estimation, and validation methods as for other estimated elements.

11.5 Grade Capping/Outlier Restrictions

Grade caps were applied based on the results of the exploratory data analysis. High-grade anomalous values were controlled through the use of top-cutting and/or high-grade estimation restrictions, applied by deposit and domain. Where multiple indicator kriging (MIK) or similar estimation methods were used, the high-grade portion of the distribution was evaluated and validated accordingly.

11.6 Composites

Composite lengths varied by complex and project, based on block sizes, sample lengths, and estimation workflow, including:

- Open pit: 10 ft, 11.5 ft, 20 ft;
- Underground: 2.5 ft, 5 ft, 10 ft, 11.5 ft.

11.7 Variography

Variographic analyses were completed by domain, using Snowden Supervisor, Vulcan, or Sage software, or GSLib/CCG programs, to determine a3D model of spatial continuity. Variogram or correlogram models were fitted to experimental variograms where sufficient data existed within the domain. Search ellipses for use in the various estimation passes were scaled according to the relative axis dimensions and orientations for each estimation domain. Visual checks of the search ellipses against the underlying geologic model and interpreted mineralization controls to ensure consistency were done using Vulcan in 3D.

11.8 Estimation/interpolation Methods

Estimation and interpolation methods varied by deposit, domain, and estimation element. The following methods were used: ordinary kriging (OK), MIK, localized indicator kriging (LIK), inverse distance weighting to the second power (ID2), inverse distance weighting to the third power (ID3), and inverse distance weighting to the fifth power (ID5). Typically, alternate grade interpolations (including nearest neighbor) were performed for use in model validation and sensitivity testing.

Depending on the deposit, interpolation was performed in multiple (usually 2–3, but as many as eight) passes. Search neighborhoods were based on variography, mineralization geometry, or on selected drill spacings. Minimum and maximum numbers of informing samples varied by deposit, as did the number of samples allowed to be used from a single drill hole:

- Minimum number of informing samples: 1–5;

- Maximum number of informing samples: 5–24;
- Maximum number of informing samples from a single drill hole: 2–3.

Dynamic anisotropy and unfolding applications could be used to improve alignment of the local sample search ellipse with changes in the strike, dip, and plunge orientation of the mineralization.

Block models were flagged for mining depletion. A depleted version was completed with blocks within previously-mined areas depleted for grades and densities. Where areas were back-filled, these blocks were coded by fill type and their density reset to reflect the fill type.

11.9 Validation

Mineralization solids were checked for conformity to drill hole data, continuity, similarity between sections, overlaps, appropriate terminations between holes and into undrilled areas.

Validation procedures were undertaken on the estimations. These could include comparison of global mean grades, visual comparisons to composite grades, comparisons to reconciliation (when available), change of support corrections estimated using a discrete Gaussian model under a diffusion model assumption, grade-tonnage curves, slope of regression calculations, comparison to NN analysis and swath plots.

No significant biases were noted from the checks.

11.10 Confidence Classification of Mineral Resource Estimate

Blocks were classified in the model, based on relative confidence in the estimated grades, into measured, indicated, and inferred. Criteria for classification were defined within each deposit, and based on various combinations of:

- Proximity to nearby drilling data (distances to nearest 1, 2, or 3 drill holes);
- Geostatistical drill spacing studies;
- Qualitative assessment of confidence in the underlying geologic interpretations;
- Historical classification assignments;
- Classification smoothing algorithms.

Local zones could be manually reclassified, using solids where required, due to lower confidence in the interpretation or estimate.

11.11 Reasonable Prospects of Economic Extraction

For each resource estimate, an initial assessment was undertaken that assessed likely infrastructure, mining, and process plant requirements; mining methods; process recoveries and throughputs; environmental, permitting and social considerations relating to the proposed mining and processing methods, and proposed waste disposal, and technical and economic considerations in support of an assessment of reasonable prospects of economic extraction.

11.11.1 Input Assumptions

Mineralization considered potentially amenable to open pit mining methods was constrained within a conceptual pit shell using the Lerchs–Grossmann (LG) algorithm within Vulcan software.

Mineralization considered potentially amenable to open pit mining methods was constrained within mineable shapes generated using Mineable Stope Optimizer (MSO) software.

Key parameters used to constrain the resource estimates are summarized in Table 11-1 (open pits) and Table 11-2 (underground). Tonnages in the tables are metric tonnes.

11.11.2 Commodity Price

Commodity prices used in resource estimation are based on long-term analyst and bank forecasts. An explanation of the derivation of the commodity prices is provided in Chapter 16.2. The estimated timeframe used for the price forecasts is the 24-year LOM that supports the mineral reserve estimates.

11.11.3 Cut-off

The resources are reported at varying cut-off values, which are based on the material type being mined, the mining method and the designated process facility. As a result, cut-off values can vary significantly by material type.

11.11.4 QP Statement

The QP is of the opinion that any issues that arise in relation to relevant technical and economic factors likely to influence the prospect of economic extraction can be resolved with further work. The mineral resource estimates are performed for deposits that are in a well-documented geological setting; the district has seen 55+ years of active open pit operations and 25+ years of underground mining operations conducted by Newmont, Barrick and NGM; Newmont is familiar with the economic parameters required for successful operations in the Nevada Operations area; and Newmont, Barrick and NGM have a history of being able to obtain and maintain permits, social license and meet environmental standards in Nevada. The 24-year timeframe is considered sufficient to address any issues that may arise with the mineral resource estimates.

Table 11-1: Open Pit Input Parameters (mineral resources)

Economic Parameters	Units	Carlin Complex		Cortez Complex		Long Canyon Complex		Phoenix Complex		Turquoise Ridge Complex	
		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Gold price	US$/oz	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Royalties	%	0	16	0.73	11	0	0	0.74	0.74	1	1
Discount rate	%	0.28	5	5	5	5	5	5	5	Varies, maximum of 5	
Mining cost	US$/t	2.08	2.08	1.80	2.42	3.80	3.80	2.63	2.81	2.51	2.57
G&A cost	US$/t	0.23	0.23	0.19	2.84	0.28	0.28	0.82	0.82	0.27	0.28
Process cost	US$/t	2.35	40.87	2.44	9.77	3.79	3.79	8.05	8.05	5.78	35.12
	% (average)	52	67	62	88	75	82	66	67	57	81
Pit slope angles	degrees	11	47	25	51	50	52	25	52	36	50
Cut-off grades	g/t Au	0.21	1.10	0.171	1.47	0.202	0.202	NA	NA	0.17	3.29

Note: NA = not applicable. Phoenix is reported using a net smelter return cut-off. Tonnages are metric tonnes.

Table 11-2: Underground Input Parameters (mineral resources)

Economic Parameters	Units	Carlin Complex		Cortez Complex		Long Canyon		Turquoise Ridge Complex	
		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Gold price	US$/oz	1,500	1,500	1,500	1,500	1,200	1,200	1,500	1,500
Royalties	%	0.56	6	1	3	NA	NA	1	1
Discount rate	%	Variable, maximum of 5		5	5	NA	NA	NA	NA
Mining cost	US$/t	61.30	145.63	31.97	97.15	122.14	122.14	134.75	213.89
G&A cost	US$/t	9.44	15.67	10.79	15.19	15.75	15.75	17.45	17.45
Process cost	US$/t	18.31	26.20	10.62	29.4	55.31	55.31	34.91	34.91
	% (average)	79	85	84	89	83	92	86	90
Cut-off grades	g/t Au	2.74	5.73	2.71	3.41	7.37	7.37	3.3	6

Note: NA = not applicable. Tonnages are metric tonnes.

11.12 Mineral Resource Statement

Mineral resources are reported using the mineral resource definitions set out in SK1300. The point of reference for the estimate is the point of delivery to the process facilities. Mineral resources are reported exclusive of those mineral resources converted to mineral reserves. Mineral resources are reported on a 100% basis. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest.

The mineral resource estimates for the Nevada Operations are provided as follows:

- Gold: Table 11-3 (measured and indicated) and Table 11-4 (inferred);
- Silver: Table 11-5 (measured and indicated) and Table 11-6 (inferred);
- Copper: Table 11-7 (measured and indicated) and Table 11-8 (inferred).

Table 11-3: Measured and Indicated Mineral Resource Statement (Gold)

Deposits	Type	Measured Mineral Resources			Indicated Mineral Resources			Measured and Indicated Mineral Resources		
		Tonnage (x 1,000 t)	**Grade (g/t Au)**	**Cont. Gold (x 1,000 oz)**	**Tonnage (x 1,000 t)**	**Grade (g/t Au)**	**Cont. Gold (x 1,000 oz)**	**Tonnage (x 1,000 t)**	**Grade (g/t Au)**	**Cont. Gold (x 1,000 oz)**
Carlin	Open pit	18,800	2.66	1,610	131,500	1.49	6,320	150,400	1.64	7,930
	Underground	18,200	5.67	3,320	8,500	5.35	1,460	26,700	5.57	4,780
	Stockpiles	8,400	1.02	280	—	—	—	8,400	1.02	280
	Carlin Sub-total	*45,400*	*3.56*	*5,210*	*140,100*	*1.73*	*7,780*	*185,500*	*2.18*	*12,980*
Cortez	Open pit	0	1.64	0	89,300	0.68	1,940	89,400	0.68	1,940
	Underground	700	7.17	170	10,200	5.84	1,910	10,900	5.93	2,070
	Cortez Sub-total	*700*	*7.02*	*170*	*99,500*	*1.20*	*3,850*	*100,300*	*1.25*	*4,010*
Long Canyon	Open pit	500	3.47	60	8,000	2.56	660	8,600	2.62	720
	Underground	—	—	—	1,800	10.68	620	1,800	10.68	620
	Long Canyon Sub-total	*500*	*3.47*	*60*	*9,800*	*4.05*	*1,280*	*10,400*	*4.02*	*1,340*
Turquoise Ridge	Open pit	800	3.13	80	23,200	2.05	1,540	24,000	2.09	1,610
	Underground	3,200	6.84	710	10,500	6.93	2,330	13,700	6.91	3,040
	Stockpiles	11,400	2.04	740	—	—	—	11,400	2.04	740
	Turquoise Ridge Sub-total	*15,300*	*3.10*	*1,530*	*33,700*	*3.57*	*3,870*	*49,100*	*3.42*	*5,400*
Phoenix	Open pit	7,600	0.53	130	218,200	0.45	3,140	225,800	0.45	3,270
	Phoenix Sub-total	*7,600*	*0.53*	*130*	*218,200*	*0.45*	*3,140*	*225,800*	*0.45*	*3,270*
	Grand Total	***69,600***	***3.17***	***7,090***	***501,300***	***1.24***	***19,910***	***571,100***	***1.47***	***27,000***

Table 11-4: Inferred Mineral Resource Statement (Gold)

Deposits	Area	Inferred Mineral Resources		
		Tonnage (x 1,000 t)	Grade (g/t Au)	Cont. Gold (x 1,000 oz)
Carlin	Open pit	89,100	1.1	3,230
	Underground	16,200	7.5	3,930
	Stockpiles	5,400	2.0	350
	Carlin Sub-total	*110,700*	*2.1*	*7,510*
Cortez	Open pit	100,100	0.5	1,760
	Underground	24,300	5.9	4,620
	Cortez Sub-total	*124,400*	*1.6*	*6,380*
Long Canyon	Open pit	1,700	0.8	50
	Underground	900	9.1	250
	Long Canyon Sub-total	*2,600*	*3.6*	*300*
Turquoise Ridge	Open pit	17,100	1.8	980
	Underground	1,100	6.2	220
	Turquoise Ridge Sub-total	*18,200*	*2.0*	*1,200*
Phoenix	Open pit	41,400	0.3	430
	Stockpiles	7,800	0.6	160
	Phoenix Sub-total	*49,200*	*0.4*	*580*
NGM Total	***Grand Total***	***305,000***	***1.6***	***15,970***

Table 11-5: Measured and Indicated Mineral Resource Statement (Silver)

Deposits	Type	Measured Mineral Resources			Indicated Mineral Resources			Measured and Indicated Mineral Resources		
		Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)
Phoenix	Open pit	7,600	5.572	1,360	218,200	5.539	38,860	225,800	5.540	40,220
	Stockpiles	—	—	—		—	—	—	—	—
	Phoenix sub-total	*7,600*	*5.572*	*1,360*	*218,200*	*5.539*	*38,860*	*225,800*	*5.540*	*40,220*
NGM Total	***Grand Total***	***7,600***	***5.572***	***1,360***	***218,200***	***5.539***	***38,860***	***225,800***	***5.540***	***40,220***

Table 11-6: Inferred Mineral Resource Statement (Silver)

Deposits	Area	Inferred Mineral Resources		
		Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)
Phoenix	Open pit	41,400	5.4	7,240
	Stockpiles	7,800	6.4	1,600
	Phoenix sub-total	*49,200*	*5.6*	*8,840*
NGM Total	***Grand Total***	***49,200***	***5.6***	***8,840***

Table 11-7: Measured and Indicated Mineral Resource Statement (Copper)

Deposits	Area	Measured Mineral Resources			Indicated Mineral Resources			Measured and Indicated Mineral Resources		
		Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)	Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)	Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)
Phoenix	Open pit	8,000	0.14	20	289,600	0.14	880	297,600	0.14	910
	Phoenix sub-total	*8,000*	*0.14*	*20*	*289,600*	*0.14*	*880*	*297,600*	*0.14*	*910*
NGM Total	***Grand Total***	***8,000***	***0.14***	***20***	***289,600***	***0.14***	***880***	***297,600***	***0.14***	***910***

Table 11-8: Inferred Mineral Resource Statement (Copper)

Deposits	Area	Inferred Mineral Resources		
		Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)
Phoenix	Open pit	43,300	0.1	140
	Stockpiles	8,300	0.1	10
	Phoenix sub-total	*51,600*	*0.1*	*150*
NGM Total	***Grand Total***	***51,600***	***0.1***	***150***

Notes to Accompany Mineral Resource Tables:

1. Mineral resources are current as at December 31, 2021, using the definitions in SK1300. The Qualified Person responsible for the estimate is Mr. Donald Doe, RM SME, Group Executive, Reserves, a Newmont employee.

2. The reference point for the mineral resources is in situ.
3. Mineral resources are reported on a 100% basis. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest.
4. Mineral resources are reported exclusive of mineral reserves. Mineral resources that are not mineral reserves do not have demonstrated economic viability.
5. Mineral Resources that are potentially amenable to open pit mining methods are constrained within a designed pit shell. Mineral Resources that are potentially amenable to underground mining methods are constrained within conceptual stope designs. Parameters used are summarized in Table 11-1 and Table 11-2.
6. Tonnages are metric tonnes rounded to the nearest 100,000. Gold and silver grades are rounded to the nearest 0.01 gold grams per tonne. Copper grade is in %. Gold and silver ounces and copper pounds are estimates of metal contained in tonnages and do not include allowances for processing losses. Contained (cont.) gold and silver ounces are reported as troy ounces, rounded to the nearest 10,000. Copper is reported as pounds and rounded to the nearest 10 million pounds. Rounding of tonnes and contained metal content as required by reporting guidelines may result in apparent differences between tonnes, grade and contained metal content. Due to rounding, some cells may show a zero (“0”). Totals may not sum due to rounding.

11.13 Uncertainties (Factors) That May Affect the Mineral Resource Estimate

Areas of uncertainty that may materially impact all of the mineral resource estimates include:

- Changes to long-term metal price and exchange rate assumptions;
- Changes in local interpretations of mineralization geometry such as pinch and swell morphology, extent of brecciation, presence of unrecognized mineralization off-shoots; faults, dykes and other structures; and continuity of mineralized zones;
- Changes to geological and grade shape, and geological and grade continuity assumptions;
- Changes to variographical interpretations and search ellipse ranges that were interpreted based on limited drill data, when closer-spaced drilling becomes available;
- Changes to metallurgical recovery assumptions;
- Changes to the input assumptions used to derive the potentially-mineable shapes applicable to the assumed underground and open pit mining methods used to constrain the estimates;
- Changes to the forecast dilution and mining recovery assumptions;
- Changes to the cut-off values applied to the estimates;
- Variations in geotechnical (including seismicity), hydrogeological and mining method assumptions;
- Changes to environmental, permitting and social license assumptions.

Specific factors that may affect individual estimates include:

- Cortez Complex: Mineralization at the Robertson deposit is genetically different to the mineralization currently mined within the Cortez Complex. Additional metallurgical testwork is planned, and results from this work may impact options for processing the mineralization and subsequent recovery expectations;
- Long Canyon Complex: the mineral resource estimate includes an assumption of underground mining for a portion of the estimate. Underground mining operations are new to the Long Canyon Complex;
- Phoenix Complex: optimization is based on the combined value of recovered gold, silver and copper. Changes to the price of one or more commodities may impact the optimization.

12.0 MINERAL RESERVE ESTIMATES

12.1 Introduction

Measured and indicated mineral resources were converted to mineral reserves. Mineral reserves in the Nevada Operations area are estimated for the Carlin, Cortez, Long Canyon, Phoenix and Turquoise Ridge complexes using open pit mining, and the Carlin, Cortez, and Turquoise Ridge complexes using underground mining. Stockpiled material is also included in the mineral reserve estimates. All Inferred blocks are classified as waste in the cashflow analysis that supports mineral reserve estimation.

Mineral Reserves are supported by a mine plan, an engineering analysis, and the application of modifying factors. These inputs are supported by operational experience.

12.2 Open Pit Estimates

The optimized economic pit shells selected for the basis of open pit designs were created using the Whittle 4X software package. Optimization work involved floating cones at a series of gold prices. The generated nested pit shells were evaluated using the reserve gold price of US$1,200/oz (and at Phoenix a copper price of $2.75/lb and silver price of $16.50/oz) and a 5% discount rate. The pit shells with the highest NPV were selected for detailed engineering design work.

A realistic schedule was developed in order to determine the optimal pit shell for each deposit; schedule inputs include the minimum mining width, and vertical rate of advance, mining rate and mining sequence.

Operating costs for mining, processing, and general and administrative were developed as part of the mine business planning process. The costs build-up is based on actual values, as well as inclusion of a number of projected cost-saving measures and efficiency gains. Costs are un-escalated.

Costs were based on the following key inputs:

- The equipment fleet required through to the end of mine life;
- Process costs for each pit and material type, derived from actual costs and forecast ore feed blends;
- Reclamation and closure cost provisions sourced from site environmental calculations.

Dilution and extraction for the open pits are addressed by using whole blocks, without any further external factors. The block models were constructed to include the expected dilution based on mining methods, bench height and other factors. The current mine and process reconciliation data appear to support this assumption.

Input parameters used are summarized in Table 12-1.

Table 12-1: Input Parameters, Open Pit (mineral reserves)

Economic Parameters	Units	Carlin Complex		Cortez Complex		Long Canyon Complex		Phoenix Complex		Turquoise Ridge Complex	
		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Gold price	US$/oz	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Royalties	%	0.56	16	1	11	0	0	0.74	0.74	1	1
Discount rate	%	0.28	5	10	10	NA	NA	NA	NA	NA	NA
Mining cost	US$/t	2.08	2.08	1.80	2.42	3.80	3.80	2.63	2.83	1.64	1.65
G&A cost	US$/t	0.23	0.23	0.19	2.84	0.28	0.28	0.46	1.17	0.64	2.94
Process cost	US$/t	2.35	40.87	2.44	9.77	3.79	3.79	1.90	8.87	6.74	25.44
	% (average)	54	66	62	88	75	75	69	73	57	81
Pit slope angles	º	11	47	25	51	45	50	25	52	36	50
Cut-off grades	g/t Au	0.21	0.99	0.14	2.06	0.24	0.24	NA	NA	0.17	3.09

Note: NA = not applicable. Phoenix is reported using a net smelter return cut-off. Tonnages are metric tonnes.

12.3 Underground Estimates

Underground mines are designed using zones that are amenable to different mining methods based on geotechnical and access considerations, the deposit shape, orientation and grade, and mining depths.

The mine plans assume use of a number of different mining methods and variants including:

- Long-hole stoping;
- Long-hole stope retreat
- Underhand drift-and-fill;
- Overhand drift-and-fill.

Stopes were created using MSO software at the required stope height, length and cut-off criteria based on the mine area. The stope widths depend on the stope cut-off and dilution (over-break) added to stope design, and the mining method used. A set of marginal stopes could also be considered in the reserve process. These stopes were assessed for reserve reporting based on an individual economic assessment. Typically, these stopes were adjacent to higher-grade stopes and thus required minimal waste development and infrastructure.

Blocks that were modelled as waste or low-grade were included in a designed stope shape as internal dilution. Additional tonnage dilution percentages could be added by site personnel, where required, based on historical reconciliation data for a particular mining method. Dilution accommodations (tonnage at no grade) can be made to account for ore handling and cemented rock fill dilution.

Mineral reserves include adjustments for ore losses and dilution.

Input parameters used are summarized in Table 12-2.

12.4 Cut-offs

Cut-off grades are determined based on a combination of the selected metal price, applicable royalty payments, mining costs, process operating costs, and on-site (and off-site) metal recoveries by material type, selected process method, and mining method. Operational cut-off grades ranged from:

- Carlin Complex: 0.20–7.06 g/t Au;
- Cortez Complex: 0.14–3.41 g/t Au;
- Long Canyon: 0.24 g/t Au;
- Turquoise Ridge Complex: 0.17–7.99 g/t Au.

Table 12-2: Input Parameters, Underground (mineral reserves)

Economic Parameters	Units	Carlin Complex		Cortez Complex		Turquoise Ridge Complex	
		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Gold price	US$/oz	1,200	1,200	1,200	1,200	1,200	1,200
Royalties	%	0.56	6	1	3	1	1
Discount rate	%	5		NA	NA	NA	NA
Mining cost	US$/t	61.30	145.63	76.16	97.15	132.30	213.72
G&A cost	US$/t	9.44	15.67	10.79	15.19	5.65	17.45
Process cost	US$/t	18.31	26.20	10.62	29.40	34.43	34.91
	% (average)	82	89	84	89	86	90
Cut-off grades	g/t Au	3.43	7.06	3.39	5.21	3.94	7.99

Note: Tonnages are metric tonnes.

Revenue from the Phoenix Complex is generated from three products: gold, silver, and copper. A revenue cut-off, rather than a grade cut-off, is used that integrates the economics (recovery, metal prices, and costs) of all three metals. The revenue calculation only includes incremental mining costs beyond the pit rim. The mineral reserves for the Phoenix Complex are reported using a zero-dollar net revenue cut-off.

12.5 Stockpiles

Stockpile estimates were based on mine dispatch data; the grade comes from closely-spaced blasthole sampling and tonnage sourced from truck factors. The stockpile volumes were typically updated based on monthly surveys. The average grade of the stockpiles was adjusted based on the material balance to and from the stockpile.

12.6 Commodity Prices

Commodity prices used in mineral reserve estimation are based on long-term analyst and bank forecasts. An explanation of the derivation of the commodity prices is provided in Chapter 16.2. The estimated timeframe used for the price forecasts is the 24-year LOM.

12.7 Mineral Reserve Statement

Mineral reserves have been classified using the mineral reserve definitions set out in SK1300. Mineral reserves are current as at December 31, 2021. The reference point for the mineral reserve estimate is as delivered to the process facilities. Mineral reserves are reported on a 100% basis. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest.

Mineral reserves are reported in Table 12-3 for gold, Table 12-4 for silver, and in Table 12-5 for copper. Tonnages in the table are metric tonnes.

12.8 Uncertainties (Factors) That May Affect the Mineral Reserve Estimate

Areas of uncertainty that may materially impact all of the mineral reserve estimates include:

- Changes to long-term metal price and exchange rate assumptions;
- Changes to metallurgical recovery assumptions;
- Changes to the input assumptions used to derive the mineable shapes applicable to the assumed underground and open pit mining methods used to constrain the estimates;
- Changes to the forecast dilution and mining recovery assumptions;
- Changes to the cut-off values applied to the estimates;
- Variations in geotechnical (including seismicity), hydrogeological and mining method assumptions;
- Changes to environmental, permitting and social license assumptions.

Table 12-3: Proven and Probable Mineral Reserve Statement (Gold)

Deposits	Area	Proven Mineral Reserves			Probable Mineral Reserves			Proven and Probable Mineral Reserves		
		Tonnage (x 1,000 t)	Grade (g/t Au)	Cont. Gold (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Au)	Cont. Gold (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Au)	Cont. Gold (x 1,000 oz)
Carlin	Open pit	15,100	2.58	1,250	79,800	1.96	5,040	94,900	2.06	6,290
	Underground	19,700	9.25	5,860	11,400	8.18	2,990	31,100	8.86	8,850
	Stockpiles	3,500	2.58	290	38,700	2.62	3,250	42,100	2.61	3,540
	Carlin sub-total	*38,300*	*6.01*	*7,400*	*129,800*	*2.70*	*11,280*	*168,100*	*3.46*	*18,670*
Cortez	Open pit	200	1.90	10	60,700	1.66	3,240	61,000	1.66	3,250
	Underground	1,300	8.57	350	42,200	7.77	10,540	43,500	7.79	10,890
	Stockpiles	2,100	2.15	140	—	—	—	2,100	2.15	140
	Cortez Subtotal	*3,500*	*4.43*	*500*	*103,000*	*4.16*	*13,780*	*106,500*	*4.17*	*14,290*
Long Canyon	Open pit	300	1.43	20	600	1.06	20	1,000	1.18	40
	Long Canyon sub-total	*300*	*1.43*	*20*	*600*	*1.06*	*20*	*1,000*	*1.18*	*40*
Turquoise Ridge	Open pit	1,200	2.18	80	13,500	1.90	820	14,600	1.92	900
	Underground	14,300	11.05	5,060	19,200	9.89	6,090	33,400	10.39	11,160
	Stockpiles	27,500	2.13	1,880	—		—	27,500	2.13	1,880
	Turquoise Ridge sub-total	*42,900*	*5.09*	*7,030*	*32,600*	*6.59*	*6,920*	*75,600*	*5.74*	*13,940*
Phoenix	Open pit	9,100	0.65	190	155,800	0.59	2,960	164,900	0.59	3,150
	Stockpiles	4,300	0.88	120	—		—	4,300	0.88	120
	Phoenix sub-total	*13,500*	*0.72*	*310*	*155,800*	*0.59*	*2,960*	*169,300*	*0.60*	*3,270*
NGM Total	***Grand Total***	***98,500***	***4.82***	***15,260***	***421,800***	***2.58***	***34,960***	***520,300***	***3.00***	***50,220***

Table 12-4: Proven and Probable Mineral Reserve Statement (Silver)

Deposits	Area	Proven Mineral Reserves			Probable Mineral Reserves			Proven and Probable Mineral Reserves		
		Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)	Tonnage (x 1,000 t)	Grade (g/t Ag)	Cont. Silver (x 1,000 oz)
Phoenix	Open pit	9,100	6.475	1,900	155,800	6.351	31,810	164,900	6.357	33,710
	Stockpile	4,300	9.345	1,300	—	—	—	4,300	9.345	1,300
	Phoenix sub-total	*13,500*	*7.397*	*3,200*	*155,800*	*6.351*	*31,810*	*169,300*	*6.434*	*35,010*
NGM Total	***Grand Total***	***13,500***	***7.397***	***3,200***	***155,800***	***6.351***	***31,810***	***169,300***	***6.434***	***35,010***

Table 12-5: Proven and Probable Mineral Reserve Statement (Copper)

Deposits	Area	Proven Mineral Reserves			Probable Mineral Reserves			Proven and Probable Mineral Reserves		
		Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)	Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)	Tonnage (x 1,000 t)	Grade (Cu %)	Cont. Copper (M lbs)
Phoenix	Open pit	9,600	0.16	30	208,300	0.17	770	217,900	0.17	800
	Stockpiles	8,200	0.17	30	—	—	—	8,200	0.17	30
	Phoenix sub-total	*17,800*	*0.17*	*70*	*208,300*	*0.17*	*770*	*226,100*	*0.17*	*830*
NGM Total	***Grand Total***	***17,800***	***0.17***	***70***	***208,300***	***0.17***	***770***	***226,100***	***0.17***	***830***

Notes to Accompany Mineral Reserve Tables:

1. Mineral reserves are current as at December 31, 2021. Mineral reserves are reported using the definitions in SK1300. The Qualified Person responsible for the estimate is Mr. Donald Doe, RM SME, Group Executive, Reserves, a Newmont employee.
2. The point of reference for the estimates is the point of delivery to the process facilities.
3. Mineral reserves are reported for Nevada Gold Mines on a 100% basis. Barrick owns a 61.5% joint venture interest, with Newmont owning the remaining 38.5% joint venture interest.
4. Mineral reserves that will be mined using open pit mining methods are constrained within a designed pit shell. Mineral reserves that will be mined by underground mining methods are constrained within conceptual stope designs. Parameters used are summarized in Table 12-1 and Table 12-2.
5. Tonnages are metric tonnes rounded to the nearest 100,000. Gold and silver grades are rounded to the nearest 0.01 gold grams per tonne. Copper grade is in %. Gold and silver ounces and copper pounds are estimates of metal contained in tonnages and do not include allowances for processing losses. Contained (cont.) gold and silver ounces are reported as troy ounces, rounded to the nearest 10,000. Copper is reported as pounds and rounded to the nearest 10 million pounds. Rounding of tonnes and contained metal content as required by reporting guidelines may result in apparent differences between tonnes, grade and contained metal content. Due to rounding, some cells may show a zero (“0”). Totals may not sum due to rounding.

13.0 MINING METHODS

13.1 Introduction

Open pit mining is conducted using conventional techniques and an Owner-operated conventional truck and shovel fleet. Open pit operations include the following: South Arturo, Goldstrike, Tri-star, Gold Quarry, Cortez, Pipeline, Crossroads, Long Canyon, Phoenix, Vista and Mega.

Underground mining is currently conducted using conventional stoping methods, and conventional mechanized equipment. Underground operations include the following: Leeville, Pete Bajo (Rita-K), Exodus, El Niño, Goldstrike, Cortez Hills, Goldrush (in development), Turquoise Ridge and Vista.

13.2 Geotechnical Considerations

Nevada Operations personnel and external consultants completed geotechnical studies and provided geotechnical recommendations that form the basis for pit designs. Ground control management plans were developed, and are regularly updated.

Designs use defined geotechnical domains together with rock mass quality ratings for the principal lithologies and appropriate design criteria that reflect expected conditions and risk. Geotechnical models are a compilation of information sourced from geotechnical cell mapping, geological mapping, core logging, and supplementary drilling designed to intersect areas of geotechnical interest, material strength, highwall and stope performance, and hydrological data.

13.2.1 Open Pit

Inter-ramp angles vary by deposit and pit wall lithology, as shown in Table 13-1.

The Nevada Operations undertake regular monitoring of pit walls through geotechnical cell mapping, geological structure mapping, groundwater monitoring, bench inspections, slope stability, and slope movement analyses.

13.2.2 Underground

Stope designs included empirical assessments of maximum hydraulic radii and man-entry opening spans to determine maximum lengths, widths, heights and whether the backs or end-walls were to be unsupported or supported. Stope pillars sizes were analyzed to determine the most suitable pillar sizes for the ground conditions and expected mining methods.

All trafficable underground excavations have minimum requirements for ground support installation. The determination of supportable loads is typically based on a dead load analysis which assesses the potential dislodgement height above an excavation as a proportion of the excavation span. For mine drifts the potential dead load failure height is assumed to form an Isosceles wedge with a maximum apex height of ½ of the excavation span.

Table 13-1: Open Pit Slope Angles

Complex	Inter-Ramp Slope Angle Range (º)
Carlin	11–47
Cortez	25–51
Phoenix	30–52
Turquoise Ridge	36–55
Long Canyon	37–52

The embedment capacity of rock bolts beyond the assumed failure surface only contributes to the retention force available. Retention forces are designed to exceed driving forces by at least 50% (i.e., a factor of safety of 1.5). The intersection of two mine drifts and the resultant increased span uses a similar design philosophy. For mine intersections the assumed maximum apex height is 1/3 of the excavation span. The design process follows the guidelines proposed by Pakalnis (2015).

Trafficable opening dimensions are specified in each underground site's Ground Control Standards. These standards are reviewed and approved annually and describe the minimum ground support requirements for each planned excavation type. Excavations that are designed outside of these standards require engineering of a site-specific design.

Mining methods employed at underground site include either cut-and-fill or long-hole open stoping methods, or a combination of the two. The mining method selection is based on the expected ground conditions from either a rock mass classification block model or by reviewing drill core information. All sites have or a working towards developing site specific stability charts that follow the methodology originally proposed by Mathew et al., (1981).

At certain sites, adjustments to mining methods are in process to reflect updated understanding of rock mass conditions.

13.3 Hydrogeological Considerations

The Nevada Operations have hydrological models constructed for key operational areas, used to predict the rate of dewatering and for well-location planning. The models are regularly updated.

In areas where underground operations are in proximity to open pit mines, the water levels are typically well below the pit bottom due to underground dewatering.

Dewatering of aquifers within limestone units is required for many of the mines. Pumping rates are controlled to dewater these aquifers based on pit-floor advance or level advance. In other mines, faults provide segmentation of water-bearing materials. In those instances, hydrological domains that are separated from existing dewatering systems are depressurized using a combination of pumping wells and drains. Perched water can be encountered near fault zones and dykes.

Dewatering wells are established both within and outside of the pits, and undergo regular inspections.

13.4 Operations

13.4.1 Open Pit

Ultimate pit designs were developed based on pit optimization analysis. The pit limits incorporate geotechnical and hydrological recommendations into final high walls and are designed to include ramps and access to haulage routes to waste rock storage facilities (WRSFs) and processing facilities. Some deposits include phased pit designs which are used to sequence the mining operation. Phases are designed to optimize the economics of the operation and/or provide access to selected ore for blending purposes.

Haul road effective widths for two-way travel range from 98–141 ft with a maximum grade of 10%. The design width for an operating two-way haul road was typically 150 ft, and the minimum operating width was generally 100 ft. For single-lane haul roads, a minimum road width of 80 ft could be used for the bottom benches of the pit. Bench heights vary from 20–40 ft, and can be 60 ft where triple-benching is employed.

Blast patterns are laid out according to material type using rock type designations. Ore grade and type control is performed by sampling each blast hole unless mining is within a known waste zone. Ore control boundaries are staked and flagged in the field and delivered to a GPS-based system for each loading unit.

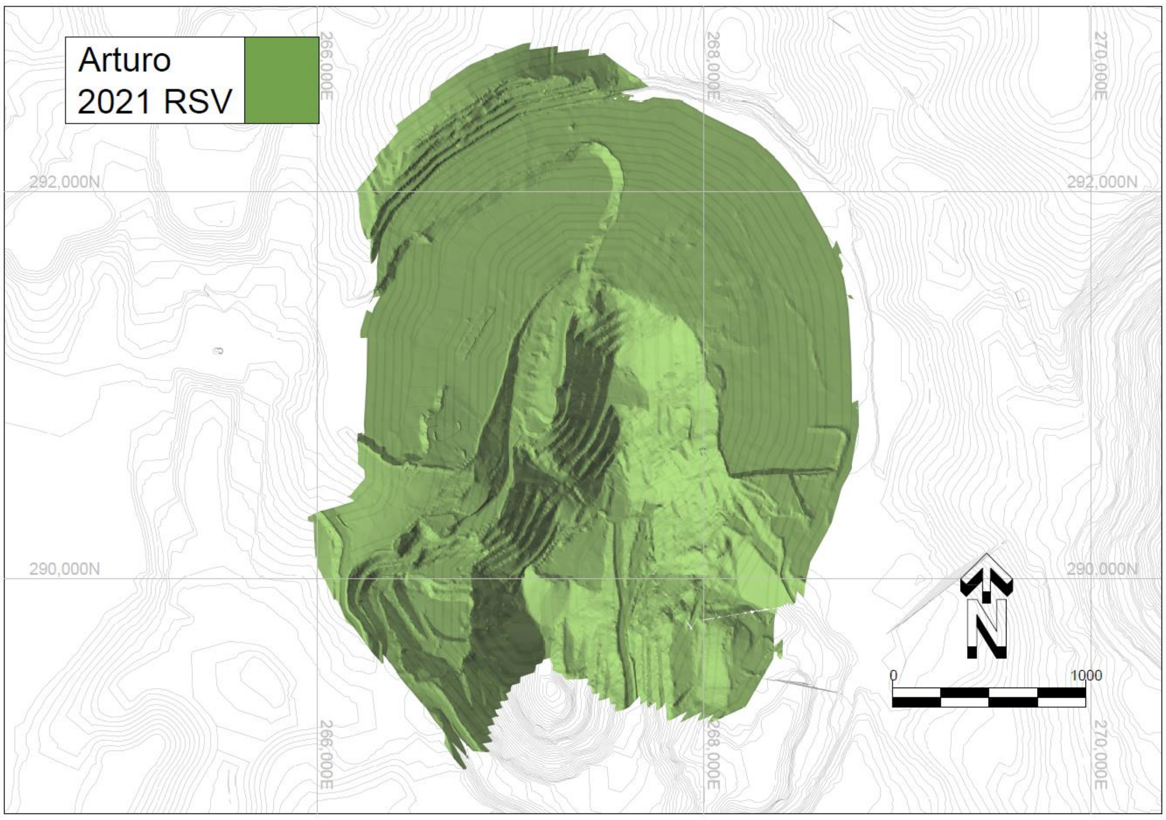
The final open pit layouts for the open pit mining operations are provided in Figure 13-1 to Figure 13-4 (Carlin Complex), Figure 13-5 to Figure 13-7 (Cortez Complex), Figure 13-8 (Long Canyon Complex), Figure 13-9 (Phoenix Complex) and Figure 13-10 to Figure 13-11 (Turquoise Ridge Complex).

13.4.2 Underground

Underground mining is mechanized, using large-scale equipment. The most common mining methods are a combination of cut-and-fill mining variants with cemented rock (CRF) or paste backfill, and long-hole stoping with, depending on ground conditions, either cemented or uncemented backfill (Table 13-2).

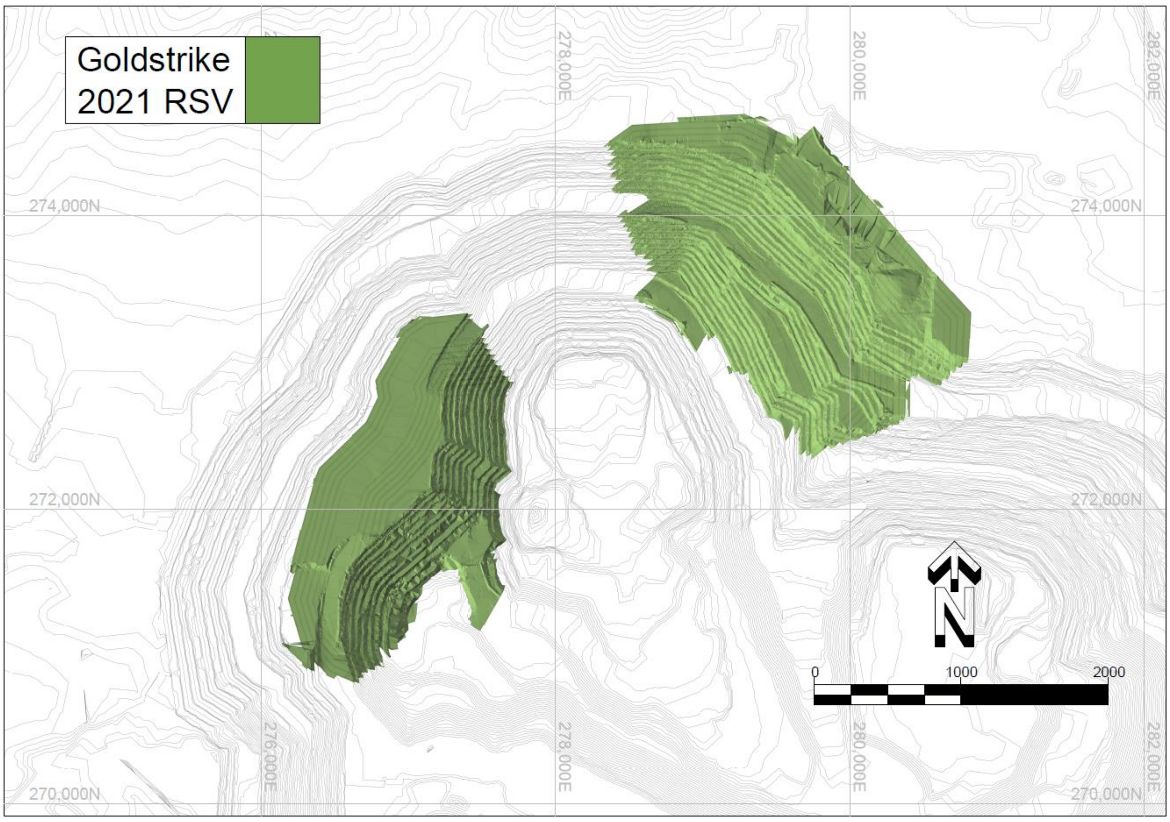
In the cut-and-fill stopes, headings are usually cycled using conventional drill/blast/muck/support on a round-by-round basis or by using mechanical cutting (road header). Top-cut headings are typically 15 x 15 ft and undercut widths vary from 18–30 ft, depending on ground conditions and ore geometry, generally with 15 ft heights. Mining may be by successive undercuts parallel to and below the top cut, or the undercuts may be driven at an angle to the top-cut. Undercuts are tight filled with CRF after mining has completed. Once filled, mining may take place in adjacent panels or below.

Figure 13-1: Final Mine Layout Plan, South Arturo, Carlin Complex



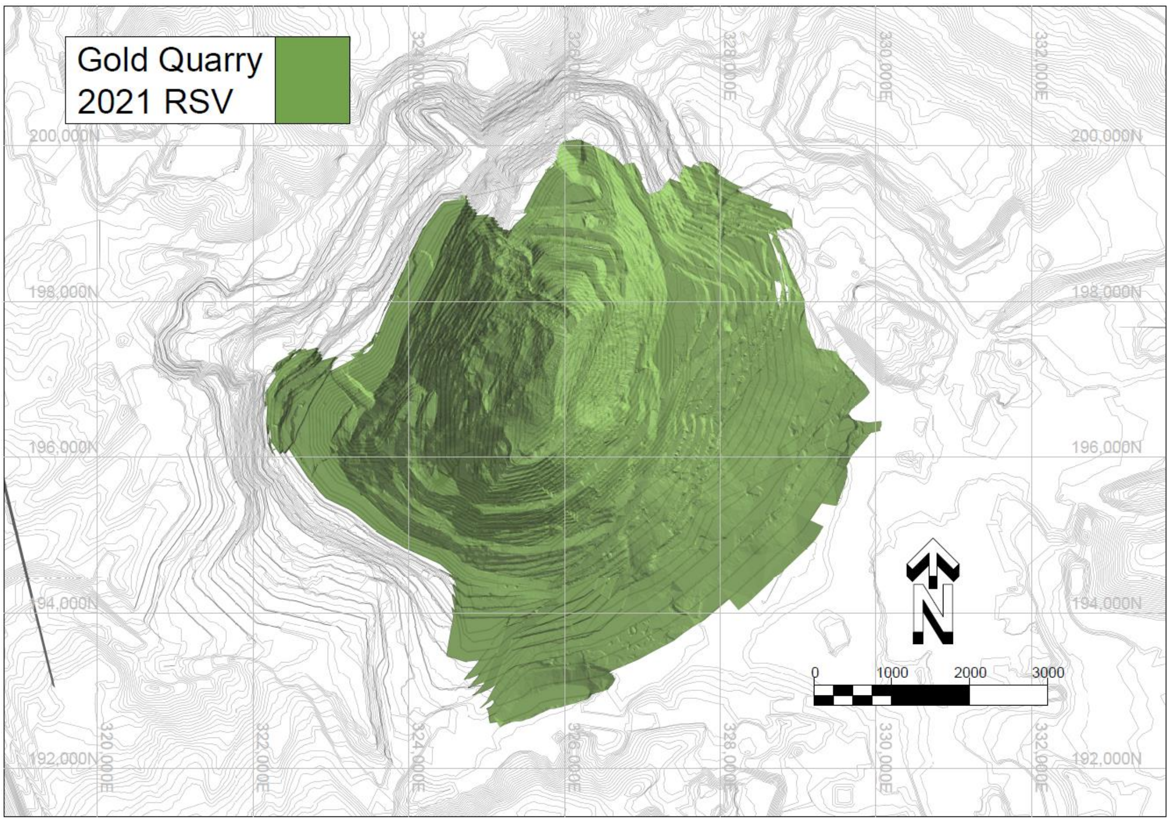
Note: Figure prepared by NGM, 2021.

Figure 13-2: Final Mine Layout Plan, Goldstrike, Carlin Complex



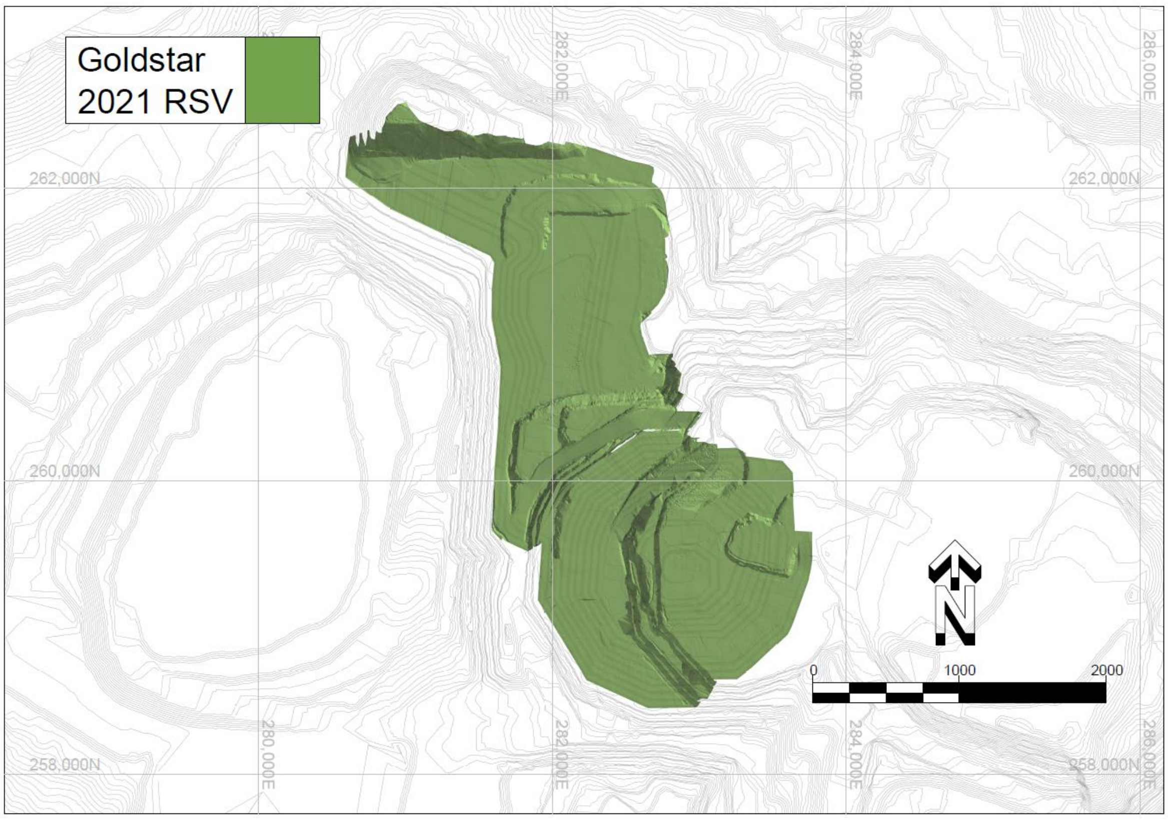
Note: Figure prepared by NGM, 2021.

Figure 13-3: Final Mine Layout Plan, Gold Quarry, Carlin Complex



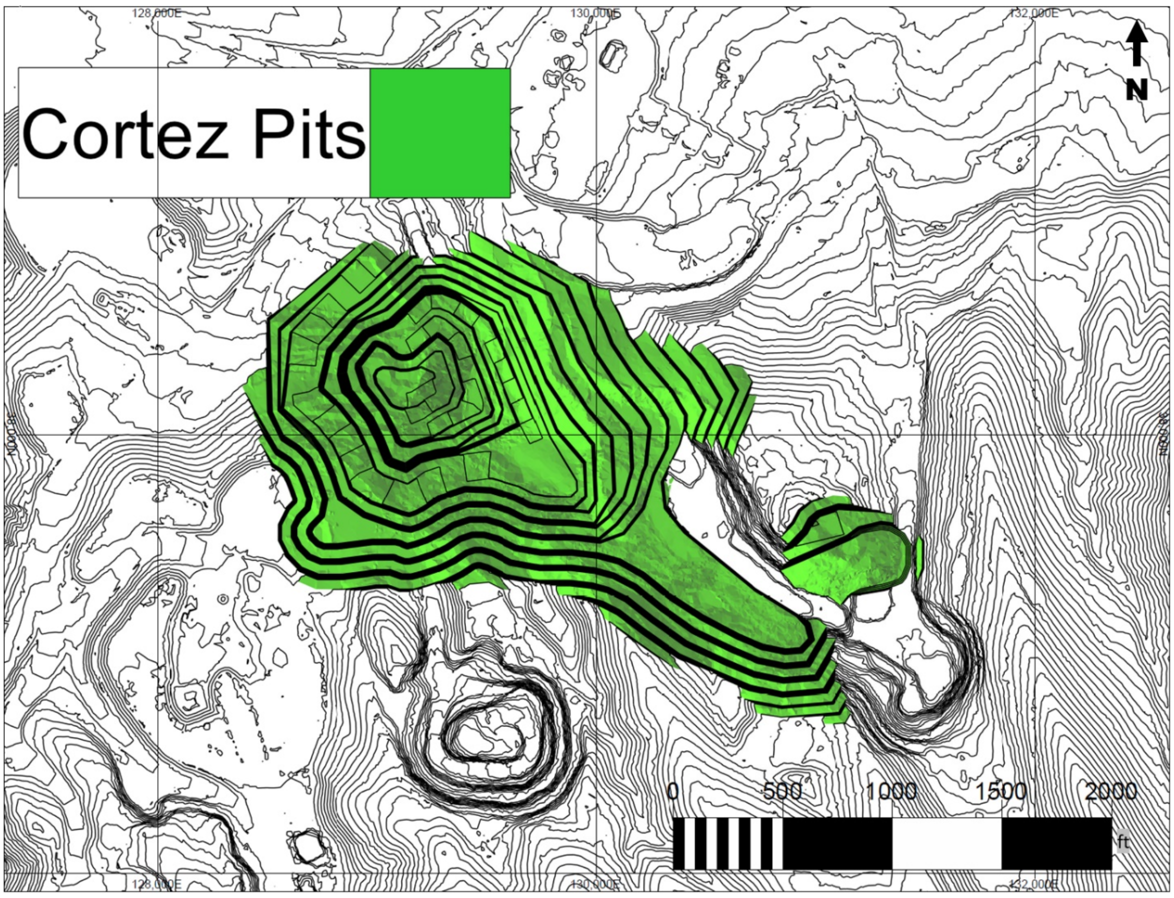
Note: Figure prepared by NGM, 2021.

Figure 13-4: Final Mine Layout Plan, Tri-Star, Carlin Complex



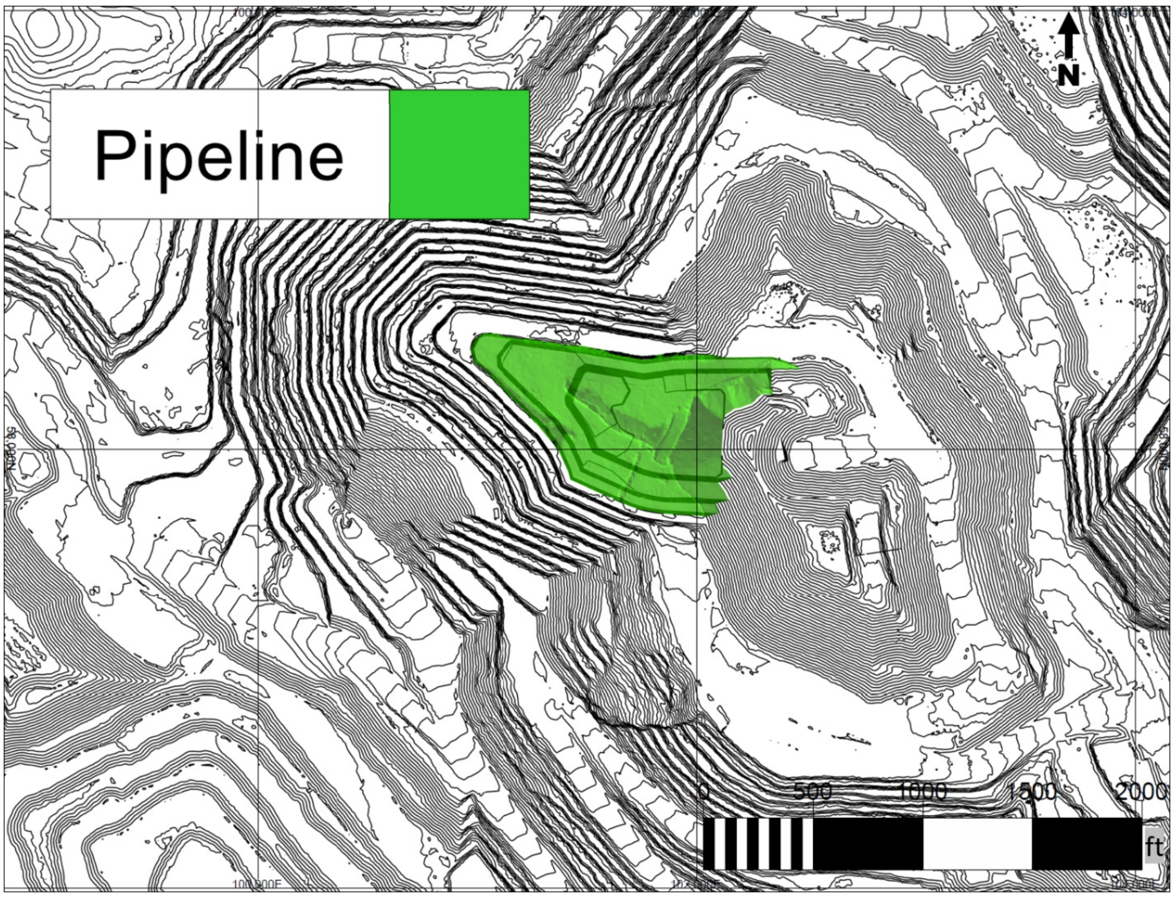
Note: Figure prepared by NGM, 2021.

Figure 13-5: Final Mine Layout Plan, Cortez Open Pit



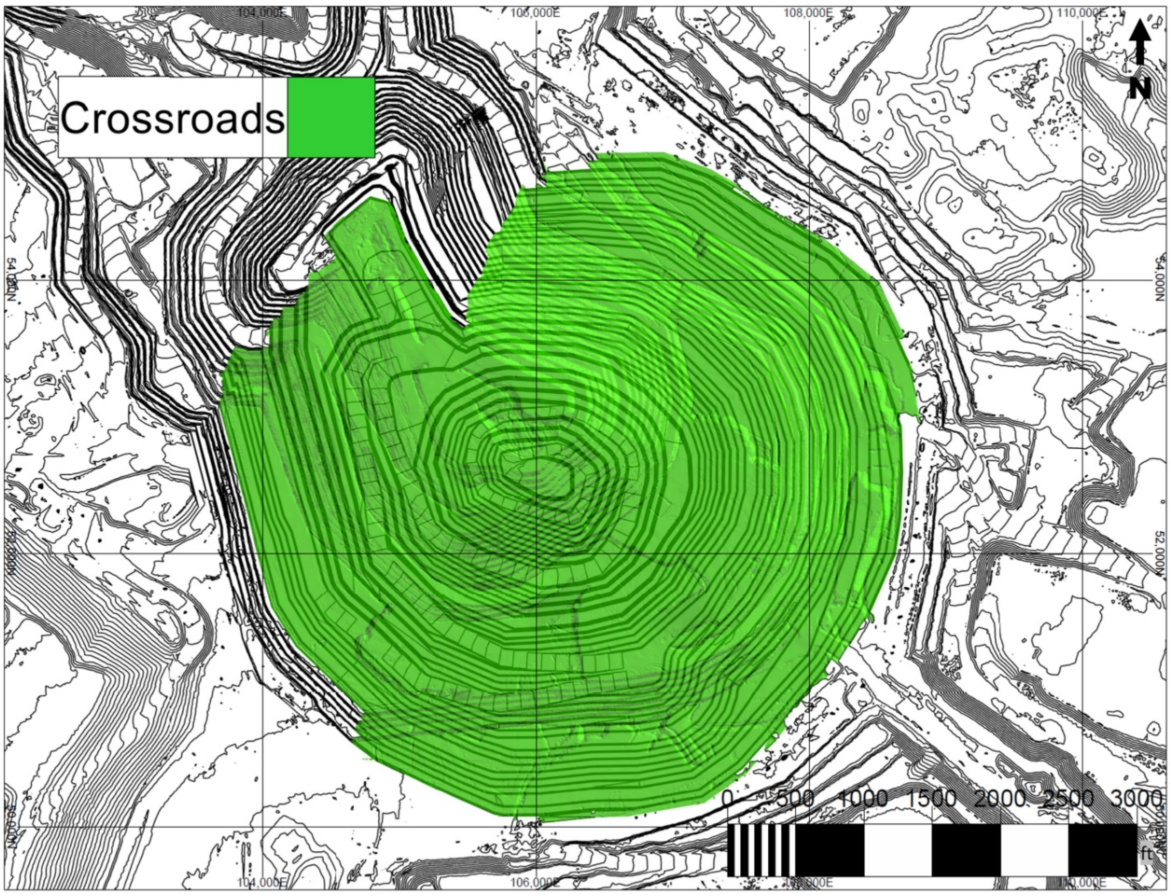
Note: Figure prepared by NGM, 2021.

Figure 13-6: Final Mine Layout Plan, Pipeline



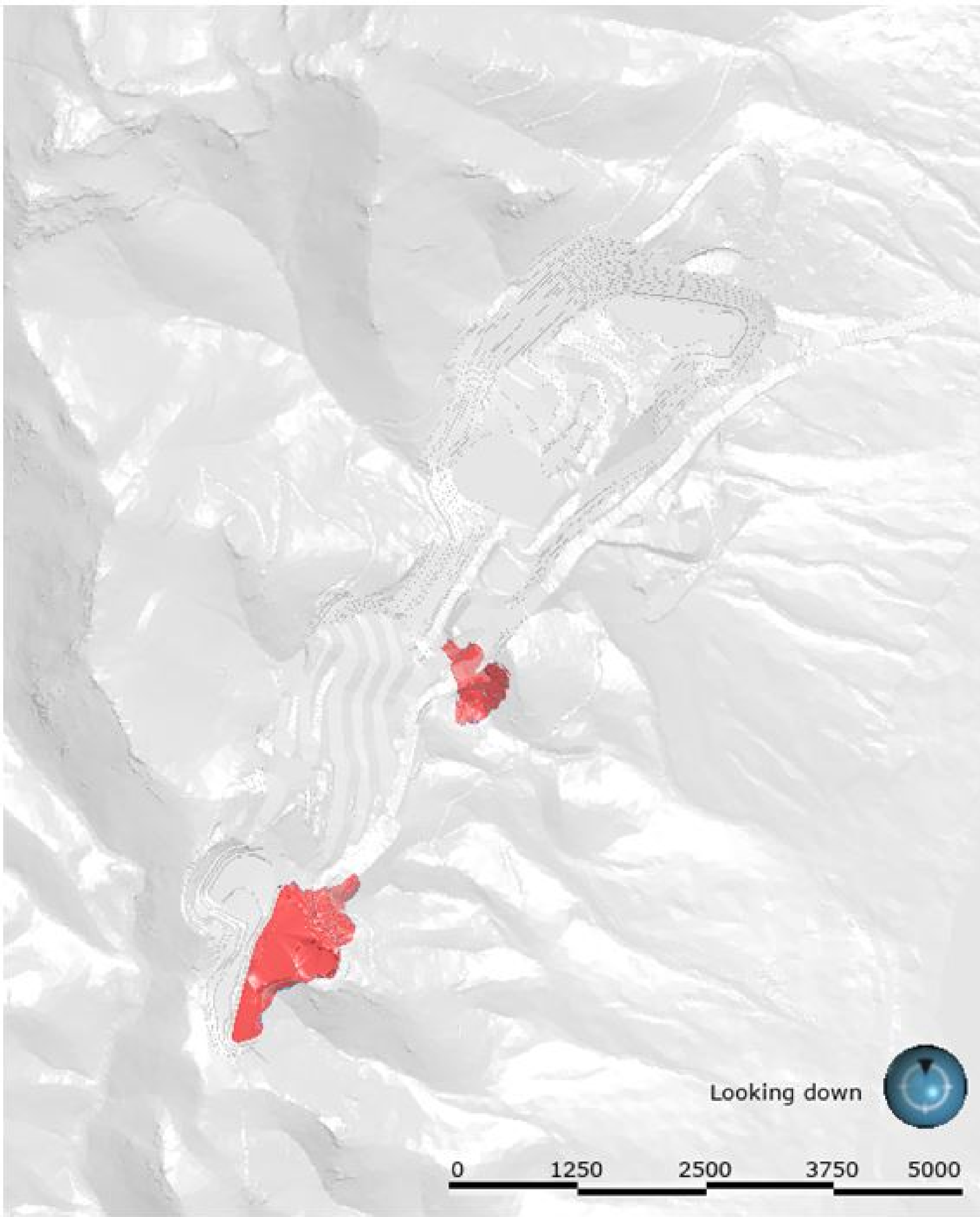
Note: Figure prepared by NGM, 2021.

Figure 13-7: Final Mine Layout Plan, Crossroads



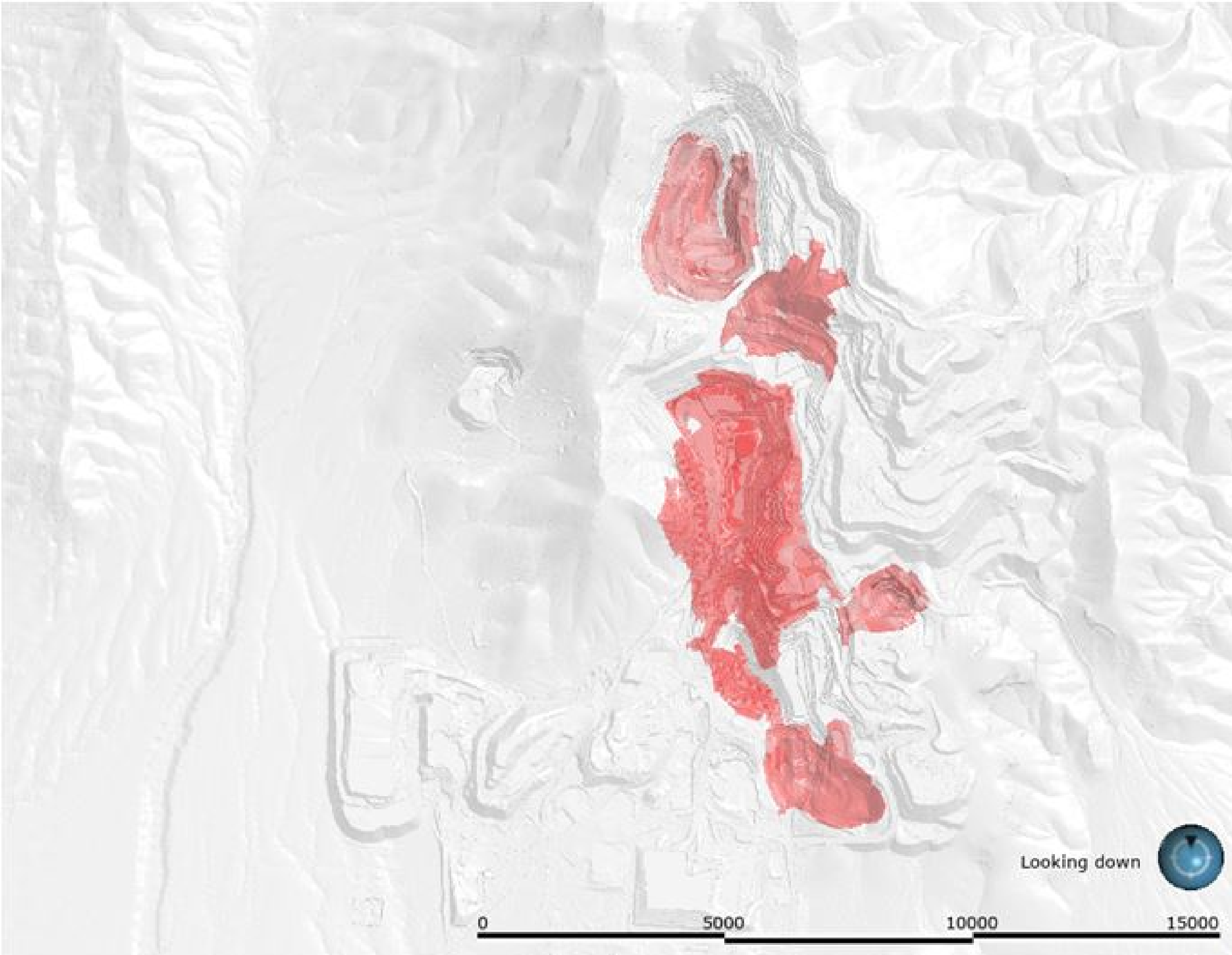
Note: Figure prepared by NGM, 2021.

Figure 13-8: Final Mine Layout Plan, Long Canyon, Long Canyon Complex



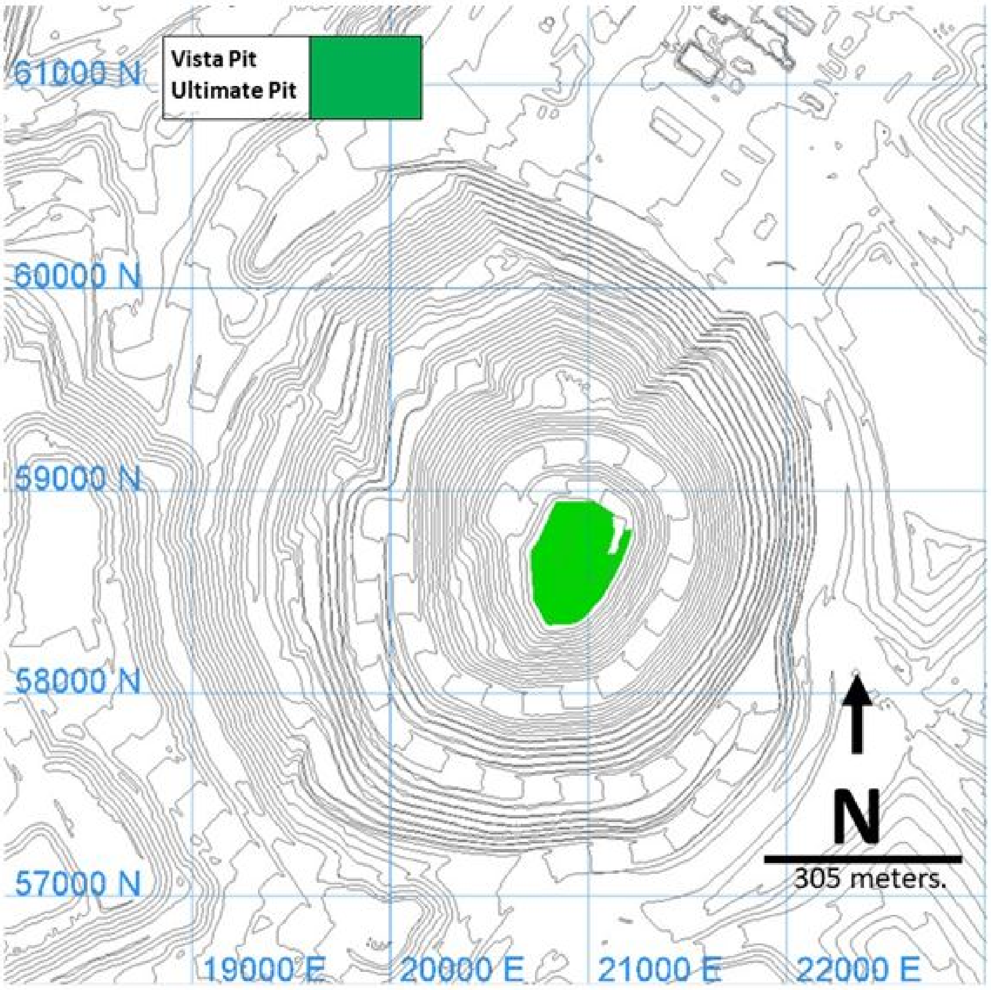
Note: Figure prepared by NGM, 2022.

Figure 13-9: Final Mine Layout Plan, Phoenix, Phoenix Complex



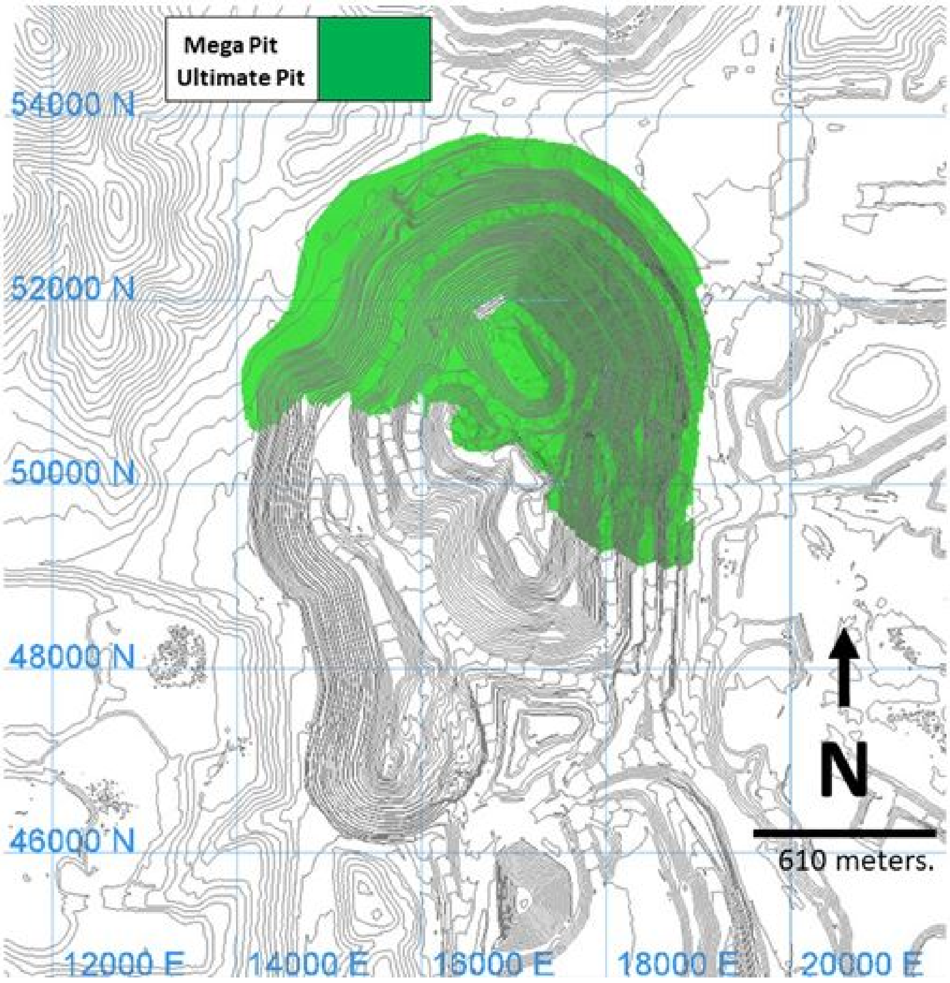
Note: Figure prepared by NGM, 2022.

Figure 13-10: Final Mine Layout Plan, Vista, Turquoise Ridge Complex



Note: Figure prepared by NGM, 2022.

Figure 13-11: Final Mine Layout Plan, Mega Pit, Turquoise Ridge Complex



Note: Figure prepared by NGM, 2022.

Table 13-2: Underground Mining Methods

Site	Cut-and-Fill		Long-hole Open Stoping	Cemented Backfill Type	
	Underhand	Overhand		Paste	CRF
Leeville	X	X	X	X	X
Goldstrike	X	X	X	X	X
Exodus			X		X
Pete Bajo		X	X		X
El Niño	X	X			X
Cortez Hills	X	X	X		X
Gold Rush			X		X
Turquoise Ridge	X	X			X

Long-hole stopes can be either transverse or longitudinal, depending on mineralization geometry and ground conditions. If the strike length of the ore is >60 ft, the development is driven to the end and the stope is mined in a retreat fashion in sections that are generally no longer than 60 ft. Each section is mined and filled before the next section is mined. If ground conditions are poor, the long-hole stope section length can be reduced. Transverse long-hole stopes are typically designed at various heights ranging from 35–100 ft, based on the existing and planned sill development levels used in the active mining areas. Stope widths are designed at varying distances, from 20–25 ft, based on the ground conditions. In secondary stopes, the width is dictated by the actual dimensions of the adjacent primary stopes. Development of the secondary sills may be reduced to about 13 ft, leaving a rock “skin” to account for poor quality backfill in the adjacent stopes. The overall stope length is based on the transverse dimension of the ore; however, individual stopes can be limited to approximately 45 ft.

Overhand drift-and-fill, back stoping, and benching may be used, based on ground conditions and the geometry of the ore zones.

Depending on the operation, material is loaded into haul trucks and hauled to surface using declines, or hoisted via shafts.

Backfill is generated by surface paste plants or underground batch plants. Backfill materials can include quarried crushed rock, crushed open pit waste rock, or roaster tailings. Cement powder and fly ash are used as binders.

Ventilation requirements are met using push–pull methods, with the airflow managed by intake and exhaust fans. Air is typically delivered via shafts or declines, ramps and raises, and circulated through a series of working levels, then exhausted via shafts, declines or raises. Mine air coolers can be installed on the mine air intakes, and spray chambers can be provided for mine air cooling and dust removal. Ventilation designs comply with applicable Mine Safety and Health Administration regulations.

Faces are generally sampled as the development advances and the sample grades are used to estimate the mine production grade and to determine the limits of the ore drives. Muck piles are typically sampled by the load-haul-dump (LHD) vehicle operator.

Mobile equipment maintenance shops and service bays are located underground. Service trucks and tractors are used to access remote areas or provide repair and maintenance services away from the maintenance shops.

Radio, telephone, and wireless network communications are used.

The final underground layouts for the underground mining operations are provided in Figure 13-12 to Figure 13-17 (Carlin Complex), Figure 13-18 (Cortez Complex), Figure 13-21 and Figure 13-22 (Turquoise Ridge Complex).

13.5 Production Schedule

Mining rates for the open pit and underground deposits are summarized in Table 13-3 and Table 13-4. The tables also provide the estimated mine life and the last year of projected operations.

13.6 Blasting and Explosives

Explosives are supplied by an explosives contractor. Emulsion or ANFO is used, depending on the blasting conditions, together with various packaged explosives and initiation systems as required. Blast patterns are laid out according to material type. Appropriate powder factors are used to match ore, waste, and overburden types.

13.7 Waste Rock Storage Facilities

The currently active waste rock storage facilities (WRSFs) and the planned WRSF expansions have adequate capacity for the LOM.

The management of waste rock is based on categorizing by waste rock types based on analytical parameters, with additional refining of waste polygons based on geologic interpretation. The Nevada Operations monitor the requirements for waste and capping materials to ensure that the facilities comply with requirements of the various permits and to ensure that acid-generating waste is capped with waste rock with a net neutralizing material.

13.8 Stockpiles

The open pit production schedules have significant variation in ore delivery over time and there is a high proportion of the ore that is stockpiled after mining and before processing. There are several stockpile options, all of which are based upon the grade of material and varying from leach ore to mill ore. Leach material is generally delivered directly to the leach pads.

Figure 13-12: Final Mine Layout Plan, El Niño, Carlin Complex

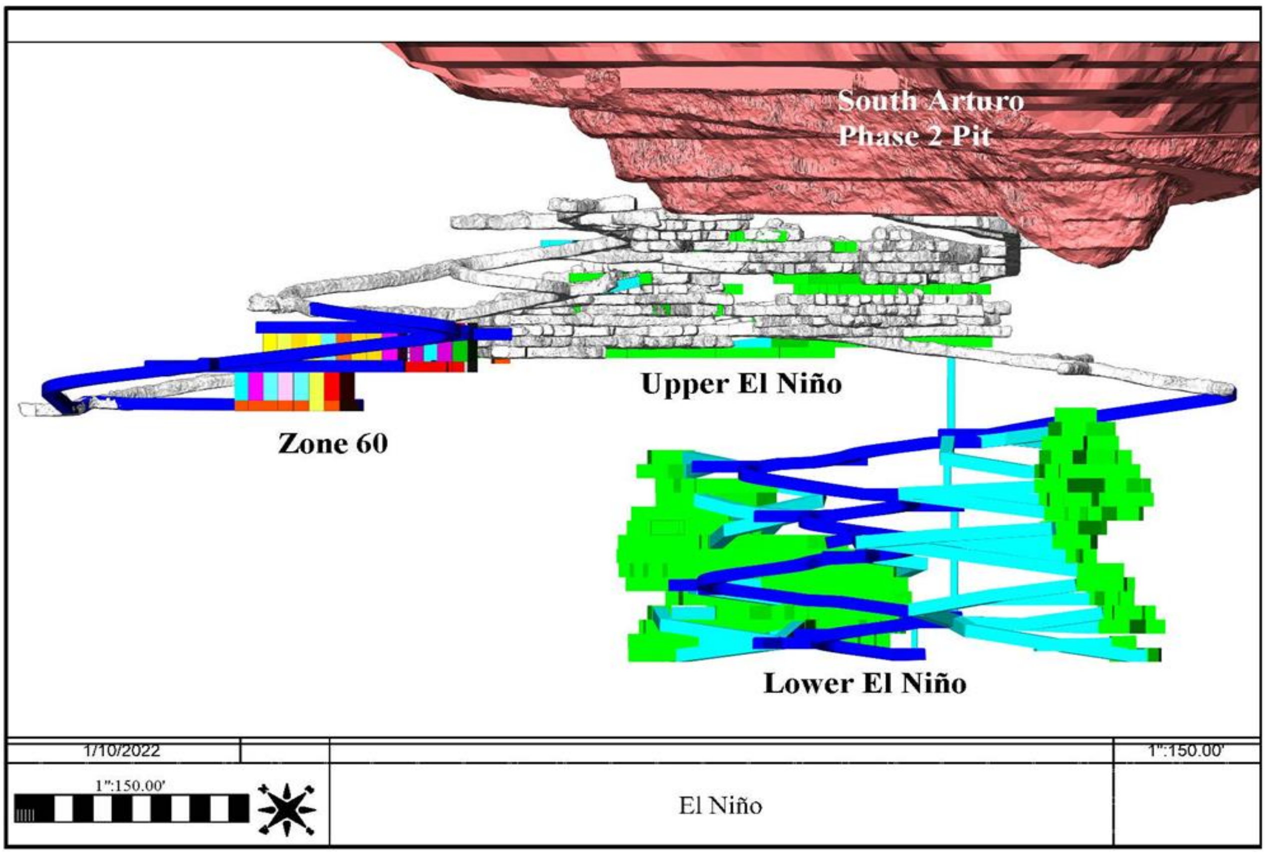
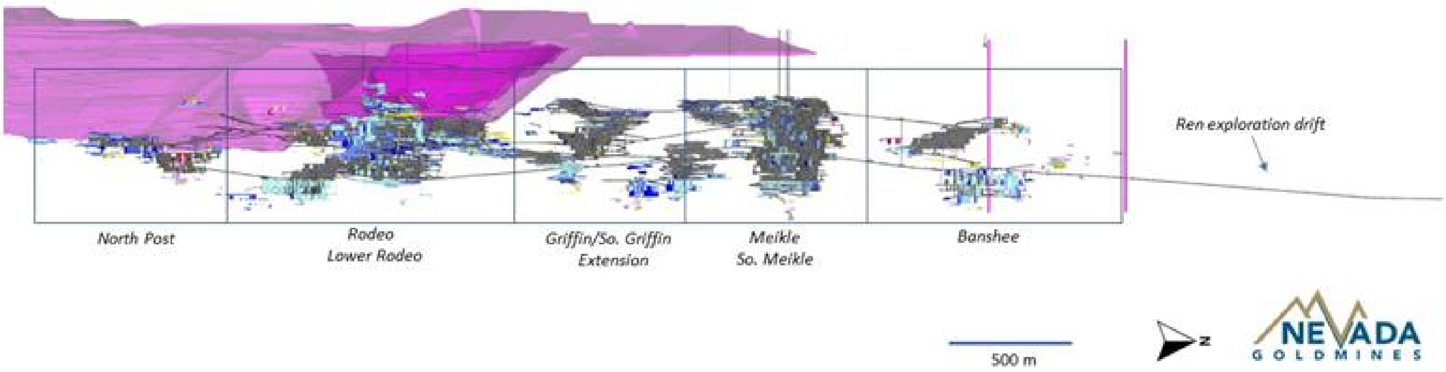
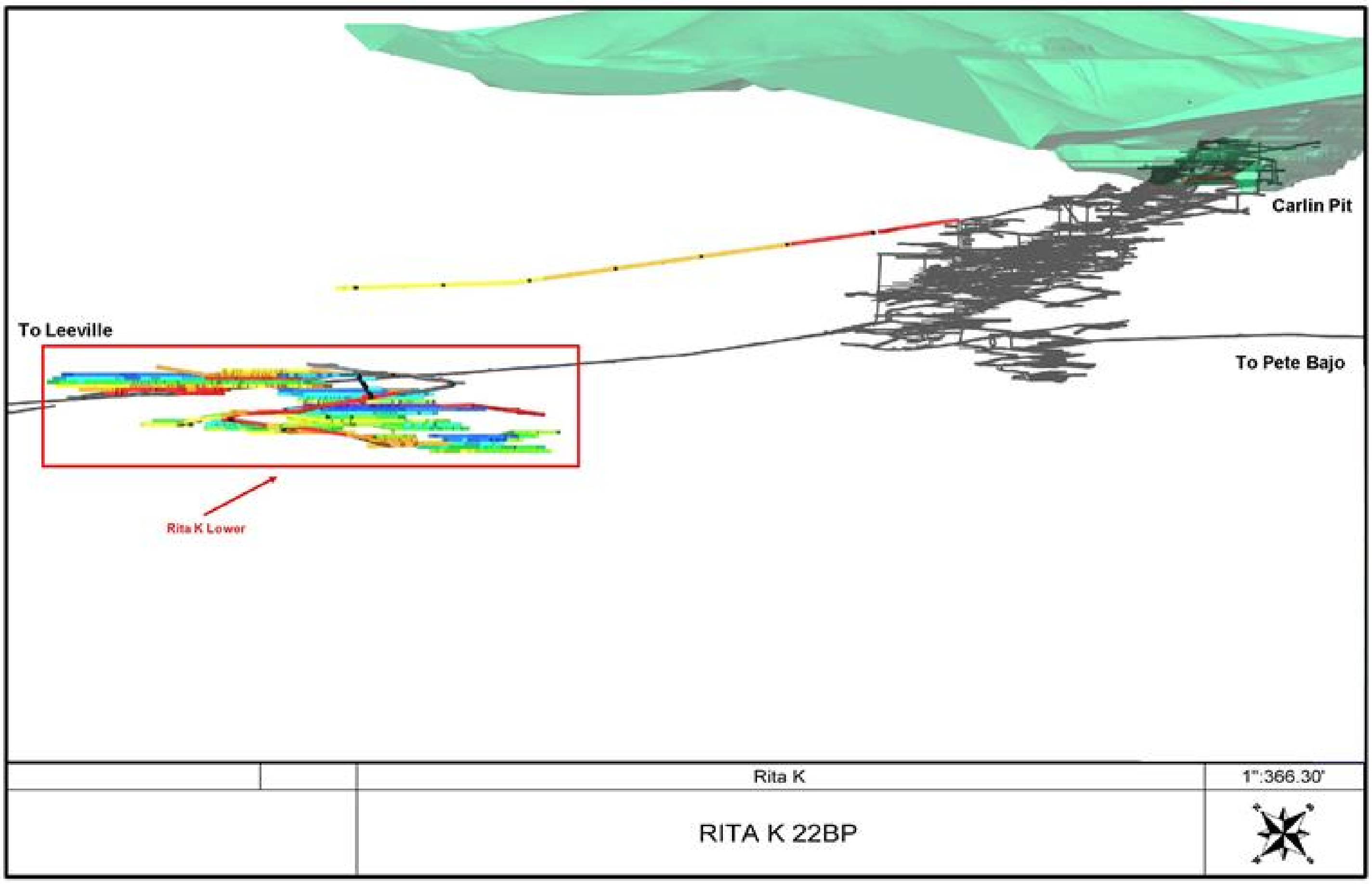


Figure 13-13: Final Mine Layout Plan, Goldstrike, Carlin Complex



Note: Figure prepared by NGM, 2021.

Figure 13-14: Final Mine Layout Plan, Rita-K, Carlin Complex



Note: Figure prepared by NGM, 2021.

Figure 13-15: Final Mine Layout Plan, West Leeville, Turf, Four Corners, Carlin Complex

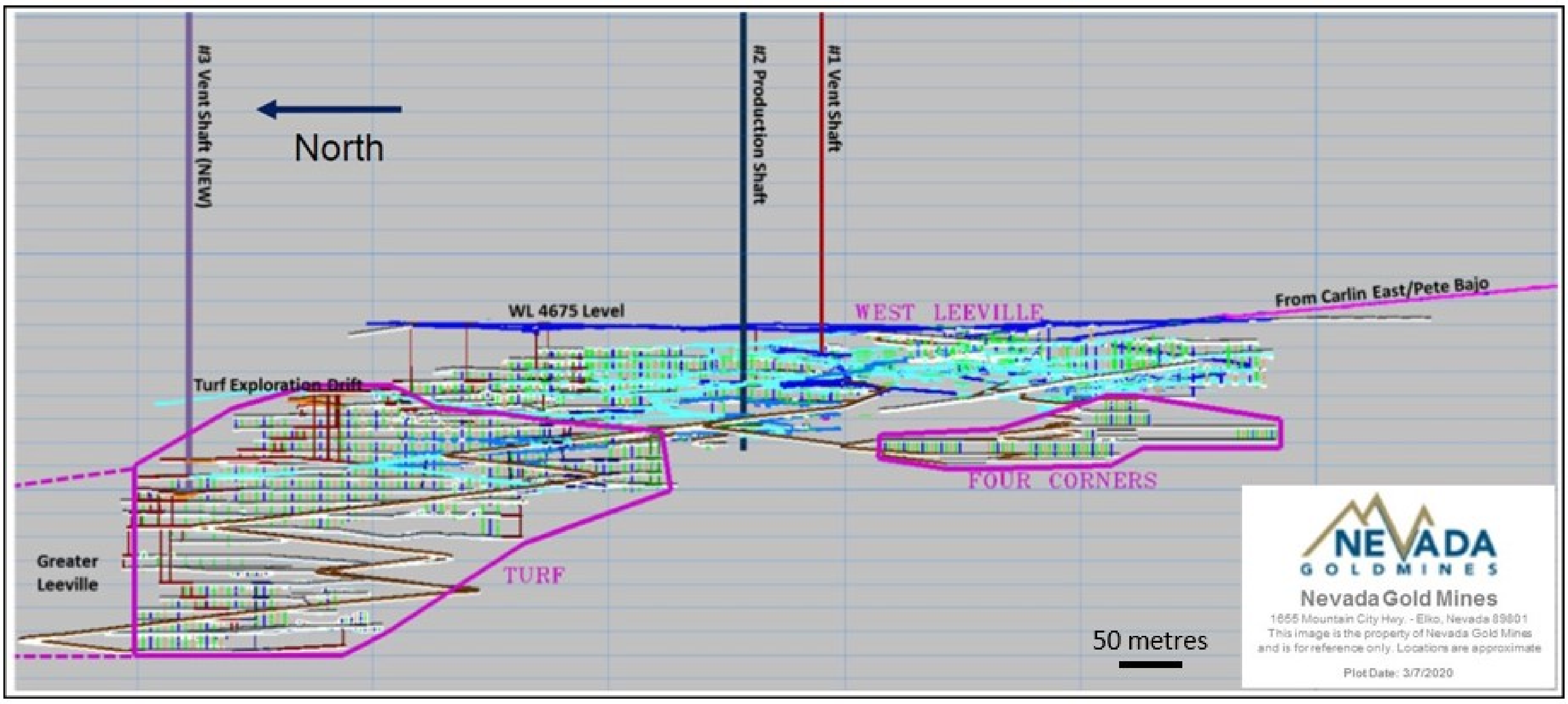
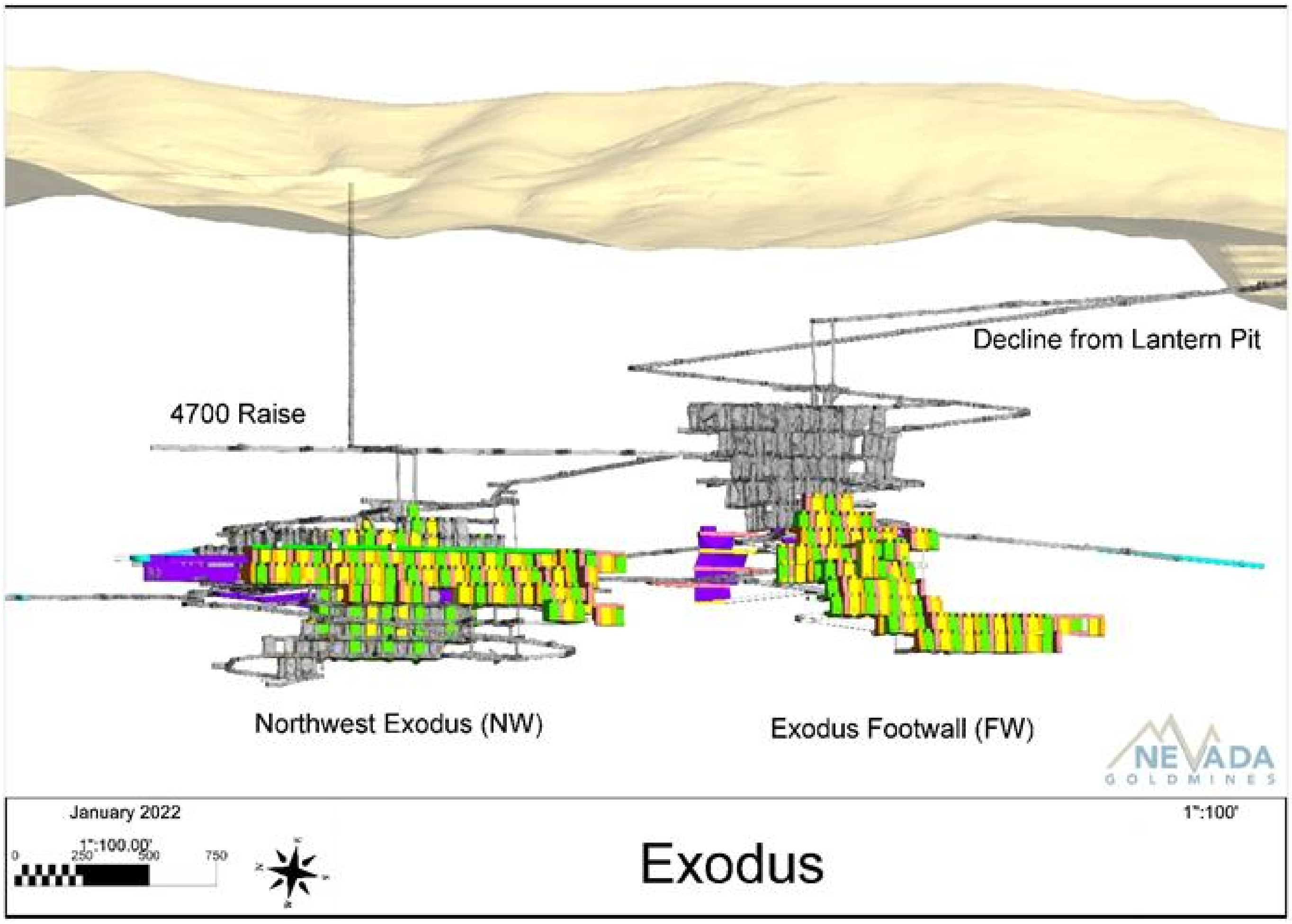
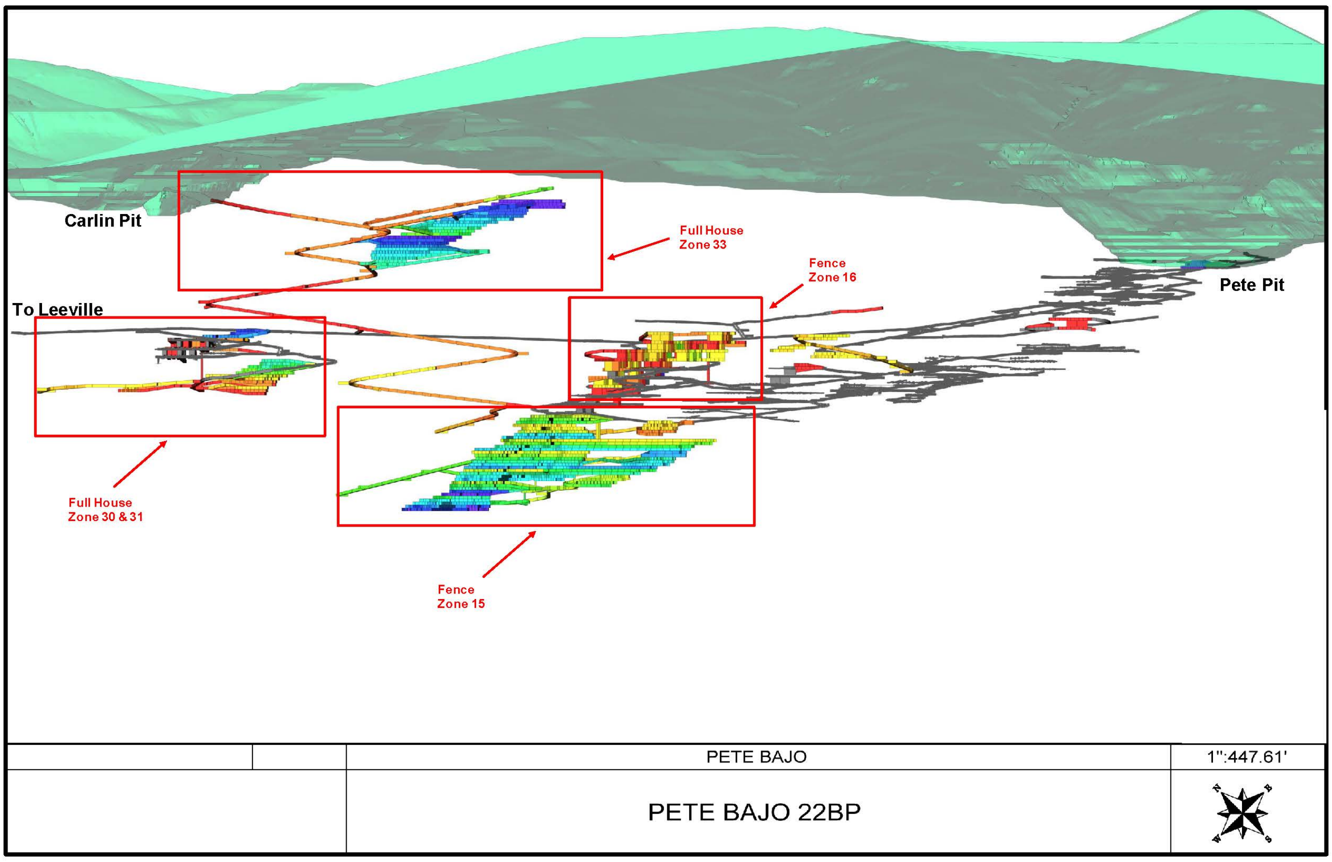


Figure 13-16: Final Mine Layout Plan, Exodus, Carlin Complex



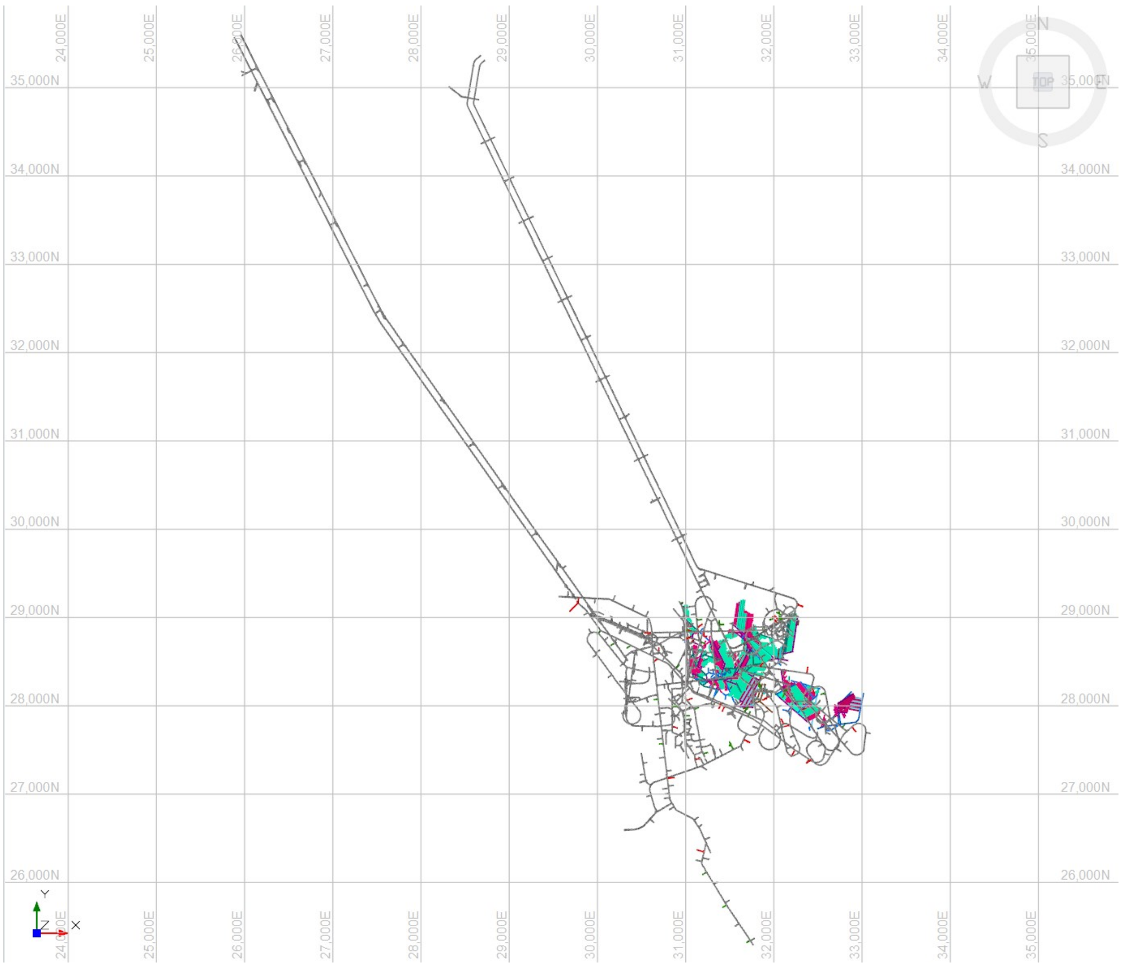
Note: Figure prepared by NGM, 2022.

Figure 13-17: Final Mine Layout Plan, Pete Bajo, Carlin Complex



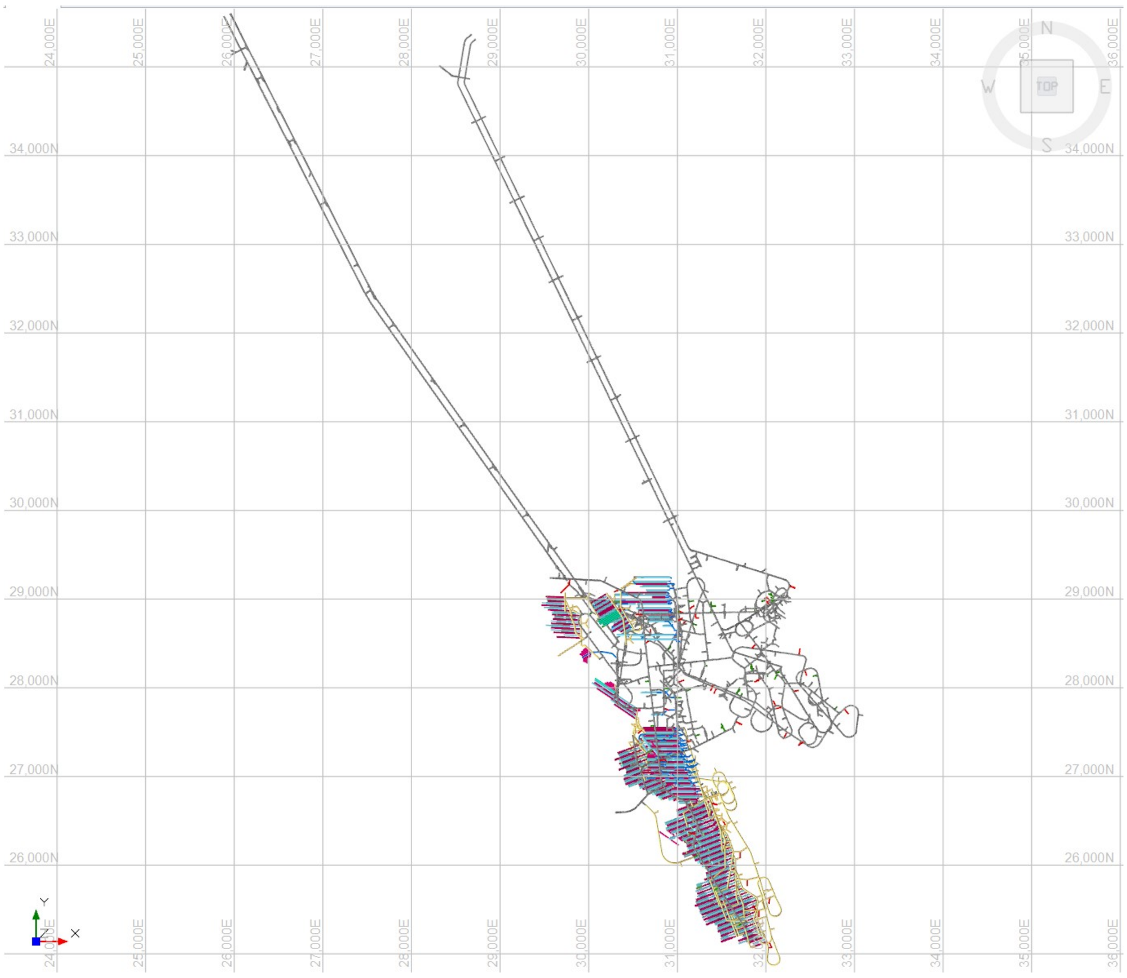
Note: Figure prepared by NGM, 2021.

Figure 13-18: Final Mine Layout Plan, Middle Zone, Cortez Hills, Cortez Complex



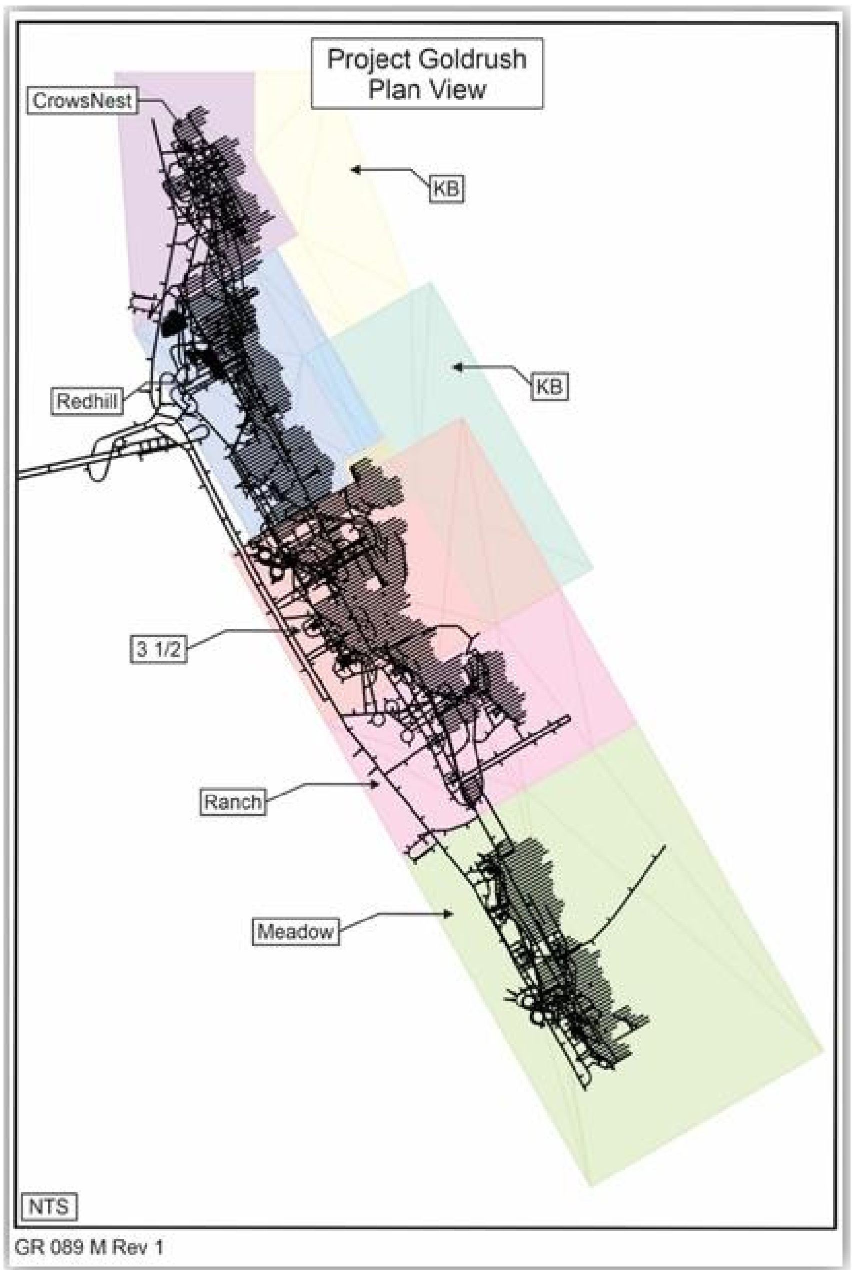
Note: Figure prepared by NGM, 2021.

Figure 13-19: Final Mine Layout Plan, Lower Zone, Cortez Hills, Cortez Complex



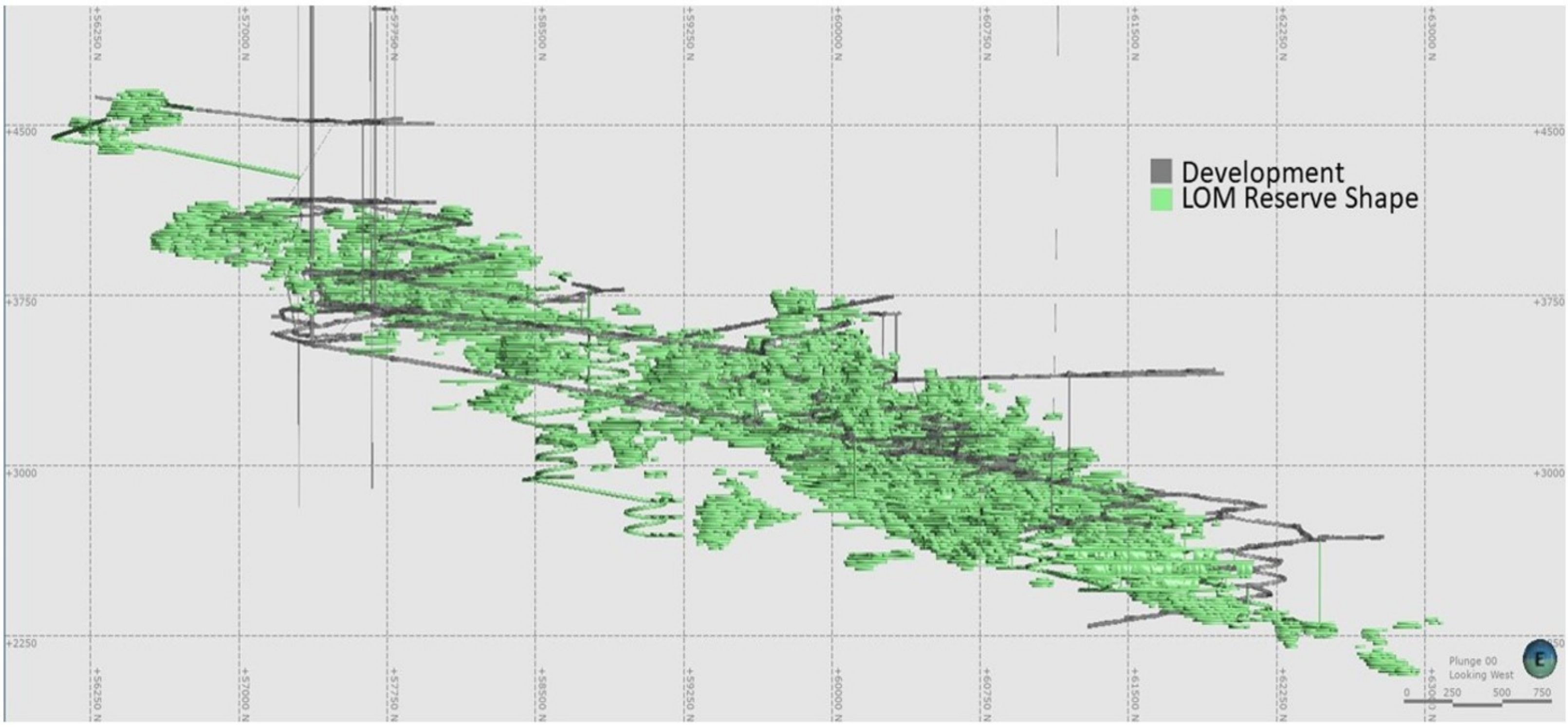
Note: Figure prepared by NGM, 2021.

Figure 13-20: Final Mine Layout Plan, Goldrush, Cortez Complex



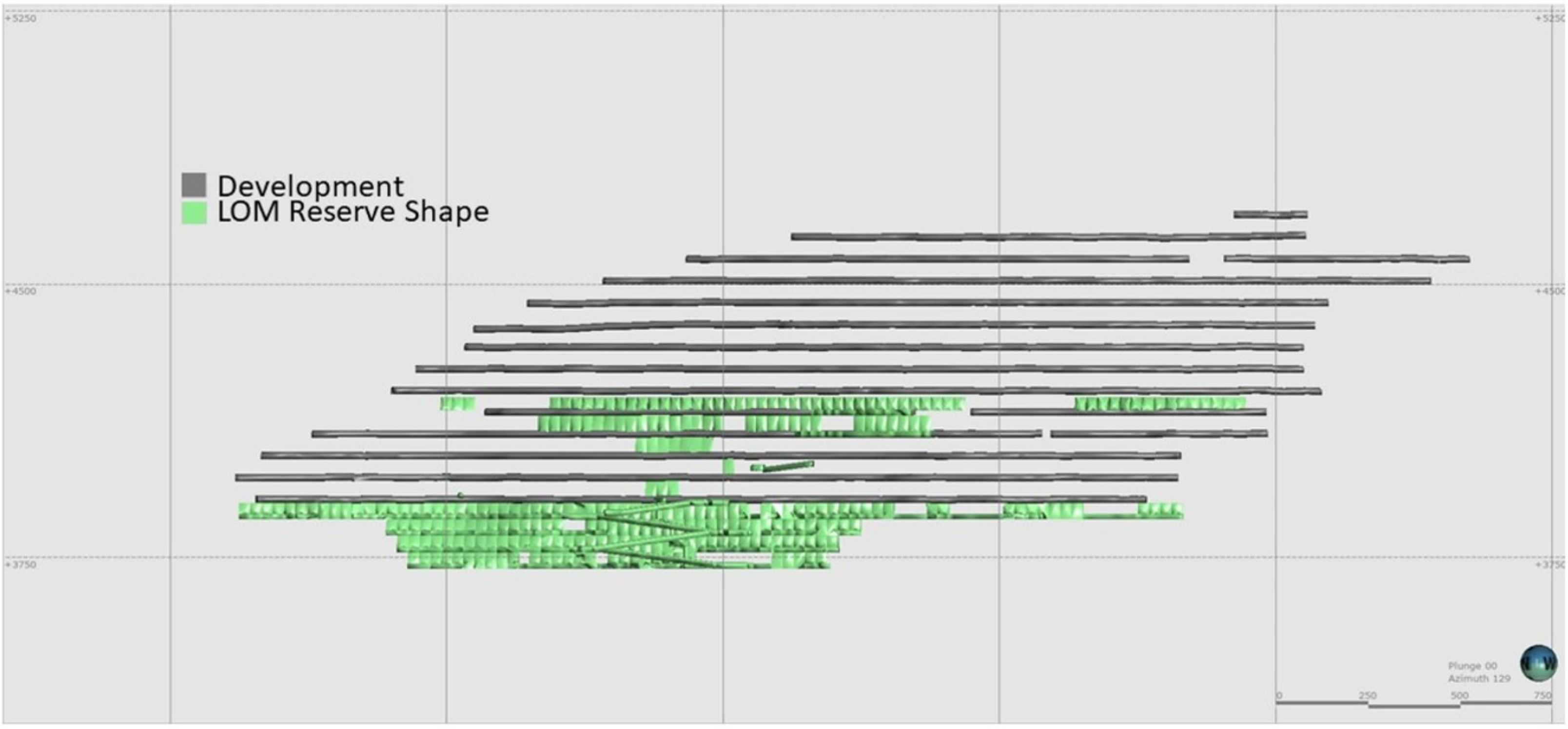
Note: Figure prepared by NGM, 2021.

Figure 13-21: Final Mine Layout Plan, Turquoise Ridge Underground, Turquoise Ridge Complex



Note: Figure prepared by NGM, 2021.

Figure 13-22: Final Mine Layout Plan, Vista Underground, Turquoise Ridge Complex, Cross-section View



Note: Figure prepared by NGM, 2021.

Table 13-3: Production Plan (2022–2036)

Item	Unit	LOM	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Total ore mined	M tonnes	577.2	31.6	35.9	72.0	58.8	78.7	68.0	49.4	34.1	32.5	30.0	25.5	14.9	4.0	3.9	3.9
Operating waste mined	M tonnes	1,201.7	192.7	208.5	145.2	174.2	171.1	60.1	35.7	68.7	60.2	42.2	13.8	11.0	1.6	1.6	1.5

Note: numbers have been rounded.

Table 13-4: Production Plan (2037–2045)

Item	Unit	2037	2038	2039	2040	2041	2042	2043	2044	2045
Total ore mined	M tonnes	3.9	3.9	3.7	3.7	3.5	3.6	1.9	1.3	0.2
Operating waste mined	M tonnes	1.6	1.6	1.5	1.5	1.4	1.5	0.8	0.5	0.1

Note: numbers have been rounded.

13.9 Equipment

The number of loading and hauling units allocated to each deposit varies depending on the operational needs from the open pit mine plans. The equipment list also includes the auxiliary equipment needed to support mining and the re-handling of the ore from the stockpile pad into the mill feeders.

Underground equipment requirements include large scale LHDs and haulage trucks, jumbos, and auxiliary equipment.

Equipment requirements for the open pit operations for the LOM are summarized in Table 13-5. Table 13-6 summarizes the equipment requirements for the underground operations.

13.10 Personnel

The Nevada Operations currently employ 2,362 persons in the open pit (Table 13-7) and 2,750 persons in the underground mining operations (Table 13-8).

Table 13-5: Open Pit Equipment Requirements

Complex	Equipment Type	Peak Requirement
Carlin	Shovel	6
	Truck	60
Cortez	Shovel	8
	Truck	74
Phoenix	Shovel	3
	Truck	16
Turquoise Ridge	Shovel	2
	Truck	11
Long Canyon	Shovel	2
	Truck	11

Table 13-6: Underground Equipment Requirements

Complex	Equipment Type	Peak Requirement
Carlin	Loader	34
	Truck	44
	Jumbo	20
	Bolter	25
	Long-hole drill	11
Cortez	Loader	13
	Truck	26
	Jumbo	11
	Bolter	8
	Long-hole drill	6
Turquoise Ridge	Loader	16
	Truck	20
	Jumbo	6
	Bolter	12
	Long-hole drill	2

Table 13-7: Open Pit Personnel Count

Complex	Peak Personnel
Carlin	905
Cortez	763
Phoenix	288
Turquoise Ridge	243
Long Canyon	163
Total	***2,362***

Table 13-8: Underground Personnel Count

Complex	Peak Personnel
Carlin	1,549
Turquoise Ridge	481
Cortez	720
Total	***2,750***

14.0 RECOVERY METHODS

14.1 Process Method Selection

The designs of the process facilities design were based on a combination of metallurgical testwork, previous study designs, and previous operating experience. The designs are generally conventional to the gold industry.

Metallurgical facilities comprise nine heap leach facilities, two oxide plants, two flotation plants, two autoclave facilities and two roaster facilities (Table 14-1).

14.2 Process Flowsheets

An example schematic showing a typical leach operation is provided in Figure 14-1. The leach operation shown is at the Cortez Complex. Figure 14-2 to Figure 14-8 show simplified flowsheets for each of the mills within the Nevada Operations. Figure 14-9 shows the flowsheet for the Goldstrike autoclave. The flowsheet for the Sage autoclave was included in Figure 14-8. The Goldstrike roaster flowsheet is provided in Figure 14-10.

14.3 Process Facilities

14.3.1 Heap Leach

14.3.1.1 Gold Leach Pads

The basic steps in heap leaching are:

- Run-of-mine or crushed ore are placed onto a prepared surface;
- Gold dissolution is promoted by applying a weak sodium cyanide solution as the lixiviant to the surface of the heap;
- Solution is collected in the leach pad drain system and then pumped to activated carbon columns (CIC) where gold loads onto activated carbon;
- Gold-laden carbon is reclaimed from the CIC circuit and transported to a centralized carbon stripping system where the gold is stripped from the carbon and recovered by electro-winning. Stripped carbon is recycled and reused.

Gold recovery from heap leaching is a function of solution application and management, particle size distribution, time, and mineralogy. Cyanide leach kinetics in the heap leach pads is most strongly affected by ore characteristics.

Table 14-1: Process Facilities

Process Type	Location	Note
Autoclaves	Goldstrike autoclave (Carlin)	
	Sage autoclave (Turquoise Ridge))	
Roasters	Gold Quarry roaster (Carlin)	Formerly referred to as Mill 6.
	Goldstrike roaster (Carlin)	
Oxide mills	Juniper (Turquoise Ridge)	
	Cortez oxide mill	
Flotation facilities	Phoenix	Flotation for copper concentrate followed by carbon-in-leach for gold–silver recovery.
	Gold Quarry concentrator (Carlin)	Formerly referred to as Mill 5.
Heap leach facilities	Long Canyon	
	Cortez Area 30	
	Cortez Area 34	
	Phoenix (copper leach)	
	Twin Creeks L8 (Turquoise Ridge)	
	Twin Creeks L31 (Turquoise Ridge)	
	Carlin South Area Leach (property)	
	Carlin South Area Leach (non-property)	
	Carlin North Area Leach	
	Emigrant (Carlin)	

Figure 14-1: Heap Leach Process Schematic

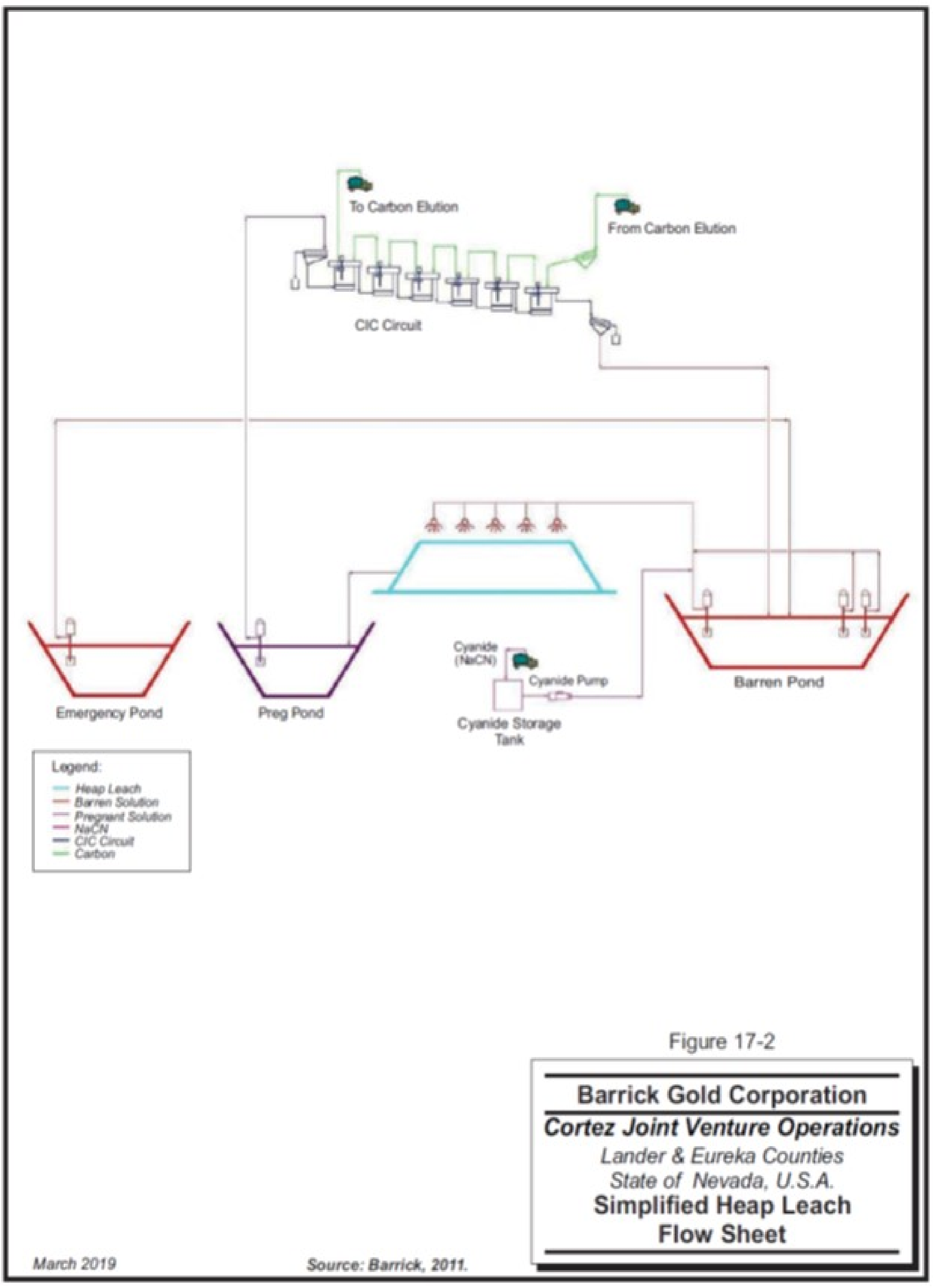


Figure 14-2: Flowsheet, Gold Quarry Concentrator

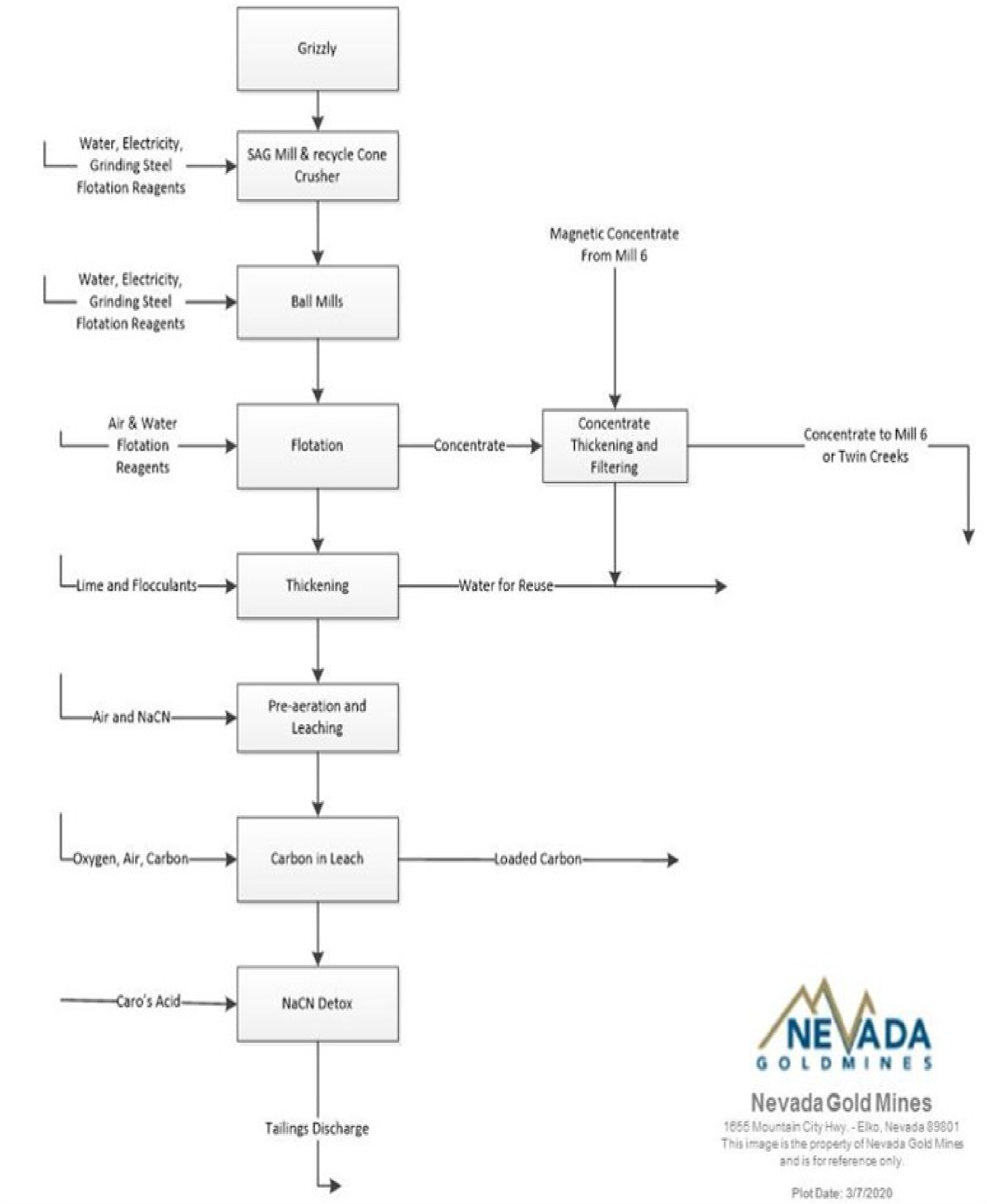


Figure 14-3: Flowsheet, Gold Quarry Roaster

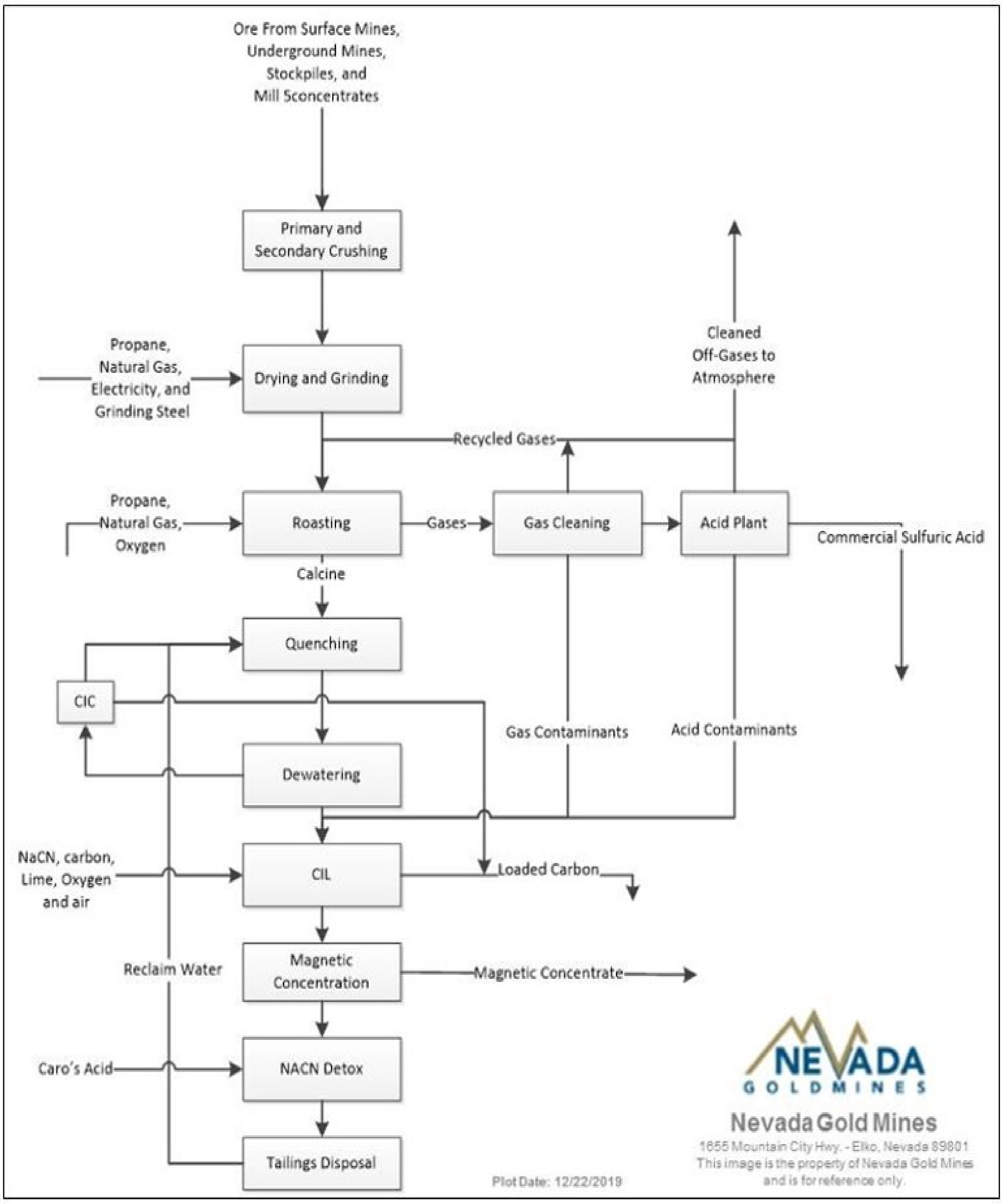


Figure 14-4: Flowsheet, Pipeline Mill

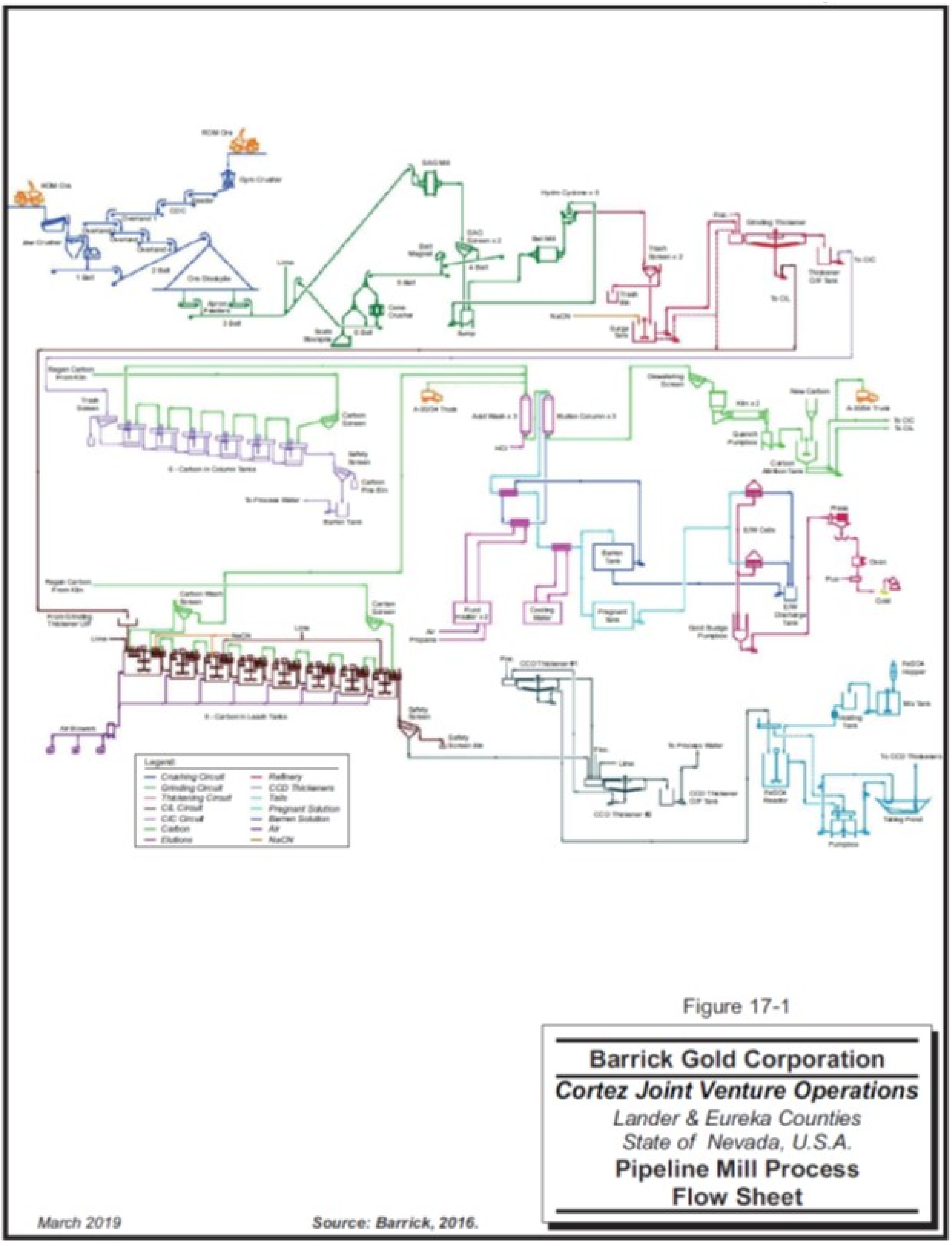


Figure 14-5: Flowsheet, Phoenix Run-of-Mine Leach

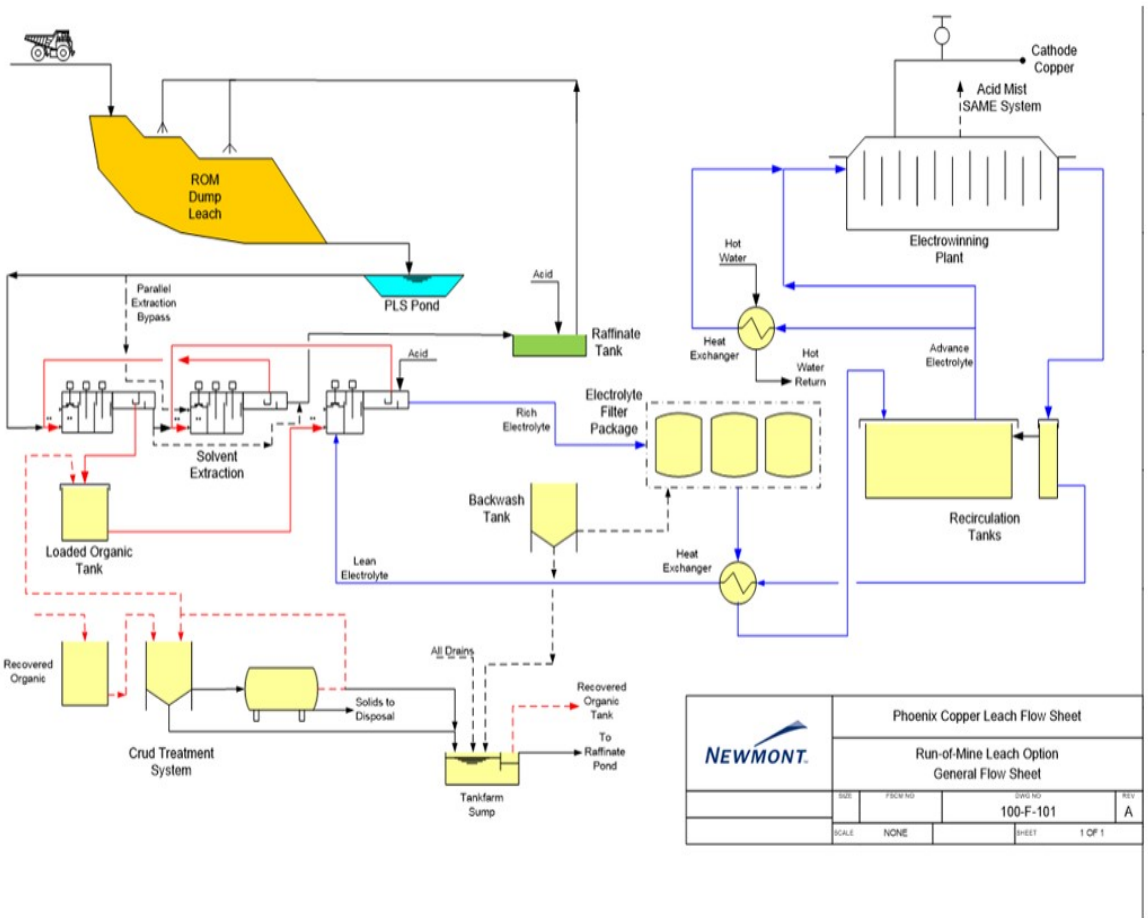


Figure 14-6: Flowsheet, Phoenix SX/EW

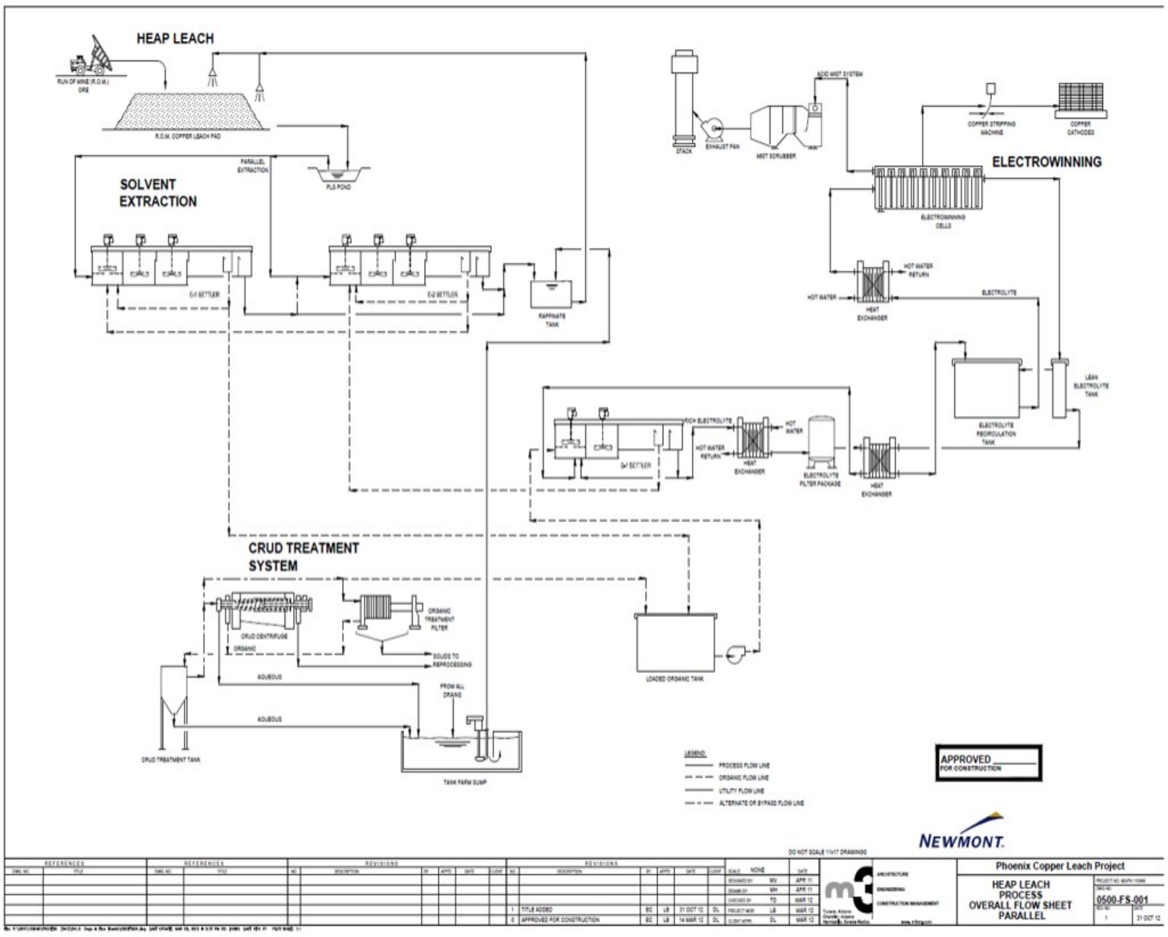


Figure 14-7: Flowsheet, Phoenix Mill

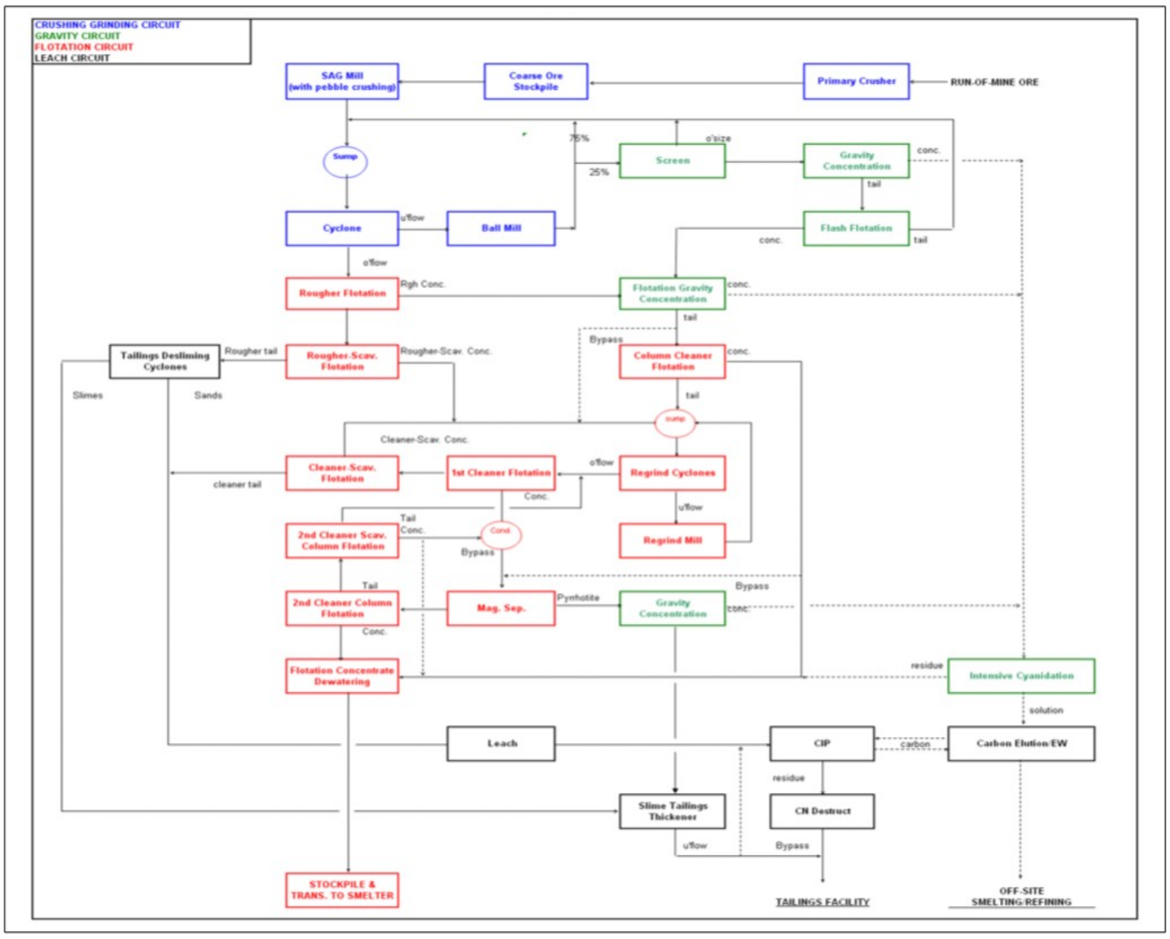


Figure 14-8: Flowsheet, Juniper Mill

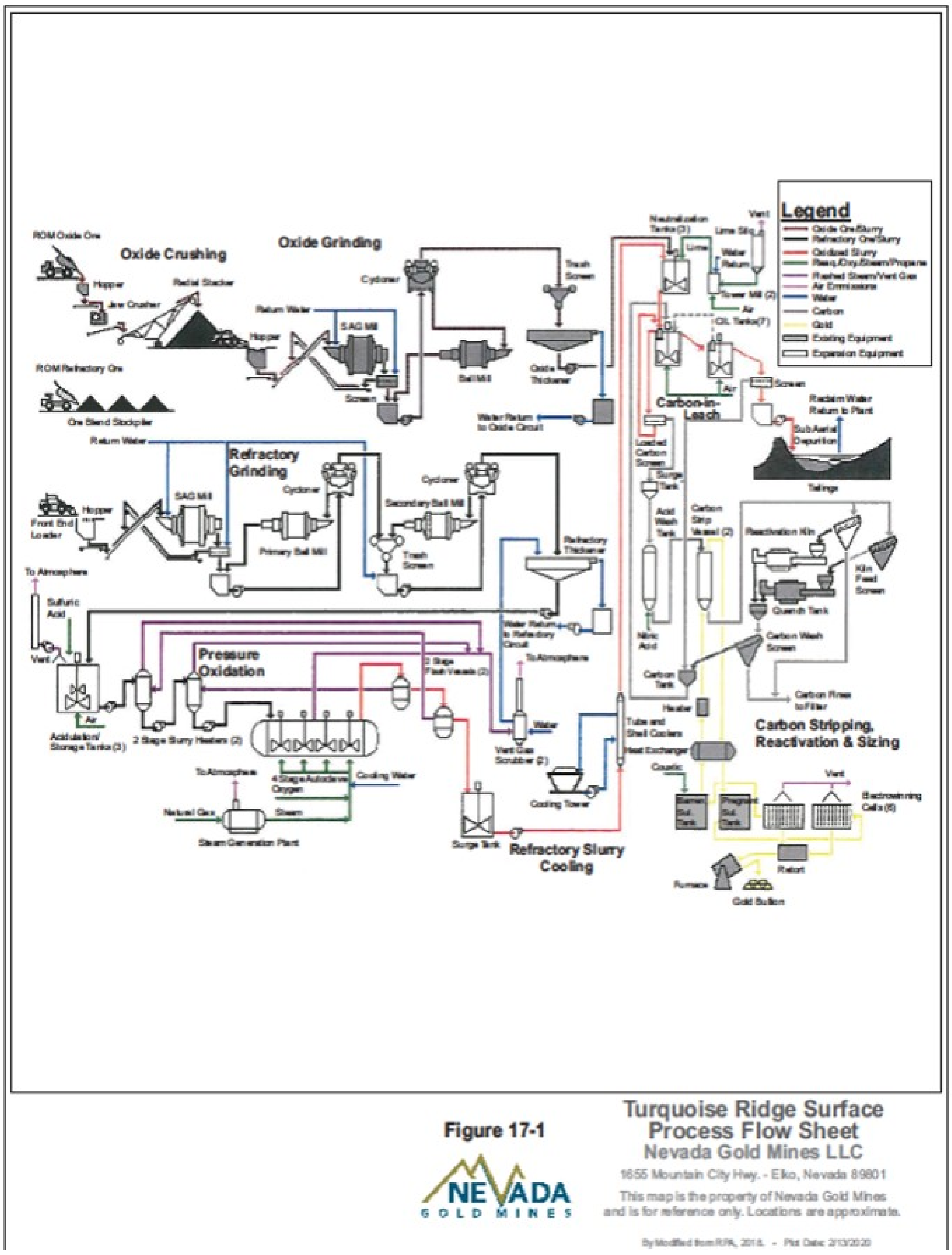


Figure 14-9: Flowsheet, Goldstrike Autoclave

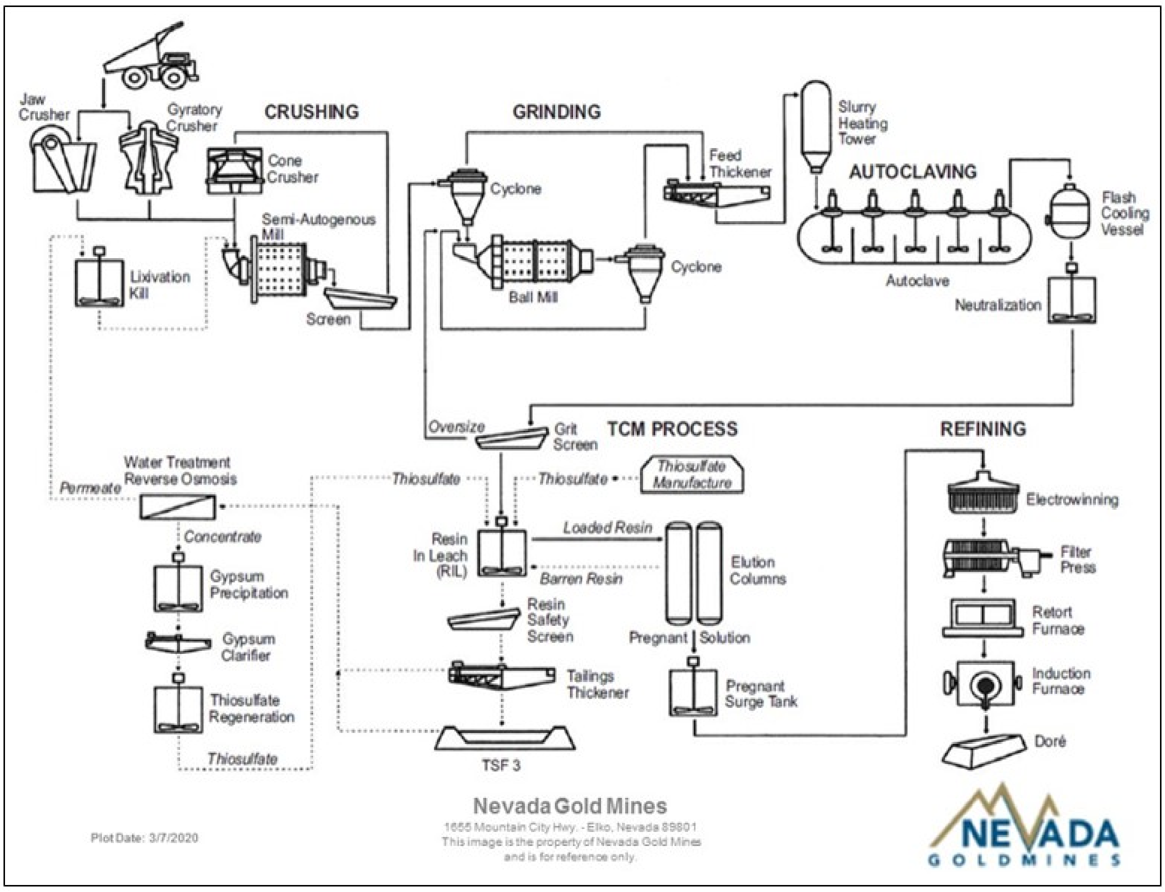
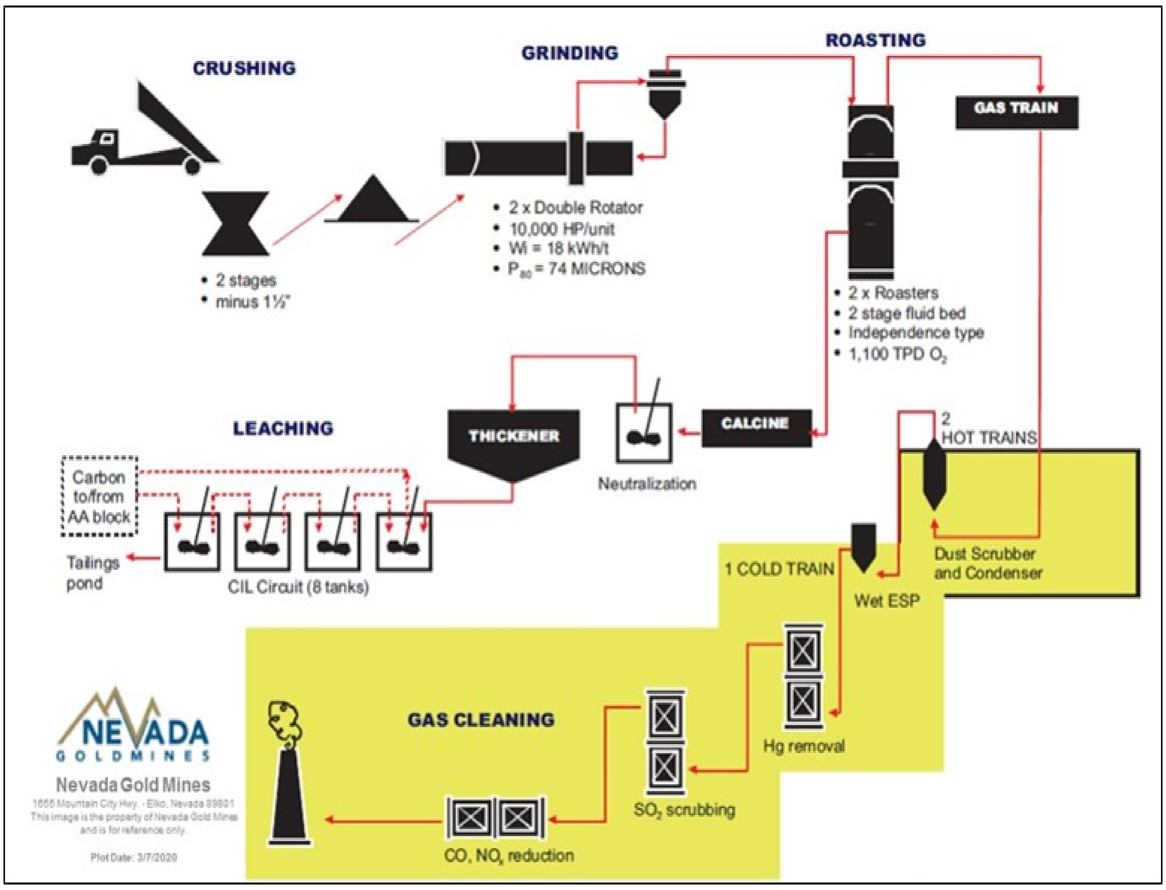


Figure 14-10: Flowsheet, Goldstrike Roaster



For oxide leach, run-of-mine material is tracked by pit or royalty source. Tonnage and contained ounces are based upon truck counts, tonnage factors, and the blast hole kriged grade of the material delivered. The tons are adjusted to match the belt-scale weightometers within the crushing circuit for all ore that is crushed. The relative proportions of the sources and royalties of both tons and ounces are conserved, as is the kriged grade. Leach pad inventory is tracked monthly.

14.3.1.2 Copper Leach Pads

Smith Williams Consultants, Inc. (later AMEC and then NewFields) designed the leach pad and ponds for the project. The Phoenix copper leach project constructed a conventional run-of-mine leach pad designed to facilitate the stacking of copper oxide and transition ores as well as the subsequent leaching, solution collection, and pumping. The leach pad design incorporates three phases of construction. Phases I–III have capacities of 49 Mt, 47 Mts, and 40 Mt respectively. The pad construction is in average lift heights of 6.1 m to a maximum height of 91.4 m at a slope of 2.5 horizontal to 1 vertical. The total leach pad area encompasses nearly 162 ha and is a closed-loop system.

The leach pad incorporates a dual liner system, utilizing a low-permeability compacted soil (prepared subgrade) with a coefficient of permeability less than or equal to 1 x 10-6 centimeters per second (cm/s) at 92% of the maximum dry density. A double textured 80-mil high density polyethylene (HDPE) geomembrane overlays the subgrade layer. A protective layer of sand and gravel or silt at a maximum size of 25.4 mm covers the liner, followed by the coarse aggregate drainage layer and solution collection piping. Ten independent solution collection systems allow for operational monitoring of each cell independently of the others. The design also incorporated a process component monitoring system to monitor the leach pad for leaks in the primary liner. The process component monitoring system design helps operations to identify the cell and leach pad phase if a leak occurs.

In addition to the pad, the leach circuit also consists of three ponds: the rich leach solution (PLS)/sediment pond, the Phase I events pond, and the Phase II events pond. A tank within a pond for secondary containment purposes collects the raffinate for distribution to the leach pad. The pond design includes double lining with smooth 80-mil secondary HDPE geomembrane overlain by 80-mil textured primary liner. Each pond has a sloped bottom and a leak collection and recovery system. The Phase II events pond construction will occur with construction of the Phase II leach pad expansion and has sufficient volume to accommodate the Phase III expansion as well. Operating pond design provides the ability to contain the operating volume as well as having approximately 1m of freeboard for un-planned events. The event pond designs accommodate leach pad drain down from an eight-hour power outage or pump loss as well as precipitation from a 100-year/24-hour storm event. The PLS/sediment and Phase I/II event ponds have a total volume of nearly 305 ML.

The raffinate tank is located approximately two miles northeast of the leach pad near the SX/EW facility, and has an operating volume of approximately 1.1 ML. The tank location is approximately 96 m higher in elevation than the toe of leach pad. To capitalize on the elevation difference, the raffinate feed to the leach pad occurs via a level control valve to allow gravity flow to the pad. Recognizing that as the leach pad gets higher it will reach a point where gravity flow is no longer feasible, the raffinate tank design incorporated nozzles and isolation valves to accommodate the future booster pump addition with minimal interruption to operations. The raffinate tank connects to an organic recovery tank so that operations can periodically flood the organic off the surface of the raffinate tank for recovery in the crud and organic treatment system. The raffinate line between the tank and the leach pad is HDPE and runs parallel to the PLS and fresh water lines in a lined secondary containment channel between the leach pad and plant.

The raffinate distributes to the leach pad via drip emitters at a design flow rate of 2,271 m^3/hr. The Phoenix ores vary in acid consumption by ore type. Based on testwork, the anticipated average life-of-mine (LOM) acid consumption is approximately 13 kg/t, though early indications from operations suggest long-term consumptions may be less than projected. The pH targets in the raffinate are between 1.5 and 3. Unlike many copper heap leach operations, Phoenix saw no benefit to an acid cure. Higher acid additions only provided opportunities for higher acid consumption.

The design solution application rate is 0.1 L/min/m^2). The leach pad operates on a 90-day active leach cycle. Operations allow the area to dry before removing piping and cross-ripping the leach pad to a depth of 3m, readying the area for new ore placement. The rip depth exceeds the 2.4m maximum required to extend beyond the truck-induced compaction zone, which was confirmed with multiple tests conducted on site. The compaction difference between

1.5 m and 2.4 m was negligible, but to ensure adequate long-term percolation at full height, site operations elected to rip the full 3 m depth.

Drain down from the leach pad reports to the PLS/sediment pond. In order to reduce the introduction of fine particulates into the SX plant, the inflow to the PLS pond initially reports to a segregated sediment storage compartment. This allows the fine solids to settle out before the PLS overflows an internal berm into the operating portion of the pond. Four 600 hp vertical turbine pumps transfer the PLS from the pond to the SX plant at an average grade of 0.6 g/L for the LOM. At design flow, there are three operating pumps with one installed spare.

14.3.2 Process Plants

14.3.2.1 Gold Quarry Concentrator (Carlin Complex)

The Gold Quarry concentrator (formerly referred to as Mill 5) relies on oxide pit, oxide stockpile, low-carbonate sulfide material, and high-carbonate sulfide material. The Gold Quarry concentrator uses a combination of flotation and cyanide leaching to recover gold. The basic steps are as follows:

- Crushing and grinding where ore is ground to the appropriate particle size, usually about 65% -200 mesh;
- Conditioning with a mixture of chemicals to provide for air bubble attachment to pyrite, arsenian pyrite, and arsenopyrite particles while minimizing bubble attachment to gangue minerals such as silica or calcite;
- Froth flotation where the pyrite, arsenian pyrite, and arsenopyrite are floated into a concentrate by sparging air into the conditioned slurry;
- Concentrate is thickened and filtered so that it can be further processed through a separate oxidizing facility such as the Gold Quarry roaster or the Sage autoclave;
- Residual gangue or flotation tailings contain sufficient residual gold to warrant CIL processing;
- CIL processing involves leaching of the slurry with cyanide to dissolve the gold and then adsorb the gold onto activated carbon;
- Gold-laden coconut carbon is transported to the carbon stripping facility where the gold is stripped from the carbon and recovered by electro-winning. Stripped carbon is recycled and reused.

Gold recovery from the flotation process is dependent upon the application of the appropriate amount of grinding to liberate the pyrite and enable the sulfide mineral(s) to be selectively floated away from the bulk of the ore. Gold recovery from the CIL process is typically a function of the ease of solution access to gold particles.

Plant throughput is a nominal 15,600 st/day which is below the permitted rate of 36,000 st/day.

14.3.2.2 Pipeline Mill (Cortez Complex)

The Pipeline mill treats material from the Crossroads/Pipeline open pit, Cortez Pits open pit, Cortez Hills underground, and historical stockpiles derived from mining of the Pipeline and Cortez Hills open pits.

The basic steps are as follows:

- Crushing and grinding;
- CIL and CIC circuits;
- Counter-current-decantation wash thickener circuit
- Carbon stripping and reactivation circuits,
- Doré refining.

Plant throughput can reach 18,000 st/d depending on the hardness of the ore being processed. The plant is permitted for an annual average of 5.4 Mst/a.

14.3.2.3 Phoenix SX/EW Plant (Phoenix Complex)

The Phoenix SX/EW plant treats material from the Fortitude and Bonanza open pits.

The SX plant consists of a single train of conventional mixer–settlers. There are two extraction mixer–settlers with a single strip mixer–settler. The settler design provides operational flexibility to run in series (2 + 1) or in parallel (1 + 1 + 1) depending on operating conditions. Each of the extraction mixer–settlers has a single pump mixer followed by secondary and tertiary mixers, all with variable frequency drive (VFD) control. The mixer–settlers, constructed of 316 L stainless steel, are approximately 31 m long by 25 m wide by 1.3 m deep. There are two rows of picket fences, including a chevron fence followed by a straight fence. The strip mixer–settler only includes a primary pump mixer and a secondary mixer, both with VFD control.

The process uses Cytec's ACORGA M5774 extractant and Chevron Phillips' Orfom SX-12 diluent. The extractant concentration in the organic is approximately 3.5 volume percent (v/o). Fire mitigation uses a high pressure water mist that rapidly cools the flames and displaces the available oxygen away from the point of combustion while filling the remaining atmosphere with water vapor.

Tank farm design includes standard features such as electrolyte and organic storage tanks, electrolyte dual media filters, and equipment for organic treatment. Because of the extreme temperature variance, there are three boilers installed to ensure adequate electrolyte heating capacity during the winter months. To help minimize the risk of sulfate crystallization, all electrolyte lines and tanks are heat traced and insulated. The electrolyte tanks are also inside a building shell to further reduce the risk. The building also contains a segregated, fire protected room for the organic treatment filter and three phase decanting crud centrifuge.

The electrowinning building houses 30 polymer-concrete EW cells. Each cell contains 60 permanent stainless steel cathodes and 61 lead-calcium-tin anodes. The plant layout allows for future expansion to the north, mirroring the existing plant, to double the EW capacity if necessary. The design average production is 10,886 t/a of copper cathodes. The design current density is 323 A/m^2 with a maximum current density of 377 A/m^2.

Copper electrowinning uses variable reactance transformer (VRT) and silicon controlled rectifier (SCR) technology.

The EW building houses metallurgy, operations, and maintenance personnel offices, the plant control room, a maintenance facility, and training/break room, along with locker room facilities. Next to the control room, the project provided a process/metallurgical laboratory for performing operational control sample analyses and cathode grading. Assaying of composite samples for metallurgical accounting occurs at an offsite lab.

The plant receives concentrated sulfuric acid from the Gold Quarry roaster and from an offsite bulk storage facility. The acid arrives by truck for gravity offload into two bulk storage tanks for leach acid and one small storage tank for electrolyte makeup acid. Diluent is the only other bulk reagent, which also arrives by truck for gravity offload into a site storage tank.

Plant throughput is nominal 28 st/day which is below the permitted rate 33 st/day.

14.3.2.4 Phoenix Mill (Phoenix Complex)

The Phoenix mill treats material from the Fortitude and Bonanza open pits. The plant has a copper/gold specific flotation system designed to provide concentrate products for sale to an outside smelter. The basic steps are as follows:

- Crushing and grinding;
- Adjustment of pH as required;
- Conditioning the slurry using collectors and activators to prevent oxidation of the sulfide mineral surfaces and create hydrophobic conditions;
- Frothing chemicals and air added to the flotation cells creating a liquid/gas interface for the hydrophobic particle to cling to;
- Residual gangue minerals contain sufficient gold for recovery by conventional CIP processing;
- Flotation tails are processed through a sands/slimes separation circuit using Hydrosizers, ahead of the CIL circuit. Most of the gold goes to the sands, and most of the copper goes to the slimes, reducing cyanide consumption in the CIP circuit. Slimes are thickened and sent to the TSF;
- The concentrate is filtered and processed through an outside smelter. The final flotation concentrate contains all of the copper, about 40% of the gold, and 35% of the silver produced by the Phoenix plant.

Gold is also recovered by gravity separation:

- Gravity separation occurs in two circuits, the first in the grinding circuit and the second on the initial rougher float product;
- The primary gravity circuit processes screened SAG and ball mill products;
- The flotation gravity circuit is in two stages, including a second, cleaner stage;
- All gravity concentrates undergo intensive cyanidation, producing a rich solution that joins rich solution from the CIP circuit ahead of electrowinning.

The Phoenix mill treats copper sulfide and gold bearing ores from the Fortitude and Bonanza pits. Plant throughput is a nominal 36,000 st/day which is below the permitted rate of 57,600 st/day.

14.3.2.5 Juniper Mill (Turquoise Ridge Complex)

Run-of-mine higher-grade oxide ore from the Turquoise Ridge Surface sources are blended for gold grade, hardness, and carbonate content and fed to the Juniper oxide mill. Undersize rejects from the Turquoise Ridge Underground aggregate crusher are added when additional carbonate is needed. The process consists of:

- A variable speed 900 Hp SAG mill operating in closed circuit with a discharge screen. The SAG mill product is fed to a 1,150 Hp ball mill operating in closed circuit with cyclones. The final product grind size is 90% - 200 mesh;
- Cyclone overflow product is fed to the neutralization circuit, where the carbonate in the oxide ore is used to neutralize the acidic autoclave discharge slurry. The combined oxide slurry and autoclave discharge slurry are further neutralized with lime before treatment in the CIL circuit;
- The CIL circuit is used to concurrently leach gold from the ore and adsorb it onto activated carbon. The final tailings slurry is pumped to the TSF;
- The gold-loaded carbon is stripped, acid washed, kiln reactivated, and recycled back to the CIL circuit. The gold stripped from the carbon is electrowon and refined into doré for shipment to an offsite refinery.

Plant throughput can reach 120 st/hr depending on the hardness of the ore being processed. This is augmented when limestone is added. The plant is permitted for running 250 st/h or 6,000 st/d.

14.3.3 Autoclaves

14.3.3.1 Goldstrike (Carlin Complex)

The Goldstrike autoclave treats material from Goldstrike Betze Open Pit. The basic steps are as follows:

- Feed is sourced from ore stockpiles located adjacent to the primary crusher;
- A Phase I grinding circuit consists of a jaw crusher, SAG mill operating in closed circuit with a pebble crusher, two secondary ball mills, and a tertiary ball mill operating in closed circuit with cyclones;
- Phase I cyclone overflow feeds two thickeners, providing an ability to operate the grinding circuits separately on alkaline or acid POX feed blends;
- A Phase II grinding circuit consists of a gyratory crusher, SAG mill operating in closed circuit with a pebble crusher;
- The Phase II discharge screen undersize is pumped along with ball mill discharge to a bank of cyclones;

- Grinding circuit thickener underflow when treating an acid ore blend (ore treated with acid) is fed to a series of acidulation tanks where sulfuric acid is added if required to digest carbonate content;
- There are five autoclaves operating in parallel at Goldstrike, all of which are configured for acid POX, while three lines can also be configured for alkaline ore POX;
- The milled, acidified slurry is fed to a series of preheaters where hot steam from the autoclave discharge flash tank is contacted with incoming feed to preheat the slurry and transfer available heat from the oxidation reactions. Pressure oxidation is carried out under elevated pressure and temperature using high purity oxygen in the autoclaves;
- Autoclave discharge progresses through a series of flash vessels with additional cooling accomplished in tube and shell slurry heat exchangers. Autoclave discharge slurry is acidic due to the formation of sulfuric acid from sulfide oxidation reactions;
- Neutralization of autoclave discharge to pH 8.0 is accomplished with slaked lime prior to thiosulfate leaching;
- As carbonate levels in a portion of the ores at Goldstrike have increased, three of the autoclaves (#4, #5, #6) have been converted such that they can operate under alkaline conditions;
- The grinding circuit product is fed to a thickener dedicated to alkaline POX operation. Thickener underflow is directed to the acidulation circuit for storage, but no acid is needed;
- The alkaline slurry reports through a series of slurry coolers to neutralization, where it is adjusted to pH 8.0 with slaked lime and then directed to thiosulfate leaching and resin-in-leach for gold recovery;
- The slurry from the alkaline and acid autoclave circuits is pumped to parallel calcium thiosulfate–resin-in-leach circuits. Cyanide has been replaced with the on-site production of calcium thiosulfate for gold dissolution. The resin is pumped counter-current to the slurry with a portion of new or recycled resin returned directly to the first resin-in-leach tank. From the first tank, loaded resin is transferred to elution and refining for the recovery of gold. The slurry exiting the final tank is sent to a tailings thickener and then pumped to a dedicated TSF to avoid comingling thiosulfate and cyanide solutions;
- Gold-bearing resin is processed in a multi-stage elution circuit. Rich solution containing the gold is forwarded to dedicated electrowinning cells operated within the gold refinery to produce doré bullion which is shipped off site for further refining. The stripped and regenerated resin is returned to the resin-in-leach circuit.

The plant is permitted for an annual average of 1,000 st/operating hour per autoclave limit.

The autoclave is planned to be converted to CIL in 2022–2023 once all of the high alkaline, preg-robbing, low-grade, double refractory stockpiles are depleted.

14.3.3.2 Sage (Turquoise Ridge Complex)

The Sage autoclave treats material from the Turquoise Ridge Underground, Mega open pit, Vista underground, and historical stockpiles derived from mining of the Mega and Vista open pits.

The process consists of:

- SAG milling followed by ball milling;
- Cyclone overflow reports to a thickener. Thickener underflow reports to an acidification circuit where sulfuric acid is added as necessary. Thickener overflow solution is returned to the milling circuit;
- After acidification, ore slurry is added to two identical autoclaves that are operated in parallel. Two stages of flash heat recovery are used. Autoclave discharge is cooled before reporting to the lime neutralization circuit;
- Oxide ore and acidic oxidized sulfide ore slurry are combined in the neutralization circuit;
- After neutralization, the ore slurry reports to a CIL circuit where the ore is leached in cyanide solution to extract the gold. Final tailings slurry is pumped to the TSF;
- Loaded carbon from the CIL circuit is transferred to the recovery plant. After acid washing to remove inorganic contaminants, the carbon is transferred to the pressure Zadra stripping circuit;
- Rich solution from the stripping circuit is pumped to an electrowinning circuit where precious metal is removed and refined into doré bars.

Plant throughput is a nominal 13,900 st/day which is below the permitted rate of 16,800 st/day.

14.3.4 Roasters

14.3.4.1 Goldstrike (Carlin Complex)

The Goldstrike roaster treats open pit and underground material from numerous sources including the South Arturo open pits, El Niño underground, Goldstrike underground, Goldstrike open pit, historical stockpiles derived from mining of the Goldstrike open pit, Goldstar open pit, Leeville underground, Pete Bajo underground, Exodus underground, Cortez Crossroads/Pipeline open pit, Cortez Hills underground, historical stockpiles derived from mining of the Cortez Hills and Crossroads/Pipeline open pits, and Goldrush underground.

The basic steps are as follows:

- Two stages of open circuit crushing including a gyratory crusher, scalping screen and cone crusher;
- Crusher product is sent to one of the two parallel dry grinding circuits. The ore is heated with natural gas and progresses toward the center of the mill as it is being dried and ground where it is transported with air through grates, a static cyclone classifier and a dynamic classifier for size separation;
- Oversize is returned to the second stage of the grinding mill for further size reduction while undersize material is transferred to bag houses for further processing;
- Material from the roaster silo is fed to the top of the roaster by a bucket elevator and a fluidized feeder. The fluidized feeder distributes ore continuously to the first stage (upper) bed of the two parallel roasters;

- Solids flow by gravity to the second stage of the roaster through an inter-stage solid transfer system. High purity oxygen is injected at the bottom of the second stage of the roasters. Oxidation is essentially complete after the second stage;
- A gas circuit removes contaminants;
- The calcine product from the roaster is cooled rapidly in quench tanks. The cooled quench tank discharge from both roasters is combined and the resulting slurry feeds neutralization tanks;
- Neutralization circuit slurry is dewatered in a thickener with excess water recycled for reuse in the quench tanks. The thickener underflow reports to the roaster CIL circuit;
- Slurry flows through the series of CIL tanks. Activated carbon is then transferred to a loaded carbon holding bin and into a truck that transports it for elution, acid washing, and regeneration in a carbon handling circuit located within the Goldstrike autoclave facility.

Plant throughput is a nominal 18,700 st/day which is below the permitted rate of 24,000 st/day.

14.3.4.2 Gold Quarry (Carlin Complex)

The Gold Quarry Roaster treats open pit and underground material from Carlin and Cortez, as well as sulfide concentrates. The process steps at the Gold Quarry Roaster are as follows:

- Crushing and dry grinding;
- Roasting at a high enough temperature to oxidize the sulfide and carbonaceous material, but at a low enough temperature that the gold is not re-encapsulated in microscopic “clinkers”;
- Leaching using a cyanide solution in the slurry in conjunction with oxygen which can be supplied by air-sparging or by the addition of enriched oxygen;
- Magnetic separation is applied to recover gold locked in a magnetic component of the tailings and transported to an autoclave for acidification and cyanide leaching;
- CIL processing involves leaching of the slurry with cyanide to dissolve the gold and then adsorb the gold onto activated carbon;
- Gold-laden coconut carbon is transported to the carbon stripping facility where the gold is stripped from the carbon and recovered by electro-winning. Stripped carbon is recycled and reused.

A cost-saving step is afforded by processing the off-gas from the roaster for recovery of sulfur dioxide as sulfuric acid. Because the final processing steps are the same as in the oxide mill, the performance of a roasting facility is similarly driven by the same parameters with the addition of sufficient retention time in the roaster in contact with sufficient oxygen to complete the oxidizing process.

Plant throughput can reach 13,000 st/d, depending on the hardness of the ore being processed. The plant is permitted for an annual average of 13,440 st/d.

14.4 Equipment Sizing

The major equipment required for the heap leach operations is summarized in Table 14-3, in Table 14-4 for the mill facilities, in Table 14-5 and Table 14-6 for the Phoenix facilities, in Table 14-7 for the autoclaves and in Table 14-2 for the roaster.

14.5 Power and Consumables

14.5.1 Power

Power supplies are discussed in Chapter 15.11.

14.5.2 Consumables

The major consumables in the gold heap leach facilities are antiscalant, cyanide and lime. The copper heap leach pads use sulfuric acid.

The Phoenix SX/EW plant uses sulfuric acid (electrolyte), cobalt, diluent, extractant, diatomaceous earth, clay, and starch.

Mill facilities use grinding media, balls for ball mills, lime, cyanide, collector, frother, and hydrogen peroxide.

The Goldstrike autoclave requires calcium thiosulfate and resin. Both autoclaves use grinding media, balls for ball mills, lime, and cyanide.

Table 14-2: Key Equipment List, Roasters

Roaster	Equipment Type/Item	Number
Goldstrike Roaster	Thyssenkrupp Double Rotator, 2x 5.8mx 17.5m, 7355kW	1
	Dorr Oliver Roasters 2 stage fluidized bed	2
Gold Quarry Roaster	Double Rotator 6.1m x 25.6m, 11MW	1
	CFB Roasters	2

Table 14-3: Key Equipment List, Leach Facilities

Leach Area	Equipment Type/Item	Number
South Area Leach (SAL)	Rich solution pumps	8
	Spent solution pumps	3
	CIC	21, 18 in operation
	Solution flow	6,500 gpm
North Area Leach (NAL)	Rich solution pumps	4
	Spent solution pumps	3
	CIC	12
	Solution flow	7,000 gpm
Emigrant Area Leach (EAL)	Rich solution pumps	3
	Spent solution pumps	3
	CIC	18, 12 in operation
	Solution flow	7,500 gpm
Cortez Leach Area 30	Pregnant pumps	6
	Barren pumps	5
	CIC	20
	Solution flow	21,000 gpm, max permit
Cortez Leach Area 34	Pregnant pumps	3
	Barren pumps	2
	CIC	15
	Solution flow	12,600 gpm, max permit

Table 14-4: Key Equipment List, Mill Facilities

Area	Item	Description	Capacity
Cortez Oxide	SAG mill	Allis 26ft x 11 ft	4500 hp
	Primary ball mill	Allis 16ft x 28.5 ft	4500 hp
Juniper	SAG mill	Marcy 18 ft x 6.5 ft	900 hp
	Primary ball mill	Marcy 11.5 ft x 16.4 ft	1,150 hp

Table 14-5: Key Equipment List, Phoenix SX/EW

Item	Quantity	Source/Vendor
Mixer tank	12	CAID
Raffinate tank	1	GBI
Mixer	6	Lightnin
Electrolyte tank	4	GBI
Crud centrifuge	1	Flottweg
Electrolyte filter	1	SpinTek
Pre-coat mix tank	1	Durco Filters
Organic filtrate tank	1	Durco Filters
Loaded organic tank	1	GBI
Organic treatment filter feed tank	1	CAID
Anodes	1830	Quemetco Metals
Cathodes	1800	CAID
Electrowinning cell	30	CTI/PI Int'l. Inc.
Cathode strip conveyer	1	Mesco/PI Int'l. Inc.
EW cell hood	30	SAME
Rectifier	2	Ametek
Sulfuric acid leach storage tank	2	Contract C002
EW acid storage tank	1	Great Basin Ind
Diluent storage tank	1	Great Basin Ind
Guar/starch mix tank	1	Solid Technology
Extraction/ strip settler	3	CAID

Table 14-6: Key Equipment List, Phoenix Mill

Item	Quantity	Source/Vendor
60 x 89 primary gyratory crusher	1	Fuller Traylor
50 x 65 primary gyratory crusher	1	Metso
Secondary cone crushers	2	Raptor 1100
Pebble cone crusher	1	Metso MP800
36’ x 18’ SAG mill 18,000 hp	1	Farnell Thompson
21’ x 33’ overflow ball mill 9,500 hp	2	Farnell Thompson
KC-48 concentrators	4	Knelson
CS-4000 intensive cyanidation reactor	1	Consep Acacia
160 m^3 flotation tank cells	12	Dorr-Oliver
30 m^3 flotation tank cells	8	Dorr-Oliver
E-CAT concentrate thickener	1	EIMCO
32 m high rate tailings thickener	1	Outokumpu
Plate and frame filter press	1	Lasta
49.5’ x 54’ agitated leach tanks	2	
36.5’ x 40’ agitated CIP tanks	5	
ADR circuit	1	Pressure Zadra

Table 14-7: Key Equipment List, Goldstrike Autoclave

Autoclave	Mill Circuit	Item	Size/Quantity	Source/Vendor
Goldstrike	Mill 1	Jaw crusher	300 hp 50 in x 60 in	Telsmith
		SAG mill	2500 hp 22 ft x 8 ft	Allis Chalmers
		Secondary ball mill	1,800 hp 13.5ft x 18 ft	Dominion
			1,250 hp 12.5 x 14 ft	Allis Chalmers
	Mill 2	Gyratory crusher	400 hp 42 in x 65 in	Allis Chalmers
		Autogenous grind mill	4,000 hp 24 ft x 12 ft	Fuller
		Secondary ball mill	5,000 hp 16.5 ft x 30.5 ft	Fuller

Table 14-8: Key Equipment List, Sage Autoclave

Item	Description	Capacity
SAG mill	Koppers 28 ft x 10 ft	4,000 hp
Primary ball mill	Svedala 20 ft x 30 ft	7,500 hp
Secondary ball mills	2 x Dominion 16.5 ft x 29 ft	4,000 hp
Autoclaves	16.5 ft x 73.3 ft	89,500 gal
Oxygen plant	air products ASU 95% O_2	1,360 t/d

The roasters require oxygen, grinding steel, cyanide, lime and sulfur.

14.5.3 Water

Water supply for process operations is discussed in Chapter 15.7.

14.6 Personnel

The LOM average personnel counts for the Nevada Operations are:

- Long Canyon leach: 13;
- Phoenix Mill: 120;
- Phoenix copper leach: 24;
- Goldstrike autoclave: 94;
- Goldstrike roaster: 116;
- Gold Quarry roaster: 212;
- Gold Quarry concentrator: 132;
- Carlin leach: 35;
- Emigrant leach (residual leach, no active mining or mineral reserves): 7;
- Cortez Pipeline oxide mill: 101;
- Cortez leach: 16;
- Sage autoclave/Juniper mill: 113;
- Turquoise Ridge leach: 13.

15.0 INFRASTRUCTURE

15.1 Introduction

Major infrastructure to support mining operations is constructed and operational. This includes:

- Open pits;
- Shafts, hoisting infrastructure, portals, declines, ramps; ventilation systems; backfill plants;
- Heap leach, mill, autoclave and roasting facilities; mine laboratories;
- Stockpiles; waste rock and tailings storage facilities;
- Conveyors and pipelines;
- Access and haul roads;
- Water management and treatment facilities;
- Power station, transmission lines, electrical stations and substations, electrical distribution networks;
- Truck shops, maintenance facilities, warehouses, and administrative facilities/offices;
- Communications, including fiber optic lines and network communications, mine radio networks, leaky-feeder systems;
- Core and sample pulp storage.

Infrastructure layout plans are provided in Figure 15-1 to Figure 15-7.

Additional infrastructure will include:

- Cortez Complex, Goldrush: mine accesses including portals, declines, and inclines; surface dewatering wells and associate pipe and pumping infrastructure; rapid infiltration basins; underground dewatering/pumping infrastructure; backfill plant; ventilation system; electrical distribution network;
- Turquoise Ridge: a third shaft is being excavated at Turquoise Ridge Underground, and will require some additional supporting surface infrastructure.
- The Cut40 open pit will require relocation of some of the existing surface infrastructure.

15.2 Roads and Logistics

The Project is accessed by all-weather road networks as discussed in Chapter 4. Rail and air services are also outlined in Chapter 4.

Figure 15-1: Infrastructure Layout Plan, Carlin Complex North Area

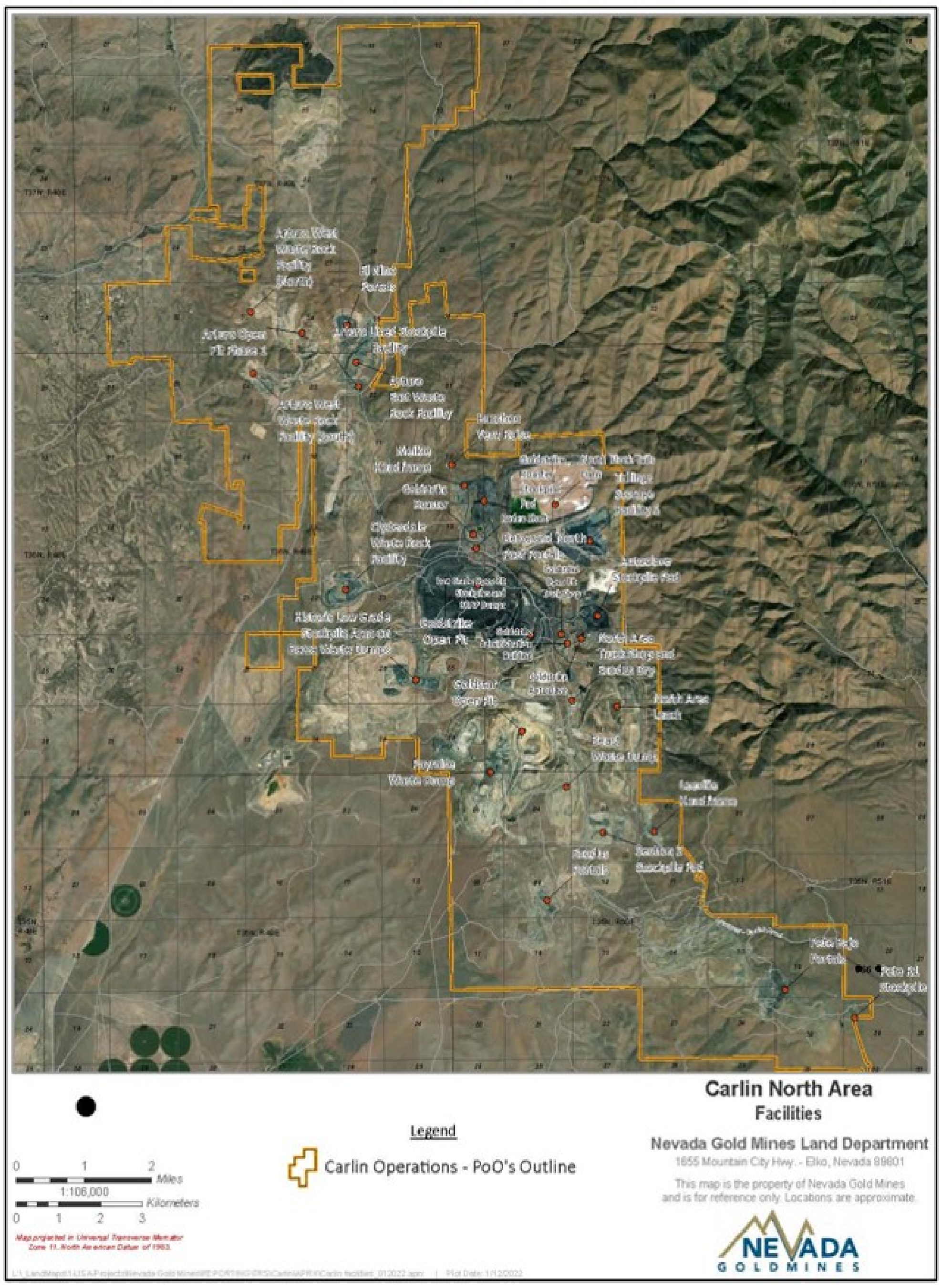


Figure 15-2: Infrastructure Layout Plan, Carlin Complex South Area

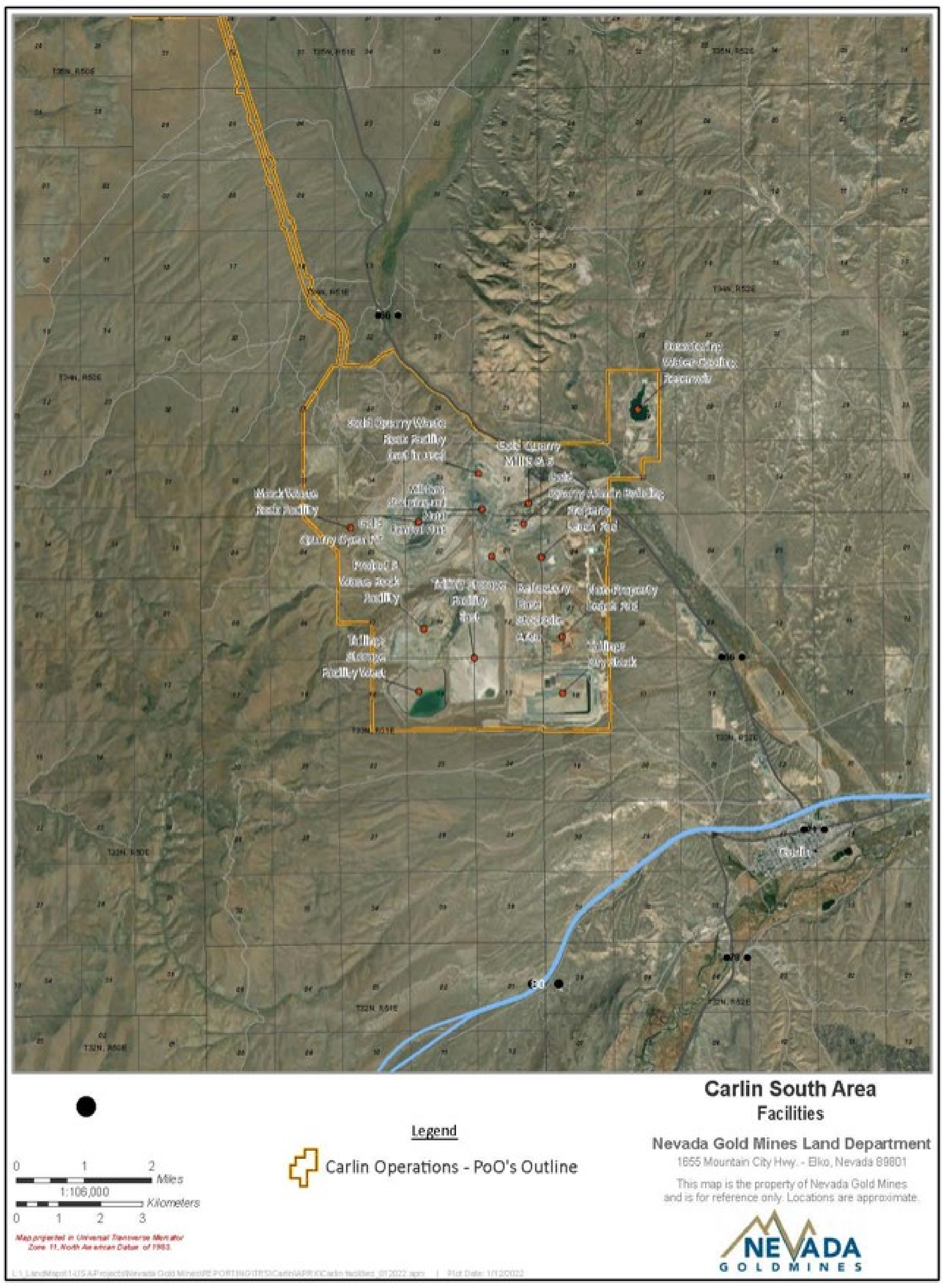


Figure 15-3: Infrastructure Layout Plan, Carlin Complex Rain–Emigrant Area

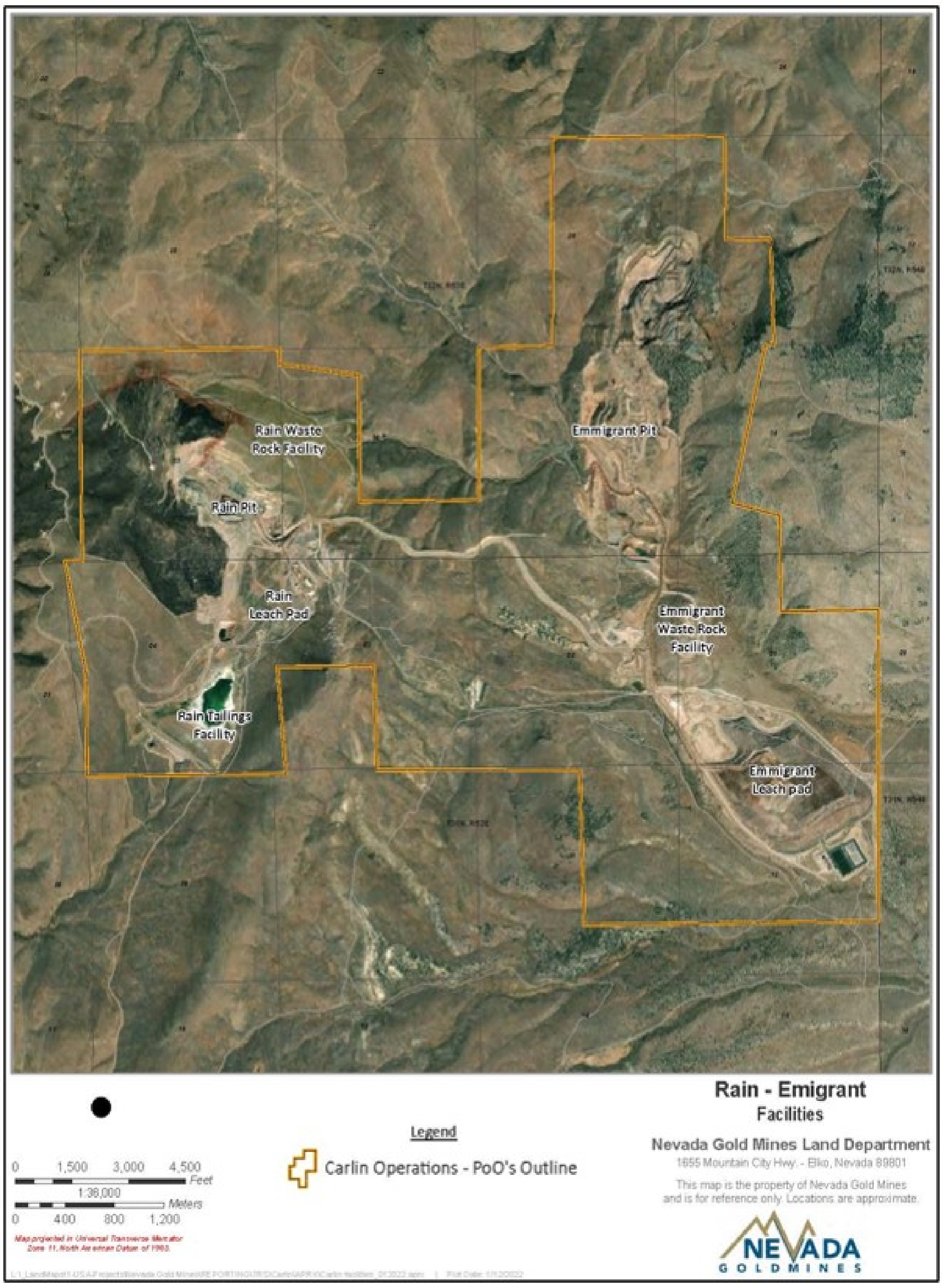


Figure 15-4: Infrastructure Layout Plan, Cortez Complex

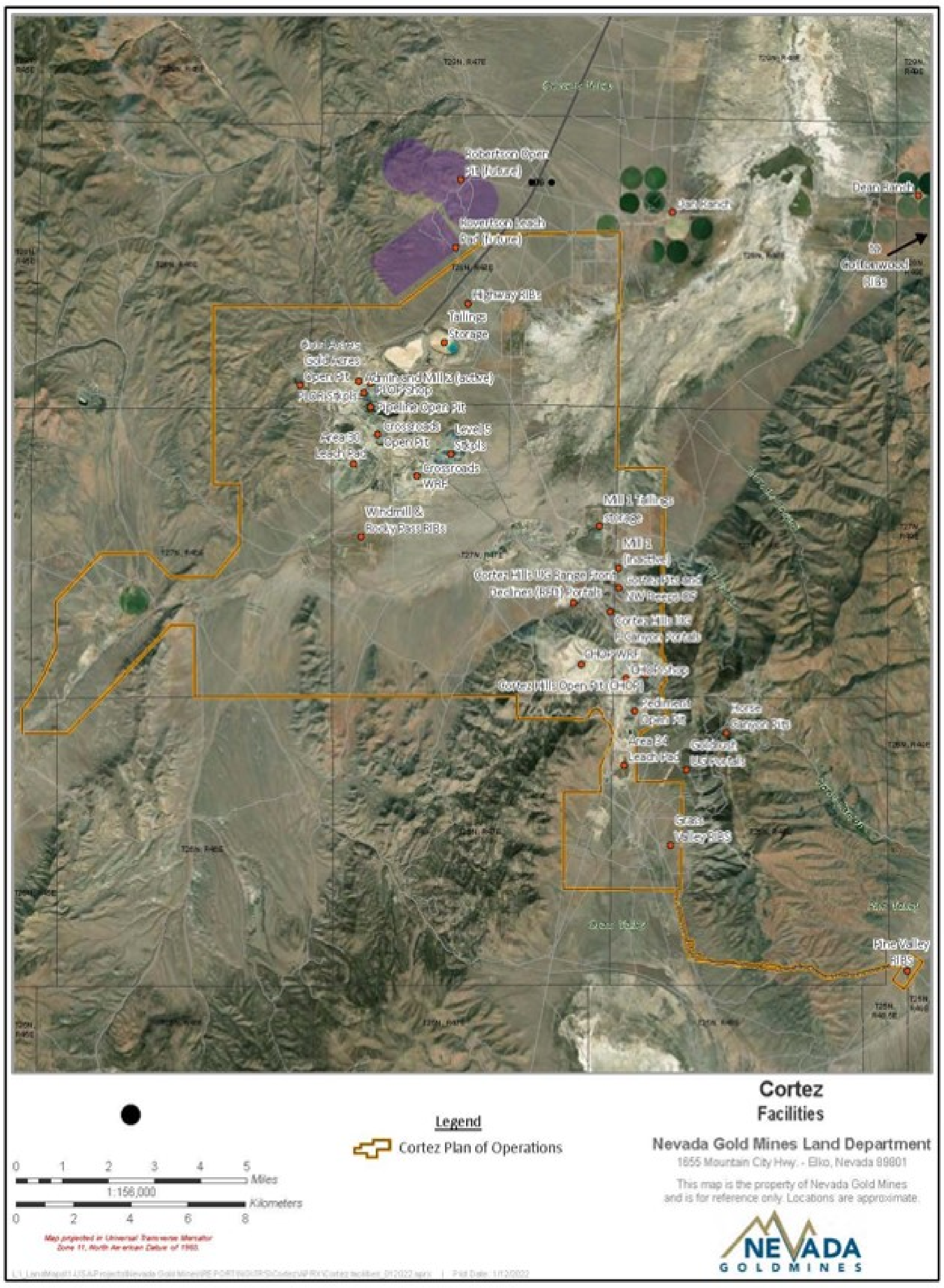


Figure 15-5: Infrastructure Layout Plan, Long Canyon Complex

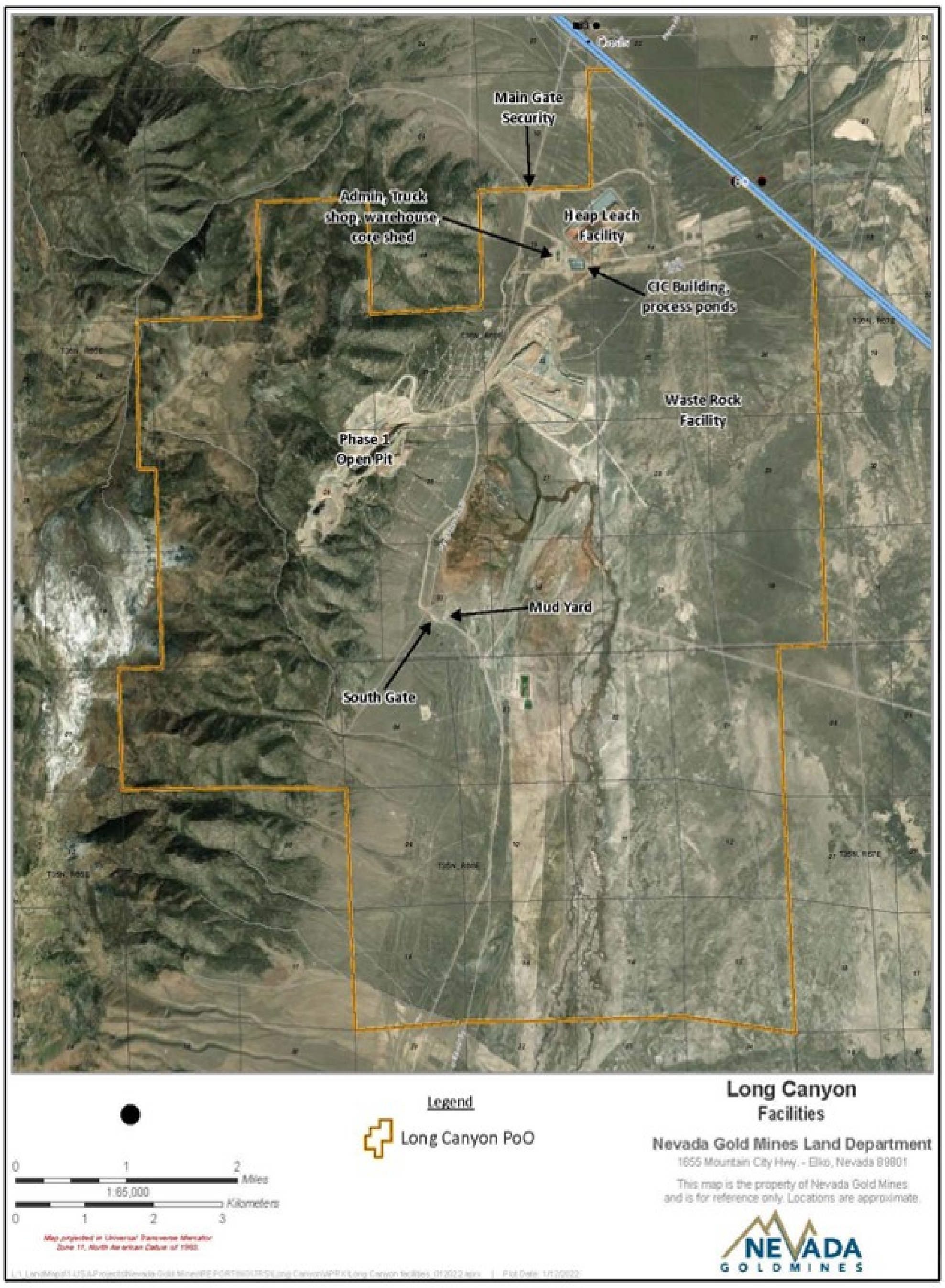
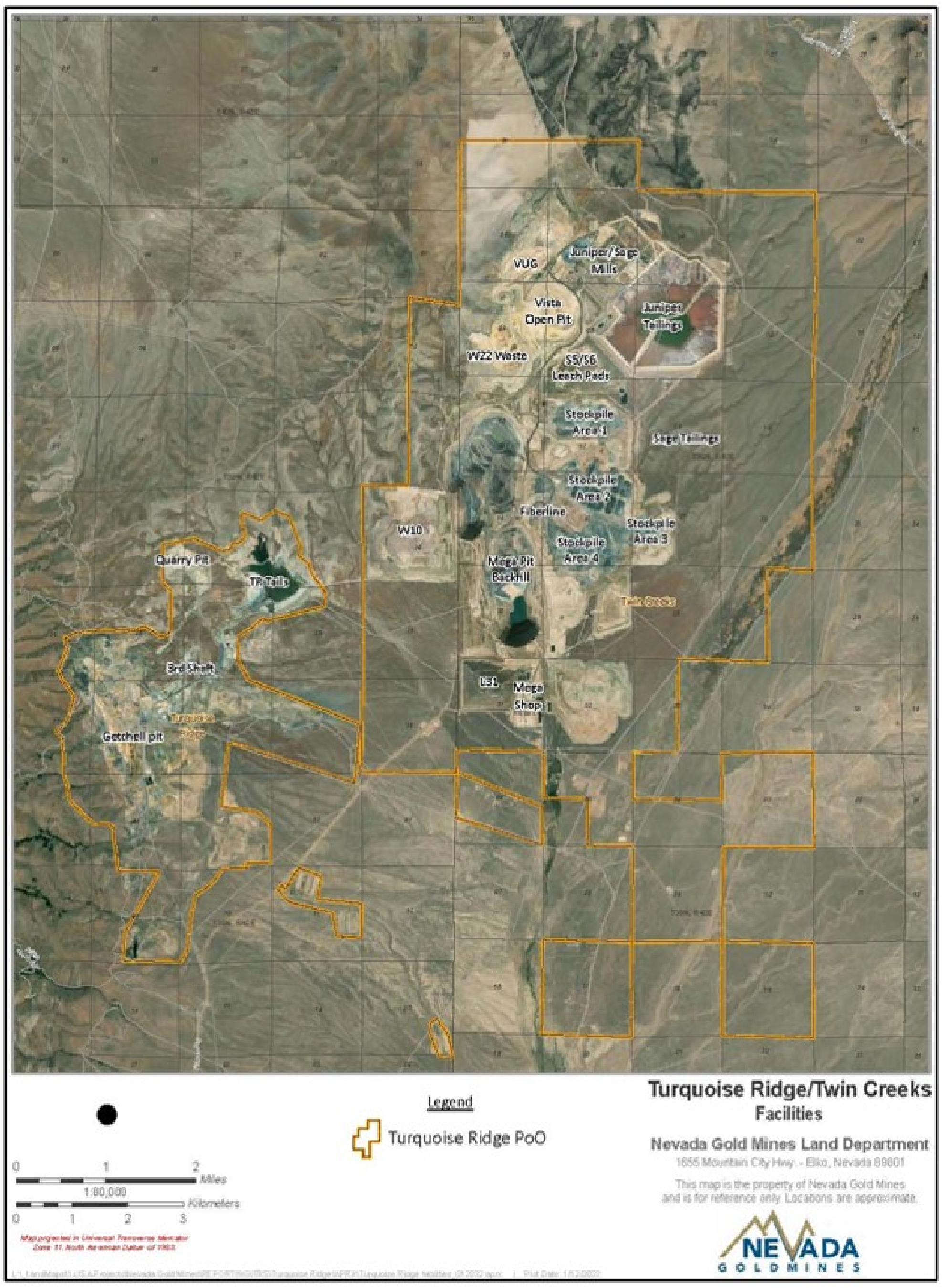


Figure 15-6: Infrastructure Layout Plan, Phoenix Complex

Figure 15-7: Infrastructure Layout Plan, Turquoise Ridge Complex



15.3 Stockpiles

Stockpiles are discussed in Chapter 12.5 and Chapter 13.7.

15.4 Leach Pads

There are nine heap leach facilities in the Project area, all of which are actively being leached. There is sufficient capacity in the existing pads and planned pad expansions for LOM planning purposes.

15.5 Waste Rock Storage Facilities

There are 67 WRSFs in the Project area, of which 36 are inactive and undergoing reclamation, and 31 are active. A total of 24 pits are permitted for partial or full waste backfill.

There is sufficient capacity in the existing WRSFs and planned WRSF expansions for LOM planning purposes.

15.6 Tailings Storage Facilities

There are 19 TSFs in the Project area, of which 11 are inactive and undergoing reclamation, and eight are active.

There is sufficient capacity in the active TSFs and planned TSF expansions for LOM planning purposes.

15.7 Water Supply

Water supply for processing operations is sourced, depending on the facility, from well fields, TSF reclaim, storm run-off water, and pit dewatering.

Potable water is provided by permitted water wells and supporting treatment and infrastructure facilities.

The current water sources, assuming similar climate conditions to those experienced by the operations in the past, will be sufficient for the LOM plan.

15.8 Water Management Structures

Water management operations include systems of dewatering wells, water gathering and conveyance facilities, water storage, water use, and various management options for discharge of excess water. Water not used for mining or milling can be pumped to storage reservoirs. Rapid infiltration basins are used to capture storm run-off water to avoid that water coming into contact with mining operations.

The NDEP allows selected complexes within the Nevada Operations, through discharge permits, to discharge groundwater from pumping operations to groundwater by percolation, infiltration, and irrigation.

The current water management practices are expected to be applicable for the LOM plan.

15.9 Built Infrastructure

All key infrastructure to support mining activities contemplated in the LOM plan is in place, or has been included in the capital cost requirements in Chapter 18.

In the Turquoise Ridge complex, a third shaft is being excavated at Turquoise Ridge Underground, and will require some additional supporting surface infrastructure. The Cut40 open pit will require relocation of some of the existing surface infrastructure.

Planned infrastructure that will be required to support the Goldrush project includes:

- Mine accesses including portals, declines, and inclines;
- Surface dewatering wells and associate pipe and pumping infrastructure;
- Rapid infiltration basins;
- Underground dewatering/pumping infrastructure;
- Backfill plant;
- Ventilation system;
- Electrical distribution network.

Within the immediate area of the planned Goldrush mine, minimal surface facilities will be installed to support the underground mining operation. These will be limited to ventilation shafts, dewatering wells, water management infrastructure power lines and all-weather roads to access the paste plant. Additional services such as a dry and major rebuild workshop will be located within the existing Cortez Mine area.

15.10 Camps and Accommodation

There are no accommodation facilities at any of the complexes. Personnel reside in adjacent settlements including Battle Mountain, Carlin, Elko, Golconda, Wells, West Wendover and Winnemucca.

15.11 Power and Electrical

Electrical power for the Carlin, Cortez, Turquoise Ridge, and Phoenix Complexes is obtained via TS Power Plant and from the Western 102 power plant (both of which are owned and operated by NGM) with transmission by NV Energy.

Power for Gold Quarry, Long Canyon, and Goldrush is supplied via the Wells Rural Electric Power Company.

The Western 102 power plant, located approximately 15 miles east of Reno, has the capacity to supply 115 MW of electricity using 14 reciprocating natural gas-fired engines, and also has a 1 MW solar plant.

The TS power plant has a capacity of 215 MW power generation from its original coal-fired process. The plant is currently being converted to using natural gas in support of carbon-reduction objectives.

Power can be purchased on the open market if required.

Electrical facilities include multiple main substations, several smaller substations throughout the Project area, and transmission lines.

16.0 MARKET STUDIES AND CONTRACTS

16.1 Markets

NGM has established contracts and buyers for the gold bullion, copper concentrate and copper cathode products from the Nevada Operations, and has an internal marketing group that monitors markets for its key products. Together with public documents and analyst forecasts, these data support that there is a reasonable basis to assume that for the LOM plan, that the key products will be saleable at the assumed commodity pricing.

There are no agency relationships relevant to the marketing strategies used.

Product valuation is included in the economic analysis in Chapter 22, and is based on a combination of the metallurgical recovery, commodity pricing, and consideration of processing charges.

16.2 Commodity Price Forecasts

The operator of NGM, Barrick, sets metal price forecasts by reviewing the LOM for the operations, which is 10+ years, and setting the commodity price for that duration. The guidance is based on a combination of historical and current contract pricing, contract negotiations, knowledge of its key markets from a long operations production record, short-term versus long-term price forecasts prepared by the Barrick's internal marketing group, public documents, and analyst forecasts when considering the long-term commodity price forecasts.

Higher metal prices are used for the mineral resource estimates to ensure the mineral reserves are a sub-set of, and not constrained by, the mineral resources, in accordance with industry-accepted practice.

The long-term commodity price forecasts are:

Mineral reserves:

- Gold: US$1,200.00/oz;
- Silver: US$16.50/oz;
- Copper: US$2.75/lb;

Mineral resources:

- Gold: US$1,500.00/oz;
- Silver: US$20.50/oz
- Copper: US$3.50/lb.

16.3 Contracts

NGM has contracts in place for the majority of the copper concentrate with smelters and various traders. The terms contained within the sales contract are typical of and consistent with standard industry practice and are like contracts for the supply of copper concentrate throughout the world.

The contracts include industry benchmark terms for metal payables, treatment charges and refining charges for concentrates produced. Depending on the specific contract, the terms for the sale of the Project's copper concentrate are either annually negotiated, benchmark-based treatment and refining charges, or a combination of annually negotiated terms and price sharing agreements. The differences between the individual contracts are generally in relative quantity of concentrates that are covered under annually-negotiated treatment and refining charges and that are covered under a price sharing formula.

Treatment charges assumed for estimation of mineral reserves are based on the blended rates of the existing contracts through the duration of the agreements. The formula used is sensitive to the underlying copper price and is consistent with long-term expectations for copper treatment and refining charges.

The Phoenix copper leach facility produces cathode copper which is sold to a trader who re-sells for product manufacturing. The terms contained within the sales contract are typical of and consistent with standard industry practice and are like contracts for the supply of copper cathode globally.

NGM's bullion is sold on the spot market, by marketing experts retained in-house by NGM/Barrick. NGM provides Newmont with the date and number of ounces that will be credited to Newmont's account, and invoices Newmont for how much NGM is owed, such that Newmont receives credits for the ounces (based on the JV interest) and Newmont pays NGM for the ounces. The terms contained within the sales contracts are typical and consistent with standard industry practice and are similar to contracts for the supply of bullion elsewhere in the world.

The largest in-place contracts other than for product sales cover items such as bulk commodities, operational and technical services, mining and process equipment, and administrative support services. Contracts are negotiated and renewed as needed.

17.0 ENVIRONMENTAL STUDIES, PERMITTING, AND PLANS, NEGOTIATIONS, OR AGREEMENTS WITH LOCAL INDIVIDUALS OR GROUPS

17.1 Introduction

As part of its permitting requirements, NGM has submitted and received approval for numerous PoOs and Reclamation Plans for each area. NGM has additionally submitted and/or provided information to support Environmental Assessments (EA) or Environmental Impact Statements (EIS) for each area containing public lands. The additionally submitted information includes various baseline and supporting studies on various natural resources. These studies include, but are not limited to:

- Vegetation surveys;
- Soil surveys;
- Wildlife surveys:
- Threatened, endangered, and special status species surveys;
- Waters of the US evaluations;
- Waste rock characterization studies;
- Groundwater modelling;
- Pit lake geochemical studies;
- Archaeological surveys;
- Air quality modelling.

Existing operations were reviewed by the BLM and Nevada Division of Environmental Protection Bureau of Mining Regulation and Reclamation (NDEP–BMRR). BLM NEPA analysis under an EA or EIS can result in a Determination of NEPA Adequacy (DNA), Findings of No Significant Impacts (FONSI), or a Record of Decision (ROD). These determinations are issued by the BLM for those operations where PoOs contain public lands.

The PoOs are updated and amended, as necessary, to allow for continuation of mining or additional mine development.

17.2 Baseline and Supporting Studies

17.2.1 Current Operations

NGM manages a number of different environmental aspects during mining operations. The operating PoOs listed in Table 17-1 and/or reclamation areas encompass all of the mining facilities within the Nevada Operations.

These geographic boundaries define areas approved for disturbance by the BLM in the form of DNAs, EAs, and EISs, as well as Nevada State permits under NDEP including water pollution control, air and water quality, reclamation, closure permits, and other permits.

EISs can require the implementation of mitigation plans due to potential identified impacts. Such plans can contain specific actions to be taken to mitigate potential impacts to riparian and wetland areas, springs and seeps, streams and rivers, aquatic habitat and fisheries, threatened, endangered, and candidate species, livestock grazing, terrestrial wildlife, soils, vegetation, visual resources, and recreation and wilderness.

17.2.2 Proposed Operations

The Goldrush project is situated in a culturally- and biologically sensitive area, with numerous cultural sites and within sage grouse habitat.

Major study areas in support of the planned mining operation include air quality, hazardous material and solid waste, noise, waste rock characterization, soils, biological resources, wildlife, special status species, visual and cultural resources, Native American Traditional Values, social and economic values, and environmental justice.

17.3 Environmental Considerations/Monitoring Programs

Each state and federal permit includes monitoring requirements. These requirements can include, but are not limited to:

- Water Pollution Control Permit monitoring of the process facilities to ensure Waters of the State are not compromised (e.g., heap leach pads, TSFs, mills/autoclaves/roaster, and potentially-acid generating WRSFs);
- Surface and groundwater are monitored under various permits to ensure no degradation of the water resource;
- Reclamation and closure activity monitoring to ensure facilities are closed as planned and to prevent environmental degradation;
- Rock blending, isolation, encapsulation and backfilling methods in order to minimize acid generation and leachate migration from waste rock that is potentially acid-generating;
- Monitoring of dewatering and water discharge impacts to ensure regulatory requirements are met;

Table 17-1: Plans of Operations

Property	PoO Name	BLM Case File
Carlin	Arturo	NVN-087946
Carlin	Bootstrap	NVN-071087
Carlin	Carlin	NVN-070574
Carlin	Dee	NVN-071216
Carlin	Emigrant	NVN-078123
Carlin	Genesis-Bluestar	NVN-070712
Carlin	Gold Quarry	NVN-070550
Carlin	Goldstrike	NVN-070708
Carlin	Leeville	NVN-071251
Carlin	Rain	NVN-070445
Cortez	Cortez	NVN-067575
Long Canyon	Long Canyon	NVN-091032
Phoenix	Phoenix	NVN-067930
Turquoise Ridge Complex	Turquoise Ridge	NVN-64093
Turquoise Ridge Complex	Twin Creeks	NVN-064094

- Air emissions monitoring, including particulates, NOx, SOx, and mercury where appropriate.

Routine environmental monitoring takes place across the operations, including dust suppression, noise, arsenic, TSF seepage water, leak detection, as well as sample collection of drinking water, ground water, surface water, and monitoring of well water.

Various Water Pollution Control Permits (WPCPs), approved and administered by the NDEP–BMRR, require waste rock to be characterized for PAG and acid neutralizing potential and are reported to the NDEP–BMRR quarterly or semi-annually, as required by the WPCPs. Existing facilities will continue to be managed in accordance with the approved site specific WPCPs and Waste Rock Management Plans. Any new refractory ore stockpiles or WRSFs will be designed, constructed, and monitored in accordance with the guidance received from the NDEP–BMRR.

Refractory ore and waste materials are present at the Phoenix, Turquoise Ridge, Carlin, and Cortez Complexes. Design requirements include encapsulation of potentially acid generating materials inside waste rock facilities and engineered systems for the collection of low pH seepage from waste rock dumps and stockpiles and treatment of the seepage. Stockpile and waste rock permitting are included in Plan of Operations submissions to the BLM and in Water Pollution Control Permit applications to the State of Nevada Division of Environmental Protection.

Tailings are analyzed and reported as part of the WPCP requirements. Tailings impoundments are engineered structures requiring separate approval and strict monitoring and reporting requirements as regulated by the NDEP. The tailings facilities are also closely monitored and inspected for geotechnical stability by the State Division of Water Resources (DWR).

NGM has an integrated ISO 14001 certified environmental management system (EMS) that controls health and safety, and environmental risks. The EMSs are updated on an annual basis and audited every three years. Environmental incidents are noted in a register which forms part of the EMS. Causes and corrective actions are identified, and once completed, the incident is closed out.

These plans will be extended to Goldrush and Robertson as they become operational.

17.4 Closure and Reclamation Considerations

17.4.1 Existing Operations

Initial closure planning is included within all proposals and reclamation plan documents during the permitting process. Closure planning is integrated with mine and reclamation planning to the extent practicable during active operations. Concurrent reclamation of lands as mining progresses is a primary consideration for NGM. Reclamation plans are regularly reviewed and revised at a minimum of every three years to ensure adequate financial assurances have been put in place for required reclamation activities. Approvals are required from both the BLM and NDEP for reclamation and closure plan amendments and bond adjustments.

Various mine facilities are located within the PoO boundaries on both private lands and the federal lands administered by the BLM. Only approved facility disturbance can be constructed within PoO boundaries. All PoO boundaries and private lands within the PoO are under the jurisdiction of the NDEP–BMRR.

The reclamation boundaries define limits of approved disturbance for mining within each PoO boundary. Approved financial assurances cover the reclamation liabilities of facilities associated with mining activity. Agency permit approval is contingent upon the placement of these financial assurances that are held by the Agencies (BLM and/or NDEP) prior to commencement of mining. They are the beneficiaries in the unlikely case that NGM files bankruptcy. Reclamation cost estimates are detailed in the reclamation plans for each plan area and facility. Additional financial assurances, in the form of a trust, may be required for long-term monitoring and maintenance costs estimated to occur after closure (i.e., long-term management of drain-down solution from heap leach pads). A Nevada industry-standard method or Standard Reclamation Cost Estimator (SRCE) model is used by NGM to calculate the liabilities.

In general, reclaimed mine sites must be left safe and stable at a minimum, with removal of all infrastructure and rehabilitation of all landforms. Groundwater quality around tailings storage facilities must meet license conditions.

NGM currently has posted approximately US$2.14 B in financial assurances in the form of letters of credit and surety bonds to cover mine closure costs. Additionally, there are several trusts associated with closure cost planning.

The economic analysis uses a closure cost assumption of US$0.9 B, which is the estimate of actual disturbance.

17.4.2 Proposed Operations

The Goldrush project will require development of a temporary closure plan, a tentative plan for permanent closure/interim closure plan, a plan of operations that includes a reclamation plan and reclamation surety estimate, and a plan for monitoring the post-closure stability of the site.

Additionally, at least two years prior to the initiation of closure, NGM must prepare and submit a final plan for permanent closure under terms of their water pollution control permit (WPCP) and NAC 445A.447. A financial surety must be provided in the form of a performance bond or other instrument suitable to construct, operate, and guarantee completion of reclamation and closure activities. A long-term funding mechanism is anticipated, based on existing mine activities in the

Cortez District and elsewhere in the state. The BLM will generally require an estimate of long-term liabilities associated with the holding and monitoring of post-closure mine features. This calculation will include funds for identifiable post-closure contingencies. An estimate for this funding instrument will be developed in consultation with NGM, using existing operations as analogs and adjusting for predicted monitoring requirements.

17.5 Permitting

17.5.1 Existing Permits

All surface activities, including reclamation, comply with all applicable Federal and State laws and regulations. The fundamental requirement, implemented in 43 CFR 3809, is that all hard-rock mining under a PoO or Notice on the public lands must prevent unnecessary or undue degradation to the environment. The PoOs and any modifications to the approved PoOs must also meet the requirement to prevent unnecessary or undue degradation.

Mining of pits and associated disturbances are evaluated and approved by the BLM and the NDEP (Nevada Administrative Code (NAC) Chapter 445A and the Federal regulations 43 CFR 3809). The BLM studies environmental impacts associated with mining under NEPA.

As part of its permitting requirements, NGM has submitted PoOs and Reclamation Plans for each operation. NGM has submitted and/or provided information to support NEPA evaluation for each area containing public lands. The PoOs are updated and amended as necessary to allow for continuation of mining or additional mine development.

Reclamation requirements are regulated by the BLM and NDEP and can include items such as regrading waste rock disposal facilities and heap leach pads, removing and demolishing buildings and structures, regrading disturbed areas, removing and regrading stockpile areas, replacing salvaged growth media, revegetation, diversion and sediment control monitoring, and management of drain down from process facilities (e.g., heap leach pads and tailings). To the extent practicable, NGM attempts to perform reclamation concurrently with mining operations.

Permits pertain to environmental and safety obligations by mining companies, and for day-to-day operations compliance. These compliance permits cover areas such as air quality, surface and ground water quality, wastewater treatment, tailings storage, hazardous materials storage, land reclamation, and community relations. NGM also maintains a legal obligation register to track permitting and ensure on-going compliance. Permit applications and renewals are undertaken as required.

The Nevada Operations have the required permits to operate or will be applying for the permits as they are required for mine development.

As at 31 December, 2021, all material permits for the current operations were in compliance or were in the renewal process.

17.5.2 Additional Permits

The Goldrush project will need the permits and authorizations outlined in Table 17-2. This table assumes off-site transport of ore for processing at Goldstrike and Gold Quarry.

Goldrush is going through NEPA review. This will result in completion of an Environmental Impact Statement which will be followed by Record of Decision from the BLM. The start of the NEPA process is completion of baseline studies and submission of a PoO to the BLM.

17.6 Social Considerations, Plans, Negotiations and Agreements

17.6.1 Current Operations

Nevada Gold Mines is one of the largest direct employers in the area and also generates significant indirect employment. Prior to the formation of NGM, Barrick had a robust community relations and social performance strategy and a dedicated team to execute on that strategy. This has continued under NGM. Stakeholder engagement is a primary pillar of that strategy and includes participation in local civic activities; city/town council and county commission meetings; serving on boards and committees; town hall meetings; and one-to-one engagement. From this engagement, NGM listens to, and partners with, local organizations to identify a social investment strategy. Education, health, economic development and cultural heritage are key areas for community investments. NGM has also partnered with local law enforcement on public safety initiatives and conservation groups on environmental conservation programs.

As part of the community affairs program, NGM engages with 10 tribal communities. Prior to the formation of NGM, Barrick worked with eight Western Shoshone communities, but the operational footprint of NGM includes traditional territories of two additional tribes, the Confederated Tribes of the Goshute Reservation and Ft. McDermitt Paiute and Shoshone Tribe. NGM initiated engagement with these two communities when the joint venture was formed. Engagement with partner tribes includes regularly-held meetings called “Dialogue Meetings”; tribal council meetings; community committees; one-to-one engagements and sponsorship of several community-driven initiatives. Through this engagement, NGM works with tribal councils to identify and support community priorities in programs aimed at improving community health and well-being, education attainment, cultural heritage preservation, and economic development.

Table 17-2: Major Permits and Approvals, Goldrush

Permit or Approval	Granting Agency
Plan of Operations, EIS ROD	U.S. Department of the Interior, BLM
Reclamation Permit	NDEP-BMRR
Historic Properties Treatment Plan (HPTP)	BLM and State Historic Preservation Office (SHPO)
Explosives Permit	U.S. Department of the Treasury, Bureau of Alcohol, Tobacco, and Firearms
Review of jurisdictional determinations for CWA Section 404 permitting	US Army Corps of Engineers (USACE), Environmental Protection Agency (EPA)
Surface Disturbance Permit Class II Operating Permit	Nevada (NV) Department of Conservation and Natural Resources (NV DCNR), NDEP, Bureau of Air Pollution Control, EPA
WPCPs	NV DCNR, NDEP, BMRR
Approval to dispose of solid waste authorized at Cortez Sanitary Landfill (Class III Waiver)	NV DCNR, NDEP, Bureau of Waste Management
EPA Identification Number from Cortez Mine will be utilized	NV DCNR, NDEP, Bureau of Waste Management
General Discharge Permit (stormwater)	NDEP, Bureau of Water Pollution Control
Permit to Operate, NRS 519A.250	Nevada State Minerals Commission, Division of Minerals
Status and production of all mining and exploration projects, NRS 519A.260	Nevada State Minerals Commission, Division of Minerals
USFWS Avian Protection Plan/Take Permit	USFWS
Working in Waters Permit	NV DCNR, NDEP, Bureau of Water Pollution Control
Water Rights Change in Point of Use and Point of Diversion, new appropriations	NV DCNR, NDWR
Hazardous Materials Permit	NV Department of Public Safety-NV State Fire Marshall
Liquefied Petroleum Gas	NV Board for the Regulation of Liquefied Petroleum Gas
Solid and Universal Waste Management (batteries, electric fluorescent lamps)	NV DCNR, NDEP, Bureau of Waste Management
Develop Obligation Register	Internal NGM Requirement

17.6.2 Proposed Operations

The Cortez Complex, including the Goldrush project, operate on lands traditionally used by the Western Shoshone tribes and bands, and NGM makes efforts to demonstrate respect for indigenous cultural resources, environmental stewardship, and shared benefits to receive support from Western Shoshone communities. These efforts are reflected in the 2014 Collaborative Agreement between Barrick and the Western Shoshone tribes and bands, and the 2018 Programmatic Agreement governing the consultation process for exploration and mining activities potentially impacting cultural or historic resources. NGM's Community Relations Department has organized a number of tours for members of the Western Shoshone Cultural Advisory Group and the Battle Mountain Band Tribal Elders, along with elected officials, to visit the Goldrush portals. Updates on the project are also provided at the Western Shoshone quarterly dialogue meetings. NGM's Community Relations Department and Cortez District Management have regular meetings with the community of Pine Valley, Lander, Eureka and Humboldt County Commissioners and Crescent Valley Town Advisory Board to provide project updates.

As the Goldrush project develops, NGM will hold public meetings (and advertise a local grievance mechanism according to the Grievance Management Procedure) if internal strategy deems appropriate so that citizens in the surrounding areas may come to learn more about the project and express their support or concerns. NGM may also share employment growth projections with local government and organizations if needed for local planning purposes.

17.7 Qualified Person's Opinion on Adequacy of Current Plans to Address Issues

Based on the information provided to the QP by NGM (see Chapter 25), there are no material issues known to the QP. The Nevada Operations are mature mining operations and currently has the social license to operate within its local communities.

18.0 CAPITAL AND OPERATING COSTS

18.1 Introduction

Capital and operating cost estimates are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%.

18.2 Capital Cost Estimates

18.2.1 Basis of Estimate

Capital costs are based on recent prices or operating data.

Capital costs include funding for infrastructure, pit dewatering, development drilling, and permitting as well as miscellaneous expenditures required to maintain production.

Mobile equipment re-build/replacement schedules and fixed asset replacement and refurbishment schedules are included.

Sustaining capital costs reflect current price trends.

18.2.2 Capital Cost Estimate Summary

The overall capital cost estimate for the LOM is US$2.6 B, as summarized in Table 18-1.

18.3 Operating Cost Estimates

18.3.1 Basis of Estimate

Operating costs are based on actual costs seen during operations and are projected through the LOM plan.

Historical costs are used as the basis for operating cost forecasts for supplies and services unless there are new contract terms for these items.

Labor and energy costs are based on budgeted rates applied to headcounts and energy consumption estimates.

18.3.2 Operating Cost Estimate Summary

Operating costs for the Nevada Operations are estimated at US$34.9 B, as summarized in Table 18-2.

Table 18-1: Capital Cost Estimate

Area	Unit	Value
Mine	US$ B	1.3
Process	US$ B	0.8
General and administrative	US$ B	0.2
Goldrush pre-production	US$ B	0.4
Total	***US$ B***	***2.6***

Note: Numbers have been rounded; totals may not sum due to rounding.

Table 18-2: Operating Cost Estimate

Item	Units	Value
Mining	US$B	18.6
Rehandle	US$B	0.8
Autoclaves	US$B	4.8
Roasters	US$B	5.2
Oxide Mill	US$B	0.4
Leach	US$B	0.6
G&A	US$B	3.3
Transport	US$B	1.1
Total	***US$B***	***34.9***

Note: Numbers have been rounded; totals may not sum due to rounding.

Average operating costs over the LOM include:

- Mining (open pit and underground): US$10.47/t mined;
- Autoclave costs: US$34.01/t processed;
- Roaster costs: US$24.12/t processed;
- Oxide mill costs: US$10.46/t processed;
- Heap leach costs: US$3.53/t processed;
- General and administrative costs (inclusive of transport costs): US$5.78/t processed.

19.0 ECONOMIC ANALYSIS

19.1 Methodology Used

The financial model that supports the mineral reserve declaration is a standalone model that calculates annual cashflows based on scheduled ore production, assumed processing recoveries, metal sale prices, projected operating and capital costs and estimated taxes.

The financial analysis is based on an after-tax discount rate of 5%. All costs and prices are in unescalated “real” dollars. The currency used to document the cashflow is US$.

All costs are based on the 2022 budget. Revenue is calculated from the recoverable metals and long-term metal price and exchange rate forecasts.

19.2 Financial Model Parameters

The economic analysis is based on the metallurgical recovery predictions in Chapter 10.4, the mineral reserve estimates in Chapter 13, the mine plan discussed in Chapter 14, the commodity price forecasts in Chapter 16, closure cost estimates in Chapter 17.4, and the capital and operating costs outlined in Chapter 18. Royalties were summarized in Chapter 3.9.

Taxes assume a rate of 21%, the Nevada Net Proceeds Tax of 5%, and the Nevada Mining Education Tax (see Chapter 3.2.4).

The economic analysis is based on 100% equity financing and is reported on a 100% project ownership basis. The economic analysis assumes constant prices with no inflationary adjustments. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest.

Within the NGM JV, copper sales are generally in the form of concentrate, which is sold to smelters for further treatment and refining, and cathode. Copper is sold in either concentrate or cathode form. These sales are to third party customers. Generally, if a secondary metal expected to be mined is significant to the NGM JV, co-product accounting is applied. When the NGM JV applies co-product accounting at an operation, revenue is recognized for each co-product metal sold, and shared costs applicable to sales are allocated based on the relative sales values of the co-product metals produced. Generally, if a secondary metal expected to be mined is not significant to the Joint Venture, by-product accounting is applied. As copper and silver production at each of the NGM operations is not significant to the NGM JV, production from copper and silver are accounted for as by-product sales. Revenues from by-product sales are credited by NGM and Barrick as a by-product credit.

For the purposes of showing a complete cashflow analysis for the Nevada Operations as a whole, silver was treated as a by-product credit.

19.3 Economic Analysis

The $NPV_{5\%}$ is US$4.2 B. Due to the profile of the cashflow, considerations of payback and internal rate of return are not relevant.

A summary of the financial results is provided in Table 19-1. An annualized cashflow statement is provided in Table 19-2 to Table 19-4. In these tables, EBITDA = earnings before interest, taxes, depreciation and amortization. The active mining operation ceases in 2045. Closure costs are estimated to 2045.

19.4 Sensitivity Analysis

The sensitivity of the Project to changes in metal prices, grade, sustaining capital costs and operating cost assumptions was tested using a range of 20% above and below the base case values (Figure 19-1).

The Project is most sensitive to changes in the metal price, followed by operating cost changes and the least sensitive to capital cost changes. Grade is not shown, as the grade sensitivity mirrors the metal price sensitivity.

Table 19-1: Cashflow Summary Table (100% basis)

Item	Unit	Value
Metal prices		
Gold	US$/oz	1,200
Copper	US$/lb	2.75
Silver	US$/oz	16.5
Total ore		
Gold tonnage	M	520
Gold grade	g/t	3.00
Copper tonnage	Mt	226
Copper grade	%	0.17
Silver tonnage	Mt	169
Silver grade	g/t	6.43
Gold ounces	Moz	50
Copper pounds	Blb	0.80
Silver ounces	Moz	35
Capital costs	US$B	2.6
Operating cashflow	US$B	34.2
Discount rate	%	5
Free cashflow	US$B	5.9
Net present value	US$B	4.2

Note: Numbers have been rounded; totals may not sum due to rounding. Tonnes are metric tonnes. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest. Table 19-1 contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, which are intended to be covered by the safe harbor created by such sections and other applicable laws. Please refer to the note regarding forward-looking information at the front of the Report. The cashflow is only intended to demonstrate the financial viability of the Project. Investors are cautioned that the above is based on a high-level mine plan and certain assumptions which may differ from Newmont's long-term outlook or actual financial results, including, but not limited to commodity prices, escalation assumptions and other technical inputs. For example, Table 19-1 uses the price assumptions stated in the table, including a gold commodity price assumption of US$1,200/oz, which varies significantly from current gold prices and the assumptions that Newmont uses for its long-term guidance. Please be reminded that significant variation of metal prices, costs and other key assumptions may require modifications to mine plans, models, and prospects.

Table 19-2: Annualized Cashflow (2022–2030; 100% basis)

	Units	LOM	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total ore mined	Mt	***577.2***	31.6	35.9	72.0	58.8	78.7	68.0	49.4	34.1	32.5
Waste mined	Mt	***1,201.7***	192.7	208.5	145.2	174.2	171.1	60.1	35.7	68.7	60.2
Ore tonnes treated	Mt	***577.2***	31.6	35.9	72.0	58.8	78.7	68.0	49.4	34.1	32.5
Contained gold	Moz	***50.2***	3.8	3.3	4.6	3.9	3.7	3.6	3.1	2.9	2.4
Contained copper	Mlb	***830.0***	50.6	50.5	62.6	83.7	89.2	78.7	71.3	66.5	65.1
Revenue	$B	***48.4***	3.6	3.1	4.1	3.6	3.5	3.6	3.1	2.8	2.2
Costs applicable to sales	$B	***-34.9***	-2.2	-2.4	-2.6	-2.7	-3.0	-2.6	-1.8	-1.9	-1.9
Other expenses	$B	***-1.9***	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
EBITDA	$B	***11.6***	1.2	0.6	1.3	0.8	0.3	0.9	1.2	0.8	0.2
Operating cashflow (after estimated taxes and other adjustments)	$B	***8.5***	0.9	0.5	1.0	0.7	0.3	0.7	1.0	0.6	0.2
Total capital	$B	***-2.6***	-0.4	-0.4	-0.4	-0.2	-0.3	-0.2	-0.1	-0.1	-0.1
Free cashflow	$B	***5.9***	0.5	0.1	0.7	0.4	0.0	0.5	0.8	0.5	0.0

Table 19-3: Annualized Cashflow (2031–2040; 100% basis)

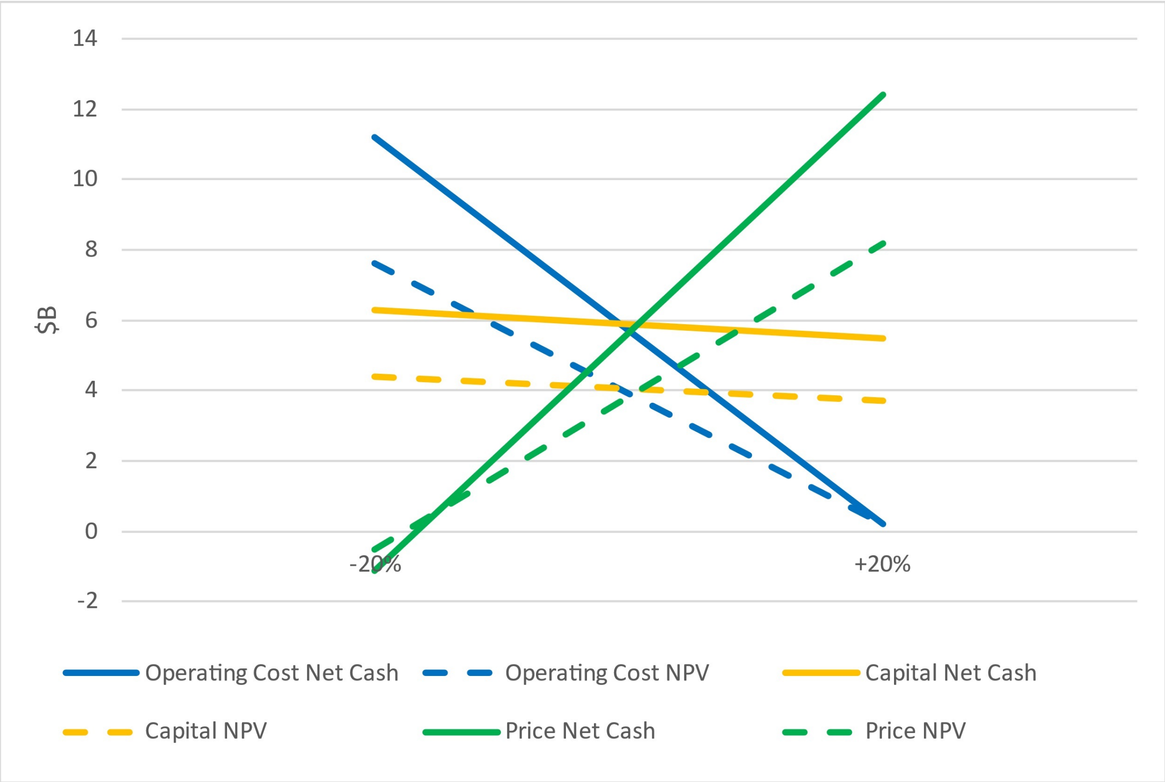
	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Total ore mined	Mt	30.0	25.5	14.9	4.0	3.9	3.9	3.9	3.9	3.7	3.7
Waste mined	Mt	42.2	13.8	11.0	1.6	1.6	1.5	1.6	1.6	1.5	1.5
Ore tonnes treated	Mt	30.0	25.5	14.9	4.0	3.9	3.9	3.9	3.9	3.7	3.7
Contained gold	Moz	2.0	2.1	1.7	1.4	1.4	1.3	1.1	1.2	1.3	1.2
Contained copper	Mlb	56.4	55.2	52.8	47.5	0.0	0.0	0.0	0.0	0.0	0.0
Revenue	$B	2.1	2.0	1.6	1.3	1.3	1.3	1.2	1.3	1.3	1.3
Costs applicable to sales	$B	-1.8	-1.8	-1.3	-0.9	-0.9	-0.8	-0.9	-0.9	-0.9	-0.8
Other expenses	$B	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	-0.1
EBITDA	$B	0.1	0.2	0.2	0.4	0.4	0.4	0.3	0.3	0.4	0.4
Operating cashflow (after estimated taxes and other adjustments)	$B	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.3
Total capital	$B	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Free cashflow	$B	0.0	0.1	0.1	0.3	0.3	0.3	0.2	0.3	0.3	0.3

Table 19-4: Annualized Cashflow (2041–2046; 100% basis)

	Units	2041	2042	2043	2044	2045	2046
Total ore mined	Mt	3.5	3.6	5.5	5.5	0.8	0.0
Waste mined	Mt	1.4	1.5	2.2	2.2	0.3	0.0
Ore tonnes treated	Mt	3.5	3.6	5.5	5.5	0.8	0.0
Contained gold	Moz	1.3	1.3	0.9	0.6	0.1	0.0
Contained copper	Mlb	0.0	0.0	0.0	0.0	0.0	0.0
Revenue	$B	1.3	1.3	0.9	0.6	0.1	0.0
Costs applicable to sales	$B	-0.8	-0.8	-0.6	-0.5	-0.2	0.0
Other expenses	$B	-0.1	-0.1	0.0	0.0	0.0	0.0
EBITDA	$B	0.4	0.4	0.2	0.1	-0.1	0.0
Operating cashflow (after estimated taxes and other adjustments)	$B	0.4	0.4	0.2	0.1	-0.1	-0.9
Total capital	$B	0.0	0.0	0.0	0.0	0.0	0.0
Free cashflow	$B	0.4	0.3	0.2	0.0	-0.1	-0.9

Note: Numbers have been rounded; totals may not sum due to rounding. Tonnes are metric tonnes. EBITDA = earnings before interest, taxes, depreciation and amortization. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest. Table 19-2 contains “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, which are intended to be covered by the safe harbor created by such sections and other applicable laws. Please refer to the note regarding forward-looking information at the front of the Report. The cashflow is only intended to demonstrate the financial viability of the Project. Investors are cautioned that the above is based on a high-level mine plan and certain assumptions which may differ from Newmont’s long-term outlook or actual financial results, including, but not limited to commodity prices, escalation assumptions and other technical inputs. For example, Table 19-2 uses the price assumptions stated in the table, including a gold commodity price assumption of US$1,200/oz, which varies significantly from current gold prices and the assumptions that Newmont uses for its long-term guidance. Please be reminded that significant variation of metal prices, costs and other key assumptions may require modifications to mine plans, models, and prospects.

Figure 19-1: NPV Sensitivity



Note: Figure prepared by Newmont, 2021. NPV = net present value.

20.0 ADJACENT PROPERTIES

This Chapter is not relevant to this Report.

21.0 OTHER RELEVANT DATA AND INFORMATION

This Chapter is not relevant to this Report.

22.0 INTERPRETATION AND CONCLUSIONS

22.1 Introduction

The QP notes the following interpretations and conclusions, based on the review of data available for this Report.

22.2 Property Setting

The Nevada Operations are located in a portion of Nevada State that has seen mining activities for over 100 years, and modern-scale operations since the 1960s. As a result, local and regional infrastructure and the supply of goods available to support mining operations is well-established. Personnel with experience in mining-related activities are available in the district. There are excellent transportation routes that access northern Nevada.

There are no significant topographic or physiographic issues that would affect the Nevada Operations. Vegetation is typically sparse. The most common current land use is for livestock grazing.

Mining operations are conducted year-round.

22.3 Ownership

NGM is a JV between Barrick and Newmont. Barrick is the JV operator and has a 61.5% interest, with Newmont owning the remaining 38.5% interest.

22.4 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

The Nevada Operations currently includes 15 operations PoOs and eight exploration PoOs. The area includes private land (surface and minerals) owned or controlled by NGM, and land owned by the federal government that is administered by the BLM.

NGM provided a claims list, fee property list, and location plans for the PoOs. The areas in the claims tables reflect the staked claim area; the areas have not been modified for claim overlaps. In some instances, where the same claims are reported within two or more PoOs; the claims are included in the claims list for the individual PoO for completeness, but have been removed for area and claim number totaling purposes.

Within the operations PoO areas are 9,205 lode, millsite, placer and patented claims covering an area of approximately 163,214 acres. Within the exploration PoO areas are 2,180 lode, millsite, placer and patented claims covering an area of approximately 43,364 acres. Between the operations and the exploration PoOs, NGM holds a total of 11,385 claims covering an area of approximately 206,578 acres.

In addition, NGM holds a number of fee properties, within the operations and exploration PoOs. Collectively, these cover an area of approximately 78,620 acres.

On 11 March, 2019, Barrick and Newmont announced the formation of the NGM JV. Newmont, Barrick, and their respective affiliates that held properties in the AOI contributed to NGM the respective rights, titles and interests in, to, or under, all properties located in the AOI and any other assets, properties or rights located in Nevada. Newmont and Barrick excluded certain development and exploration properties that the companies held within the AOI from the JV; these included Newmont's Fiberline and Mike projects, and Barrick's Fourmile project. The JV has a mechanism for the potential contribution of the excluded properties to NGM in the future.

A number of agreements exist with federal, state, and third-party entities and these are monitored using a land management database.

NGM holds all necessary surface rights for the current mining operations. Additional surface rights will be required to support the Goldrush project envisaged in the LOM plan in this Report.

NGM currently maintains a combination of approximately 1,250 active surface and groundwater rights within 38 hydrographic basins. NGM holds all necessary water rights for the LOM plan envisaged in this Report.

There are numerous royalties that pertain to the active mines within the Nevada Operations. Royalty payments vary, as the payments depend upon actual tonnages mined, the amount of gold recovered from that mined material, the deposit being mined, the receiving entity, and the type of royalty. Active royalty payments are included in the LOM economic analysis.

22.5 Geology and Mineralization

The deposits that comprise the Nevada Operations are considered to be examples of Carlin-style carbonate-hosted disseminated gold–silver deposits and intrusion-related gold–copper–silver skarn deposits.

The geological understanding of the settings, lithologies, and structural and alteration controls on mineralization in the different zones is sufficient to support estimation of mineral resources and mineral reserves. The geological knowledge of the area is also considered sufficiently acceptable to reliably inform mine planning.

The mineralization style and setting are well understood and can support declaration of mineral resources and mineral reserves.

Exploration potential exists adjacent to many of the deposits, along strike and at depth along favorable mineralized structures and within the favorable host lithologies. NGM continues to actively explore in the immediate and near-mine areas.

Multiple opportunities exist in the district to expand known deposits and discover additional mineralization.

22.6 History

The Nevada Operations have over 55 years of active mining history, with modern mining operations commencing in 1965. Modern exploration activity by Newmont and Barrick and their predecessor companies, commenced in the late 1950s.

22.7 Exploration, Drilling, and Sampling

The exploration programs completed to date are appropriate for the style of the mineralization within the Nevada Operations area.

Drill holes are oriented with an inclination to accommodate the steeply-dipping nature of the Ahafo deposits, resulting in an intersection generally representing 75–85% of true width. Drilling is orientated generally perpendicular to the strike of the orebodies. Local variations may be present to accommodate infrastructure constraints.

Sampling methods, sample preparation, analysis and security conducted prior to Newmont's interest in the operations were in accordance with exploration practices and industry standards at the time the information was collected. Current NGM sampling methods are acceptable for mineral resource and mineral reserve estimation. Sample preparation, analysis and security for the NGM programs are currently performed in accordance with general industry standards.

The quantity and quality of the lithological, geotechnical, collar and down-hole survey data collected during the exploration and delineation drilling programs are sufficient to support mineral resource and mineral reserve estimation. The collected sample data adequately reflect deposit dimensions, true widths of mineralization, and the style of the deposits. Sampling is representative of the gold and, where relevant, copper grades in the deposits, reflecting areas of higher and lower grades.

Density measurements are considered to provide acceptable density values for use in mineral resource and mineral reserve estimation.

The sample preparation, analysis, quality control, and security procedures used by the Nevada Operations have changed over time to meet evolving industry practices. Practices at the time the information was collected were industry-standard, and frequently were industry-leading practices. The sample preparation, analysis, quality control, and security procedures are sufficient to provide reliable data to support estimation of mineral resources and mineral reserves.

The QA/QC programs adequately address issues of precision, accuracy and contamination. Modern drilling programs typically included blanks, duplicates and standard samples. QA/QC submission rates meet industry-accepted standards.

22.8 Data Verification

Validation checks are performed by NGM operations personnel on data used to support estimation comprise checks on surveys, collar coordinates, lithology data (cross-checking from photographs), and assay data. Errors noted are rectified in the database prior to data being flagged as approved for use in resource estimation.

Reviews performed by external consultants were undertaken in support of acquisitions, support of feasibility-level studies, and in support of technical reports, producing independent assessments of the database quality. No significant problems with the database, sampling protocols, flowsheets, check analysis program, or data storage were noted.

NGM considers that a reasonable level of verification has been completed, and that no material issues would have been left unidentified from the programs undertaken.

The QP requested that information, conclusions, and recommendations presented in the body of this Report be reviewed by Newmont staff as a further level of data verification. Feedback from the reviewers was incorporated into the Report as required.

The QP has reviewed the reports and is of the opinion that the data verification programs completed on the data collected from the Project are consistent with industry best practices and that the database is sufficiently error-free to support the geological interpretations and mineral resource and mineral reserve estimation, and mine planning.

22.9 Metallurgical Testwork

Industry-standard studies were performed as part of process development and initial mill design. Subsequent production experience and focused investigations guided mill alterations and process changes. Testwork programs, both internal and external, continue to be performed to support current operations and potential improvements. From time to time, this may lead to requirements to adjust cut-off grades, modify the process flowsheet, or change reagent additions and plant parameters to meet concentrate quality, production, and economic targets.

Samples selected for testing were representative of the various types and styles of mineralization. Samples were selected from a range of depths within the deposit. Sufficient samples were taken so that tests were performed on sufficient sample mass.

Recovery factors estimated are based on appropriate metallurgical testwork, and are appropriate to the mineralization types and the selected process routes. Gold recovery is a function of the processing method (e.g., heap leaching, CIL, roasting, and arsenic concentration for refractory ore) and the lithology of the mineralization being processed. As applicable, recovery estimates include consideration of the head grade, cyanide-soluble gold to fire assay gold ratio, sulfide sulfur concentration, total organic carbon concentration, and silica concentration. Copper recovery models were derived from a statistical review of the metallurgical data and range in complexity from simple, fixed recoveries to complex, multi-variable equations. The following input variables were available as possible drivers of recovery: head grade, copper leach ore type, alteration type, formation, and various trace elements.

The mill throughput and associated recovery factors are considered appropriate to support mineral resource and mineral reserve estimation, and mine planning.

Depending upon the specific processing facility, several processing factors or deleterious elements could have an economic impact on extraction efficiency of a certain ore source, based either on the presence, absence, or concentration of the following constituents in the processing stream: organic carbon; sulfide sulfur; carbonate carbon; arsenic; mercury; antimony; and copper. However, under normal ore routing and blending practices at NGM where material from several sites may be processed at one facility, the above list of constituents is typically not a concern.

22.10 Mineral Resource Estimates

NGM has a set of protocols, internal controls, and guidelines in place to support the mineral resource estimation process.

All mineralogical information, exploration boreholes and background information were provided to the estimators by the geological staff at the mines or by exploration staff.

Mineral resources are reported using the mineral resource definitions set out in SK1300, and are reported exclusive of those mineral resources converted to mineral reserves. The reference point for the estimate is in situ. Mineral resources are reported on a 100% basis. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest.

Factors that may affect the Mineral Resource estimate include: changes to long-term metal price assumptions; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological and grade shape and geological and grade continuity assumptions; changes to input parameters used in the pit shells and stope outlines constraining the Mineral Resources; changes to the cut-off grades used to constrain the estimates; variations in geotechnical, mining, and processing recovery assumptions; and changes to environmental, permitting and social license assumptions.

22.11 Mineral Reserve Estimates

Mineral reserves were converted from measured and indicated mineral resources. Inferred mineral resources were set to waste.

All current mineral reserves will be exploited using open pit mining methods, underground mining methods, or are in stockpiles. Mineral reserves amenable to open pit mining methods were estimated assuming open pit methods with conventional methods for drilling, blasting, loading with hydraulic shovels and haulage by large trucks. Mineral reserves amenable to underground mining methods were estimated assuming conventional stoping methods. Mineral resources were converted to mineral reserves using a detailed mine plan, an engineering analysis, and consideration of appropriate modifying factors. Modifying factors include the consideration of dilution and ore losses, open pit and underground mining methods, metallurgical recoveries, permitting and infrastructure requirements.

Mineral reserves are reported using the mineral reserve definitions set out in SK1300. The reference point for the estimate is the point of delivery to the process facilities. Mineral reserves are reported on a 100% basis. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest.

Factors that may affect the mineral reserve estimates include: changes to the gold price assumptions; changes in the metallurgical recovery factors; changes to the operating cut-off assumptions for mill feed or stockpile feed; changes to the input assumptions used to derive the open pit and stope outlines and the mine plan that is based on those open pit and stope designs; changes to operating, and capital assumptions used, including changes to input cost assumptions such as consumables, labor costs, royalty and taxation rates; variations in geotechnical, hydrogeological, dilution and mining assumptions; including changes to pit phase or stope designs as a result of changes to geotechnical, hydrogeological, and engineering data used; changes to the assumed permitting and regulatory environment under which the mine plan was developed; ability to maintain mining permits and/or surface rights; ability to permit the expanded TSF and obtain the operations certificate for current and future underground operations; ability to maintain social and environmental license to operate.

22.12 Mining Methods

Mining operations can be conducted year-round.

Open pit mining is conducted using conventional techniques and an Owner-operated conventional truck and shovel fleet. The open pit mine plans are appropriately developed to maximize mining efficiencies, based on the current knowledge of geotechnical, hydrological, mining and processing information on the Project.

Underground mining is currently conducted using conventional stoping or cut-and-fill methods, and conventional mechanized equipment. The underground mine plans are based on the current knowledge of geotechnical, hydrological, mining and processing information. At certain sites, adjustments to mining methods is in process to reflect rock mass conditions.

The LOM plan assumes 577.2 Mt of ore and 1,201.7 Mt of waste will be mined.

As part of day-to-day operations, NGM will continue to perform reviews of the mine plan and consider alternatives to, and variations within, the plan. Alternative scenarios and reviews may be based on ongoing or future mining considerations, evaluation of different potential input factors and assumptions, and corporate directives.

22.13 Recovery Methods

The process facilities designs were based on a combination of metallurgical testwork, previous study designs, previous operating experience. The designs are generally conventional to the gold industry and have no novel parameters.

The facilities will produce variations in recovery due to the day-to-day changes in ore type or combinations of ore type being processed. These variations are expected to trend to the forecast recovery value for monthly or longer reporting periods.

22.14 Infrastructure

The majority of the key infrastructure to support the mining activities envisaged in the LOM is in place. New infrastructure will be required to support proposed operations at Goldrush and Robertson. A third shaft is in progress at the Turquoise Ridge Complex.

A stockpiling strategy is practiced to defer lower-grade ores to the end of mine life.

There is sufficient capacity in the existing heap leach pads and planned heap leach pad expansions, existing WRSFs and planned WRSF expansions, and existing TSFs and planned TSF expansions for LOM planning purposes.

The current water sources, assuming similar climate conditions to those experienced by the operations in the past, will be sufficient for the LOM plan.

The current water management practices are expected to be applicable for the LOM plan.

The existing infrastructure, staff availability, existing power, water, and communications facilities, and the methods whereby goods are transported to the mine are all in place and well-established, and can support the estimation of mineral resources and mineral reserves. Requirements for additional infrastructure to support the proposed operations at Goldrush and Robertson are well understood.

Personnel commute from surrounding settlements.

Electrical power for the Carlin, Cortez, Turquoise Ridge, and Phoenix Complexes is obtained via TS Power Plant and from the Western 102 power plant (both of which are owned and operated by NGM) with transmission by NV Energy. Power for Gold Quarry, Long Canyon, and Goldrush is supplied via the Wells Rural Electric Power Company.

22.15 Market Studies

NGM has established contracts and buyers for the gold bullion, copper concentrate and copper cathode products from the Nevada Operations. Together with public documents and analyst forecasts, these data support that there is a reasonable basis to assume that for the LOM plan, that the key products will be saleable at the assumed commodity pricing.

Barrick, as operator of the NGM JV, provides the commodity price guidance. Higher metal prices are used for the mineral resource estimates to ensure the mineral reserves are a sub-set of, and not constrained by, the mineral resources, in accordance with industry-accepted practice.

NGM has contracts in place for the majority of the copper concentrate with smelters and various traders. The terms contained within the sales contract are typical of and consistent with standard industry practice and are like contracts for the supply of copper concentrate throughout the world. The Phoenix copper leach facility produces cathode copper which is sold to a trader who re-sells for product manufacturing. The terms contained within the sales contract are typical of and consistent with standard industry practice and are like contracts for the supply of copper cathode globally.

NGM's bullion is sold on the spot market, by marketing experts retained in-house by NGM/Barrick. NGM provides Newmont with the date and number of ounces that will be credited to Newmont's account, and invoices Newmont for how much NGM is owed, such that Newmont receives credits for the ounces (based on the JV interest) and Newmont pays NGM for the ounces. The terms contained within the sales contracts are typical and consistent with standard industry practice and are similar to contracts for the supply of bullion elsewhere in the world.

The largest in-place contracts other than for product sales cover items such as bulk commodities, operational and technical services, mining and process equipment, and administrative support services. Contracts are negotiated and renewed as needed.

22.16 Environmental, Permitting and Social Considerations

Baseline and supporting environmental studies were completed to assess both pre-existing and ongoing site environmental conditions, as well as to support decision-making processes during operations start-up. Characterization studies were completed for climate, air quality, hydrology and surface water quality, hydrogeology, flora, fauna, soils, agriculture and land use, and the socioeconomic environment.

Plans were developed and implemented to address aspects of operations such as waste and fugitive dust management, spill prevention and contingency planning, water management, and noise levels.

NGM currently has posted approximately US$2.14 B in financial assurances in the form of letters of credit and surety bonds to cover mine closure costs. Additionally, there are several trusts associated with closure cost planning.

As part of its permitting requirements, NGM has submitted and received approval on numerous PoOs and Reclamation Plans for each area. NGM has submitted and/or provided information to support NEPA evaluation for each area containing public lands. The PoOs are updated and amended as necessary to allow for continuation of mining or additional mine development. The Nevada Operations have the required permits to operate or will be applying for the permits as they are required for mine development. Additional permits will be required to support planned operations at Goldrush with about 20 key permits required for Goldrush.

Nevada Gold Mines is one of the largest direct employers in the area and also generates significant indirect employment. Prior to the formation of NGM, Barrick had a robust community relations and social performance strategy and a dedicated team to execute on that strategy. This has continued under NGM. Stakeholder engagement is a primary pillar of that strategy and includes participation in local civic activities; city/town council and county commission meetings; serving on boards and committees; town hall meetings; and one-to-one engagement. From this engagement, NGM listens to, and partners with, local organizations to identify a social investment strategy.

As part of the community affairs program, NGM engages with 10 tribal communities. Engagement with partner tribes includes regularly-held meetings called “Dialogue Meetings”; tribal council meetings; community committees; one-to-one engagements and sponsorship of several community-driven initiatives. Through this engagement, NGM works with tribal councils to identify and support community priorities in programs aimed at improving community health and well-being, education attainment, cultural heritage preservation, and economic development.

The Cortez Complex, including the Goldrush project, operate on lands traditionally used by the Western Shoshone tribes and bands, and NGM makes efforts to demonstrate respect for indigenous cultural resources, environmental stewardship, and shared benefits to receive support from Western Shoshone communities.

As the Goldrush project develops, NGM will hold public meetings (and advertise a local grievance mechanism according to the Grievance Management Procedure) if internal strategy deems appropriate so that citizens in the surrounding areas may come to learn more about the project and express their support or concerns.

22.17 Capital Cost Estimates

Capital costs were based on recent prices or operating data and are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%.

Capital costs included funding for infrastructure, pit dewatering, development drilling, and permitting as well as miscellaneous expenditures required to maintain production. Mobile equipment re-build/replacement schedules and fixed asset replacement and refurbishment schedules were included. Sustaining capital costs reflected current price trends.

The overall capital cost estimate for the LOM is US$2.6 B.

22.18 Operating Cost Estimates

Operating costs were based on actual costs seen during operations and are projected through the LOM plan, and are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%.

Historical costs were used as the basis for operating cost forecasts for supplies and services unless there are new contract terms for these items. Labor and energy costs were based on budgeted rates applied to headcounts and energy consumption estimates.

The LOM operating costs are estimated at US$34.9 B. The average mining costs (open pit and underground) over the LOM are US$10.47/t mined, autoclave costs are US$34.01/t processed, roaster costs are US$24.12/t processed, oxide mill costs are US$10.46/t processed, heap leach costs are US$3.53/t processed, and general and administrative costs (inclusive of transport costs) are US$5.78/t processed.

22.19 Economic Analysis

The $NPV_{5\%}$ is US$4.2 B on a 100% basis. Barrick owns a 61.5% JV interest, with Newmont owning the remaining 38.5% JV interest.

Due to the profile of the cashflow, considerations of payback and internal rate of return are not relevant.

22.20 Risks and Opportunities

Factors that may affect the mineral resource and mineral reserve estimates were identified in Chapter 11.13 and Chapter 12.9 respectively.

22.20.1 Risks

The risks associated with the Nevada Operations are generally those expected with open pit and underground mining operations and include the accuracy of the resource models, unexpected geological features that cause geotechnical issues, and/or operational impacts.

Other risks noted include:

- Commodity price increases for key consumables such diesel, electricity, tires and chemicals would negatively impact the stated mineral reserves and mineral resources;
- Labor cost increases or productivity decreases could also impact the stated mineral reserves and mineral resources, or impact the economic analysis that supports the mineral reserves;
- Geotechnical and hydrological assumptions used in mine planning are based on historical performance, and to date historical performance has been a reasonable predictor of current conditions. Any changes to the geotechnical (seismicity) and hydrological assumptions could affect mine planning, affect capital cost estimates if any major rehabilitation is required due to a geotechnical or hydrological event, affect operating costs due to mitigation measures that may need to be imposed, and impact the economic analysis that supports the mineral reserve estimates;

- The mineral resource estimates are sensitive to metal prices. Lower metal prices require revisions to the mineral resource estimates;
- The LOM plan assumes that new TSFs can be permitted based on envisaged timelines. If the permitting schedule is delayed, this could impact costs and proposed production;
- Updated industry standards for TSFs may have an impact on the envisaged TSF costs;
- The LOM plan assumes that ore is sent to the process facility that will provide optimal results (costs, metallurgical recoveries). Should, for operational reasons, a different process facility be selected, then higher operating costs and/or lower recoveries may result;
- The LOM plan envisages blending of numerous ore sources at the various process facilities. Non-optimal blends could impact operating costs, plant throughputs, and metallurgical recoveries. There may be potential for exceedances on environmental monitoring limits if such blends are not well controlled;
- Stockpiled materials can undergo degradation over time, and the metallurgical recoveries assumed for stockpiled materials may be lower than that assumed in the LOM plan;
- Management of threatened and endangered species may delay permits and increase capital and/or operating costs. Although there are site-specific management plans, either planned or in place, if there is a major impact seen on the populations from mining activities, the environmental permits for the operations could be revised or even revoked. The social license to operate could also be impacted;
- Regulatory approval of the Goldrush project is still pending, and the project is in the EIA process. If conditions are imposed by the regulators as a result of the process, this could impact the project schedule and cost estimates;
- On-highway transport of ore or concentrate could be impacted by changes to regulations on the number of trucks that can be used;
- Exceedances of permit conditions have historically occurred at certain of the process facilities. Should such exceedances recur, there could be social and regulatory impacts to operations, mine plans, and the forecast economic analyses;
- Climate changes could impact operating costs and ability to operate;
- The long-term reclamation and mitigation of the Nevada Operations are subject to assumptions as to closure timeframes and closure cost estimates. If these cannot be met, there is a risk to the costs and timing;
- Newmont is the minority partner in the NGM JV and does not exercise day-to-day control over NGM’s operations;
- Political risk from challenges to the current state or federal mining laws.

22.20.2 Opportunities

Opportunities include:

- Conversion of some or all of the measured and indicated mineral resources currently reported exclusive of mineral reserves to mineral reserves, with appropriate supporting studies;

- Upgrade of some or all of the inferred mineral resources to higher-confidence categories, such that this higher-confidence material could potentially be converted to mineral reserve estimates;
- Higher metal prices than forecast could present upside sales opportunities and potentially an increase in predicted Project economics;
- NGM holds a significant ground package within the AOI that retains significant exploration potential:
    - Exploration potential around current and historical open pits;
    - Potential for new underground operations proximal to the current mineral resource and mineral reserve estimates, with the support of additional studies.

22.21 Conclusions

Under the assumptions presented in this Report, the Nevada Operations have a positive cashflow, and mineral reserve estimates can be supported.

23.0 RECOMMENDATIONS

As the Nevada Operations are a complex of operating mines, the QP has no material recommendations to make.

24.0 REFERENCES

24.1 Bibliography

Altman, K.A., Bergen, R.D., Collins, S.E., Moore, C.M., and Valliant, W.W., 2016: Technical Report on the Cortez Operations, State of Nevada, U.S.A., NI 43-101 report; report prepared by Roscoe Postle Associates Inc. for Barrick Gold Corporation, effective date March 21, 2016

Bergen, R.D., Gareau, M.B., and Altman, K.A., 2012: Technical Report On The Cortez Joint Venture Operations, Lander And Eureka Counties, State Of Nevada, U.S.A. NI 43-101: report prepared by Roscoe Postle Associates Inc. for Barrick Gold Corporation, effective date March 16, 2012.

Bolin, L., Fiddes, C., Yopps, S.W., 2020: Technical Report On The Turquoise Ridge Complex, State Of Nevada, USA NI 43-101 Report: Prepared For Newmont Corporation And Barrick Gold Corporation By Nevada Gold Mines LLC effective date December 31, 2019.

Cox., J.J., Valliant, W.W., Altman, K.A., Geusebroek, P.A., 2018: Technical Report On The Turquoise Ridge Mine, State Of Nevada, U.S.A. NI 43-101 Report: report prepared by Roscoe Postle Associates Inc. for Barrick Gold Corporation, effective date March 19, 2018.

Cox., J.J., Geusebroek, P.A., Valliant, W.W., Haggarty, S., 2019: Technical Report On The Goldstrike Mine, Eureka And Elko Counties, State Of Nevada, USA NI 43-101 Report: report prepared by Roscoe Postle Associates Inc. for Barrick Gold Corporation, effective date March 22, 2019.

Doe, D., 2018: Carlin Operations, Nevada USA, NI 43-101 Report: report prepared for Newmont Mining Corporation, effective date 31 December, 2018.

Evans, L., Collins, S.E., Cox, J.J., Krutzelmann, H., 2017: Technical Report On The Goldstrike Mine, Eureka And Elko Counties, Nevada U.S.A. NI 43-101 Report: report prepared by Roscoe Postle Associates Inc. for Barrick Gold Corporation, effective date April 25, 2017.

Fiddes, C., Olcott, J., Bolin, C.L. and Yopps, S.W., 2020: Technical Report On The Carlin Complex, Eureka And Elko Counties, State Of Nevada, USA: report prepared for Barrick Gold Corporation and Newmont Corporation by Nevada Gold Mines LLC, effective date March 25, 2020.

Gustin, M.M. and Smith, M., 2009: Technical Report on the Long Canyon Project, Elko County, Nevada, USA: report prepared by Mine Development Associates for Fronteer Development Group Inc., effective date April 17, 2009.

Heitt, D.G., 2002: Newmont's Reserve History on the Carlin Trend, 1965–2001: in Thompson, T.B., Teal, L., and Meeuwig, R.O., eds, Gold Deposits of the Carlin Trend, Nevada Bureau of Mines and Geology Bulletin 111, pp. 35–45.

Hofstra A.H., Leventhal J.S., Northrop H.R., Landis G.P., Rye R.O., Birak D.J., and Dahl A.R., 1991: Genesis Of Sediment-Hosted Disseminated Gold Deposits By Fluid Mixing And Sulfidization: Chemical-Reaction-Path Modeling Of Ore-Depositional Processes Documented In The Jerritt Canyon District, Nevada: Geology 19:36–40.

Hotz, P.E., 1963: Geology and Mineral Deposits of the Osgood Mountains Quadrangle, Humboldt County, Nevada, Preston E. Hotz and Ronald Wilden. Washington, U.S. Government Printing Office, 1963.

Jory, J., 2002: Stratigraphy and Host Rock Controls of Gold Deposits of the Northern Carlin Trend: in Thompson, T.B., Teal, L., and Meeuwig, R.O., eds, Gold Deposits of the Carlin Trend, Nevada Bureau of Mines and Geology Bulletin 111, pp. 20–34.

Miranda, H., Altman, K.A., Geusebroek, P.A., Valliant, W.W., Bergen, R.D., 2019: Technical Report On The Cortez Joint Venture Operations, Lander And Eureka Counties, State Of Nevada, U.S.A. NI 43-101 Report: report prepared by Roscoe Postle Associates Inc. for Barrick Gold Corporation, March 22, 2019.

Moore, C.M., Bergen, R.D., Valliant, W.W., Collins, S.E., Altman, K.A., 2012: Technical Report On The Goldstrike Mine, Eureka & Elko Counties, State Of Nevada, U.S.A., NI 43-101 Report: report prepared by Roscoe Postle Associates Inc. for Barrick Gold Corporation, effective date March 16, 2012.

Nevada Gold Mines, 2020: Qualified Persons Summary to Support Year End Reserves and Resources, Cortez; report prepared year-end 31 December, 2020.

Nevada Gold Mines, 2020: Qualified Persons Summary to Support Year End Reserves and Resources, Goldrush; report prepared year-end 31 December, 2020.

Nevada Gold Mines, 2020: Qualified Persons Summary to Support Year End Reserves and Resources, Carlin Complex; report prepared year-end 31 December, 2020.

Nevada Gold Mines, 2020: Qualified Persons Summary to Support Year End Reserves and Resources, Arturo South; report prepared year-end 31 December, 2020.

Nevada Gold Mines, 2020: Qualified Persons Summary to Support Year End Reserves and Resources, Long Canyon; report prepared year-end 31 December, 2020.

Nevada Gold Mines, 2020: Qualified Persons Summary to Support Year End Reserves and Resources, Phoenix; report prepared year-end 31 December, 2020.

Nevada Gold Mines, 2021: Goldrush Underground Mine Feasibility Study: draft August, 2021.

Nevada Gold Mines, 2021: Goldrush Underground Mine Feasibility Study: draft October, 2021.

Papke, K.G., and Davis, D.A., 2019: Mining Claim Procedures for Nevada Prospectors and Miners, Fifth Edition: Nevada Bureau of Mines and Geology, Mackay School of Mines, 2019 update, 58 p.

Rhys, D., Valli, F., Burgess, R., Heitt, D., Griesel, G. and Hart, K., 2015: Controls of Fault and Fold Geometry on the Distribution of Gold Mineralization on the Carlin Trend: in Prennell, W.M. and Garside, L.J., eds, New Concepts and Discoveries. Geological Society of Nevada 2015 Symposium. Vol. Geological Society of Nevada Reno/Sparks, NV, p. 333–389.

Smith, M.T., Rhys, D., Ross, K., Lee, C., and Gray, J.N., 2013: The Long Canyon Deposit: Anatomy of a New Off-Trend Sedimentary Rock-Hosted Gold Discovery in Northeastern Nevada: Economic Geology, vol. 108(5), pp. 1119–1145.

Stewart, J.H., 1980: Geology of Nevada: a discussion to accompany the Geologic Map of Nevada: Nevada Bureau of Mines and Geology Special Publication, No. 4, 136 p.

Teal, L., and Jackson, M., 2002: Geologic Overview of the Carlin Trend Gold Deposits: in Thompson T.B., Teal, L., and Meeuwig, R.O., eds., Gold Deposits of the Carlin Trend: Nevada Bureau of Mines and Geology, Bulletin 111, p. 9–19.

24.2 Abbreviations

Abbreviation/Symbol	**Term**
AAL	American Assay Laboratory
ALS	ALS Chemex
BLM	US Bureau of Land Management
BMRR	Bureau of Mining Regulation and Reclamation
CAI	organic carbon
CIC	carbon-in-columns
CRF	capital recovery factor
CSAMT	controlled-source audio-frequency telluromagnetics
DNA	Determination of NEPA Adequacy
DWR	State Division of Water Resources
EA	Environmental Assessments
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
Elliot	Elliot Geophysical Laboratories
EM	electromagnetics
FA	fire assay
FONSI	Findings of No Significant Impacts
G&A	general and administrative
GPS	global positioning system
GSI	geological strength index
ICP	inductively coupled plasma
ICP AES	inductively coupled plasma–atomic emission spectroscopy
ICP-MS	inductively coupled plasma–mass spectrometry
ID2	inverse distance to the power of two
ID3	inverse distance to the power of three
ID5	inverse distance to the power of five
IK	indicator kriging
IP	induced polarization
IRMR	in situ rock mass rating
LG	Lerchs–Grossmann
LIK	Local indicator kriging
LOM	life-of-mine
MSO	Mineable Stope Optimizer
MT	magnetotellurics
NAC	Nevada Administrative Code
NaCN	cyanide
NAL	North Area Leach pads
NDEP	Nevada Division of Environmental Protection
NEPA	National Environmental Policy Act
Newmont	Newmont Mining Corporation
NEX	North East Extension
NN	nearest neighbor

Abbreviation/Symbol	Term
OK	ordinary kriging
PAG	potentially acid-generating
PoO	Plan of Operations
QA/QC	quality assurance and quality control
QP	Qualified Person
RC	reverse circulation
RIL	resin-in-leach
RMR	rock mass rating
ROD	Record of Decision
ROM	run-of-mine
RQD	rock quality description
SAG	semi-autogenous grind
SAL	South Area leach pads
Sdrm	Silurian Roberts Mountain
SDrm	Siluro-Devonian Roberts Mountains Formation
SME	Society for Mining, Metallurgy and Exploration
SP	self-potential
SRCE	Standard Reclamation Cost Estimator
SRM	standard reference materials
SX/EW	solvent extraction and electrowinning
TSF	tailing storage facility
US	United States
USGS	US Geological Survey
WPCPs	water pollution control permits
WRSF	waste rock storage facilities
XRD	X-ray diffraction
XRF	X-ray fluorescence
Zonge	Zonge Engineering

24.3 Glossary of Terms

Term	Definition
advanced argillic alteration	Consists of kaolinite + quartz + hematite + limonite. feldspars leached and altered to sericite. The presence of this assemblage suggests low pH (highly acidic) conditions. At higher temperatures, the mineral pyrophyllite (white mica) forms in place of kaolinite
alluvium	Unconsolidated terrestrial sediment composed of sorted or unsorted sand, gravel, and clay that has been deposited by water.
aquifer	A geologic formation capable of transmitting significant quantities of groundwater under normal hydraulic gradients.
argillic alteration	Introduces any one of a wide variety of clay minerals, including kaolinite, smectite and illite. Argillic alteration is generally a low temperature event, and some may occur in atmospheric conditions
autoclave	A special reaction vessel designed for high pressure and temperature hydrometallurgical reactions, for example in the treatment of refractory ores
ball mill	A piece of milling equipment used to grind ore into small particles. It is a cylindrical shaped steel container filled with steel balls into which crushed ore is fed. The ball mill is rotated causing the balls themselves to cascade, which in turn grinds the ore.

Term	Definition
Bond work index	A measure of the energy required to break an ore to a nominal product size, determined in laboratory testing, and used to calculate the required power in a grinding circuit design.
bullion	Unrefined gold and/or silver mixtures that have been melted and cast into a bar or ingot.
carbon-in-column	A method of recovering gold and silver from rich solution from the heap leaching process by adsorption of the precious metals onto fine carbon suspended by up-flow of solution through a tank.
carbon-in-leach	A method of recovering gold and silver from fine ground ore by simultaneous dissolution and adsorption of the precious metals onto fine carbon in an agitated tank of ore solids/solution slurry. The carbon flows counter currently to the head of the leaching circuit.
carbonaceous	Containing graphitic or hydrocarbon species, e.g. in an ore or concentrate; such materials generally present some challenge in processing, e.g. preg-robbing characteristics.
comminution/crushing/grinding	Crushing and/or grinding of ore by impact and abrasion. Usually, the word “crushing” is used for dry methods and “grinding” for wet methods. Also, “crushing” usually denotes reducing the size of coarse rock while “grinding” usually refers to the reduction of the fine sizes.
concentrate	The concentrate is the valuable product from mineral processing, as opposed to the tailing, which contains the waste minerals. The concentrate represents a smaller volume than the original ore
cut-and-fill	Cut-and-fill stoping is a preferred method for high-grade ore bodies with a steep dip size or irregular shape or vein structure. It is also useful for deposits that have weak walls as the fill supports the slope walls and provides a platform for when the next slice is cut.
cut-off grade	The grade (i.e., the concentration of metal or mineral in rock) that determines the destination of the material during mining. For purposes of establishing “prospects of economic extraction,” the cut-off grade is the grade that distinguishes material deemed to have no economic value (it will not be mined in underground mining or if mined in surface mining, its destination will be the waste dump) from material deemed to have economic value (its ultimate destination during mining will be a processing facility). Other terms used in similar fashion as cut-off grade include net smelter return, pay limit, and break-even stripping ratio.
cyanidation	A method of extracting gold or silver by dissolving it in a weak solution of sodium cyanide.
data verification	The process of confirming that data has been generated with proper procedures, has been accurately transcribed from the original source and is suitable to be used for mineral resource and mineral reserve estimation
decline	A sloping underground opening for machine access from level to level or from the surface. Also called a ramp.
density	The mass per unit volume of a substance, commonly expressed in grams/ cubic centimeter.
depletion	The decrease in quantity of ore in a deposit or property resulting from extraction or production.
development	Often refers to the construction of a new mine or; Is the underground work carried out for the purpose of reaching and opening up a mineral deposit. It includes shaft sinking, cross-cutting, drifting and raising.
development property	a property that is being prepared for mineral production or a material expansion of current production, and for which economic viability has been demonstrated by a pre-feasibility or feasibility study.

Term	Definition
dilution	Waste of low-grade rock which is unavoidably removed along with the ore in the mining process.
drift	A horizontal mining passage underground. A drift usually follows the ore vein, as distinguished from a crosscut, which intersects it.
easement	Areas of land owned by the property owner, but in which other parties, such as utility companies, may have limited rights granted for a specific purpose.
electrowinning.	The removal of precious metals from solution by the passage of current through an electrowinning cell. A direct current supply is connected to the anode and cathode. As current passes through the cell, metal is deposited on the cathode. When sufficient metal has been deposited on the cathode, it is removed from the cell and the sludge rinsed off the plate and dried for further treatment.
elution	Recovery of the gold from the activated carbon into solution before zinc precipitation or electro-winning.
EM	Geophysical method, electromagnetic system, measures the earth's response to electromagnetic signals transmitted by an induction coil
encumbrance	An interest or partial right in real property which diminished the value of ownership, but does not prevent the transfer of ownership. Mortgages, taxes and judgements are encumbrances known as liens. Restrictions, easements, and reservations are also encumbrances, although not liens.
feasibility study	A feasibility study is a comprehensive technical and economic study of the selected development option for a mineral project, which includes detailed assessments of all applicable modifying factors, as defined by this section, together with any other relevant operational factors, and detailed financial analysis that are necessary to demonstrate, at the time of reporting, that extraction is economically viable. The results of the study may serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. A feasibility study is more comprehensive, and with a higher degree of accuracy, than a pre-feasibility study. It must contain mining, infrastructure, and process designs completed with sufficient rigor to serve as the basis for an investment decision or to support project financing.
flotation	Separation of minerals based on the interfacial chemistry of the mineral particles in solution. Reagents are added to the ore slurry to render the surface of selected minerals hydrophobic. Air bubbles are introduced to which the hydrophobic minerals attach. The selected minerals are levitated to the top of the flotation machine by their attachment to the bubbles and into a froth product, called the “flotation concentrate.” If this froth carries more than one mineral as a designated main constituent, it is called a “bulk float”. If it is selective to one constituent of the ore, where more than one will be floated, it is a “differential” float.
flowsheet	The sequence of operations, step by step, by which ore is treated in a milling, concentration, or smelting process.
footwall	The wall or rock on the underside of a vein or ore structure.
frother	A type of flotation reagent which, when dissolved in water, imparts to it the ability to form a stable froth
gangue	The fraction of ore rejected as tailing in a separating process. It is usually the valueless portion, but may have some secondary commercial use
gravity separation	Exploitation of differences in the densities of particles to achieve separation. Machines utilizing gravity separation include jigs and shaking tables.
hanging wall	The wall or rock on the upper or top side of a vein or ore deposit.

Term	Definition
heap leaching	A process whereby valuable metals, usually gold and silver, are leached from a heap or pad of crushed ore by leaching solutions percolating down through the heap and collected from a sloping, impermeable liner below the pad.
hydrometallurgy	A type of extractive metallurgy utilizing aqueous solutions/solvents to extract the metal value from an ore or concentrate. Leaching is the predominant type of hydrometallurgy.
indicated mineral resource	An indicated mineral resource is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of adequate geological evidence and sampling. The term adequate geological evidence means evidence that is sufficient to establish geological and grade or quality continuity with reasonable certainty. The level of geological certainty associated with an indicated mineral resource is sufficient to allow a qualified person to apply modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.
inferred mineral resource	An inferred mineral resource is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. The term limited geological evidence means evidence that is only sufficient to establish that geological and grade or quality continuity is more likely than not. The level of geological uncertainty associated with an inferred mineral resource is too high to apply relevant technical and economic factors likely to influence the prospects of economic extraction in a manner useful for evaluation of economic viability. A qualified person must have a reasonable expectation that the majority of inferred mineral resources could be upgraded to indicated or measured mineral resources with continued exploration; and should be able to defend the basis of this expectation before his or her peers.
initial assessment	An initial assessment is a preliminary technical and economic study of the economic potential of all or parts of mineralization to support the disclosure of mineral resources. The initial assessment must be prepared by a qualified person and must include appropriate assessments of reasonably assumed technical and economic factors, together with any other relevant operational factors, that are necessary to demonstrate at the time of reporting that there are reasonable prospects for economic extraction. An initial assessment is required for disclosure of mineral resources but cannot be used as the basis for disclosure of mineral reserves
internal rate of return (IRR)	The rate of return at which the Net Present Value of a project is zero; the rate at which the present value of cash inflows is equal to the present value of the cash outflows.
IP	Geophysical method, induced polarization; used to directly detect scattered primary sulfide mineralization. Most metal sulfides produce IP effects, e.g. chalcopyrite, bornite, chalcocite, pyrite, pyrrhotite
Knelson concentrator	a high-speed centrifuge that combines centrifugally enhanced gravitational force with a patented fluidization process to recover precious metals
life of mine (LOM)	Number of years that the operation is planning to mine and treat ore, and is taken from the current mine plan based on the current evaluation of ore reserves.
lithogeochemistry	The chemistry of rocks within the lithosphere, such as rock, lake, stream, and soil sediments
lixiviant	A leach liquor used to dissolve a constituent in an ore, for example a cyanide solution used to dissolve gold.

Term	Definition
long-hole stoping	Long-hole sublevel stoping, often referred to as sublevel open stoping and blast hole stoping is a commonly-used method in large-scale mining. It is primarily used for large ore bodies with a steep dip, regular shape, and defined ore bodies. It is used when the ore body is narrow in width (20–100 ft)
long-hole stope retreat	Similar mining method to long-hole stoping, except that the long axis of the stope is along (or parallel) to the strike of the orebody.
magnetic separation	Use of permanent or electro-magnets to remove relatively strong ferromagnetic particles from para- and dia-magnetic ores.
measured mineral resource	A measured mineral resource is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of conclusive geological evidence and sampling. The term conclusive geological evidence means evidence that is sufficient to test and confirm geological and grade or quality continuity. The level of geological certainty associated with a measured mineral resource is sufficient to allow a qualified person to apply modifying factors, as defined in this section, in sufficient detail to support detailed mine planning and final evaluation of the economic viability of the deposit.
merger	A voluntary combination of two or more companies whereby both stocks are merged into one.
mill	Includes any ore mill, sampling works, concentration, and any crushing, grinding, or screening plant used at, and in connection with, an excavation or mine.
mineral reserve	A mineral reserve is an estimate of tonnage and grade or quality of indicated and measured mineral resources that, in the opinion of the qualified person, can be the basis of an economically viable project. More specifically, it is the economically mineable part of a measured or indicated mineral resource, which includes diluting materials and allowances for losses that may occur when the material is mined or extracted. The determination that part of a measured or indicated mineral resource is economically mineable must be based on a preliminary feasibility (pre-feasibility) or feasibility study, as defined by this section, conducted by a qualified person applying the modifying factors to indicated or measured mineral resources. Such study must demonstrate that, at the time of reporting, extraction of the mineral reserve is economically viable under reasonable investment and market assumptions. The study must establish a life of mine plan that is technically achievable and economically viable, which will be the basis of determining the mineral reserve. The term economically viable means that the qualified person has determined, using a discounted cashflow analysis, or has otherwise analytically determined, that extraction of the mineral reserve is economically viable under reasonable investment and market assumptions. The term investment and market assumptions includes all assumptions made about the prices, exchange rates, interest and discount rates, sales volumes, and costs that are necessary to determine the economic viability of the mineral reserves. The qualified person must use a price for each commodity that provides a reasonable basis for establishing that the project is economically viable.

Term	Definition
mineral resource	A mineral resource is a concentration or occurrence of 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 economic extraction. The term material of economic interest includes mineralization, including dumps and tailings, mineral brines, and other resources extracted on or within the earth's crust. It does not include oil and gas resources as defined in Regulation S-X (§210.4-10(a)(16)(D) of this chapter), gases (e.g., helium and carbon dioxide), geothermal fields, and water. When determining the existence of a mineral resource, a qualified person, as defined by this section, must be able to estimate or interpret the location, quantity, grade or quality continuity, and other geological characteristics of the mineral resource from specific geological evidence and knowledge, including sampling; and conclude that there are reasonable prospects for economic extraction of the mineral resource based on an initial assessment, as defined in this section, that he or she conducts by qualitatively applying relevant technical and economic factors likely to influence the prospect of economic extraction.
mining claim	A description by boundaries of real property in which metal ore and/or minerals may be located.
modifying factors	The factors that a qualified person must apply to indicated and measured mineral resources and then evaluate in order to establish the economic viability of mineral reserves. A qualified person must apply and evaluate modifying factors to convert measured and indicated mineral resources to proven and probable mineral reserves. These factors include, but are not restricted to: mining; processing; metallurgical; infrastructure; economic; marketing; legal; environmental compliance; plans, negotiations, or agreements with local individuals or groups; and governmental factors. The number, type and specific characteristics of the modifying factors applied will necessarily be a function of and depend upon the mineral, mine, property, or project.
net present value (NPV)	The present value of the difference between the future cashflows associated with a project and the investment required for acquiring the project. Aggregate of future net cashflows discounted back to a common base date, usually the present. NPV is an indicator of how much value an investment or project adds to a company.
net smelter return (NSR)	A defined percentage of the gross revenue from a resource extraction operation, less a proportionate share of transportation, insurance, and processing costs.
open pit	A mine that is entirely on the surface. Also referred to as open-cut or open-cast mine.
orogeny	A process in which a section of the earth's crust is folded and deformed by lateral compression to form a mountain range
ounce (oz) (troy)	Used in imperial statistics. A kilogram is equal to 32.1507 ounces. A troy ounce is equal to 31.1035 grams.
overburden	Material of any nature, consolidated or unconsolidated, that overlies a deposit of ore that is to be mined.
overhand drift and fill	The orebody is initially mined using a horizontal slice. The mined-out slice is then backfilled to provide additional support for the country rock surrounding the stope. The backfilled material forms the base for executing the next, upper slice. In effect, in overhand cut-and-fill, the ore lies above the working area and the floor is backfill.

Term	Definition
penalty elements	Elements that when recovered to a flotation concentrate, attract a penalty payment from the smelting customer. This is because those elements are deleterious, and cause quality, environmental or cost issues for the smelter. Includes elements such as, Hg and Pb.
phyllic alteration	Minerals include quartz–sericite–pyrite
plant	A group of buildings, and especially to their contained equipment, in which a process or function is carried out; on a mine it will include warehouses, hoisting equipment, compressors, repair shops, offices, mill or concentrator.
portal	The surface entrance to a tunnel or adit
potassic alteration	A relatively high temperature type of alteration which results from potassium enrichment. Characterized by biotite, K-feldspar, adularia.
preliminary feasibility study, pre-feasibility study	A preliminary feasibility study (prefeasibility study) is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a qualified person has determined (in the case of underground mining) a preferred mining method, or (in the case of surface mining) a pit configuration, and in all cases has determined an effective method of mineral processing and an effective plan to sell the product. A pre-feasibility study includes a financial analysis based on reasonable assumptions, based on appropriate testing, about the modifying factors and the evaluation of any other relevant factors that are sufficient for a qualified person to determine if all or part of the indicated and measured mineral resources may be converted to mineral reserves at the time of reporting. The financial analysis must have the level of detail necessary to demonstrate, at the time of reporting, that extraction is economically viable
probable mineral reserve	A probable mineral reserve is the economically mineable part of an indicated and, in some cases, a measured mineral resource. For a probable mineral reserve, the qualified person's confidence in the results obtained from the application of the modifying factors and in the estimates of tonnage and grade or quality is lower than what is sufficient for a classification as a proven mineral reserve, but is still sufficient to demonstrate that, at the time of reporting, extraction of the mineral reserve is economically viable under reasonable investment and market assumptions. The lower level of confidence is due to higher geologic uncertainty when the qualified person converts an indicated mineral resource to a probable reserve or higher risk in the results of the application of modifying factors at the time when the qualified person converts a measured mineral resource to a probable mineral reserve. A qualified person must classify a measured mineral resource as a probable mineral reserve when his or her confidence in the results obtained from the application of the modifying factors to the measured mineral resource is lower than what is sufficient for a proven mineral reserve.
propylitic alteration	Characteristic greenish color. Minerals include chlorite, actinolite and epidote. Typically contains the assemblage quartz–chlorite–carbonate
proven mineral reserve	A proven mineral reserve is the economically mineable part of a measured mineral resource. For a proven mineral reserve, the qualified person has a high degree of confidence in the results obtained from the application of the modifying factors and in the estimates of tonnage and grade or quality. A proven mineral reserve can only result from conversion of a measured mineral resource.

Term	Definition
qualified person	A qualified person is an individual who is a mineral industry professional with at least five years of relevant experience in the type of mineralization and type of deposit under consideration and in the specific type of activity that person is undertaking on behalf of the registrant; and an eligible member or licensee in good standing of a recognized professional organization at the time the technical report is prepared. For an organization to be a recognized professional organization, it must: (A) Be either: (1) An organization recognized within the mining industry as a reputable professional association, or (2) A board authorized by U.S. federal, state or foreign statute to regulate professionals in the mining, geoscience or related field; (B) Admit eligible members primarily on the basis of their academic qualifications and experience; (C) Establish and require compliance with professional standards of competence and ethics; (D) Require or encourage continuing professional development; (E) Have and apply disciplinary powers, including the power to suspend or expel a member regardless of where the member practices or resides; and; (F) Provide a public list of members in good standing.
raise	A vertical or inclined underground working that has been excavated from the bottom upward
reclamation	The restoration of a site after mining or exploration activity is completed.
refining	A high temperature process in which impure metal is reacted with flux to reduce the impurities. The metal is collected in a molten layer and the impurities in a slag layer. Refining results in the production of a marketable material.
refractory	Gold mineralization normally requiring more sophisticated processing technology for extraction, such as roasting or autoclaving under pressure.
resistivity	Observation of electric fields caused by current introduced into the ground as a means of studying earth resistivity in geophysical exploration. Resistivity is the property of a material that resists the flow of electrical current
roasting	A high temperature oxidation process for refractory ores or concentrates. The material is reacted with air (possibly enriched with oxygen) to convert sulfur in sulfides to sulfur dioxide. Other constituents in ore (e.g. C, Fe) are also oxidized. The resulting calcine can then be leached with cyanide, resulting in economic gold recoveries.
rock quality designation (RQD)	A measure of the competency of a rock, determined by the number of fractures in a given length of drill core. For example, a friable ore will have many fractures and a low RQD.
royalty	An amount of money paid at regular intervals by the lessee or operator of an exploration or mining property to the owner of the ground. Generally based on a specific amount per tonne or a percentage of the total production or profits. Also, the fee paid for the right to use a patented process.
run-of-mine (ROM)	Rehandle where the raw mine ore material is fed into the processing plant's system, usually the crusher. This is where material that is not direct feed from the mine is stockpiled for later feeding. Run-of-mine relates to the rehandle being for any mine material, regardless of source, before entry into the processing plant's system.
semi-autogenous grinding (SAG)	A method of grinding rock into fine powder whereby the grinding media consists of larger chunks of rocks and steel balls.

Term	Definition
shaft	A vertical or inclined excavation for the purpose of opening and servicing a mine. It is usually equipped with a hoist at the top, which lowers and raises a conveyance for handling men and material
specific gravity	The weight of a substance compared with the weight of an equal volume of pure water at 4°C.
stope	An excavation in a mine, other than development workings, made for the purpose of extracting ore.
strike length	The horizontal distance along the long axis of a structural surface, rock unit, mineral deposit or geochemical anomaly.
tailings	Material rejected from a mill after the recoverable valuable minerals have been extracted.
tunnel	A horizontal underground passage that is open at both ends; the term is loosely applied in many cases to an adit, which is open at only one end
underhand drift and fill	The orebody is initially mined using a horizontal slice. The mined-out slice is then backfilled to provide additional support for the country rock surrounding the stope. The backfilled material forms the roof for executing the next, lower slice. In effect, in underhand cut-and-fill, the ore lies underneath the working area and the roof is backfill.
uniaxial compressive strength	A measure of the strength of a rock, which can be determined through laboratory testing, and used both for predicting ground stability underground, and the relative difficulty of crushing.
triaxial compressive strength	A test for the compressive strength in all directions of a rock or soil sample

25.0 RELIANCE ON INFORMATION PROVIDED BY THE REGISTRANT

25.1 Introduction

The QP relied upon Barrick Gold Corporation, as the operator of NGM for the information used in the areas noted in the following sub-sections.

The NGM joint venture is governed pursuant to an operating agreement entered into on July 1, 2019 between Barrick and the registrant and their wholly-owned subsidiaries party thereto (JV Agreement). Under the terms of the JV Agreement, the registrant holds a 38.5% economic interest and Barrick holds a 61.5% economic interest in NGM. Barrick operates NGM with overall management responsibility and is subject to the supervision and direction of NGM's Board of Managers, which is comprised of three managers appointed by the Operator and two managers appointed by the registrant. Outside of certain prescribed matters, decisions of the Board of Managers will be determined by a majority vote. The registrant also has representatives on the joint venture's advisory committees, including its advisory technical, finance and exploration committees. The QP does not serve on the Board of Managers or the advisory committees. Given that the registrant does not have a majority interest, does not operate NGM and has more limited access, the registrant is required to rely upon Barrick for information.

The QP considers it reasonable to rely upon Barrick for the information identified in those sub-sections, for the following reasons:

- Barrick has held overall management and operational responsibility of NGM since July 2019;
- The JV Agreement requires Barrick to provide the registrant with reports of mineral reserves and resources sufficient to comply with securities laws and any other technical information reasonably requested by the registrant to permit it to comply with the reporting and disclosure obligations, as well as financial information, project and budget reports, certain guidance estimates, and other reports;
- The registrant has employed industry professionals with expertise to review the annual reserve and resource information provided by Barrick, and employs individuals with considerable experience in each of these areas listed in the following sub-sections who have also reviewed the information provided by Barrick;
- Like the registrant, Barrick has considerable experience in each of these areas and has employed industry professionals with expertise in the areas listed in the following sub-sections;
- Both the registrant and Barrick have formal systems of oversight and governance over these activities.

25.2 Macroeconomic Trends

- Information relating to inflation, interest rates, discount rates, exchange rates, and taxes was obtained from Barrick.

This information is used in the economic analysis in Chapter 19. It supports the assessment of reasonable prospects for economic extraction of the mineral resource estimates in Chapter 11, and inputs to the determination of economic viability of the mineral reserve estimates in Chapter 12.

25.3 Markets

- Information relating to market studies/markets for product, market entry strategies, marketing and sales contracts, product valuation, product specifications, refining and treatment charges, transportation costs, agency relationships, material contracts (e.g., mining, concentrating, smelting, refining, transportation, handling, hedging arrangements, and forward sales contracts), and contract status (in place, renewals), was obtained from Barrick.

This information is used in the economic analysis in Chapter 19. It supports the assessment of reasonable prospects for economic extraction of the mineral resource estimates in Chapter 11, and inputs to the determination of economic viability of the mineral reserve estimates in Chapter 12.

25.4 Legal Matters

- Information relating to the corporate ownership interest, the mineral tenure (concessions, payments to retain property rights, obligations to meet expenditure/reporting of work conducted), surface rights, water rights (water take allowances), royalties, encumbrances, easements and rights-of-way, violations, and fines, permitting requirements, and the ability to maintain and renew permits was obtained from Barrick.

This information is used in support of the property description and ownership information in Chapter 3, the permitting and mine closure descriptions in Chapter 17, and the economic analysis in Chapter 19. It supports the reasonable prospects of economic extraction for the mineral resource estimates in Chapter 11, and the assumptions used in demonstrating economic viability of the mineral reserve estimates in Chapter 12.

25.5 Environmental Matters

- Information relating to baseline and supporting studies for environmental permitting, and monitoring requirements, ability to maintain and renew permits, emissions controls, closure planning, closure and reclamation bonding and bonding requirements, sustainability accommodations, and monitoring for and compliance with requirements relating to protected areas and protected species was obtained from Barrick.

This information is used when discussing property ownership information in Chapter 3, the permitting and closure discussions in Chapter 17, and the economic analysis in Chapter 19. It supports the reasonable prospects of economic extraction for the mineral resource estimates in Chapter 11, and the assumptions used in demonstrating economic viability of the mineral reserve estimates in Chapter 12.

25.6 Stakeholder Accommodations

- Information relating to social and stakeholder baseline and supporting studies, hiring and training policies for workforce from local communities, partnerships with stakeholders (including national, regional, and state mining associations; trade organizations; fishing organizations; state and local chambers of commerce; economic development organizations; non-government organizations; and, state and federal governments), and the community relations plan was obtained from Barrick.

This information is used in the social and community discussions in Chapter 17, and the economic analysis in Chapter 19. It supports the reasonable prospects of economic extraction for the mineral resource estimates in Chapter 11, and the assumptions used in demonstrating economic viability of the mineral reserve estimates in Chapter 12.

25.7 Governmental Factors

- Information relating to taxation and royalty considerations, monitoring requirements and monitoring frequency, bonding requirements, violations, and fines was obtained from Barrick.

This information is used in the discussion on royalties and property encumbrances in Chapter 3, the monitoring, permitting and closure discussions in Chapter 17, and the economic analysis in Chapter 19. It supports the reasonable prospects of economic extraction for the mineral resource estimates in Chapter 11, and the assumptions used in demonstrating economic viability of the mineral reserve estimates in Chapter 12.