Technical Report
San Manuel Property
Pinal County, Arizona

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Report Prepared for

Faraday Copper Corp.

2800 – 1055 Dunsmuir Street,
Vancouver, BC, Canada, V7X1L2

Report Prepared by

srk consulting

SRK Consulting (U.S.), Inc.
999 17th Street, Suite 400
Denver, CO 80202

Authors:
Matthew Hastings, MSc, MAusIMM, Principal Consultant, Resource Geology
Scott Burkett, BSc Geology, SME-RM, Principal Consultant, Exploration Geologist
Kimberly Mills, PhD, MMSA QP, Principal Consultant, Metallurgy

Reviewed by:
Berkley Tracy, MSc Geology, PG, CPG, PGeo, Practice Leader/Principal Consultant, Resource Geologist

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1 Summary

This report was prepared as a National Instrument 43-101 (NI 43-101) Technical Report (Technical Report) for Faraday Copper Corp (Faraday) by SRK Consulting (U.S.), Inc. (SRK) on the San Manuel Property (the Property or the San Manuel Property).

1.1 Property Description and Ownership

The San Manuel Property is located in Pinal County, Arizona, United States of America, approximately 65 miles northeast of Tucson and approximately 75 miles east-southeast of Phoenix in the unincorporated community of San Manuel, Arizona.

The San Manuel Property encompasses a combination of patented and fee property and unpatented federal mining claims, Arizona State Land Department Mineral Exploration Permits, as well as split estate surface lands and mineral rights. The Property is not subject to any royalties, back-in rights, payments, or other encumbrances known to SRK.

The San Manuel mine operated historically until approximately the late 1990's. It was mined via open pit, block cave, and In Situ Recovery (ISR) methods over the years. After 1999 the property was placed on care and maintenance, and in 2002 closure was declared, and reclamation activities began, including decommissioning and reclamation of surface facilities, which was completed in 2008. Ongoing activities include groundwater monitoring, inspections and reporting.

1.2 Geology and Mineralization

The San Manuel Property deposit is one of the largest Laramide porphyry copper systems in Arizona and is the type example of the structurally dismembered porphyry sub-class. Mineralization is hosted by multiphase granodiorite to monzonite porphyry stocks (~67 to 69 Mega-annum (Ma)) emplaced into Proterozoic Oracle Granite (~1,440 Ma) basement and exhibits a well-developed concentric alteration pattern, with a potassic core, a sulfide-rich phyllic zone that hosts the principal copper ore shell, and an outer propylitic halo. The classic Lowell- and Guilbert (1970) porphyry model is largely based on San Manuel. The hypogene sulfide assemblage is dominated by chalcopyrite and pyrite with subsidiary molybdenite and minor bornite; supergene oxidation and a chalcocite enrichment blanket are well developed in the shallower San Manuel segment but are absent from the Kalamazoo segment, which has been protected throughout the Tertiary by sedimentary cover. Mid-Tertiary extension on the low-angle, southwest-dipping San Manuel fault offset the original porphyry column by approximately 3,609 to 4,265 feet (ft) of dip-slip and tilted the entire system by approximately 33° about a N46°W axis, producing the present geometry of two spatially separated orebody segments. At a 0.5 percent (%) Cu cut-off, the San Manuel deposit extends approximately 7,710 ft down dip and 2,707 ft along strike from near surface, while the Kalamazoo deposit extends approximately 6,693 ft down dip and 3,002 ft along strike from a top-of-mineralization depth of approximately 1,600 ft. Gold (Au), molybdenum (Mo), and minor silver (Ag) have historically been recovered as by-products.

1.3 Status of Exploration, Development and Operations

The San Manuel deposit was delineated by U.S. Bureau of Mines and Magma Copper drilling between 1943 and 1944, and the offset Kalamazoo deposit was discovered by Quintana Minerals (under J.D. Lowell) in 1967; work that contributed directly to the development of the Lowell-Guilbert porphyry copper model. Magma Copper Company (acquired by the Broken Hill Proprietary Company Limited, a subsidiary of BHP Group Ltd. ((references to BHP herein refer to BHP and/or its applicable subsidiary(ies), as the context requires)) in 1996) operated the integrated complex from 1956 to 1999, producing in the order of 9 billion pounds of copper plus by-product molybdenum, gold, and silver from underground block-cave mining at both San Manuel and Kalamazoo, open-pit oxide mining (1985 to 1995), heap-leach / SX-EW (1986 to 2002), and in situ leach (1986 to 1999); underground mining ceased in 1999, leaching ceased in 2002, and surface facilities were demolished and reclaimed in stages through 2008 under an Arizona Department of Environmental Quality (ADEQ) approved closure plan. The supporting drilling database comprises 2,214 holes across 14 series spanning 1943 to 2015, dominated by the DD diamond-core series (~285 holes) and the Kalamazoo K underground fan-drill series (~130 holes), with the BHP 2013 to 2015 brownfields campaign (~100 holes) drilled under contemporary protocols including Differential Global Position System (DGPS) collar control, regular downhole gyro surveys, written sample-preparation flowsheets, and modern Quality Assurance/Quality Control (QA/QC). Most of the Magma-era drilling pre-dates modern QA/QC practice; data adequacy has therefore been reconstructed through the IMC 2000 audit (which identified a systematic acid-soluble copper (ASCu) high-bias in the ARM and LIH in situ leach series), the SRK 2013 database validation (SRK, 2013; series-level total copper (TCu) transcription error rates of 0.00% to 0.91%) and the SRK 2017 model and mineralogy review (SRK, 2017).

1.4 Mineral Processing and Metallurgical Testing

Historically, the mine processed sulfide material in a conventional concentrator facility. Copper from oxide material was processed via heap leach methods and a Solvent Extraction and Electrowinning (SX-EW) facility. ISR methods were also used with fluids processed at the SX-EW facility. The following sub-section provides an overview of historical processing and metallurgical performance for the project during its period of production.

The underground block cave fed material to a sulfide concentrator. A flotation process recovery of 89.1% Cu approximates the historical Cu plant-circuit recovery reported by Chadwick (1992) for the integrated San Manuel concentrator at the late-Magma operating state. Concentrate grade is assumed at 30% Cu, consistent with the cleaner concentrate spec reported by Brunskill (1985). The 89.1% figure reflects plant flotation recovery to bulk Cu-Mo concentrate at the concentrator boundary and is believed to not include downstream losses through Mo separation, smelting, or refining. Future work will need to be completed to determine byproduct recovery in payable quantities.

The historical information on heap leaching on transitional material from the 1999 BHP-internal SMRDP feasibility study (Brunskill, 2001, §2.6, Table 2.6), whose chrysocolla + chalcocite zone (Zone 7): 80% of ASCu + 30% of (TCu − ASCu) yielded approximately 57% of TCu at the historical chrysocolla+chalcocite grade. Post-1999 heap leach practice improvements (Witt et al., 1999; Braun et al., 2025) raised life-of-mine (LoM) ASCu extraction from 73% in 1993 to 88.3% at closure in 2002. The transitional zone is currently poorly characterized in the information reviewed and therefore, confirmation drilling and additional material type characterization is recommended to optimize future metallurgical performance in the event of site reactivation.

For situ recovery on residual oxide / secondary sulfide (leach + SX-EW), the historical records provide the following anchors:

- LoM heap leach AS-Cu extraction: 88.3% (Braun et al., 2025)
- LoM ISL Zone 6 AS-Cu extraction: 41.7% (Sutton, 2019)
- ISL achievable extraction estimation: ~50% AS Cu (Sutton, 2019, revised estimate)
- SX-EW conversion of Cu in pregnant leach solution (PLS) to refined cathode: >99% (industry-standard for oxime SX + EW).

1.5 Mineral Resource Estimate

No current Mineral Resource estimate exists for the Property. The last resource and reserve disclosure on San Manuel that is available to Faraday was published as a part of BHP's annual business reporting requirements in 2001 which was based off BHP work programs completed in 1999. This disclosure is understood to be reflective of the resource and reserves upon mine closure, based on the assumptions and economic parameters which are referenced herein. To the best of SRK's knowledge, figures stating resources or reserves for public facing figures were summarized and rolled into the BHP portfolio of assets at the time. The historical resources and reserves are interpreted to be based on various pricing or criteria assumptions which, for the mineral resources, are not clearly stated in the 1999 disclosure. The historical sulfide reserves used a price of US$0.90/pound (lb) and inferred pricing for the oxide reserves is assumed at approximately US$0.80/lb Cu, which differ significantly from current market conditions. The context below is from BHP internal reports produced at the time of filing to support the public disclosure.

A qualified person has not completed sufficient work to classify these historical estimates as current Mineral Resources or Mineral Reserves, required under 2.4(g)(ii) of NI 43-101, Faraday is not treating these historical estimates as current Mineral Resources or Mineral Reserves and the historical estimates should not be treated as current or relied upon for economic evaluation. Required under 2.4 (g)(ii) of NI 43-101, the historical estimates were prepared in accordance with classification systems and reporting standards that may differ materially from current CIM Definition Standards incorporated into NI 43-101. The reconciliation presented in this section is intended solely to establish internal consistency among the historical disclosures identified above and does not constitute verification, validation, or re-estimation of the underlying data.

1.5.1 Historical Sulfide Resource and Reserves Statement

In 1999, BHP produced internal mineral resource and reserve reports for the sulfide portions of the San Manuel and Kalamazoo ore bodies to support annual reporting requirements. Additional context for this historical disclosure is detailed in Section 6 of this report.

Historical results for sulfide mineralization are presented in Table 1-1 (Resources) and Table 1-2 (Reserves).

Table 1-1: Historical Sulfide Resources (June 1, 1999)

Item	Tons (000)[2]	TCu (%)	Contained Cu (000 lb) [1]
Measured	418,021	0.65	5,434,269
Indicated	86,939	0.66	1,147,599
Meas+Ind	504,960	0.65	6,581,868
Inferred	47,965	0.64	613,950

Source: BHP, 1999.
(1) Contained metal = tons × TCu grade; total is the sum of categories. Cut-off 0.5% TCu (San Manuel) / 0.4% TCu (Kalamazoo).
(2) Reported exclusive of sulfide mineral reserve.

- Historical estimate – not current and not treated as current mineral resources/reserves.
- Contained metal is shown for reference only and does not reflect metallurgical recovery, mining recovery, or payability.
- No Qualified Person has done sufficient work to classify this historical estimate as current.

Table 1-2: Historical Sulfide Reserves (June 1, 1999)

Area	Tons (000)	TCu (%)	Contained Cu (000 lb) [1]
San Manuel (2615 Level)	1,350	0.47	12,612
Lower Kalamazoo (3440 Level)	188,262	0.61	2,285,495
Development Muck	1,476	0.43	12,694
Reserve Totals	**191,088**	**0.61**	**2,310,801**

Source: BHP, 1999.
(1) Contained metal = tons × TCu grade, no recovery applied. Total TCu% is tonnage-weighted.
(2) Cut-off 0.9% TCu.

- Historical estimate – not current and not treated as current mineral resources/reserves.
- Contained metal is shown for reference only and does not reflect metallurgical recovery, mining recovery, or payability.
- No Qualified Person has done sufficient work to classify this historical estimate as current.

The historical reserves in Table 1-2 include both Proven and Probable Reserves. The historical reserves are based on scheduled life-of-mine (LoM) production at the time of statement.

1.5.2 Historical Oxide Resource and Reserves Statement

In 1999, BHP produced mineral resource and reserve statements for the oxide portions of the San Manuel ore body. Historical results are presented in Table 1-3 (Resources) and Table 1-4 (Reserves).

Table 1-3: Historical Oxide Resources (June 1, 1999)

Mineral Zone	Tonnes (000's)[3]	%TCu	%ASCu	Contained TCu (000 lb) [1]	Contained ASCu (000 lb) [2]
Chalcocite	5,404	1.05	0.31	113,603	33,499
Chalcocite + Chalcopyrite	5,893	0.95	0.21	111,899	24,277
Chrysocolla	247,965	0.48	0.33	2,370,838	1,651,443
Chrysocolla + Chalcopyrite	9,560	0.50	0.21	95,656	40,156
Chrysocolla + Chalcocite	26,826	0.66	0.36	352,246	193,153
Chrysocolla + CC + Chp	17,413	0.57	0.25	197,535	86,374
Total	**313,062**	**0.53**	**0.33**	**3,241,776**	**2,028,901**

Source: BHP, 1999.
(1) Contained TCu as reported by BHP (1999) = tonnes (t) × total-copper grade;
(2) Contained ASCu = t × acid-soluble-copper grade (added for reference).
(3) Reported inclusive of in situ oxide mineral reserve, exclusive of heap leaching.

- Historical estimate – not current and not treated as current mineral resources/reserves.
- Contained metal is shown for reference only and does not reflect metallurgical recovery, mining recovery, or payability.
- No Qualified Person has done sufficient work to classify this historical estimate as current.

Table 1-4: Historical Oxide Reserves (June 1, 1999)

Ore Type	Tonnes (000's)	%TCu	%ASCu	Contained TCu (000 lb) [1]	Contained ASCu (000 lb) [1]
In situ – Proven	167,772	0.51	0.34	1,697,850	1,137,493
In situ – Probable	5,401	0.58	0.42	62,223	45,803
Heap Leaching	92,704	0.20	0.06	376,380	116,808
Total	**265,877**	**0.40**	**0.24**	**2,136,453**	**1,300,103**

Source: BHP, 1999.

(1) Contained metal = t × grade, no recovery applied (total copper and acid-soluble copper).
(2) Contained ASCu = t × acid-soluble-copper grade (added for reference).

- Historical estimate – not current and not treated as current mineral resources/reserves.
- Contained metal is shown for reference only and does not reflect metallurgical recovery, mining recovery, or payability.
- No Qualified Person has done sufficient work to classify this historical estimate as current.

1.6 Environmental Studies and Permitting

Under current conditions, the San Manuel Property and Plant sites are in a closed and reclaimed condition with routine compliance monitoring and reporting obligations.

1.7 Conclusions and Recommendations

The San Manuel Property is a historical mine site with an extensive history of exploration, development, production, and closure / reclamation. The historical mineral resources and reserves estimates indicate that a significant remnant of mineralized material was identified by previous operators which, with additional data collection supported by confirmation drilling and study, could be brought into a current Mineral Resource and, potentially, a Mineral Reserve reporting framework.

A recommended work program to generate a current NI 43-101 compliant Mineral Resource is anticipated to require approximately 82,000 ft (25,000 m) of confirmation drilling and other technical inputs, at an estimated cost US$17,200,000.

2 Introduction

2.1 Terms of Reference and Purpose of the Report

This report was prepared as a National Instrument 43-101 (NI 43-101) Technical Report (Technical Report) for Faraday by SRK Consulting (U.S.), Inc. (SRK) on the San Manuel legacy Mine project.

The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in SRK's services, based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended for use by Faraday subject to the terms and conditions of its contract with SRK. Except for the purposes legislated under relevant jurisdictional securities law, any other uses of this report by any third party is at that party's sole risk. This report will be filed as a Technical Report with Canadian Securities Regulatory Authorities pursuant to NI 43-101 in connection with Faraday's proposed acquisition of the San Manuel legacy Mine project pursuant to the terms of a purchase and sale agreement entered into between Faraday, BHP Copper Inc. (BHP Copper) and Redhawk Copper – San Manuel Inc. dated July 2, 2026.

2.2 Qualifications of Consultants (SRK)

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

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

The following individuals, by virtue of their education, experience and professional association, are considered Qualified Persons (QP) as defined in NI 43-101. The personnel responsible for specific sections as follows:

- Scott Burkett is responsible for Sections 4, 5, 7, 8, 9, and portions of 1, 2, 3, 6, 25, and 26.
- Matthew Hastings is responsible for Sections 10, 11, 12, 18, 20, 23, and portions of 1, 2, 3, 25, and 26. He is also responsible for Sections 14, 15, 16, 19, 21, 22, and 24 which, given the current stage of the San Manuel Property, contain little to no technical information requiring specialist qualified person input.
- Kimberly Mills is responsible for Sections 13 and 17 and portions of 1, 2, and 6.

2.3 Details of Inspection

Site visits conducted are summarized in Table 2-1.

Table 2-1: Site Visit Participants

Personnel	Company	Expertise	Date(s) of Visit	Details of Inspection
Matt Hastings	SRK	Resources / Geology	February 24, 2026 – February 26, 2026	Overview of San Manuel pit and geology. Review of drill core in Tucson logging facility.
Scott Burkett	SRK	Resources / Geology	February 24, 2026 – February 26, 2026	Overview of San Manuel pit and geology. Review of drill core in Tucson logging facility.

2.4 Sources of Information

The sources of information include historical data and reports as well as documents cited throughout the report and referenced in Section 27. Additional historical information on the operations history and closure and other context was provided by others external who previously worked at the San Manuel Property or were otherwise connected to the historically operated project. All figures related to historical estimates of mineral resources or mineral reserves are taken from internal BHP company reports supporting global U.S. Securities & Exchange Commission (SEC) Form (SEC) filings or BHP annual reports. SRK notes that much of this legacy disclosure pre-dates requirements for on-line filing and may exceed normal record retention statutes. SRK only references internal BHP reports or accessible public filings for documentation of legacy resource or reserve figures.

2.5 Effective Date

The effective date of this report is June 1, 2026.

2.6 Units of Measure

Imperial units have been used throughout this report. Tons are short tons (st) of 2,000 lb or approximately 907.2 kg. All currency is in U.S. dollars (US$) unless otherwise stated.

3 Reliance on Other Experts

The Consultant's opinion contained herein is based on information provided to the Consultants by BHP, Faraday or their designates throughout the course of the investigations.

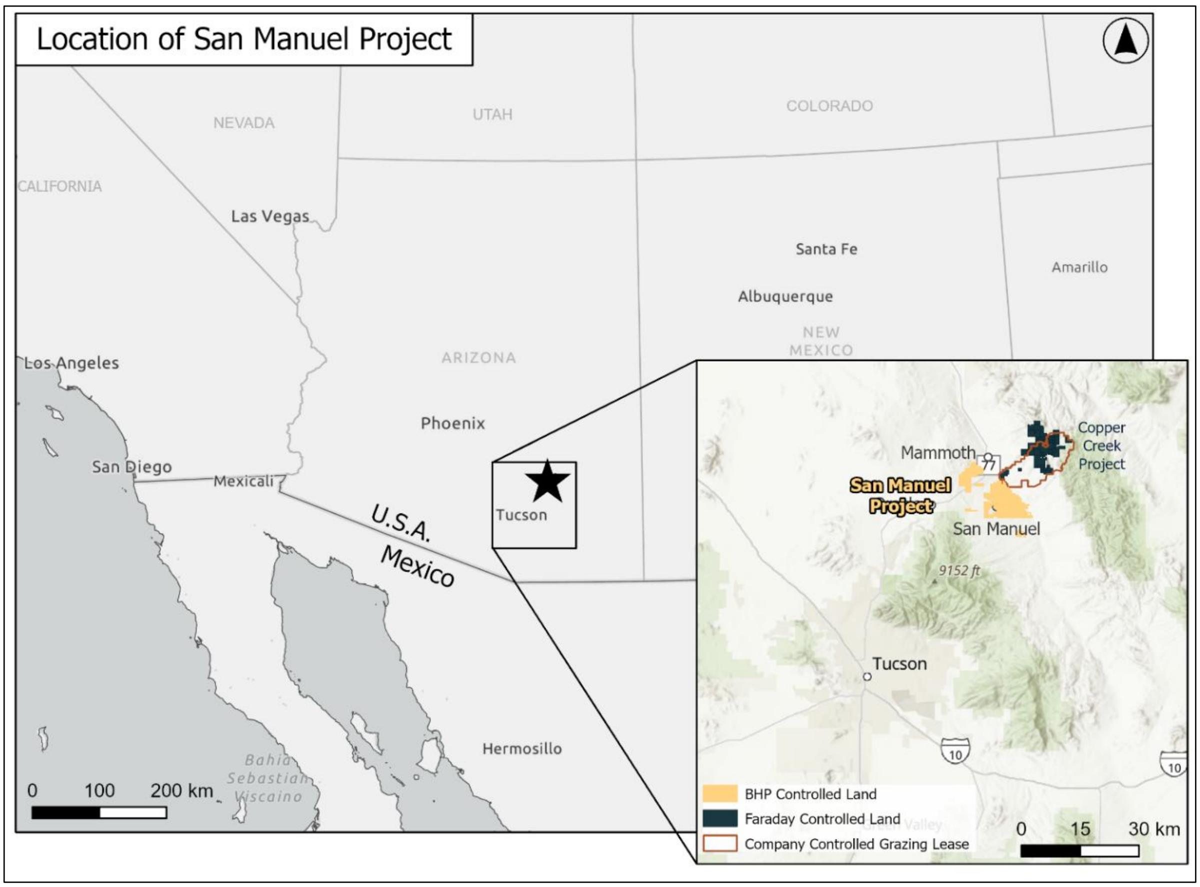
The Consultants used their experience to determine if the information from previous reports was suitable for inclusion in this Technical Report and adjusted information that required amending. This report includes technical information, which required subsequent calculations to derive subtotals, totals, and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, the Consultants do not consider them to be material.

4 Property Description and Location

4.1 Property Location

The San Manuel Property is located in Pinal County, Arizona, United States of America, approximately 65 miles [104.6 km] northeast of Tucson and approximately 75 miles [120.7 km] east-northeast of Phoenix (Figure 4-1). The Property is situated approximately 4 miles [6.4 km] north of the unincorporated community of San Manuel, Arizona.

The approximate geographic center of the Property is located UTM coordinates of approximately 1,738,845 ft E, 11,832,966 ft N (UTM Zone 12N, NAD83). The Property lies within Township 7 South, Range 17 East, Gila and Salt River Meridian. Figure 4-1 shows the property location.



Source: Faraday, 2026

Figure 4-1: San Manuel Property Location

4.2 Mineral Titles

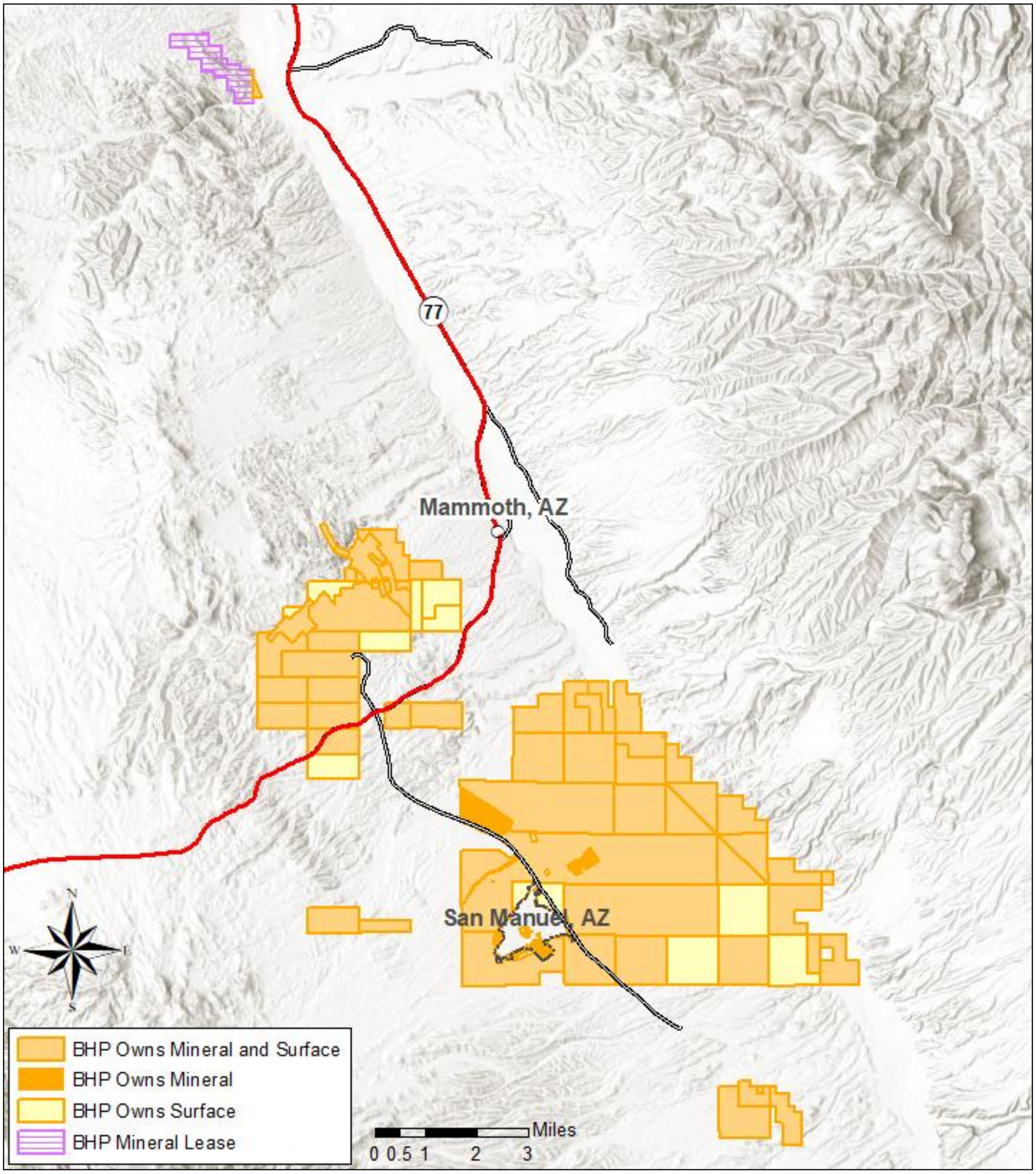
The San Manuel Property encompasses a combination of fee ground, patented land and unpatented federal mining claims, administered under the jurisdiction of the United States Bureau of Land Management (BLM), Tucson Field Office, and State of Arizona mineral exploration permits. A summary of the current land has not been compiled at this time.

Annual maintenance fees are required to maintain the unpatented federal lode mining claims in good standing. Maintenance fees are payable to the BLM annually. Failure to pay maintenance fees results in forfeiture of the claims. SRK has not independently verified the current status of maintenance fee payments. Table 4-1 below provides a tenement summary on the San Manuel property.

Table 4-1: San Manuel Tenement Summary

Category	Number of Units	Approximate Area (ha)	Approximate Area (acres)	Notes
Mineral and Surface Owned	184	9,445	23,338	Private mineral and surface parcels. There are mining claims (5 placer, 27 lode) that require annual fee payments that overlap with the Black Hills quarry patented land (mineral and surface owned) and does not add to overall acreage of land ownership.
Mineral Owned (No surface)	21	197	487	Private mineral with split surface rights retained by other parties.
Surface Owned (No mineral)	18	1,397	3,451	Private surface with federal or state minerals
Mineral Lease	1	207	511	Camp Grant lease with the Arizona State Land Department (ASLD) - includes surface access
Mineral Exploration Permits	6	896	2,213	Filed with the ASLD - includes surface access
Total Land	**230**	**12,142**	**30,000**	

Source: Faraday, 2026



Source: Faraday, 2026

Figure 4-2: San Manuel Tenement Summary

4.3 Royalties, Back-In Rights, and Encumbrances

The portions of the Property in respect of which the historical estimates of mineral resources or mineral reserves referred to in this Technical Report were reported are not subject to any royalties, back-in rights, payments, or other encumbrances known to SRK. The overall San Manuel Property surface ownership may have other encumbrances which are not relevant to this disclosure, and which SRK has not evaluated.

4.4 Environmental Liabilities and Permitting

4.4.1 Legacy Closure and Reclamation Activities

The San Manuel Plant Site (SMPS) entered a care and maintenance status on June 24, 1999, and declared permanent closure on January 15, 2002. The site-wide closure and reclamation activities were performed in accordance with BHP Copper San Manuel Plant Site Pinal County, Arizona – Mined Land Reclamation Plan (A.R.S. §27-901 et seq.) 2005 Annual Status Report and Amendment (2005 MLRP), and in accordance with closure plans and designs approved by ADEQ. The sub-areas addressed in the 2005 MLRP included the Plant Area (i.e., numerous beneficiation and processing facilities), the Tailings Area (seven consolidated and/or single tailings impoundments), Landfills (Asbestos, Wood, Solid Waste), a Mine-to-Plant ore haulage railroad, and Black Hills Quarry located south-southeast of SMPS. Reclamation-related disturbances resulted at SMPS because of the construction of tailings spillways, upstream diversion channels, sedimentation basins, and borrow areas, and at BHQ for limestone rock production areas.

The site-wide closure and reclamation scopes were completed in July 2007 (Tailings Area), September 2007 (Plant Area), and January 2008 (the satellite support site known as Black Hills Quarry (BHQ)).

SMPS: Closure and reclamation of this major industrial complex was completed in stages between 1999 and 2008. The closure and reclamation activities at SMPS included (i) decommissioning / demolition of the surface operations for salvage / sale / repurposing of usable materials, equipment, and facilities and/or disposal and recycling, (ii) preparing closure work plans and completing site characterization studies, (iii) preparing engineering alternatives, final designs, and permit applications (iv) executing the closure earthworks and facility close-out reporting, and (v) revegetation and post-reclamation monitoring.

After demolition and regrading were completed in the Plant Area, the regraded land surface was covered with a minimum of one foot of local borrow materials (San Manuel Formation and gravels). The impoundments and embankments of the Tailings Storage Facilities (TSFs) were graded to shed stormwater and support a revegetated soil cover. The lower two-thirds of the TSF embankments were mantled with one foot of rock armor. A significant portion of the rocky soil borrow materials placed on TSFs was derived during the excavation of upstream diversion channels that direct non-contact water around the TSFs to the San Pedro River. The two landfills (Solid Waste, Asbestos) are partially reclaimed but still have active cells because the landfills are still needed.

BHQ: BHQ was reclaimed after the reclamation activities at San Manuel Property and Plant sites were completed; the site has not been reactivated by fresh quarrying since January 2008. In accordance with the MLRP, the focus of the completed reclamation at BHQ was removing unneeded structures, restricting public access through locked gates / signage, protecting public safety from on-site hazards (i.e., quarry benches), and promoting revegetation to support a post-reclamation land use of wildlife habitat. All quarry high walls were sloped to eliminate risk to potential trespassers. The quarry slopes were re-seeded with native seed mix. The remaining small unneeded equipment to remove includes an old ore hopper and a rock-screen grizzly. Stockpiles of eight inch minus limestone riprap materials also remain available for maintenance and repairs and are stored at various locations at BHQ. Note there are three stock wells at BHQ that are not owned by BHP and require on-going road access; these wells are owned by Arizona State Land Department, and two nearby ranchers (Goff, Bingham).

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Physiography & Topography

The Property is situated within the Basin and Range physiographic province of the southwestern United States, a region characterized by northwest-trending mountain ranges separated by broad alluvium-filled valleys. The Property occupies a basin setting in the San Pedro valley, 12 mi west of the Galiuro Mountains, with the Santa Catalina Mountains located approximately 19 mi to the southwest and the Tortilla Mountains approximately 25 mi to the north.

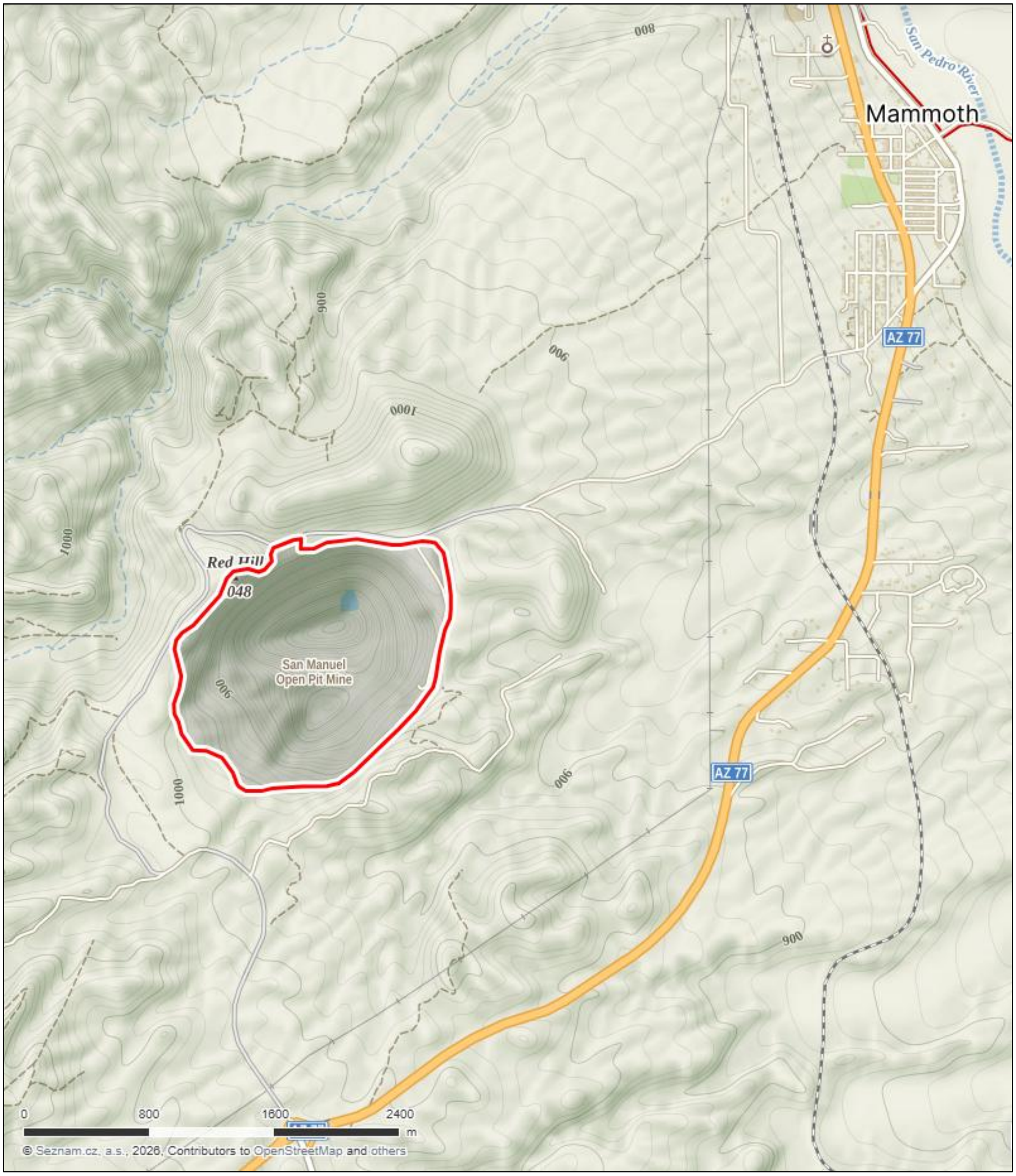
The land surface in the vicinity of the Property is broadly flat to gently undulating, reflecting the alluvial apron derived from the surrounding ranges. Ground surface elevations across the Property range from approximately 3,300 to 3,700 feet above sea level The topographic relief within the Property boundary is modest, with the most significant relief associated with legacy waste rock dumps and tailings storage facilities from prior mining operations.

5.2 Accessibility and Transportation to the Property

Access to the Property is provided by a network of paved and graded gravel roads. The primary access route from Tucson is via Interstate 10 east to State Route 77 (Oracle Road) north, continuing approximately 53 mi to the town of Mammoth. From Mammoth, paved mine access roads lead to the Property, at a distance of approximately 4.0 mi. The total driving time from Tucson is approximately 1 hour under normal conditions.

From Phoenix, access is via US Route 60 east to Florence Junction, then State Route 79 south to Florence, and State Route 77 south and east to San Manuel, a total distance of approximately 106 mi with a driving time of approximately 2.5 hours.

The nearest commercial airport is Tucson International Airport (TUS), located approximately 62 mi from the Property. Phoenix Sky Harbor International Airport (PHX) is located approximately 112 mi by road and provides broader domestic and international connectivity. A private airstrip previously served the mine site and is currently owned and operated by Pinal County and used for small private aircraft. Figure 5-1 below shows the location map and nearby access.



Source: https://mapy.com/en/turisticka?source=osm&id=1043824870&x=-110.6664828&y=32.6969811&z=14

Figure 5-1: Location Map – Nearby Access

5.3 Climate and Length of Operating Season

The Property experiences a semi-arid, desert climate typical of the Sonoran Desert at mid-elevation. Key climatic parameters are summarized in Table 5-1.

Table 5-1: Climate Summary, San Manuel Area

Parameter	Value	Notes
Mean annual precipitation	~16 to 18 in	Bimodal: winter frontal and summer monsoon
Summer monsoon season	July – September	Accounts for ~50% of annual precipitation
Mean annual temperature	~64°F	
Maximum temperature	~108°F	July to August
Minimum temperature	~-23°F	December to January; frost occasional
Mean annual evapotranspiration	~70.87 to 78.74 in	Significantly exceeds precipitation
Prevailing wind direction	Southwest to west	
Snow	Rare at mine elevation	Occasional light snowfall possible

Source: SRK, 2026

The climate does not impose material seasonal constraints on mining operations. Surface activities can generally be conducted year-round. Summer temperatures require heat management protocols for personnel and equipment. The summer monsoon season may result in localized flash flooding in ephemeral drainage channels; stormwater management is a design consideration for any surface infrastructure.

5.4 Infrastructure Availability and Sources

5.4.1 Power

The Property is located within the service territory of Arizona Public Service Company (APS), Arizona's largest electric utility. High-voltage transmission infrastructure previously served the San Manuel mine and smelter complex; the capacity and current condition of the existing APS 115 kilovolt (kV) substation located at the SMPS would need to be assessed as part of project development planning.

5.4.2 Water

The Property lies within the upper San Pedro River watershed. Groundwater in the region is present in the Tertiary and Quaternary basin fill aquifers at depths that vary across the Property. Historical mine operations utilized groundwater for processing and dust suppression; the mine water management program also produced significant volumes of water. Work to define water sources or quantities for a future operation needs to occur at the next level of study.

5.4.3 Mining Personnel

The closest residential communities to the Property are Mammoth (~4.0 mi), San Manuel (~6.2 mi) and Oracle (~9.3 mi). Regional mining industry labor draws from the Greater Tucson metropolitan area (population ~1 million) and from established copper mining communities including Globe, Miami, and Hayden, all within approximately 50 to 74.6 mi of the Property. The region has a long history of copper mining.

5.4.4 Existing Infrastructure

The San Manuel mine was a significant industrial operation from 1956 to 1999, and the site retains elements of legacy infrastructure including:

- Shaft collars (condition varies; assessment required prior to re-use)
- Portions of the underground workings and infrastructure which are currently flooded
- Surface roads and haul roads (paved and gravel)
- Site grading and areas associated with legacy heap leach, tailings and waste rock facilities. The historical tailings areas have been re-graded and reclaimed with ongoing monitoring
- Former concentrator footprint (structures demolished; foundation and utilities remain)
- Railroad spur connection to the San Pedro Valley Railroad
- The former BHP smelter complex was decommissioned in 1999 following closure of the mine
- Historic Rail / Utility Corridor from Mine to Millsite

The American Smelting and Refining Company (ASARCO) Hayden Smelter, owned by Grupo Mexico exists in Hayden, Arizona though it is not currently operational.

6 History

6.1 Prior Ownership and Ownership Changes

A summary of the historical ownership and operational milestones at the San Manuel Property is provided in Table 6-1.

Table 6-1: Summary of Historical Ownership and Operations, San Manuel Property

Period	Owner / Operator	Key Activities
1879 to 1940’s	Various prospectors and early miners	Early exploration; discovery of copper mineralization in the San Manuel area
1943 to 1944	Magma Copper Company/ U.S. Government	Systematic exploration drilling; definition of the San Manuel ore body
1944 to 1956	Magma Copper Company	Feasibility, permitting, and construction of underground mine and concentrator
1956 to 1996	Magma Copper Company	Continuous underground block cave mining and milling operations; mining of ore via open pit, ISR, and underground block cave mining methods in the San Manuel area. Discovery, delineation, and some mining of the Kalamazoo ore body.
1996 to 1999	BHP (acquired Magma in 1996)	Continued operations; mine placed on care and maintenance and subsequently closed in 1999 following depressed copper prices
1999 to present	BHP	Care and maintenance; decommissioning and reclamation of surface facilities; ongoing groundwater monitoring and compliance

Source: BHP, 2026

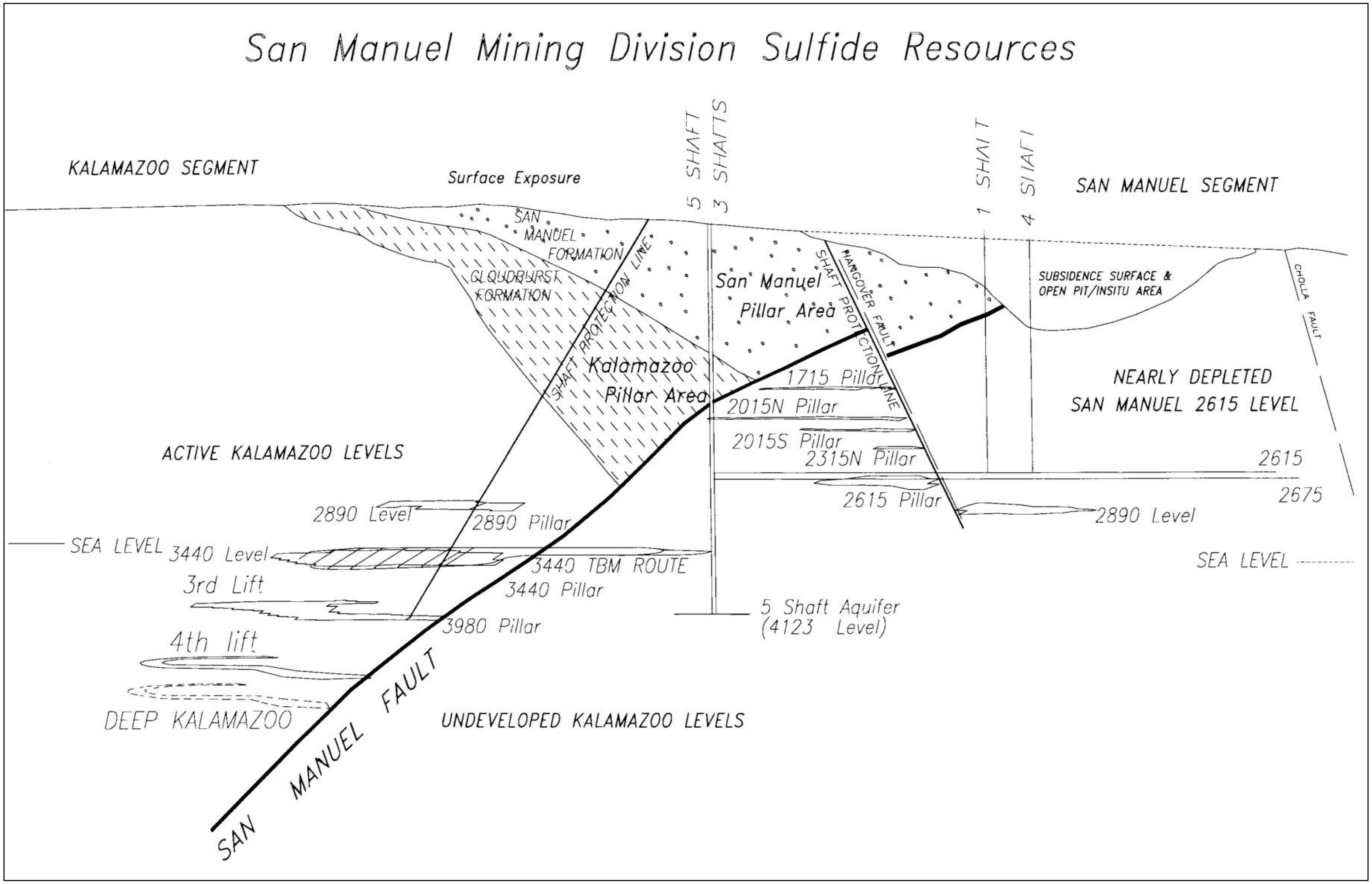
During its operational life, the San Manuel mine was one of the largest underground copper mines in the United States, and one of the largest block cave operations in the world. Cumulative production is estimated at approximately 9 billion pounds of copper, together with significant by-product molybdenum, gold, and silver.

6.2 Exploration History

6.2.1 Introduction

The San Manuel Property porphyry copper deposit is located at Red Hill in Pinal County, Arizona, approximately 31 mi northeast of Tucson. The deposit comprises two spatially separated but genetically related deposits — the San Manuel deposit and the Kalamazoo deposit — which together constitute one of the largest porphyry copper systems developed in North America. The exploration history of the property spans more than a century, progressing from initial prospecting in the late nineteenth century through systematic geological investigation and drilling programs that led to the definition of an economic copper resource and the discovery of the Kalamazoo deposit.

The following account, shown in Figure 6-1, is derived primarily from Briggs (2014) and Hoag et al. (1996), supplemented by published geological investigations cited therein. All historical tonnages are reported in st unless otherwise stated.



Source: Hoag et al., 1996
Note: Showing Ore Body Geometry, Mining Levels, Shaft Locations, and Structural Relationships

Figure 6-1: Schematic Diagram of the Integrated San Manuel Property Underground and Open Pit System

6.2.2 Early Prospecting (1879 to 1942)

The occurrence of green copper-stained outcrop on the south slope of Red Hill attracted the attention of prospectors at the time of discovery of the nearby Mammoth mine in July 1879. Test pits were excavated at the site during the early 1880's; however, prospecting activities over the subsequent four decades failed to identify economic-grade mineralization, and the mining claims were allowed to lapse (Briggs, 2014).

In July 1925, the original San Manuel Claims No. 1 through No. 5 were staked at Red Hill by Anselmo Laguna. Ownership interests in the claim group subsequently changed hands through a series of transactions: James Douglas acquired a one-third interest in June 1926 and an additional one-third interest in August 1939; the remaining one-third interest was acquired by Douglas and Burns Giffin in October 1939. A one-quarter interest was deeded to Victor Erickson in March 1940 in exchange for assessment work and construction of a small camp at Red Hill. The claim group was also expanded from five to twenty-one claims over this period. By 1942, the partnership sought the involvement of Henry Nichols, an assayer at Magma Copper Company, who agreed to provide technical assistance in return for an equity interest in the property (Briggs, 2014).

Despite early efforts by Nichols to interest Magma Copper Company and ASARCO in the San Manuel property, both companies declined further examination. In October 1942, Nichols submitted an application to the U.S. Reconstruction Finance Corporation (RFC) for a loan of US$20,000 to finance an exploration drilling program; this application was rejected in March 1943 (Briggs, 2014).

6.2.3 U.S. Bureau of Mines Exploration Program (1943 to 1944)

The rejection of the RFC loan application notwithstanding, a copy of the Nichols technical report was forwarded to the U.S. Geological Survey (USGS). In March 1943, two USGS geologists conducted a brief examination of the property and issued a favorable report recommending that the U.S. Bureau of Mines (USBM) investigate the property's copper potential. An exploration agreement between the San Manuel partnership and the USBM was executed in August 1943 (Briggs, 2014).

The USBM exploration program commenced in November 1943. By mid-January 1944, five shallow churn drillholes totaling 1,480 ft had been completed, returning drill intercepts of 75 to 300 ft of significant, but sub-economic, oxide mineralization. Continued drilling subsequently intersected the sulfide deposit in May 1944. Reserve estimates prepared at that time indicated approximately 30 million st averaging 0.80% copper for the combined sulfide and oxide deposits. These results provided sufficient encouragement for Magma Copper Company to obtain an option to purchase the property in August 1944 (Briggs, 2014).

6.2.4 Magma Copper Company Exploration and Development (1944 to 1956)

Magma Copper Company initiated its own surface drilling program at San Manuel in December 1944. Results were positive, and Magma exercised its purchase option in September 1945. The San Manuel Copper Corporation was subsequently formed to carry out future exploration and development activities at the site. Surface drilling continued until February 1948 (Briggs, 2014).

Shaft sinking commenced with the collaring of the No. 1 shaft in March 1948, positioned north of the mineralized zone to serve as a ventilation and supply shaft and to provide future hoisting capability. The No. 2 shaft was collared in October 1948, over the southern limb of the deposit, to facilitate underground exploration and development. The RFC approved a US$94 million loan to finance the San Manuel development project in July 1952. The first two 2,950-ft production shafts (No. 3A and No. 3B) were collared southwest of the deposit in September 1953 (Briggs, 2014).

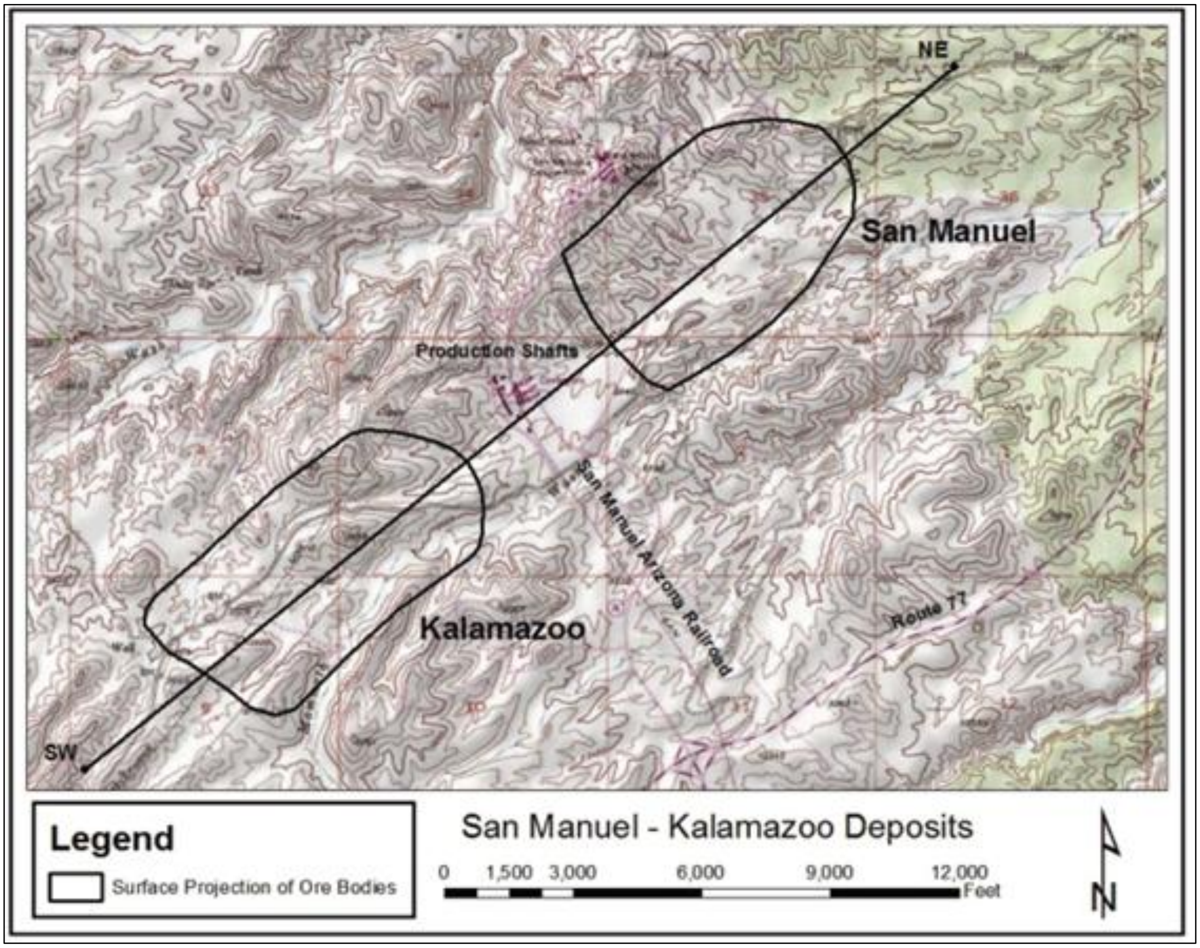
6.2.5 Discovery of the Kalamazoo Ore Body (1944 to 1968)

From the time of the initial discovery of the San Manuel deposit, geologists recognized that the deposit was situated in the footwall of a major low-angle fault zone, and that the hanging wall segment of the deposit was absent. Although early efforts to locate this missing segment failed to intersect economic grade mineralization, seven drillholes completed between 1947 and 1958 encountered the alteration halo characteristic of the hanging wall portion of the porphyry system (Briggs, 2014).

In August 1965, the Quintana Minerals Corporation initiated a systematic exploration program in the region under the direction of J. David Lowell. This program resulted in the discovery of the Kalamazoo deposit in 1967. The Kalamazoo deposit was interpreted as a downthrown upper plate segment of the San Manuel deposit, displaced approximately 7,900 ft to the southwest along the San Manuel fault (Hoag et al., 1996; Lowell, 1968). Magma Copper Company subsequently purchased the Kalamazoo property from Quintana Minerals in March 1968, for a combination of cash and stock valued at US$31.8 million (Briggs, 2014).

The analysis of geological data gathered from the San Manuel and Kalamazoo deposits contributed to the development by J. David Lowell and Dr. Charles Guilbert of the porphyry copper deposit model (Lowell and Guilbert, 1970), which remains a foundational framework for the evaluation of large porphyry mineralized systems.

As depicted in Figure 6-2, the San Manuel deposit occupies the northeastern lobe; the Kalamazoo deposit the southwestern lobe, offset approximately 7,900 ft along the San Manuel fault. Figure 6-3 shows an idealized cross section.



Source: Briggs, 2014, Topographic base from USGS

Figure 6-2: Schematic Surface Projection of The San Manuel and Kalamazoo Deposits on a USGS Mammoth 7.5-Minute Topographic Base

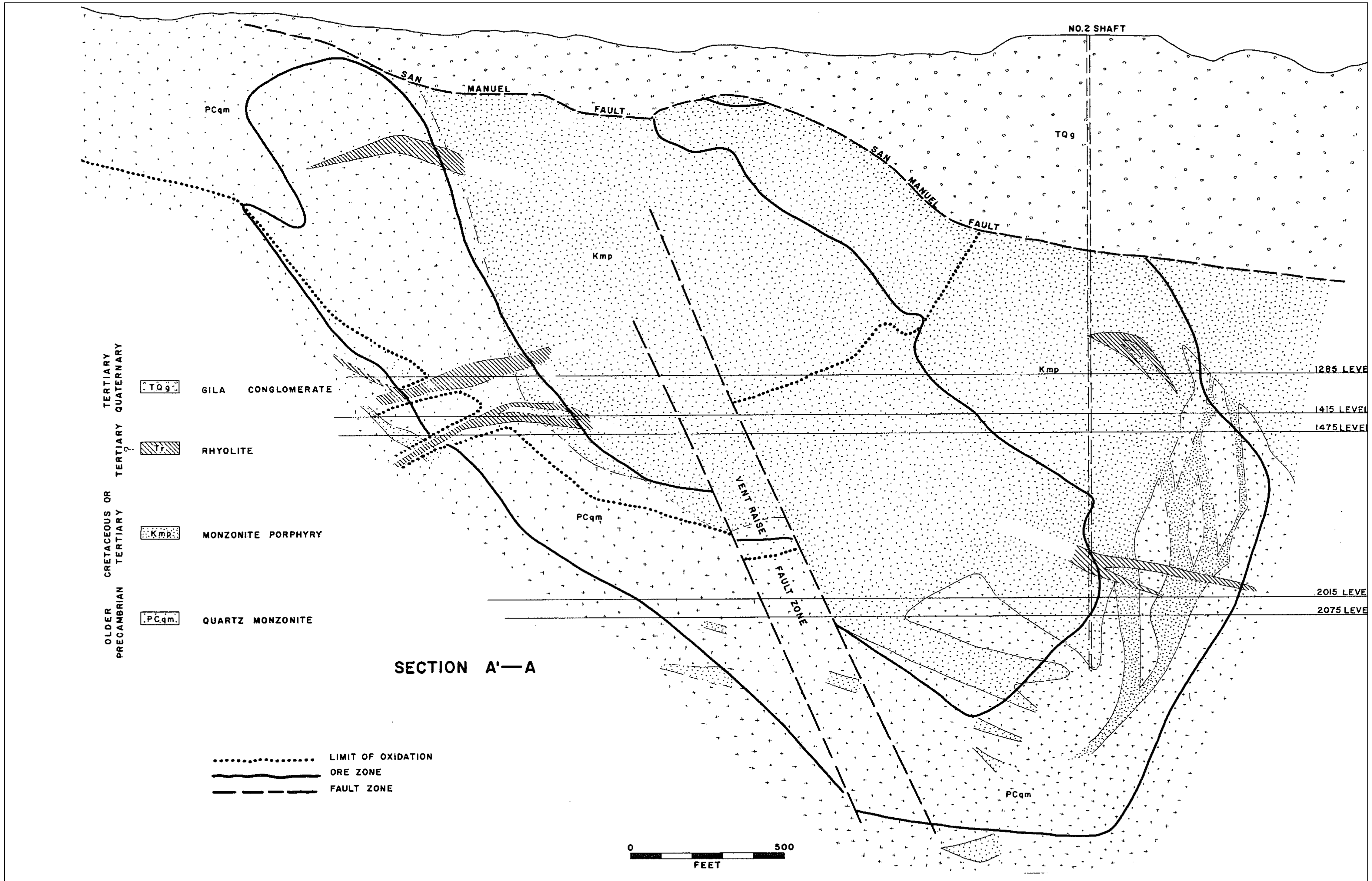


FIGURE 3.—Idealized cross section looking northeast.

Source: Modified from Thomas (1966), as presented in Hoag et al. (1996)
Note: Based on a 0.5% Cu Cut-off Grade. Strike Length Approximately 7,710 ft; Depth to 2,710 ft Below Surface.

Figure 6-3: Idealized Cross-section Looking Northeast through the San Manuel Deposit

6.2.6 Kalamazoo Underground Exploration and Development (1977 to 1993)

Following the acquisition of the Kalamazoo property, Magma Copper sank the 4,123-ft No. 5 shaft to provide underground access to the Kalamazoo deposit. Underground development of the upper levels of the deposit commenced during 1977; however, development activities were suspended in December 1981 in response to adverse copper market conditions (Briggs, 2014).

During 1983, Magma Copper commenced a feasibility study examining the economic potential of mining the shallower oxide copper ores situated in the caved zone above the San Manuel underground workings by open pit methods. This study supported the initiation of open pit mining in February 1985. Approval for the development of the lower levels of the Kalamazoo deposit was granted by Magma Copper's Board of Directors in March 1993 (Briggs, 2014).

6.2.7 Summary of Key Exploration Milestones

Table 6-2 summarizes key exploration milestones.

Table 6-2: Key Exploration Milestones

Year / Period	Activity / Finding
1879	Copper-stained outcrop at Red Hill first noted by prospectors.
1925	San Manuel Claims No. 1 to 5 staked by Anselmo Laguna at Red Hill.
1942	Henry Nichols engaged as technical advisor; claim group expanded to 21 claims.
Aug 1943	Exploration agreement executed between San Manuel partnership and USBM.
Nov 1943	USBM drilling commenced; five churn holes completed (total 1,480 ft).
May 1944	Sulfide ore body intersected; initial resource estimate ~30 million tonnes (Mt) at 0.80% Cu.
Aug 1944	Magma Copper Company acquired option to purchase San Manuel property.
Dec 1944	Magma Copper initiated independent surface drilling program.
Sep 1945	Magma Copper exercised purchase option; San Manuel Copper Corporation formed.
1947 to 1958	Seven holes drilled in San Manuel fault hanging wall; alteration halo encountered.
Aug 1965	Quintana Minerals initiated regional exploration under J.D. Lowell.
1967	Kalamazoo ore body discovered by Quintana Minerals.
Mar 1968	Magma Copper acquired Kalamazoo property from Quintana for US$31.8 million.
1977	Underground development of Kalamazoo upper levels commenced (suspended 1981).
1983	Feasibility study initiated for oxide open pit and heap leach.
Mar 1993	Board approval for lower Kalamazoo development (US$150 million capital).
Jun to Jul 1996	1:2,400 geological mapping of San Manuel Oxide pit completed by BHP Copper, N.A.

Source: BHP, 2026

6.3 Historical Production

6.3.1 Introduction

The San Manuel Property porphyry copper deposit supported one of the largest underground copper mining operations in North America over a production period of 44 years (1955 to 1999). The integrated mining complex encompassed underground block cave mining of both the San Manuel and Kalamazoo ore bodies, open pit extraction of oxide ore, heap leach processing, in situ leach operations, and on-site concentrating, smelting, and refining facilities. The following account summarizes the production history of the property by operational segment. All historical tonnages are reported in st unless otherwise stated.

6.3.2 Underground Block Cave Mining – San Manuel (1955 to 1999)

The San Manuel underground block cave mine was developed by the San Manuel Copper Corporation, a subsidiary of Magma Copper Company, on the basis of development work carried out by Magma Copper and the U.S. Bureau of Mines. Block caving operations commenced on November 24, 1955. Commercial mining and milling operations were achieved on January 1, 1956. The San Manuel smelter was brought online on January 8, 1956 (Briggs, 2014).

The San Manuel deposit was located at depths ranging from surface to approximately 2,700 ft and measured approximately 7,874 ft in length by 3,600 ft in width, with a geometry analogous to an upright canoe tilted approximately 45° to the northwest, and a long axis plunging to the southwest at approximately 20° (Briggs, 2014). The block caving method involved systematic undercutting of horizontal ore slices to induce gravitational collapse of the overlying ore column; broken ore migrated by gravity through a system of transfer raises to draw points, where it was recovered by underground ore train and hoisted to surface via production shafts. Surface ore was crushed and transported 6.8 miles by rail to the concentrator adjacent to the town of San Manuel. Figure 6-4 shows the historical surface infrastructure.

Source: D.F. Briggs, November 2001

Figure 6-4: Production Shaft Headframes at San Manuel, Showing the Surface Infrastructure Associated with Underground Hoisting Operations

Initial concentrator capacity of 30,000 short tons per day (st/d) was progressively increased to 36,000 st/d in 1963, 40,000 st/d in 1965, and 62,500 st/d in 1971. An electrolytic refinery and continuous casting rod plant were commissioned in December 1971. A sulfuric acid plant was added in 1974 to convert sulfur dioxide from the smelter converter into marketable sulfuric acid (Briggs, 2014).

The concentrator reached a final capacity of 62,500 st/d (56,699 metric tons per day (mt/d) following successive expansions between 1963 and 1971. Figure 6-5 shows the legacy concentrator facility and smelter. This surface infrastructure has been removed and reclaimed.

Source: D.F. Briggs, November 2001.

Figure 6-5: San Manuel Legacy Concentrator Facility with Smelter Stacks in The Background

From 1986 to 1988, Magma Copper modernized its smelting facility, replacing the existing reverberatory-converter smelter with an Outokumpu flash. Commissioned in July 1988, this facility was the largest flash smelter of its type in the world at the time of construction (Briggs, 2014).

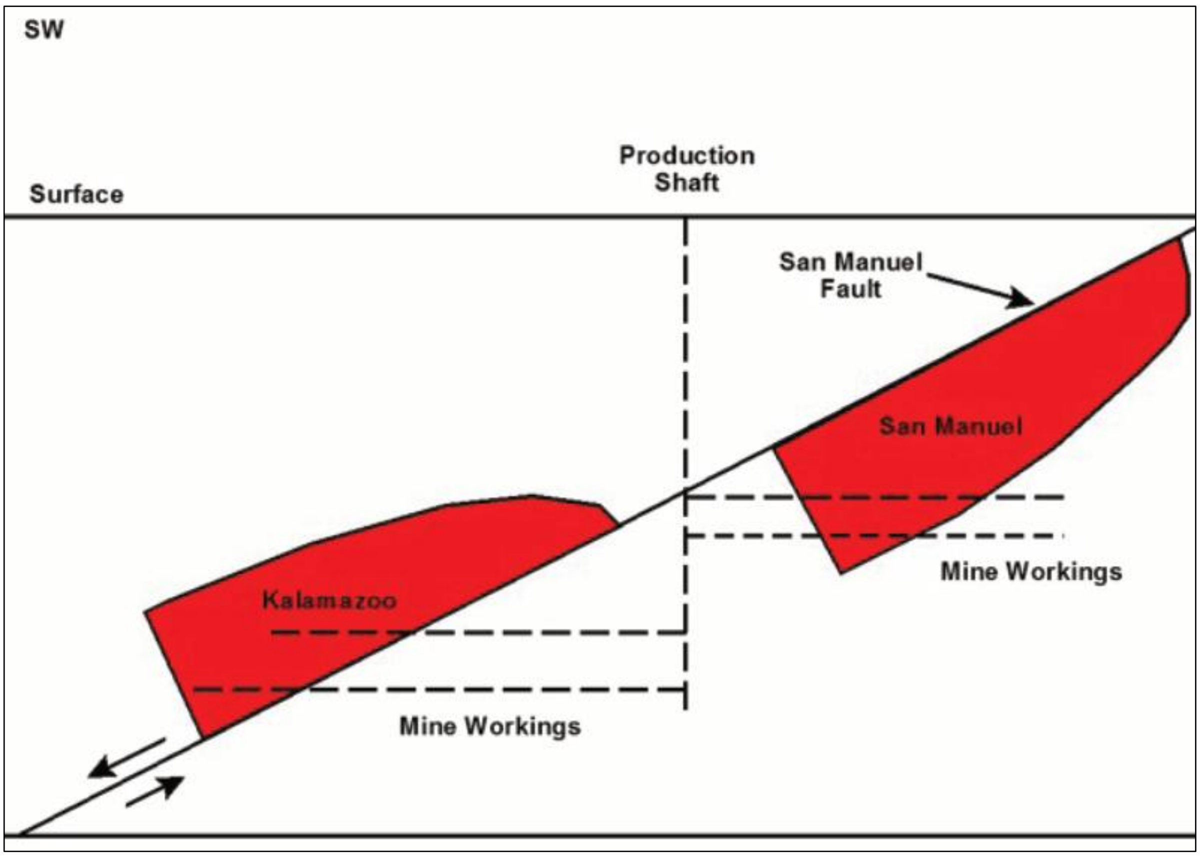
In May 1962, Newmont Mining Corporation increased its equity interest in Magma Copper Company from 21.5% to 80.6% and acquired the remaining outstanding stock in May 1969, making Magma Copper a wholly owned subsidiary. In 1987, Newmont divested its copper holdings to form a new public company, also named Magma Copper Company (Briggs, 2014).

As of June 1996, more than 646 million tons of ore averaging 0.71% TCu had been hoisted from the combined San Manuel Property underground operations. The San Manuel deposit was, at that time, producing approximately 41,000 tons per day (Hoag et al., 1996). Underground reserves within the San Manuel deposit were substantially depleted by early 1999 (Briggs, 2014).

6.3.3 Underground Block Cave Mining – Kalamazoo (1990 to 1999)

The Kalamazoo deposit is located approximately 5,000 ft southwest of the San Manuel production shafts, at depths ranging from 2,500 to 4,600 ft below surface. The deposit measures approximately 6,700 ft in length by 3,000 ft in width and ranges up to 1,000 ft in thickness, with the geometry of an overturned canoe whose keel plunges to the southwest at approximately 20° (Briggs, 2014), as shown in Figure 6-6.

Underground development of the upper levels of the Kalamazoo deposit commenced in 1977 following the sinking of the 4,123-ft No. 5 shaft but was suspended in December 1981 due to adverse copper market conditions. Limited development of the upper levels was resumed by Magma Copper in 1986, with limited production achieved in August 1990. Development of the lower Kalamazoo levels was approved in March 1993. Sulfide ore production from the lower levels was achieved in January 1997. As of June 1996, BHP was mining approximately 15,000 tons per day from the Kalamazoo operation, with development proceeding on the 3,440 level (Hoag et al., 1996). Mining at Kalamazoo continued until June 1999, when declining copper prices prompted the suspension of all underground, concentrating, smelting, and refining operations (Briggs, 2014).



Source: Briggs, 2014
Note:

- Not to scale.
- Showing the Relative Geometry of The Two Ore Bodies (shown in red), The San Manuel fault, Production, Production Shaft, and Mine Workings ale.

Figure 6-6: Simplified Schematic Northeast-Southwest Cross-section through The San Manuel and Kalamazoo Deposits

6.3.4 Open Pit Mining – San Manuel Oxide Pit (1985 to 1995)

Magma Copper initiated the open pit project in February 1985 to extract oxide copper ore from the shallow caved zone overlying the San Manuel underground workings. Open pit operations were conducted from August 1985 through January 1995, when the mineable oxide ore reserves were depleted and operations were suspended (Briggs, 2014).

Over the ten-year operating period, a total of 222 million tons of material was mined at an overall stripping ratio of 1.35:1. The mined material included approximately 93 million tons of oxide ore at an average ASCu grade of 0.47% and an average TCu grade of approximately 0.61%, and 1.5 million tons of sulfide ore at an average total copper grade of 1.02% (Hoag et al., 1996; Briggs, 2014). Figure 6-7 shows the San Manuel open pit.

Source: D.F. Briggs, early 1990s
Note: The collapse of the pit wall in the far background reflects surface subsidence above underlying block caving operations.

Figure 6-7: Aerial View of the San Manuel Open Pit Looking South Toward the Santa Catalina Mountains

6.3.5 Heap Leach Operations (1986 to 2002)

Oxide ore from the San Manuel open pit was processed by heap leaching on large-scale, lined heap leach facilities located north of the pit. Ore was stacked and irrigated with dilute sulfuric acid; copper-bearing pregnant leach solution (PLS) was recovered and processed at a solvent extraction-electrowinning (SX-EW) plant commissioned in May 1986, producing copper cathode at a purity of 99.999% (Briggs, 2014).

Heap leach operations commenced in 1986 and as of mid-1996 had produced more than 654 million pounds of copper cathode, with operations anticipated to continue through the year 2000 (Hoag et al., 1996). Cathode copper production from the heap leach operation was halted in March 2002 (Briggs, 2014).

6.3.6 In Situ Leach Operations (1986 to 1999)

A pilot in situ leach program was initiated by Magma Copper in 1986 within the San Manuel open pit and in portions of the block-caved underground workings, to assess the practicality of recovering copper from oxide mineralization using in situ methods. Two approaches were employed (Briggs, 2014; Hoag et al., 1996):

- **Well-to-well leaching**: Closely spaced injection and recovery wells were installed within the remaining widths of mined open pit benches. Dilute sulfuric acid (raffinate) was injected via screened PVC pipe; copper-bearing PLS was recovered from production wells on pit benches and from underground workings below the pit, then pumped to the SX-EW plant. Well-to-well leaching was initiated in 1988.
- **Well-to-underground leaching**: Deeper injection wells targeted caved and broken material on the eastern side of the San Manuel underground workings not recovered by conventional mining. Dilute sulfuric acid trickled by gravity through the caved zone; PLS was collected from sumps on the two lowest underground levels and pumped to the SX-EW plant.

In situ copper production increased from 614 st in 1986 to 12,500 st in 1990. Cumulative copper cathode production from in situ leach operations totaled more than 149 million pounds as of mid-1996 (Hoag et al., 1996). Many injection and production wells installed during early phases of operations were subsequently mined-out as the open pit phases advanced. Production from in situ leach operations continued following the suspension of underground mining in June 1999 (Briggs, 2014).

6.3.7 Tiger Quarry (pre-1987)

The Tiger Quarry, located in proximity to the San Manuel mining complex but is not included in the historical resource estimate for San Manuel. The Tiger quarry is associated with the Mammoth-Tiger low-sulfidation epithermal vein system and was operated by Magma Copper Company until 1987, supplying precious metal-bearing silica flux to the San Manuel smelter. The gold-silver production averaged approximately 0.08 troy ounces (oz) per ton gold, with the highest gold values associated with silicified rhyolite breccia. The system also yielded vanadium, lead, zinc, copper, molybdenum, and silver ores, and is noted for occurrences of vanadinite and wulfenite. The vein system is thought to be Oligocene in age and thus considerably younger than San Manuel Property (Force and Cox, 1992). It is offset by the Mammoth fault, which has been traced along strike into the San Manuel pit as the East fault (Force and Cox, 1992; Hoag et al., 1996). This area is not captured in historical resource estimate and may warrant additional evaluation.

6.3.8 BHP Acquisition and Care and Maintenance (1996 to 1999)

BHP acquired the San Manuel Property through its acquisition of Magma Copper Company in January 1996. In June 1999, BHP placed all underground mining, concentrating, smelting, and refining operations at the San Manuel Property on care and maintenance status, citing the decline of copper prices from a high of US$1.395 per pound in July 1995 to US$0.645 per pound in June 1999 (Briggs, 2014).

6.3.9 Final Closure and Reclamation (1999 to 2007)

From 1999 onward, BHP Copper engaged with state and federal environmental regulatory agencies and local communities to develop a closure approach and timeline, including comprehensive amendments to existing Aquifer Protection Permits to incorporate closure designs and post-closure monitoring programs (Briggs, 2014).

All underground operations were permanently suspended in January 2002 following an analysis that determined resumption of production would not be economically viable. Following salvage of underground equipment and removal of hazardous fluids, dewatering pumps were decommissioned in mid-February 2002, allowing the underground workings to flood. Cathode copper production from the heap leach operation was halted in March 2002. The concentrator, smelter, refinery, and rod plant were permanently closed in October 2003 and subsequently demolished. A 4,600-acre site reclamation program encompassed 3,600 acres of tailings impoundments and 625 acres of industrial plant facilities. The two 500-foot smelter stacks, shown in Figure 6-8 were demolished on January 18, 2007. The reclamation program was completed during 2007 and is recognized as one of the largest owner-funded mine and plant site closure projects in the world (Briggs, 2014).

Source: D.F. Briggs, 2001
Note: The stacks were demolished on January 18, 2007, as part of the site reclamation program.

Figure 6-8: San Manuel Smelter Facility Showing the Two Legacy 500-Foot Stacks

6.3.10 Total Historic Production

Over the 44-year operating life of the San Manuel Property mining complex, the cumulative production shown in Table 6-3 was achieved.

Table 6-3: Cumulative Production San Manuel-Kalamazoo

Parameter	Quantity
Total sulfide ore mined (underground)	**703,686,000 st at avg. 0.66% Cu**
Total oxide ore mined (open pit)	**92,969,000 st at avg. 0.61% Cu**
Total copper produced	**4,651,600 st**
Total molybdenum produced	**73,200 st**
Heap leach cathode production (to mid-1996)	>654 million lbs copper cathode
In situ leach cathode production (to mid-1996)	>149 million lbs copper cathode

Source: Briggs, 2014; Hoag et al., 1996

In terms of total ore production, the San Manuel Property operation was the largest underground copper mining operation in North America and one of the largest operations of its type in the world, contributing significantly to the economies of Pinal and Pima Counties, Arizona (Briggs, 2014).

6.4 Historical Mineral Resource and Reserve Estimates

This section reconciles the historical resource and reserves figures for the San Manuel and Kalamazoo deposits across three generations of disclosure: (i) the estimate prepared by Magma Copper Company effective January 1, 1995; (ii) the estimate carried by BHP through its final public disclosure prior to the 1999 suspension of mining at San Manuel, as reported in the BHP Billiton Ltd 2001 Annual Report, and (iii) the internal 1999 BHP reports which detail the estimates of the figures supporting the 2001 Annual Report. The reconciliation is then carried forward to the tabulation of these same estimates in the current technical report draft, and all tonnages are converted to st for consistency with the imperial units used elsewhere in this report, or the original units in which they were stated.

None of the estimates discussed in this section are, nor is Faraday treating them as, current Mineral Resources or Mineral Reserves under NI 43-101. They are presented, and should be read, strictly as historical estimates. No qualified person engaged for the current report has re-performed, re-audited, or verified these historical estimates, and they are reproduced solely to document the deposit's reporting history. The work that would be required to verify and potentially establish a current Mineral Resource is summarized in Section 26 of this Technical Report.

Two 1999 reports supporting the resources and reserves at the time were internal BHP documents and were never publicly disclosed in the form reproduced here. They were prepared by BHP Copper's technical planning groups generally applying the Australasian Code for Reporting of Mineral Resources and Ore Reserves (the "JORC Code," 1996 edition), consistent with BHP's reporting obligations to the Australian Securities Exchange at the time and last shared in the 2001 Annual Report to the best of SRK's knowledge. The estimates were supported by external audits: the Winters Company audited the San Manuel 2615-Level sulfide reserves (January 1994) and the oxide in situ reserves (1992 to 1993), and Pincock, Allen & Holt audited the Kalamazoo 2890- and 3440-Level reserves (January 1996). The historical estimates were prepared in accordance with classification systems and reporting standards that may differ materially from current CIM Definition Standards incorporated into NI 43-101.

6.4.1 Basis of the Historical Estimates

Three source documents underlie the reconciliation: (i) the The Magma Copper Company Form 10-K tabulates "proven/probable" ore reserves in committed mine plans and a separate category of "mineralized rock" not committed to mine plans, both effective January 1, 1995, at a copper price assumption of approximately US$0.80 per pound, reported in st with mineable diluted grades; (ii) the last public reserve statement covering San Manuel is the BHP 1999 Annual Report (fiscal year ended May 31, 1999), prepared at a copper price assumption of US$1.00 per pound; and (iii) the BHP Billiton Ltd 2001 Annual Report tabulates San Manuel's Total Mineral Resource under the JORC Code (September 1999) as at end June 2001, in metric t, on a basis inclusive of any tonnage already converted to Ore Reserves; a footnote to that table states that the San Manuel Mineral Resource "has not been updated to account for" production since the property was placed on care-and-maintenance status in mid-1999, meaning the figures reported in 2001 substantively represent the position at closure. San Manuel does not appear in BHP's Ore Reserves table from FY2001 onward

This disclosure is understood to be reflective of the historical resource and reserve estimate upon mine closure, based on the assumptions and economic parameters at that time. The documented 1999 historical reserves estimate for oxides and sulfides are interpreted to be based on a pricing assumption of US$0.80/lb Cu and US$0.90/lb Cu, respectively, while pricing assumptions and criteria for mineral resources are not as clearly stated or understood. Mineral resources were generally not disclosed in 20-F filing documentation and thus, while the reserves feature pricing information and other criteria, resources for the time were likely considered internally for other planning purposes and without the same rigorous constraints as applied today.

The resource and reserve figures discussed in this section are historical estimates within the meaning of NI 43-101 and predate the adoption of the current CIM Definition Standards on Mineral Resources and Mineral Reserves (2014) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (2019). These historical estimates were prepared using classification schemes, cut-off grades (CoG) and estimation methodologies that may not conform to current CIM Definition Standards, and reflect copper price assumptions that differ significantly from current market conditions.

A qualified person has not completed sufficient work to classify these historical estimates as current Mineral Resources or Mineral Reserves, and the historical estimates are not treated by Faraday as current Mineral Resources or Mineral Reserves and should not be treated as current or relied upon for economic evaluation. The reconciliation presented in this section is intended solely to establish internal consistency among the historical disclosures identified above and does not constitute verification, validation, or re-estimation of the underlying data. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

6.4.2 Historical Sulfide Resource and Reserves Statement

In 1999, BHP produced mineral resource and reserve statements for the sulfide portions of the San Manuel and Kalamazoo deposits. The sulfide resource was constrained by TCu cut-off grade and by distance-to-nearest-composite classification, bounded by structural domains and shaft-pillar limits. Material beyond the classified envelope (termed “Possible” or “Speculative”) was excluded from both resource and reserve. Reasonable prospects for eventual economic extract (RPEEE) was thus carried implicitly through the cut-off and the underground mine geometry rather than through a formally optimized constraining shape for the reserve. SRK has not assessed whether the historical estimates satisfy current CIM requirements relating to reasonable prospects for eventual economic extraction. Resources are reported both inclusive and exclusive of reserves, depending on material type, and use different approaches for each as noted in table footnotes. Key assumptions and exclusions for the legacy statements are noted below.

- The FY00 sulfide reserves were based on a copper price assumption of US$0.90/lb, net of treatment and refining charges (TC / RCs), with an assumed smelter recovery of 96.5% and mill recoveries of 83.4% (San Manuel) and 89.18% (Lower Kalamazoo). Reserves were tied to scheduled LoM production and reported on a total-copper basis.
- No specific pricing guidance was stated for sulfide mineral resources, but the same US$0.90/lb Cu is assumed.
- SRK notes that molybdenum was historically produced from the San Manuel Kalamazoo sulfide process as noted in Table 6-3 and further described in Section 17.2.2. Mo was not included in the historical disclosure.

Historical estimates results are presented in Table 6-4 (Resources) and Table 6-5 (Reserves).

Table 6-4: Historical Sulfide Resources (June 1, 1999)

Item	Tons (000)[2]	TCu (%)	Contained Cu (000 lb) [1]
Measured	418,021	0.65	5,434,269
Indicated	86,939	0.66	1,147,599
Meas+Ind	504,960	0.65	6,581,868
Inferred	47,965	0.64	613,950

Source: BHP, 1999.
(1) Contained metal = tons × TCu grade; total is the sum of categories. Cut-off 0.5% TCu (San Manuel) / 0.4% TCu (Kalamazoo).
(2) Reported exclusive of sulfide mineral reserve.

- Historical estimate – not current and not treated as current mineral resources/reserves.
- Contained metal is shown for reference only and does not reflect metallurgical recovery, mining recovery, or payability.
- No Qualified Person has done sufficient work to classify this historical estimate as current.

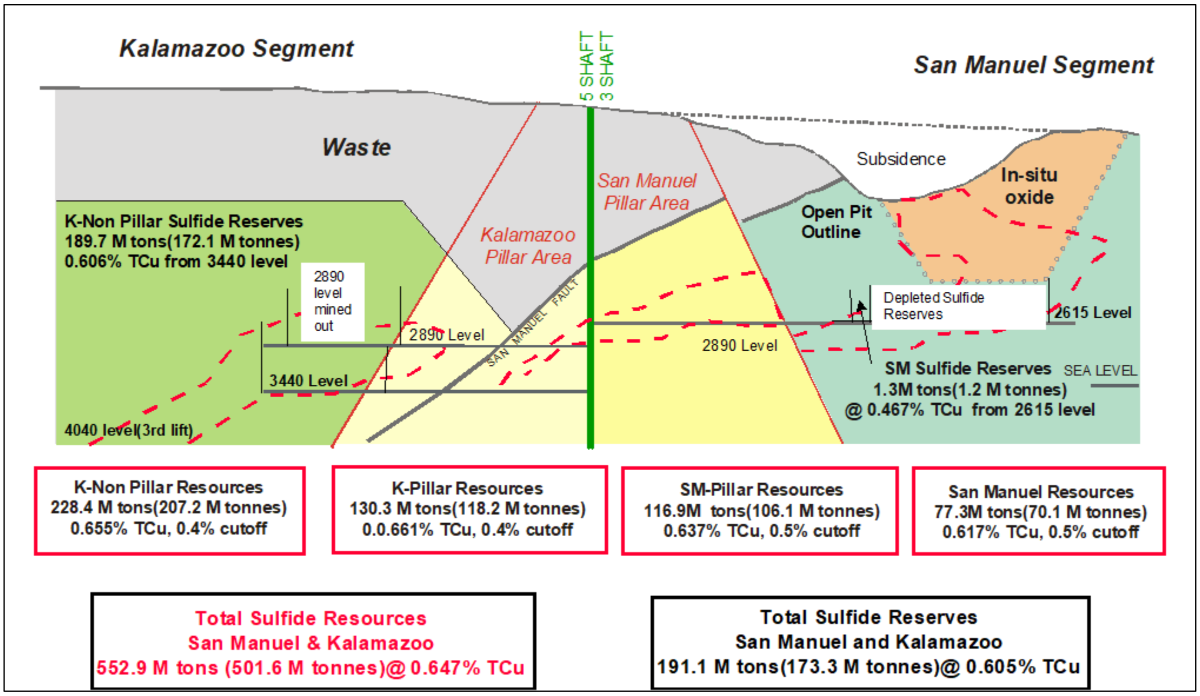
Table 6-5: Historical Sulfide Reserves (June 1, 1999)

Area	Tons (000)	TCu (%)	Contained Cu (000 lb) [1]
San Manuel (2615 Level)	1,350	0.47	12,612
Lower Kalamazoo (3440 Level)	188,262	0.61	2,285,495
Development Muck	1,476	0.43	12,694
Reserve Totals	**191,088**	**0.61**	**2,310,801**

Source: BHP, 1999.
(1) Contained metal = tons × TCu grade, no recovery applied. Total TCu% is tonnage-weighted.
(2) Cut-off 0.9% TCu.

- Historical estimate – not current and not treated as current mineral resources/reserves.
- Contained metal is shown for reference only and does not reflect metallurgical recovery, mining recovery, or payability.
- No Qualified Person has done sufficient work to classify this historical estimate as current.

The historical reserves in Table 6-5 include both Proven and Probable Reserves. The historical reserves are based on scheduled LoM production at the time of statement. A general layout of the sulfide material incorporated into the historical resources and reserves is shown below in Figure 6-9.



Source: BHP, 1999
Note: This cross-section is consistent in structure and units (st, exclusive resource/reserve categories) with internal BHP Copper reserves and resources report prepared at the time of the 1999 care-and-maintenance decision, rather than with either of BHP's public JORC disclosures. It is treated here as a fourth, independent data point against which both the public disclosures and the draft tabulation can be checked.

Figure 6-9: Conceptual Resource / Reserves Layout

6.4.3 Historical Oxide Resource and Reserves Statement

In 1999, BHP produced mineral resource and reserve statements for the oxide portions of the San Manuel deposit. The oxide report quotes the JORC RPEEE definition verbatim and states that the resource "uses grade cutoffs below that of the ore reserve in the expectation that reasonable prospects for extraction exist in the future." The economic test was applied directly according to the report. Low-revenue areas carrying drilling capital greater than US$0.20/lb, plus US$0.40/lb direct operating cost and US$0.20/lb allocated overhead, were removed from the ore reserve "but placed back into the resource until conditions that are more favorable occur". This implies a US$0.80/lb pricing assumption but also incorporates other factors and criteria in tabulation which are likely not disclosed.

The BHP 1999 oxide report does not disclose an explicit cut-off grade for the oxide resources or reserves. The economic limit was framed metallurgically and operationally. The in-situ economic cut-off was set at a pregnant-leach-solution (PLS) tenor of 0.20 g/L above raffinate, and the historical open pit had been mined to an approximately US$0.80/lb economic limit. The reserve economic screen likewise implies a copper price near US$0.80/lb. Historic results are presented in Table 6-6 (Resources) and Table 6-7 (Reserves).

Table 6-6: Historical Oxide Resources (June 30, 2001)

Mineral Zone	Tons (000's)[3]	%TCu	%ASCu	Contained TCu (000 lb) [1]	Contained ASCu (000 lb) [2]
Chalcocite	5,404	1.05	0.31	113,603	33,499
Chalcocite + Chalcopyrite	5,893	0.95	0.21	111,899	24,277
Chrysocolla	247,965	0.48	0.33	2,370,838	1,651,443
Chrysocolla + Chalcopyrite	9,560	0.50	0.21	95,656	40,156
Chrysocolla + Chalcocite	26,826	0.66	0.36	352,246	193,153
Chrysocolla + CC + Chp	17,413	0.57	0.25	197,535	86,374
Total	**313,062**	**0.53**	**0.33**	**3,241,776**	**2,028,901**

Source: BHP, 1999.
(1) Contained TCu as reported by BHP (1999) = tonnes (t) × total-copper grade;
(2) Contained ASCu = t × acid-soluble-copper grade (added for reference).
(3) Reported inclusive of in situ oxide mineral reserve, exclusive of heap leaching.

- Historical estimate – not current and not treated as current mineral resources/reserves.
- Contained metal is shown for reference only and does not reflect metallurgical recovery, mining recovery, or payability.
- No Qualified Person has done sufficient work to classify this historical estimate as current.

Table 6-7: Historical Oxide Reserves (June 30, 2001)

Ore Type[2]	Tons (000's)	%TCu	%ASCu	Contained TCu (000 lb) [1]	Contained ASCu (000 lb) [1]
In situ – Proven	167,772	0.51	0.34	1,697,850	1,137,493
In situ – Probable	5,401	0.58	0.42	62,223	45,803
Heap Leaching	92,704	0.20	0.06	376,380	116,808
Total	**265,877**	**0.40**	**0.24**	**2,136,453**	**1,300,103**

Source: BHP, 1999.
(1) Contained metal = t × grade, no recovery applied (total copper and acid-soluble copper).
(2) Contained ASCu = t × acid-soluble-copper grade (added for reference).

- Historical estimate – not current and not treated as current mineral resources/reserves.
- Contained metal is shown for reference only and does not reflect metallurgical recovery, mining recovery, or payability.
- No Qualified Person has done sufficient work to classify this historical estimate as current.

7 Geological Setting and Mineralization

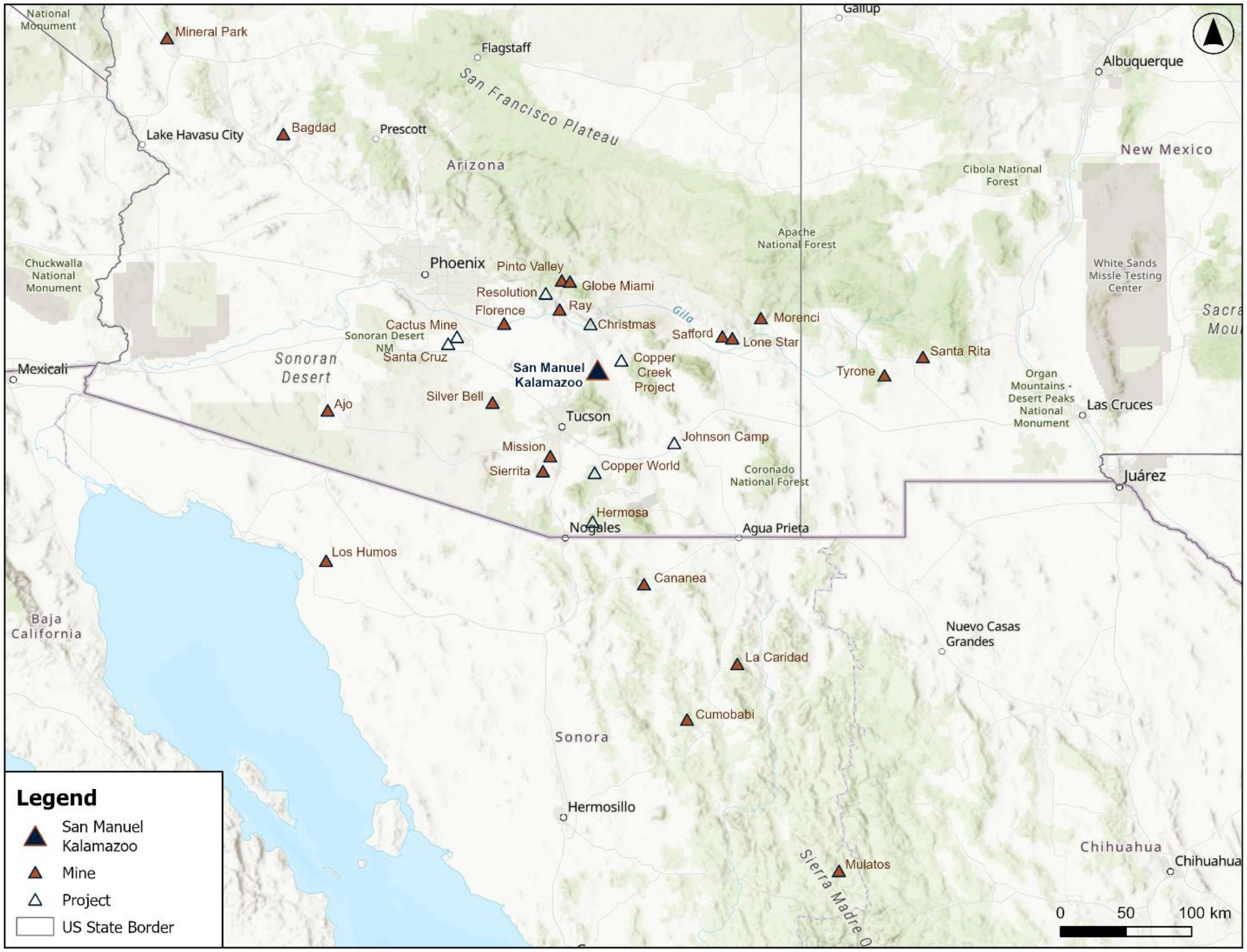
7.1 Regional Geology

7.1.1 Physiographic Setting

The San Manuel Property porphyry copper deposit is located in the southern Basin and Range physiographic province of Arizona (Menges and Pearthree, 1989), approximately 30 mi [48.3 km] northeast of Tucson and 50 mi [80.5 km] north of the international border in Pinal County as shown in Figure 7-1. The deposit lies within the San Pedro River drainage basin, a northwest-trending intermontane basin bounded by the Tortilla Mountains to the west and the Winchester, Galiuro, and Aravaipa mountain ranges to the east. Topographic relief in the immediate project area is relatively subdued, with basin floor elevations between approximately 2,620 and 2,950 ft above mean sea level and surrounding range elevations commonly exceeding 3,937 ft.

San Manuel is part of the Southwestern North American Porphyry Copper province (Titley and Anthony, 1989; Leveille and Stegen, 2012), which includes parts of the State of Sonora, Mexico, as well as the U.S. states of New Mexico and Arizona (Figure 7-1). This metallogenetic province is, after the Central Andes, the most endowed in copper around the Pacific (Sillitoe, 2012). Porphyry and related deposits are generally aligned along northwest- or northeast-oriented lineaments, which reflect the underlying large-scale basement architecture (Leveille and Stegen, 2012). Mineralization in these deposits coincides with the 80 to 55 Ma Laramide orogeny and associated arc magmatism, which was the result of northeast-directed shallow-angle subduction of the Farallon Plate beneath the North American continental plate (e.g., Liu and Currie, 2016). Mineralization typically post-dates Laramide shortening (Seedorff et al., 2019).

Major porphyry copper deposits within this province include Bagdad, Miami-Inspiration, Ray, Superior (Resolution), Copper Creek and the Morenci-Clifton district, all of which share broadly similar geologic controls, alteration styles, and mineralization character with San Manuel-Kalamazoo.



Source: Faraday, 2026
Note: Figure shows San Manuel Kalamazoo site relative to major copper mines and projects, towns, and political boundaries

Figure 7-1: Location Map of the San Manuel Property Porphyry Copper Deposit

7.1.2 Structural Framework

The regional structural setting of the San Manuel Property deposit is dominated by two major tectonic episodes: Laramide compression during the Late Cretaceous to early Eocene, and mid-Tertiary crustal extension during the Oligocene and Miocene. The interplay of these two events is fundamental to the present geometry of the mineralized system and the unusual depth and configuration of the Kalamazoo deposit.

During the Laramide orogeny, northeastward subduction of the Farallon plate beneath the North American plate drove arc magmatism and crustal thickening throughout the region. Porphyritic intrusions emplaced at depth provided the heat, fluids, and metals responsible for the San Manuel Property mineralization system. During emplacement, the porphyry system underwent hydrothermal alteration and ore deposition within a broadly compressional tectonic framework.

Subsequently, during the mid-Tertiary (approximately 30 to 10 Ma), the region experienced significant crustal extension associated with the development of the Basin and Range province. This extensional episode produced a system of low-angle detachment faults and high-angle normal faults that faulted, tilted, and partially exhumed the Laramide ore systems. Paleomagnetic data and structural analyses indicate that the San Manuel region experienced regional tilting of approximately 33° ± 12° about a N46°W axis during this extensional phase (Sandbak and Alexander, 1995). This tilting accounts for the shallow southwest dip of the San Manuel fault and the general structural configuration of the district.

The San Pedro Basin, within which the property is situated, represents a half-graben or graben structure generated by Basin and Range faulting. The Cloudburst Formation and overlying Miocene–Pliocene sedimentary sequences (San Manuel and Quiburis Formations) were deposited in subsiding basins formed during and after the extensional episode (Dickinson, 1991; Force et al., 1995). These Tertiary sedimentary packages overlie the Laramide intrusive–volcanic complex and form the dominant stratigraphic cover above the Kalamazoo deposit.

7.1.3 Regional Geologic and Stratigraphic Context

The regional stratigraphy of the San Manuel area spans approximately 1.4 billion years, from Proterozoic crystalline basement to Holocene alluvium. The oldest exposed unit, the Oracle Granite, was emplaced at approximately 1,440 Ma (Van Schmus and Bickford, 1981) and forms the regional basement against which all subsequent lithological units are referenced. A suite of Proterozoic diabase sills and dikes intruded the granite at approximately 1,040 to 1,100 Ma, representing a regional tectonic event recognized across much of the southwestern United States.

Following a protracted period of erosion and non-deposition during the Paleozoic and Mesozoic, the Laramide orogeny produced the granodiorite and monzonite porphyry intrusions that are associated with the San Manuel Property mineralized system (67 to 69 Ma; Creasey et al., 1977). Volcanic rocks, including andesite flows and igneous breccia, are interpreted to be nearly contemporaneous with the porphyry emplacement. A second episode of igneous activity produced widespread rhyolite eruptions during the early stages of Basin and Range extension (Berger and Drewes, 1965). These rhyolites cap several ridges in the local area and serve as stratigraphic markers.

Neogene and Quaternary sedimentation produced a sequence of continental clastic deposits in the San Pedro Valley: the Cloudburst Formation (Oligo-Miocene andesite to latite flows and tuffs, and coarse conglomerate derived from basin-bounding ranges), the San Manuel Formation (upper Miocene well-bedded sandstone and conglomerate), and the Quiburis Formation (upper Miocene to Pliocene fine-grained lacustrine fluvial sediments and evaporites). This Tertiary sedimentary section reaches thicknesses of several hundred meters (m) within the San Pedro Basin and provides the principal overburden above the Kalamazoo deposit.

7.2 Local Geology

7.2.1 Overview

The local geology of the San Manuel Property district encompasses an area of approximately 38.6 mi^2 centered on the former San Manuel Property. The district exposes a structurally complex assemblage of Proterozoic basement, Laramide intrusive and volcanic rocks, and Tertiary–Quaternary sedimentary cover. The configuration of these units is governed by a series of north- to northwest-trending normal faults produced during mid-Tertiary Basin and Range extension, which created a series of tilted fault blocks and associated half-graben basins. The overall geometry of the district and the spatial relationship between surface geology and the buried Kalamazoo deposit are illustrated on the surface geology map of the area (Sandbak and Alexander, 1995, Fig. 2).

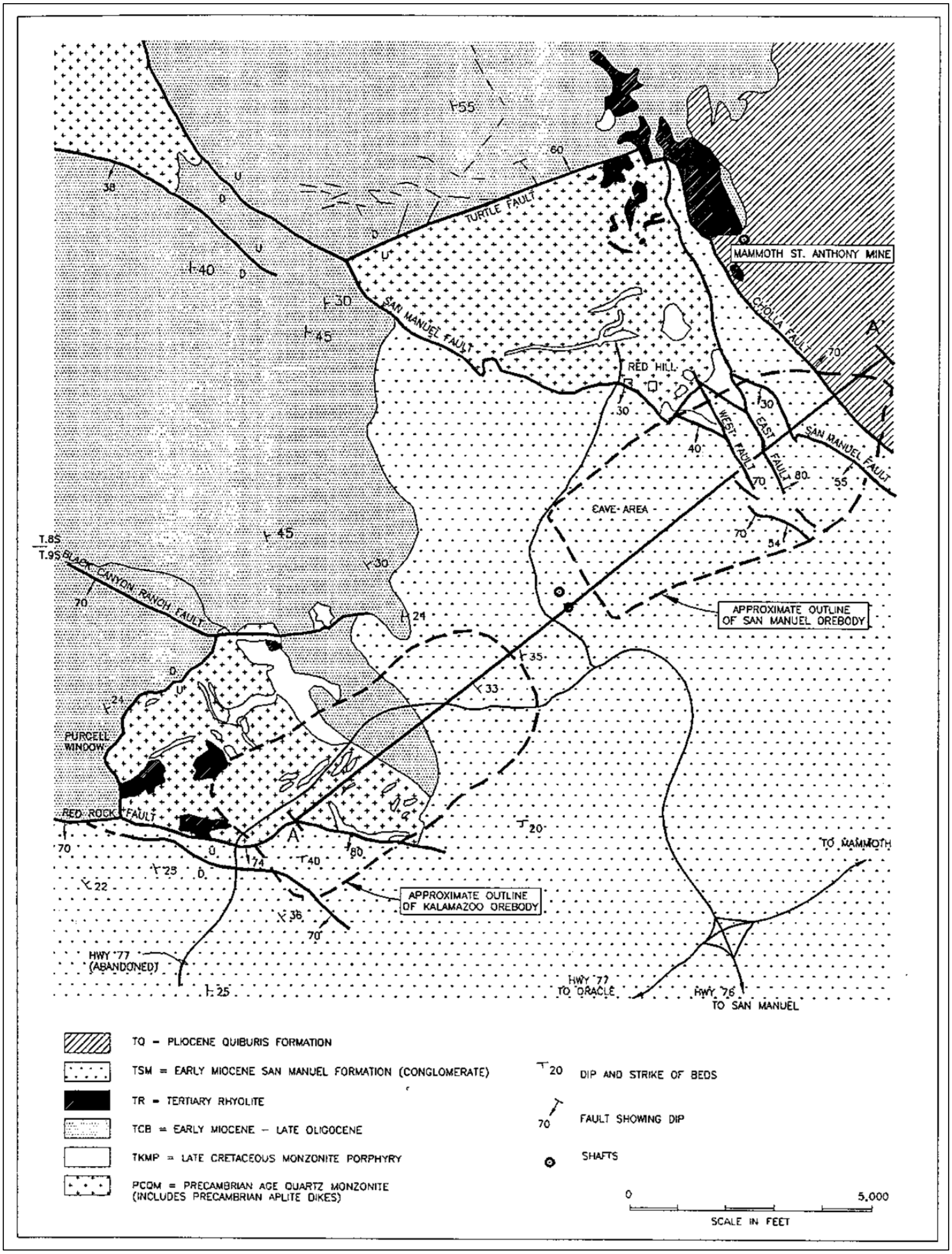
7.2.2 Surface Geological Units

The oldest rocks exposed at surface in the district are outcrops of Oracle Granite, which occur as isolated erosional inliers within the fault-controlled uplifts. The most significant of these exposures is the Purcell Window, a structural culmination located directly above the Kalamazoo orebody in which Proterozoic granite is exposed at the surface through erosional breaching of the Tertiary sedimentary cover. The Purcell Window provided critical evidence during early exploration that the basement lay at relatively shallow depths in this area, guiding the exploration program that led to discovery of the Kalamazoo deposit (Lowell, 1968).

Laramide-age intrusive rocks are exposed primarily in the Red Hill area, located in the southwestern portion of the district, where granodiorite and monzonite porphyry outcrops provide surface expression of the porphyry system. Hydrothermally altered equivalents of these intrusive rocks are also exposed in eroded fault blocks across the district. Associated volcanic rocks, including andesite flows and igneous breccias are interpreted to be nearly contemporaneous with the Laramide intrusive episode, crop out locally along fault-bounded ridges and hills within the mine area.

Miocene rhyolite, emplaced at approximately 22 Ma, caps several elevated terrain features in the Mammoth-St. Anthony area to the north and northeast of the mine. These rhyolite units serve as convenient stratigraphic reference horizons and are correlated with mid-Tertiary volcanism associated with the early stages of Basin and Range extension. Topographically below the rhyolite, and throughout the low-lying areas of the district, Oligo-Miocene sedimentary formations of the Cloudburst, San Manuel, and Quiburis sequences overlie the Laramide basement at depths controlled by fault geometry.

Quaternary alluvium occupies the active drainages and valley floors, reaching thicknesses of tens of m in the San Pedro Valley. This unconsolidated material forms the surficial veneer over much of the district and has negligible geological significance to the deeper ore system but represents the principal host of the tailings storage and heap-leach facilities constructed during mine operation. Figure 7-2 shows the surface geology.



Source: Modified from Dickinson (1993) and Sandbak and Alexander (1995).
Note: Figure shows mapped rock units, major fault traces, and the approximate outlines of the San Manuel and Kalamazoo deposit segments project to surface

Figure 7-2: Surface Geology Map of the San Manuel Property Porphyry Copper Deposit

7.2.3 Principal Structures

The structural framework of the district is dominated by northwest- to north-trending normal fault systems that dip to the northeast or southwest and were active during mid-Tertiary Basin and Range extension. These faults controlled the local stratigraphy and created the half-graben structures in which Tertiary sediments were deposited. The principal fault systems identified from surface mapping and underground workings are described below (Sandbak and Alexander, 1995).

The San Manuel fault is the dominant structure of the district and the most significant fault with respect to the mineral system. It is a low-angle normal fault that dips approximately 30° to the southwest and strikes northwest. The fault separates the San Manuel deposit in the footwall from the Kalamazoo deposit in the hanging wall, and its displacement is estimated at approximately 3,937 ft of dip-slip. The San Manuel fault is interpreted as a mid-Tertiary in age or closely related structure formed during the extensional episode, and its movement effectively bisected what had been a single Laramide porphyry system into two distinct orebody segments now separated by several kilometers in planview. The fault plane is expressed at surface as a low-relief scarp and is observed in drill core and underground workings as a zone of gouge and breccia several m thick.

The Turtle Fault is a high-angle normal fault trending northwest and dipping northeast, located in the western portion of the district. It bounds the western edge of the main porphyry intrusive complex and juxtaposes alluvial basin sediments against Laramide intrusive rocks along its trace. The Turtle Fault was a significant hydrological barrier during mine dewatering operations.

The East Fault, Cholla Fault, West Fault, and Hangover Fault comprise a system of subsidiary northeast- to north-trending normal faults that define the internal structural blocks within the porphyry deposit. These faults were mapped extensively from underground workings and are generally steeply dipping (60° to 80°) with relatively small individual displacements of a few tens of m. They locally offset copper grade boundaries and alteration contacts, complicating resource estimation and mine planning, but do not substantially disrupt the continuity of the mineralized system at the deposit scale.

The Red Rock Fault and Black Canyon Ranch Fault are structural features identified from surface mapping that bound the northeastern and southeastern margins of the Laramide intrusive complex respectively. Both faults trend approximately north-northwest and show significant down to the southwest normal displacement that contributes to the differential burial depth of the Laramide rocks across the district.

7.2.4 Local Stratigraphy

The local stratigraphic column spans from Proterozoic basement through Quaternary alluvium. The principal stratigraphic units observed in surface exposures and drillholes within the district are, from oldest to youngest:

- Oracle Granite (1,440 Ma). Proterozoic crystalline basement. Light gray to pink, coarse-grained, massive to weakly foliated; composed principally of K-feldspar, quartz, and biotite. Forms the regional basement and the host rock of the porphyry system in the deeper portions of the deposit.
- Proterozoic diabase (1,040 to 1,100 Ma). Mafic intrusive sills and dikes intruded into the Oracle Granite. Dark gray, fine- to medium-grained; composed of plagioclase, augite, and magnetite. Generally unaffected by later hydrothermal alteration unless crosscut by the porphyry system.

- Laramide Porphyry Intrusions (67 to 69 Ma). Multiphase granodiorite and monzonite porphyry stocks and dikes constituting the principal host of the San Manuel Property mineralized system. Phenocrysts of hornblende and biotite in a fine-grained groundmass, variably altered by hydrothermal fluids. Exposed at Red Hill and in the Purcell Window area.
- Andesite and Igneous Breccia. Intermediate volcanic flows and intrusion breccias contemporaneous with the Laramide porphyry episode. Found within and adjacent to the intrusive complex; locally altered to sericite-pyrite assemblages within the phyllic alteration zone.
- Cloudburst Formation (Oligo-Miocene). Andesite to latite flows and tuffs, overlain by coarse, poorly sorted conglomerate and sandstone deposited in alluvial fan and fluvial environments during the early stages of Basin and Range extension. Clast compositions are dominated by locally derived Oracle Granite and Laramide intrusive rocks. Unconformably overlies Laramide basement.
- Rhyolite (~22 Ma). Miocene volcanic ash-flow tuffs and lava flows emplaced during mid-Tertiary volcanism. Exposed as cap rocks on elevated terrain in the Mammoth–St. Anthony area. Provides a stratigraphic datum for structural interpretation.
- San Manuel Formation (late Miocene). Moderately consolidated, well-bedded sandstone, siltstone, and conglomerate deposited in fluvial and lacustrine environments within developing basin structures. Typically, the uppermost consolidated unit overlying the mineral system in the San Manuel area.
- Quiburis Formation (late Miocene–Pliocene). Fine-grained, poorly consolidated lacustrine and fluvial sediments. Youngest consolidated sedimentary unit in the district; conformably overlies the San Manuel Formation in basin depocenters.
- Quaternary Alluvium. Unconsolidated gravel, sand, and silt deposited in active drainages and valley floors. Typically, less than 98 ft thick in the San Pedro Valley.

7.3 Property Geology

7.3.1 Introduction

Property geology at the San Manuel Property is defined by the lithological, structural, and alteration characteristics of the rocks within and immediately surrounding the mineral system as determined from surface mapping, underground development, and core drilling. The geological framework described herein is based primarily on the detailed underground geological mapping and drillhole logging program compiled by the San Manuel Property geological staff over the operational period and synthesized in Sandbak and Alexander (1995). Supplementary information regarding surface geology and the San Manuel open pit is drawn from Hoag et al. (1996).

The San Manuel Property deposit is hosted within a multiphase Laramide porphyry intrusive complex emplaced into Proterozoic Oracle Granite and associated basement rocks. The mineral system was subsequently displaced and separated into two deposit segments and regionally tilted approximately 33° during mid-Tertiary crustal extension by movement on the San Manuel fault. The property geology therefore reflects superimposed effects of Laramide magmatism and hydrothermal alteration, post-mineral faulting, and later Tertiary cover deposition.

7.3.2 Lithologic Units

Oracle Granite (Proterozoic, ~1,440 Ma)

The Oracle Granite is the oldest lithological unit within the property and constitutes the primary host rock for the mineral system. The unit is light gray to pink, coarse-grained, equi-granular to weakly porphyritic, and composed principally of K-feldspar (orthoclase and microcline), quartz, plagioclase (oligoclase to andesine), and primary biotite. Accessory minerals include magnetite, ilmenite, zircon, and apatite. The granite is massive to weakly foliated at the property scale and lacks well-developed regional metamorphic fabric. Locally, it is cut by aplite and pegmatite dikes contemporaneous with the main granite phase.

Emplacement of the Oracle Granite at approximately 1,440 Ma (Van Schmus and Bickford, 1981) predates the porphyry mineralization event by approximately 1.37 billion years. The granite is overprinted by Laramide hydrothermal alteration throughout the mineral system, where it exhibits pervasive potassic (K-feldspar flooding and biotite replacement), phyllic (sericite-quartz-pyrite), and propylitic (chlorite-epidote) alteration assemblages depending on proximity to the porphyry intrusive center.

Proterozoic Diabase (~1,040 to 1,100 Ma)

Proterozoic diabase sills and dikes intruded the Oracle Granite at approximately 1,040 to 1,100 Ma as part of a regionally extensive mafic intrusive event correlated with the Apache Group sill swarms of central Arizona (Shride, 1967). The diabase is dark gray to black, fine- to medium-grained, and composed of labradorite plagioclase, augite, and magnetite. Individual sills and dikes range from less than 3.28 ft to approximately 98 ft in thickness and commonly display chilled margins against the enclosing granite.

In fresh condition, the diabase is significantly harder and more competent than the surrounding granite. Within the hydrothermal alteration halo of the porphyry system, diabase is variably altered to chlorite, epidote, and calcite assemblages typical of propylitic alteration, or to sericite-pyrite assemblages in the phyllic zone. The diabase units serve as distinctive lithological markers in drill core and underground mapping owing to their consistent mineralogy and dark color contrast against the surrounding altered granite and porphyry.

Granodiorite and Monzonite Porphyry (Laramide, 67 to 69 Ma)

The granodiorite and monzonite porphyry constitute the principal intrusive host of the San Manuel Property mineral system and are the dominant rock type within the mineralized zone. Radiometric dating of these units yields ages of approximately 67 to 69 Ma (Creasey et al., 1977), consistent with the regional Laramide porphyry copper metallogenic episode in Arizona. The porphyries are characterized by phenocrysts of hornblende (typically 0.2 to 0.59 in), plagioclase (oligoclase to andesine), biotite, and minor quartz set in a fine-grained to aphanitic groundmass of the same composition. K-feldspar phenocrysts are present in the more silicic monzonite phases.

Detailed mapping has identified at least three phases of porphyry emplacement based on cross-cutting relationships and textural variations. The early porphyry phases are generally coarser-grained and host the highest densities of quartz stockwork veining; later phases are finer-grained and locally brecciated. The multiphase nature of the intrusive complex is consistent with episodic magma injection sustained over a protracted hydrothermal system lifetime of approximately 1 to 2 million years (m.y.), as is typical of major porphyry copper systems.

Dacite Porphyry

Dacite porphyry occurs as late-stage intrusive bodies crosscutting the earlier granodiorite and monzonite phases. This unit is distinguished by a higher silica content, smaller and more abundant quartz phenocrysts, and a denser, more glassy-textured groundmass. The dacite porphyry is generally interpreted as a later pulse of the Laramide intrusive episode and is spatially associated with the margins of the main porphyry stock. Hydrothermal alteration of the dacite ranges from potassic to phyllic depending on position within the system.

Igneous Breccia

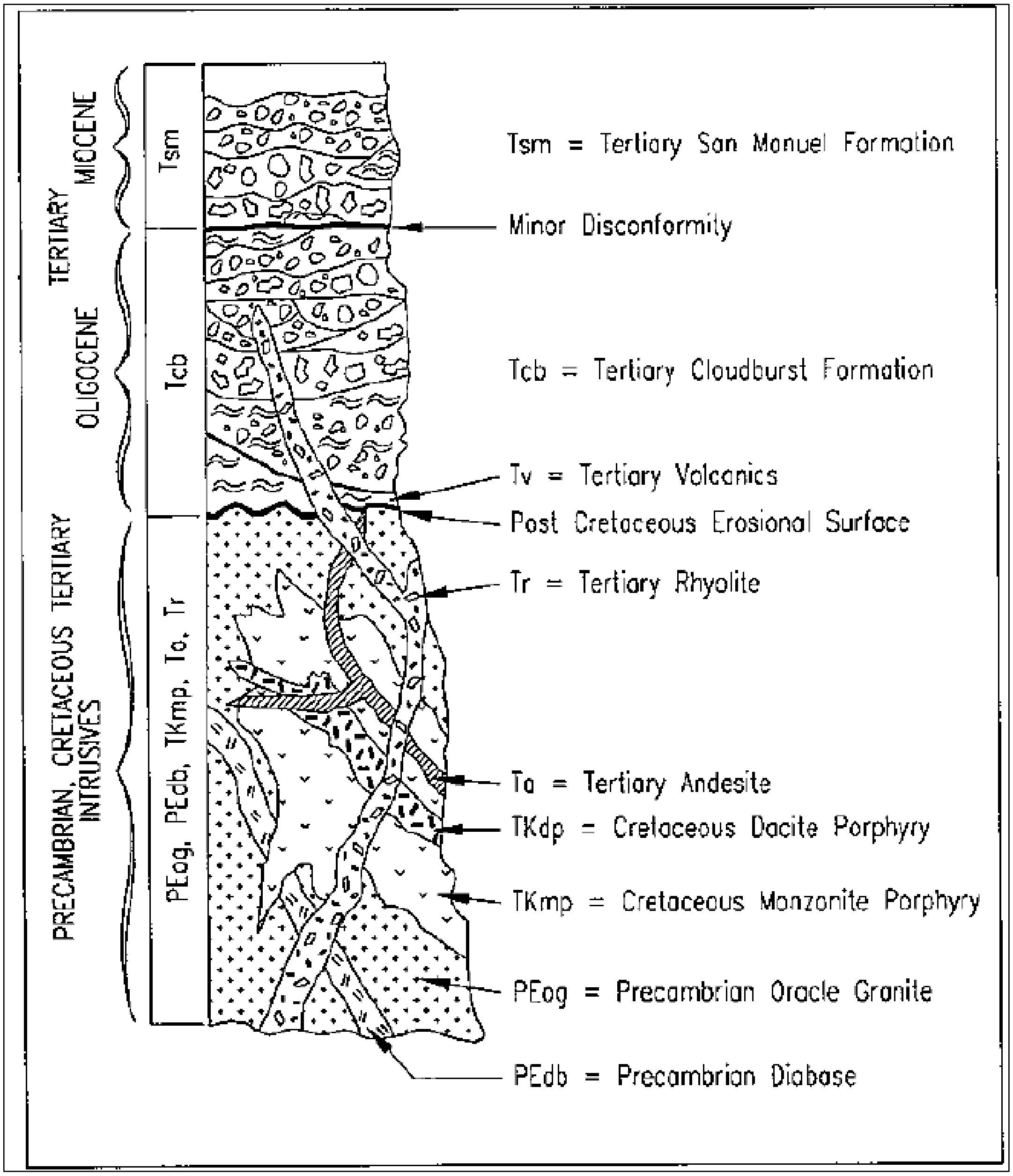
Igneous breccia zones occur at the margins and apices of the porphyry intrusive complex, where forceful emplacement of magma into brittle country rock produced hydraulic fracturing and brecciation. The breccia consists of angular to sub-angular clasts of granodiorite, monzonite porphyry, and Oracle Granite in a matrix of fine-grained porphyry, quartz-feldspar aplite, and hydrothermal minerals. Breccia zones are locally well-mineralized where hydrothermal fluids were focused into the permeable breccia framework.

Andesite

Andesite flows and tuffs occur as remnant volcanic units preserved within the porphyry intrusive complex and along its margins. These intermediate volcanic rocks are broadly contemporaneous with the Laramide intrusive episode and represent the extrusive equivalent of the granodiorite-monzonite magmatic suite. Andesite is dark gray to greenish-gray, aphanitic to fine-grained, and locally vesicular. Within the hydrothermal system, andesite is altered to chlorite-epidote assemblages in the propylitic zone and to sericite-pyrite assemblages in the phyllic zone.

Tertiary Sedimentary Cover Sequences (Late Miocene to Pliocene)

Three Tertiary sedimentary formations overlie the Laramide intrusive complex with angular unconformity across the property. The Cloudburst Formation (Oligo-Miocene) consists of andesite to latite flows and tuffs, overlain by coarse, poorly sorted conglomerate and sandstone deposited in alluvial fan environments adjacent to uplifted basin-bounding ranges. Clast compositions reflect the local lithological assemblage, with abundant Oracle Granite and porphyry clasts. The overlying San Manuel Formation comprises well-bedded sandstone, siltstone, and minor conglomerate deposited in more distal fluvial and lacustrine environments. The Quiburis Formation is the youngest consolidated sedimentary unit and consists of fine-grained lacustrine and fluvial silts and sands that thin toward basin margins. The combined thickness of the Tertiary sedimentary section ranges from approximately 160 ft over structural highs to more than 1,310 ft in basin depocenters. Figure 7-3 shows a generalized stratigraphic column for the area.



Source: Sandbak and Alexander, 1995.
Note: Figure shows rock units from Precambrian through Miocene with formation symbols and characteristic mineralogy

Figure 7-3: Generalized Stratigraphic Column for The San Manuel Property Area

7.3.3 Property Scale Structure

The structural framework described below is based on detailed underground mapping by the San Manuel Property geological staff as synthesized by Sandbak and Alexander (1995).

San Manuel Fault Zone

The San Manuel fault zone is the defining structural feature of the property and is responsible for the bifurcation of the mineral system into the San Manuel and Kalamazoo deposit segments. The fault is a low-angle normal fault dipping approximately 25° to 35° to the northeast with a strike of approximately N50°W. The fault zone itself consists of a zone of gouge, breccia, and mylonite ranging from a few m to approximately 98 ft in thickness, developed in the footwall of the main detachment surface.

Total dip-slip displacement on the San Manuel fault is estimated at approximately 3,609 to 4,265 ft based on the offset of correlative geological contacts and alteration boundaries between the hanging wall and footwall. The fault is interpreted to have been active during the mid-Tertiary extensional episode (approximately 20 to 15 Ma) and may represent a regional detachment fault surface. Post-slip tilting of the entire block at approximately 33° about a northwest axis further modified the geometry. The fault plane truncates all Laramide alteration zones and is itself unaffected by Laramide hydrothermal alteration, confirming that fault movement post-dates mineralization.

Virgin Fault Zone and Associated Structures

The Virgin fault zone is a moderately to steeply dipping fault system that intersects the deposit in the hanging wall of the San Manuel fault. It trends approximately north to north-northwest and dips steeply to the east or west depending on local geometry. The Virgin fault zone locally offsets mineralization and alteration boundaries by a few tens of m of normal displacement. The fault gouge is partially mineralized by supergene copper oxides in the shallower portions of the system, indicating that the structure provided a permeability pathway for supergene fluids.

The Middle fault zone, Vent Raise structure, Marty fault, and numerous smaller subsidiary faults were identified from underground mapping within the mine. These structures are generally steeply dipping (60° to 85°) with relatively limited displacements (approximately 33 to 160 ft) and trend north-northwest to northeast. They were active primarily as tensional or trans-tensional structures during the extensional episode and locally produced open fractures that facilitated supergene fluid migration in the San Manuel segment. These smaller faults were considered as local-scale grade discontinuities rather than major structural boundaries in historical resource estimations.

7.3.4 Paleomagnetic Data and Structural Rotation

Paleomagnetic studies of the Laramide porphyry rocks and associated units at San Manuel Property have provided quantitative constraints on the magnitude and direction of post-Laramide structural rotation (Sandbak and Alexander, 1995). Paleomagnetic vectors measured from oriented drill core and surface samples of granodiorite porphyry indicate that the Laramide rocks have been rotated approximately 60° to 65° from their expected Laramide paleomagnetic orientation.

This rotation is interpreted as a combination of: (i) regional tilting of approximately 33° ± 12° about a N46°W axis, associated with mid-Tertiary extensional faulting; and (ii) block rotation within the fault system. The paleomagnetic data are consistent with the structural interpretation that the mineral system was originally a sub-vertical porphyry column that was tilted and offset during Basin and Range extension to produce the current geometry in which the mineral zones dip steeply to moderately to the northeast and are truncated by the San Manuel fault.

Understanding the sense and magnitude of rotation is important for interpreting the original geometry of the mineral system and for evaluating the potential for extensions of the system beyond the currently delineated deposit limits. Restoration of the paleomagnetic rotation suggests that the original Laramide porphyry column was more steeply oriented and that the current geometry of both the San Manuel and Kalamazoo segments reflects this post-mineral tilting.

7.3.5 Sequence of Geologic Events

The geological history of the San Manuel Property can be summarized in the following sequence of events, from oldest to youngest:

- ~1,440 Ma: Emplacement of the Oracle granite as part of regional Proterozoic magmatism in southern Arizona
- ~1,040 to 1,100 Ma: Intrusion of Proterozoic diabase sills and dikes into the Oracle granite during regional mafic magmatic episode
- ~67 to 69 Ma (Laramide): Emplacement of multiphase granodiorite and monzonite porphyry stocks into the Oracle granite basement, accompanied by hydrothermal circulation and development of potassic, phyllic, and propylitic alteration zones; deposition of copper-molybdenum-gold sulfide ore
- Post-67 Ma: Extrusion of andesite volcanics contemporaneous with or slightly post-dating the main porphyry intrusive episode
- ~30 to 15 Ma (mid-Tertiary): Onset of Basin and Range crustal extension; development of the San Manuel fault; bifurcation of the original single porphyry deposit by approximately 3,937 ft into the separate San Manuel (hanging wall) and Kalamazoo (footwall) segments.
- ~22 Ma: Rhyolite volcanism contemporaneous with early-stage Basin and Range extension; deposition of the Cloudburst Formation in developing half-graben basins.
- ~15 Ma (mid-Miocene): Continued extension and regional tilting of approximately 33° about a N46°W axis; deposition of the San Manuel Formation.
- Late Miocene–Pliocene: Deposition of the Quiburis Formation in basin depocenters; continued Basin and Range subsidence.
- Post-tilting: Supergene oxidation and enrichment of the San Manuel deposit segment during periods of active groundwater circulation; formation of chalcocite enrichment blanket and copper oxide zone.
- Quaternary: Deposition of alluvial and fluvial sediments in the San Pedro Valley; current landscape development.

7.4 Significant Mineralized Zones

7.4.1 Overview

The San Manuel Property mineral system exhibits a well-developed concentric alteration zonation pattern typical of calc-alkaline porphyry copper deposits (Lowell and Guilbert, 1970; Titley and Beane, 1981). Three principal alteration zones are recognized from the core outward: potassic, phyllic, and propylitic. A less extensive argillic zone is developed locally near the surface in the San Manuel segment. The alteration geometry was established during the Laramide hydrothermal event and has been partially overprinted by supergene processes in the shallower portions of the San Manuel deposit.

7.4.2 Hydrothermal Alteration Zonation

Potassic Alteration Zone

The potassic alteration zone occupies the core of the hydrothermal system and is characterized by pervasive secondary K-feldspar flooding of feldspar phenocrysts and groundmass, replacement of primary mafic minerals (hornblende, biotite) by secondary biotite, and minor development of quartz-molybdenite and quartz-chalcopyrite veins. Magnetite is a characteristic accessory mineral of the potassic zone, occurring both as disseminations and as veinlets.

The potassic zone is characterized by relatively low copper grades compared to the ore shell, typically less than 0.3% Cu, owing to the dominance of disseminated chalcopyrite at lower modal abundances than in the adjacent phyllic zone. Pyrite is present at low modal abundances (typically 1% to 3%) in the potassic zone. Molybdenite is distributed throughout the potassic zone in quartz veinlets and as disseminations.

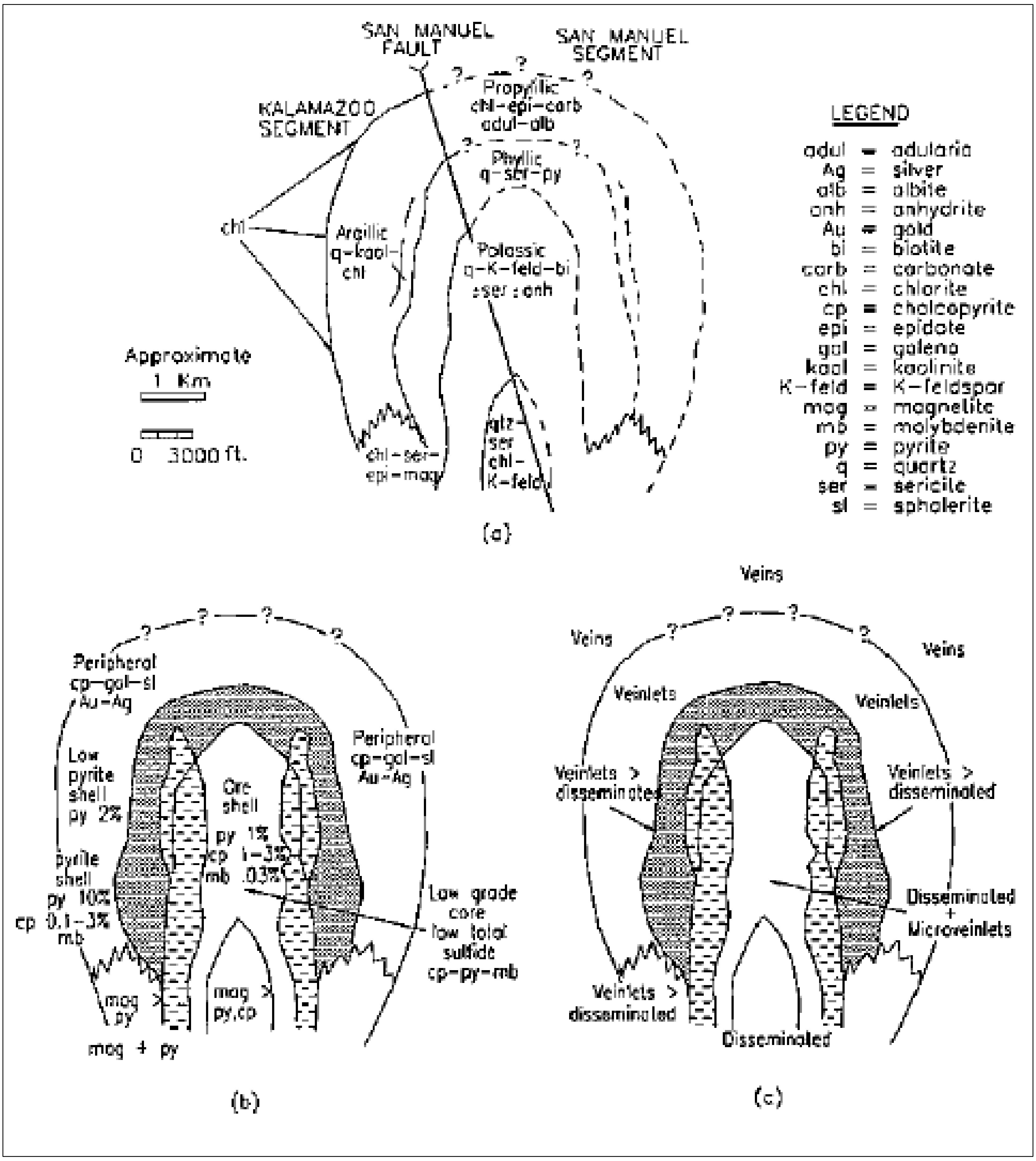
Phyllic Alteration Zone

The phyllic alteration zone surrounds the potassic core and is defined by pervasive replacement of feldspars and mafic minerals by sericite (fine hydrothermal muscovite), quartz, and pyrite. This zone contains the highest pyrite abundances in the system, typically exceeding 10% modal pyrite, with localized concentrations up to 20% to 25%. The phyllic zone also hosts the principal mineralized shell of the deposit, where chalcopyrite grades are significantly elevated relative to both the inner potassic zone and the outer propylitic zone.

The mineralized shell is developed at and immediately inward of the phyllic-potassic alteration boundary and is 98 to 984 ft wide. Within the mineralized shell, chalcopyrite is the dominant copper mineral, occurring as interstitial disseminations, as coatings on pyrite grains, and as fracture-fill in association with quartz-sericite-pyrite veinlets. Total copper grades within the ore shell typically range from 0.5% to greater than 1.0% Cu. The spatial coincidence of the ore shell with the phyllic-potassic boundary is consistent with the thermal gradient model of chalcopyrite precipitation proposed by Lowell and Guilbert (1970).

Propylitic Alteration Zone

The propylitic alteration zone forms the outermost halo of the hydrothermal system and is characterized by replacement of mafic minerals by chlorite and epidote, with minor calcite and albite. The propylitic zone lacks significant quartz-sericite-pyrite overprinting and retains much of the original rock texture. Pyrite is present at low abundances (typically less than 1%), and copper grades are low, generally less than 0.05% Cu. The propylitic zone grades outward into fresh, unaltered Oracle Granite and diabase over a transition zone that may be gradational over tens of m to kilometers. Figure 7-4 shows the alteration and mineralization of the deposit.



Source: Modified from Guilbert and Park (1986) and Sandbak and Alexander (1995)
(a) Fault Cross-section Geometry
(b) San Manuel Ore Shell Zonation
(c) Kalamazoo Disseminated Pattern

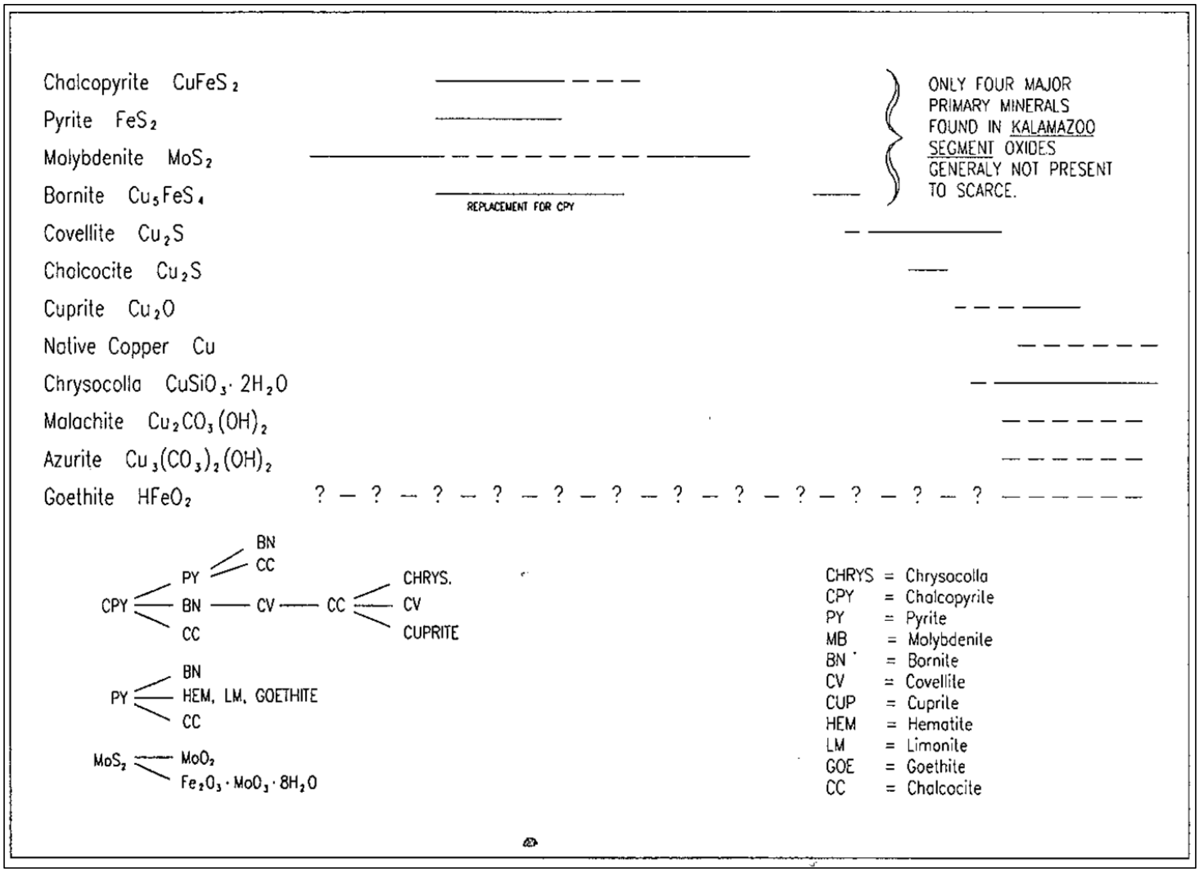
Figure 7-4: Alteration and Mineralization Model of The San Manuel Property Deposit

7.4.3 Primary Sulfide Mineralogy and Paragenesis

The primary hypogene sulfide assemblage at San Manuel Property is typical of the Laramide porphyry copper clan and is dominated by chalcopyrite and pyrite, with subsidiary molybdenite and minor bornite. The paragenetic sequence reflects multiple stages of hydrothermal fluid evolution during the Laramide intrusive event (Sandbak and Alexander 1995).

- Chalcopyrite ($CuFeS_2$). Principal copper economic mineral. Occurs as disseminated grains (0.004 to 0.08 in), as coatings on pyrite, and as fill in quartz veins. Most abundant in the mineralized shell at the phyllic-potassic boundary. Grade in the economic shell; typically 0.5% to 1.0% Cu.
- Pyrite (FeS_2). Ubiquitous throughout the system. Occurs as disseminated cubes and aggregates (0.04 to 0.39 in), as veinlets, and as replacements of mafic minerals. Modal abundance ranges from <1% (potassic core) to >10% (phyllic zone).
- Molybdenite (MoS_2). Accessory ore mineral occurs as flakes in quartz-molybdenite veinlets concentrated in the potassic core and innermost phyllic zone. Recovered as a by-product during mill operations.
- Bornite (Cu_5FeS_4). Minor copper mineral occurring in the innermost potassic core, associated with highest-grade chalcopyrite zones. Indicates elevated Cu/Fe ratios in early-stage hydrothermal fluids.
- Minor sulfides. Trace sphalerite, galena, and enargite occur locally within the phyllic zone and along fault-controlled vein systems. Not economically significant as individual minerals.

The paragenetic sequence, shown in Figure 7-5 begins with early potassic alteration and quartz-magnetite-K-feldspar veining (A-veins), followed by chalcopyrite-molybdenite deposition in quartz veins (B-veins), and subsequently by the main stage of pyrite-chalcopyrite-sericite-quartz veining (D-veins) associated with phyllic alteration. Late-stage pyrite veins with minor Cu minerals post-date the main deposition stage. This paragenetic evolution is consistent with progressive cooling of the hydrothermal system and outward migration of the alteration front over the lifetime of the porphyry system.



Source: Sandbak and Alexander, 1995.
Note: Figure shows mineral stability relationships and the progression from hypogene to supergene assemblages

Figure 7-5: Paragenetic Sequence of Economic and Gangue Minerals in the San Manuel Property Orebodies

7.4.4 Supergene Mineralogy and Paragenesis

Supergene enrichment is developed in the San Manuel deposit segment and is essentially absent in the Kalamazoo segment. The differential enrichment is explained by the geological history of the two segments: the San Manuel segment was exposed at the erosion surface during Tertiary time and subjected to oxidizing meteoric water infiltration, while the Kalamazoo segment was protected from supergene processes throughout the same period.

In the San Manuel segment, three supergene zones are recognized from surface downward: (1) an oxide zone of variable thickness (typically 98 to 328 ft) in which primary sulfides have been fully oxidized and replaced by copper oxides and silicates including chrysocolla with minor malachite, azurite, and cuprite; (2) a transitional zone below the paleo-water table where both oxide and sulfide copper minerals co-occur; and (3) a supergene enrichment blanket in which chalcocite (Cu_2S) has replaced primary chalcopyrite and pyrite through the action of downward-percolating acidic copper-bearing solutions.

The supergene chalcocite blanket was exploited as a high-grade resource during the early phases of underground mining at San Manuel. The oxide zone copper was subsequently targeted by the SX-EW heap-leach operation starting in 1986.

7.4.5 By-Product and Minor Metals

Gold occurs at low concentrations throughout the mineralized system. In the potassic zone, gold values average approximately 0.10 to 0.15 ppm (parts per million) Au, declining to lower values in the phyllic zone. Gold is interpreted to be associated primarily with chalcopyrite and to a lesser extent with free gold in quartz veins. Recovery of gold as a mill by-product was economically significant during operations at the San Manuel concentrator.

Silver is present at low concentrations throughout the system, typically not exceeding 1 to 2 ppm Ag in the highest-grade zones. Silver values were below the recovery threshold for most of the operational history of the mine and were not a primary target of the milling circuit, though silver was recovered incidentally during copper flotation.

Molybdenum was produced as a by-product concentrate at the San Manuel concentrator during periods when molybdenite concentrations in the feed were sufficient to justify a molybdenum circuit. Molybdenite grades in the mineral system are generally modest, and the molybdenum contribution to revenue was a secondary consideration relative to copper recovery.

7.4.6 Geometry and Dimensions of San Manuel and Kalamazoo

The San Manuel and Kalamazoo deposit segments share the same alteration model and mineralization style but differ in geometry owing to their different structural settings and post-displacement histories. The dimensional summary shown in Table 7-1 is based on Sandbak and Alexander (1995) and is presented at the 0.5% Cu economic cut-off grade used in historical mine planning.

Table 7-1: Summary Dimensions of The San Manuel and Kalamazoo Deposit Segments at 0.5% Cu Cut-off

Parameter	San Manuel Deposit	Kalamazoo Deposit
Along-strike length	~7,700 ft	~6,700 ft
Down-dip extent	~2,700 ft	~3,000 ft
Ore zone width (at 0.5% Cu)	100 to 500 ft (avg ~200 ft)	100 to 500 ft (avg ~250 ft)
Vertical depth (top of ore)	~98 ft (near surface)	~2,500 ft below surface
Vertical depth (base of ore)	~2,710 ft	~4,600 ft below surface
General dip of ore shell	~30° NE (tilted)	~40° to 60° NE (tilted)
Supergene enrichment	Present (chalcocite blanket)	Absent

Source: Sandbak and Alexander., 1995

The mineral shell geometry at Kalamazoo is broadly tabular to pipe-like in three dimensions, wrapping around the phyllic-potassic boundary of the porphyry system. In plan view at any given elevation, the mineralization appears as a roughly elliptical annulus of higher-grade material surrounding a lower-grade potassic core. In vertical cross section, the mineralization forms a crescent-shaped shell that widens toward the northwest along the strike of the system. This geometry is consistent with the typical geometry of porphyry mineral shells at the Lowell-Guilbert model scale and is a critical control on future resource estimation and mine planning for both underground and any subsequent surface operations.

8 Deposit Type

8.1 Mineral Deposit

The San Manuel Property deposit is one of the largest porphyry copper systems in Arizona by total contained metal and is a representative of the Laramide porphyry copper type locality of the southwestern United States. Deposits of this metallogenic province are spatially and temporally associated with calc-alkaline intrusive suites emplaced during oblique subduction of the Farallon plate. The Laramide arc in Arizona trends broadly north-northwest and includes clusters of porphyry copper deposits grouped into districts spaced approximately 31 to 62.1 mi apart.

Key characteristics shared among Laramide porphyry copper deposits of the region include: (1) emplacement within Proterozoic crystalline, supracrustal basement and/or Paleozoic to Mesozoic sequences; (2) association with multiphase porphyritic stocks of granite to granodiorite to monzonite composition; (3) concentric hydrothermal alteration zonation (potassic core, phyllic intermediate, propylitic outer halo, and locally argillic); (4) a copper–molybdenum–gold assemblage with chalcopyrite and molybdenite as the primary economic minerals; and (5) post-Laramide supergene enrichment that selectively elevated grades in some systems (Titley and Beane, 1981). San Manuel Property exhibits all of these characteristics and is considered a type example of the Laramide porphyry copper class.

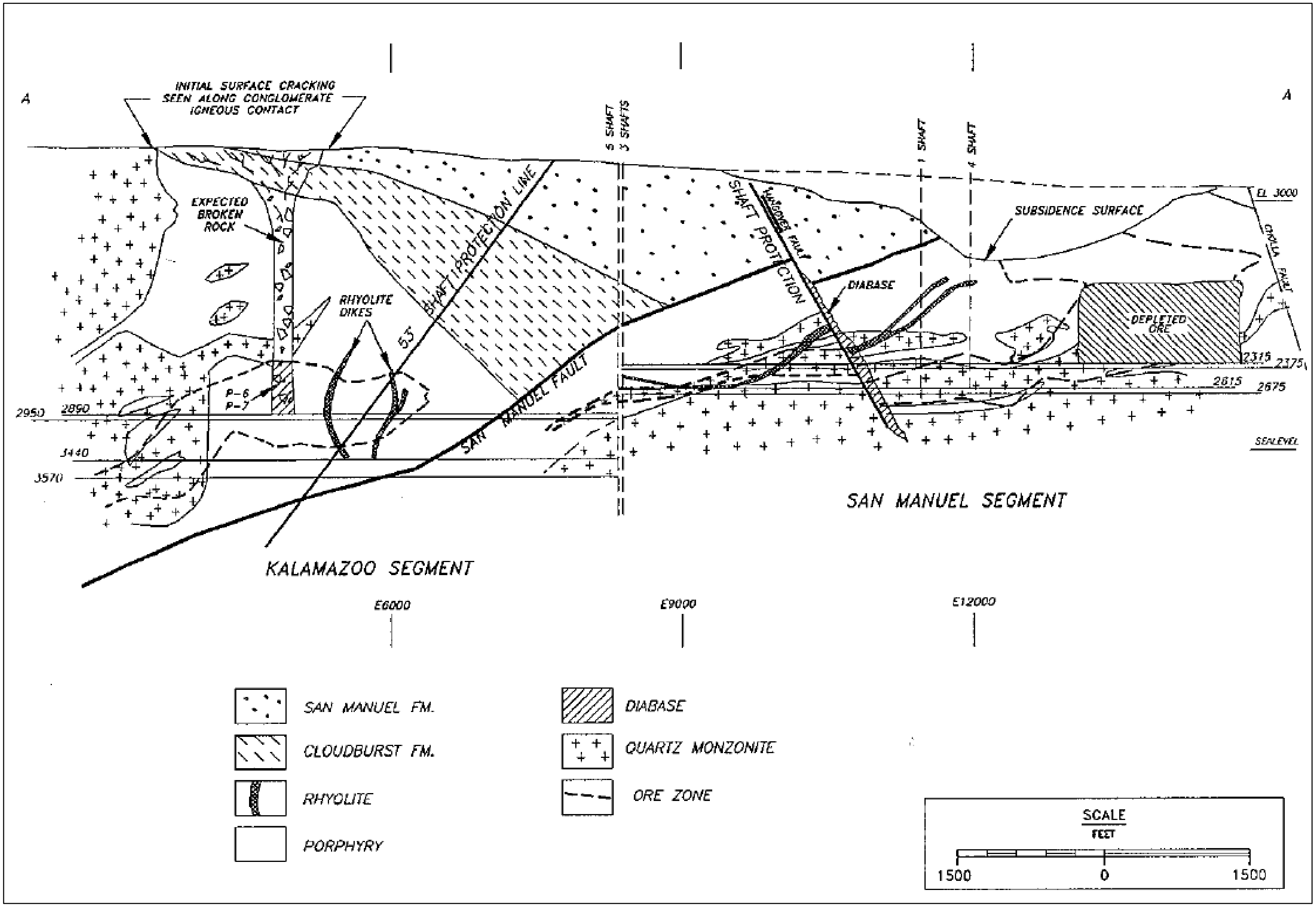
The subsequent mid-Tertiary extensional event that affected the entire region had a pronounced influence on deposit geometry at San Manuel-Kalamazoo. The San Manuel fault, a low-angle normal fault, displaced and separated a single original porphyry system into two spatially distinct mineral segments; the shallower San Manuel segment and the more deeply buried Kalamazoo segment. This structural separation, combined with regional tilting, is unique among major porphyry copper deposits in the southwestern United States and presented significant exploration and mining challenges.

8.2 Geological Model

The subsurface geology of the San Manuel Property district is substantially better constrained than typical porphyry copper systems owing to the extensive underground development and drilling programs conducted during decades of mining. Approximately 118 mi of underground workings were developed during the operational life of the San Manuel Property , providing detailed three-dimensional geological control over the ore system from the surface to depths exceeding 3,937 ft. This underground mapping, combined with surface and underground drilling, forms the primary geological database for the district.

At depth, the Oracle Granite underlies all younger geological units and forms the lower boundary of the mineralizing system. The Laramide porphyry intrusions are emplaced into the granite, and the contact between the two units is locally sharp and locally gradational through zones of contact metasomatism. The porphyry stock geometry is broadly cylindrical to elongate in plan view, with the long axis trending approximately north-northwest, consistent with regional structural controls on Laramide magma emplacement.

The San Manuel fault separates the San Manuel deposit in the footwall and shallower from the Kalamazoo deposit in the hanging wall but displaced deeper. Above the fault surface, the Kalamazoo segment represents the down-dip continuation of the same Laramide porphyry system, displaced and rotated by fault movement and regional tilting. The footwall of the fault therefore exposes the deeper, slightly more mafic and less altered portions of the original intrusive system, including greater proportions of Proterozoic host rocks relative to the hanging wall. A generalized long section is shown in Figure 8-1.



Source: Sandbak and Alexander 1995

Figure 8-1: Generalized Long-Section Through the San Manuel – Kalamazoo Porphyry Copper Deposit

9 Exploration

9.1 Relevant Exploration Work

9.1.1 1996 Geologic Mapping Program

In June and July 1996, a systematic geological mapping program of the San Manuel Oxide pit was conducted by F. Bain, C. Hoag, R. Moulton, R. Parker, and R. Preece under the direction of BHP Copper, N.A. (Hoag et al., 1996). Although geological mapping had been conducted throughout the operational history of the open pit, prior mapping had not been compiled in a form that documented the spatial distribution of geological features across the pit surface.

The 1996 program produced lithological, structural, hydrothermal alteration, and oxide mineralization maps at a scale of 1:2,400. The primary objective was to establish a geological framework for ongoing hydrological, geological, and geochemical studies related to in situ leaching operations within the pit. Lithological mapping documented the distribution of Proterozoic Oracle granite, Laramide granodiorite and dacite porphyry intrusions, mid-Tertiary andesite and rhyolite dikes, and the Tertiary Cloudburst, San Manuel, and Quiburis formations. Structural mapping characterized the principal fault systems controlling both geological architecture and hydrological behavior within the leach field. Alteration and mineralization mapping followed the nomenclature of Guilbert and Park (1986), characterizing potassic, phyllic, and propylitic hydrothermal alteration assemblages and documenting the distribution of hypogene sulfide and supergene oxide mineralization (Hoag et al., 1996).

9.1.2 2015 Fajardo Thesis on San Manuel and Kalamazoo

Fajardo's 2015 Professional Science Master's thesis (University of Arizona, supported by BHP Billiton, 2015) is a two-part study of the San Manuel Property porphyry Cu-(Mo) deposit in Pinal County, Arizona; a Laramide (~68 Ma) deposit that was dismembered and tilted by mid- to late-Tertiary Basin and Range extension. The first part uses fault-surface mapping, crosscutting relationships, and stereonet restoration of synextensional sedimentary rocks to reconstruct the pre-extensional geometry of the deposit. Fajardo identifies six generations of normal faults (Cloudburst, Turtle, San Manuel, Black Canyon, Cowhead Well, and Cholla sets), only the oldest three of which have greater than 1.6 mi of slip and concludes that the >0.5 wt% Cu ore shell has been tilted approximately 62° to the east-northeast. The restored ore-shell axis plunges ~82°SW, indicating the San Manuel orebody was emplaced within 8° of vertical; a result that confirms Lowell's (1968) original reconstruction over the alternative interpretation of Force et al. (1995).

The second part evaluates epidote chemistry in the propylitic alteration halo as a distal exploration vector, testing the pathfinder framework of Cooke et al., (2014). Microprobe analyses show the epidote is dominated by the Fe^{3+} end-member with minor clinozoisite and piedmontite; allanite is absent and REE concentrations are largely below detection limit, so the proposed allanite-component pathfinder does not apply at San Manuel-Kalamazoo. However, vanadium and chromium concentrations in the epidote M-site show a positive correlation with distance from the porphyry center, suggesting that V and Cr in propylitic epidote may serve as a distal geochemical footprint for fertile porphyry Cu systems. Fajardo notes the dataset is limited and recommends a larger sample suite with SIMS or induced couple plasma mass spectrometry (ICP-MS) trace-element work to confirm the vector, but the study supports propylitic-epidote chemistry as a viable tool for exploring concealed or blind porphyry deposits.

9.1.3 Geophysics

Over the past decade, BHP has completed a number of geophysical surveys over the property.

In 2015 a VTEM time domain survey was acquired over San Manuel with a line spacing ranging from 820 to 1,640 ft and was part of a broader exploration program that was mapping the San Pedro Basin. Subsequently, broadband magnetotelluric data was acquired in 2019 as part of a broader profile that extended from San Manuel Property to Copper Creek and was spaced at approximately 0.6 to 1 mi between sites over the known deposit.

In 2024 frequency domain IP data was collected on three profiles with 984 ft spacing for the transmitters and receivers along the profile. Additionally, as part of the same campaign twenty-seven (27) MT stations were acquired on the same three profiles at a 0.6 mi spacing with 328 ft dipoles.

10 Drilling

10.1 Introduction

The database contains 2,214 drillholes organized into 27 distinct series that span roughly seven decades of exploration, definition, production, in situ leach, metallurgical, hydrogeological, and brownfields activity. Drilling was conducted by Magma Copper Company, its successor BHP Copper, BHP Minerals Exploration, and various specialist contractors or third parties engaged for individual campaigns. Apart from the 1996 to 1998 campaign carried out by BHP (see details below), no drill core is preserved.

The San Manuel deposit went into production in 1956 and operated continuously until 1999; the majority of drilling predates modern industry standards for downhole surveying, QA/QC and data custody. Descriptions in this section therefore emphasize what is documented per series, what has been verified by SRK (SRK, 2013; SRK, 2017) and IMC (2000), and what remains a QP verification item for the current estimate. Sampling of the drill core and chips, including core cutting, sample splitting, preparation flowsheets, analytical methods, bulk density determination, QA/QC and security, is described in Section 11.

10.2 Drilling History Overview

Exploration and production drilling at San Manuel Property can be grouped into four broad eras:

- Magma pre-production (1940’s to 1955): initial discovery and delineation of the San Manuel porphyry system by surface diamond drilling (DD and MM series)
- Magma production era (1956 to 1995): continuous underground development and production drilling at San Manuel and, from the 1970’s, the Kalamazoo fault block; principally DD, K, SMO, PH and specialized monitoring series
- In situ leach era (1980’s to 1999): oxide-zone ISL operations supported by the ARM (injection / recovery / monitoring wells) and LIH (in situ leach production) series, plus associated CON, BF, BK and CRMW hydrogeological holes
- BHP exploration era (1996 to 2015): CD metallurgical core drilling in the late 1990’s under BHP Copper, followed by the BHP Minerals Exploration brownfields program between 2013 and 2015 which tested deep targets between the San Manuel mine site and the plant site. These later holes (2013 to 2015) are not incorporated into this dataset as they are distal from the San Manuel Property areas of interest. The 1996 to 1998 BHP holes are included and primarily focus on the San Manuel cave area. These holes are also the only ones with drill core preserved.

Table 10-1 summarizes the 14 drillhole series in the database. Counts are approximate and reflect the 2026 reconciliation against the collar file (Section 12.3); refinements by series follow in Section 10.3.

Table 10-1: Drillhole Series Inventory (2026 Reconciliation)

Series	Holes / Excavations	Total ft	Company	Year
CD	125	**205,287**	USBM, Magma	1943-69
IC	23	**38,278**	Magma	1945-53
SANTAMARIA	1	**2,145**	Brophy	1945
K	221	**214,799**	Magma	1948-1990’s
DD	1,001	**450,808**	Magma	1950-80
PH	240	**65,562**	Magma	1951-80
SHAFT[2]	8	**25,779**	Magma	1951-74
H	32	**15,988**	Magma	1960-78
PHK	24	**7,127**	Magma	1976-82
LIH	40	**29,442**	Magma	1983-91
LIHEXP	11	**6,070**	Magma	1983-91
LIHECHO	8	**5,470**	Magma	1983-91
ARM	167	**90,385**	Magma	1984-95
R	2	**2,660**	Magma	1984
MM	117	**39,457**	Magma	1987-88
CR	9	**1,940**	Magma	1988
DFT	9	**4,685**	Magma/BHP	1990’s
TBM[1]	3	**33,012**	Magma/BHP	1990’s
ADD	5	**2,904**	Magma	1990
UGIP	5	**3,420**	Magma	1991
CON	1	**900**	Magma	1992
BHP	126	**156,921**	BHP	1996-97
SMO	20	**18,711**	BHP	1996-97
5X-10RC	8	**4,440**	BHP	1997-98
CRMW	3	**2,607**	SRK	2000
BF	3	**3,553**	SRK	2001
BK	2	**1,446**	SRK	2011
Total	**2,214**	**1,433,796**		**avg = total_m / n_holes**

Source: SRK, 2013
(1) Tunnel Boring Machine – muck / channel data collected during tunnel boring in Kalamazoo development.
(2) Samples collected during excavation of shafts.

10.3 Drilling Methods by Series

10.3.1 DD Series: Diamond Drill Core

The DD series comprises 1,001 holes drilled for a combined 450,808 ft by Magma Copper between 1950 and 1980. The series is overwhelmingly an underground operation with 995 of the 1,001 holes (99 percent) drilled from underground, and only six surface holes recorded. DD holes are pre-cave, generally drilled from working levels or surface during the active mine development and production phases at San Manuel. Average hole depth is 449 ft, consistent with a campaign of short-to-medium length stope-pattern and infill diamond-core holes drilled from successive production levels. Core sizes are predominantly NQ and BQ. The DD series is the principal source of grade information for the San Manuel sulfide resource within the legacy producing block, and assay records are archived for nearly all sampled intervals.

DD holes are the best-documented series in the database. Collar locations were surveyed by Magma's mine surveyors and, for holes drilled after the late 1970’s, downhole-survey records are available on log for the majority of holes (single-shot and, for later campaigns, multi-shot gyro). Geology logs are present for essentially all DD holes, and assay records are archived for nearly all intervals sampled.

The 2013 SRK data validation (SRK, 2013) found the DD series to have an exceptionally low TCu error rate of 0.08% when digital records were compared to original log and certificate sources

10.3.2 K Series: Kalamazoo Surface / Underground Drilling

The K series comprises 221 holes drilled for a combined 214,799 ft by Magma Copper between 1948 and the 1990's. Of these, 171 holes are underground fan holes drilled from production-level stations in the Kalamazoo fault block, with the remaining 50 holes recorded as surface collars. Average hole depth is 971 ft, and the deepest holes in the underground fan pattern approach 1,970 ft. All 221 K-series holes are pre-cave. Because the underground component was drilled from working levels, collar coordinates for those holes were originally recorded in mine grid and have been transformed to the project CRS; the surface component was surveyed in the relevant project CRS at the time of collaring. K-series holes continue to provide the primary control grade distribution for the Kalamazoo deposit.

A significant proportion of the K series was not downhole-surveyed. IMC (2000) compared surveyed analogs to unsurveyed K holes and concluded that positional errors at depth in the deep fan holes can be of the order of hundreds of feet, with the largest inferred error approximately 500 ft. Shorter holes likely have much lower deviations with less material impacts on accuracy.

The 2013 SRK validation reported a TCu error rate of 0.66% for the K series; higher than DD but within industry tolerances for historical data.

10.3.3 PH Series (Production Holes - Percussion and Rotary Drilling)

The PH series (approximately 240 holes) is composed of percussion and rotary holes drilled from surface, principally to define the shallow oxide zone above the San Manuel porphyry. Holes are typically vertical or steeply inclined, drilled using tricone rotary and reverse-circulation percussion rigs. Samples were recovered as drill chips (and, for a subset, as rotary sludge) rather than core.

Because PH holes do not produce core, per-interval recovery is recorded as chip-sample return rather than as a linear core-recovery percentage. Sample size is controlled by the rod-change interval (typically 5 ft) and by the cyclone splitter used at the rig, where present. The PH series is shallow, the majority of holes are less than 500 ft deep, and downhole surveying was generally not performed (not required for holes of this length and inclination).

The 2013 SRK validation found a TCu error rate of 0.00% for the PH series; zero transcription errors across the sample of PH holes audited. The principal limitation of the PH data is therefore the sampling method (chip rather than core, with the attendant risk of contamination between rod changes and of biased sampling across soft oxide intervals) rather than data-entry integrity.

10.3.4 ARM Series (In Situ Leach Injection, Monitoring, and Recovery)

The ARM series comprises 167 holes drilled for a combined 90,384 ft by Magma Copper between 1984 and 1995, in support of the in situ leach operations that produced cathode copper from oxide mineralization below and peripheral to the San Manuel underground workings. Of the 167 holes, 162 are surface collars and five are underground; all 167 are pre-cave. The ARM series includes injection wells, monitoring wells and recovery wells, but the collar database does not distinguish between these roles.

Documentation is limited for ARM wells. Collar surveys and downhole surveys are generally absent from the digital record, and many ARM holes were not surveyed by Magma's mine surveyors. Assay records are nonetheless available for most ARM wells. The 2013 SRK validation identified a TCu error rate of 0.91% for the series; the highest among the series that were formally audited.

IMC (2000, San Manuel Section 2.2.5 and Kalamazoo equivalent) identified a systematic analytical high-bias for acid-soluble copper in ARM and LIH holes, relative to BHP and SMO drilling in the same geological domains. Indicative bias is approximately 3.7% for TCu and 7.2% for ASCu. This is an analytical bias, not a data-entry issue, and is believed to reflect the combined effect of rotary-mud contamination, acid residues in the sample train from the leach infrastructure, and the use of older AA assay methods on samples that had been stored wet.

10.3.5 CD Series (Magma – USBM historical drilling)

The CD series (locally referred to in documentation as CDH) comprises 125 surface diamond-core holes drilled between 1943 and 1969 for a combined 205,289 ft, with an average hole depth of 1,640 ft. These are the discovery, delineation and early infill holes for the San Manuel and Kalamazoo porphyry copper deposits, drilled by the US Bureau of Mines and the Magma Copper Company under their cooperative exploration agreement of August 1943 (Briggs, 2014). The exploration program began in November 1943; by mid-January 1944, five shallow churn holes totaling 1,480 ft had encountered oxide mineralization, and the sulfide ore body was intersected in May 1944. Magma Copper exercised its option to purchase the property in September 1945, formed the San Manuel Copper Corporation, and continued surface drilling through to February 1948. Subsequent drilling within the same CD series, extending to the late 1960’s, included the Kalamazoo discovery and delineation work (the seven exploratory holes drilled between 1947 and 1958 that identified the Kalamazoo offset, and the follow-up drilling that defined the Kalamazoo deposit). The average hole depth of 1,640 ft — the deepest of any non-shaft, non-TBM series in the project database — is consistent with this deep-porphyry exploration role.

All 125 CD holes are flagged PreCave in the project database, that is, they predate the start of block caving in November 1955 or were drilled outside the cave footprint. Cores from many CD holes were later used in mineralogical compilations; SRK's 2013 inventory carries a "Mineralogy" notation against the majority of CD holes, indicating the existence of mineralogy records associated with the hole rather than the purpose for which the hole was drilled.

CD holes have been recorded in a different coordinate system from the main database (local mine grid vs. state plane vs. UTM) and were transformed into the project CRS during 2026. Mineralogy data are available for many CD holes and support model verification in Section 12.4.3.

The 2013 SRK validation reported a TCu error rate of 0.03% for the CD series; essentially zero transcription errors across the holes audited.

10.3.6 BHP Series (BHP-Era Metallurgical Post-Cave Drilling)

The BHP series comprises 126 holes drilled by BHP Copper in 1996 to 1997 for a combined 156,919 ft, with an average hole depth of 1,250 ft. All 126 holes are flagged PostCave in the project database, that is, they were drilled into the subsided block above and around the San Manuel cave footprint and constitute BHP's modern infill and in situ-leach evaluation campaign. The BHP series is the only campaign on the property with a formal contemporaneous QA/QC program, with more than

5,000 pulps re-assayed at Skyline and American Analytical. This showed the in-house San Manuel laboratory biased low, and outside-laboratory values were given priority in the database. Cores from BHP holes were also used in the BHP-era mineralogy compilation that established ASCu / TCu ratios for the principal copper species, but the primary drilling purpose was in situ-leach evaluation rather than mineralogical characterization. The diameter (HQ with NQ reduction at depth) is cited anecdotally from various BHP personnel and is not supported by the project collar database. Local remnant core exists for this drilling and is generally HQ diameter. Figure 10-1 shows an example of a BHP Series drill core.

Source: SRK, 2026

Figure 10-1: Example of BHP Series Drill Core

10.3.7 SMO/5X-10RC Series (BHP-Era Production and Grade-Control Drilling)

The SMO series comprises 20 holes drilled by BHP Copper in 1996 to 1997 for a combined 18,711 ft, with an average hole depth of 935 ft. Hole identifiers follow the BHP year-coded convention used elsewhere in the 1996 to 1997 campaign: SMO9601 through SMO9616 (16 holes drilled in 1996) and SMO9701 through SMO9704 (four holes drilled in 1997). Of the 20 SMO holes, 17 are coded SURFACE and one (SMO9608) is coded UG; the two remaining holes (SMO9611 and SMO9701) carry no attribution. All 20 holes are flagged PreCave and were drilled outside or above the cave footprint at the time of drilling. SMO is the pre-cave component of the BHP 1996 to 1997 campaign and is contemporaneous with the BHP-prefixed series and the 5X-10RC series (eight surface reverse-circulation holes, 1997 to 1998).

10.3.8 MM Series (Magma Copper Pre-Production)

The MM series comprises 117 holes drilled by Magma Copper in 1987 to 1988 for a combined 39,458 ft, with an average hole depth of 338 ft. The purpose of the MM campaign (re-evaluation, infill ahead of in situ leach planning, or late-stage exploration) is not recoverable from the collar database and is taken from anecdotal accounts from memos or interviews with personnel.

Holes are surface diamond core at predominantly BQ and AQ diameters (dia.). Documentation is the weakest of any core series in the database; collar surveys are generally on log, but downhole surveys were not conducted (the technology was not in routine use), and assay certificates are rarely retained. MM holes nonetheless provide the principal record of pre-production grade distribution in parts of the hanging wall and upper footwall and are retained in the database.

10.3.9 LIH Series (In Situ Leach Production Wells)

The LIH series comprises three related series of in situ leach production wells installed by Magma Copper between 1983 and 1991 to operate the San Manuel oxide leach field. The series are: LIH (40 surface wells, 29,440 ft), LIHEXP (11 surface wells, 6,070 ft) and LIHECHO (8 surface wells, 5,469 ft), for a combined total of 59 wells and 40,981 ft. All 59 are pre-cave and surface collared. The functional distinction between LIH, LIHEXP, and LIHECHO (production, expansion or pilot, and follow-up or echo testing) is not recoverable from the collar file LIH wells were drilled by rotary-mud contract rigs; samples are chips and sludge. Downhole surveys are not routine for LIH wells, and collar surveys were conducted by mine surveyors at the time of installation. LIH assays are subject to the same ARM_BIAS analytical high bias identified by IMC (2000).

10.3.10 BF and BK Series (Hydrogeological Monitoring Wells)

The BF and BK series are small post-mine monitoring-well installations. The BF series comprises three surface wells drilled in 2001 for a combined 3,553 ft; the BK series comprises two surface wells drilled in 2011 for a combined 1,447 ft. All five wells are surface-collared and pre-cave.

Both series are rotary-mud wells with chip samples. The distinction between the two is procedural: BF holes were installed with packer tests conducted at multiple depth intervals during completion; BK holes were completed without packer tests. Both series support groundwater modeling and water-quality monitoring rather than resource estimation; assays are recorded where samples were collected but are not the primary purpose of these series.

10.3.11 Other Specialized Series (SHAFT, 5X-10RC, ADD, UGIP, R, DFT, CR, CRMW, CON)

A comparably small number of specialized holes are recorded in the database under miscellaneous identifiers:

- SHAFT: shaft pilot and geotechnical characterization holes associated with hoisting-shaft construction
- 5X-10RC: a small reverse-circulation program drilled by Magma for grade control at specific stope horizons
- ADD: infill holes added to support specific engineering studies (ground-conditions, ventilation, etc.)
- UGIP: underground induced-polarization / geophysical survey holes
- R: isolated reconnaissance holes drilled outside the principal campaigns
- DFT: draw-point / draw-bell geotechnical test holes associated with block-caving feasibility work
- CR: 9 Magma-era (1988) pre-cave drill holes focused in northwest Tiger satellite exploration area
- CRMW: 3 Post-closure regional monitoring wells
- CON: Magma-era (1992) single conventional rotary hydrogeological hole

The aggregate hole count across these specialized series is small (of the order of a few dozen). Each is retained in the database for reference and supporting engineering information, but they are individually assessed by the QP for database inclusion.

10.4 Collar and Downhole Survey Control

10.4.1 Collar Surveying

Collar coordinates for surface-drilled series were originally established by Magma's mine-survey department or, from 2013, by differential GPS for the BHP campaign. Collar coordinates for underground series (K and underground subsets of SMO, DD, UGIP, DFT, SHAFT) are recorded in mine coordinates and were subsequently transformed to the project coordinate system. The 2013 SRK audit verified a sample of collar coordinates against original survey records and log-sheet entries; residual errors were typically less than 10 ft and were corrected in the database. This reconciliation was repeated in 2026 to cross-check against the master collar file and resolved the coordinate-system discrepancies noted for selected drilling series.

10.4.2 Downhole Surveying

Downhole-survey practice varied by era and by series:

- DD holes drilled after the late 1970's: single-shot Sperry-Sun instruments at 98 ft nominal intervals; post-1996 holes include multi-shot gyroscopic surveys for deviated deep holes
- K holes: surveyed where access permitted and where the producing level supported survey equipment; a significant proportion lack downhole surveys altogether
- PH and ARM / LIH holes: generally not surveyed, consistent with the short hole lengths for PH and the vertical completion geometry for ARM / LIH
- CD holes (late 1990's): full single-shot and, for longer holes, multi-shot records on log
- BHP holes (2013 to 2015): full downhole surveys at 98 ft nominal intervals with multi-shot gyro on a subset of deep holes

10.5 Core Recovery

Reported run-recoveries for BHP holes are generally high (mean ~95%, with localized loss known to occur in fault-breccia intervals). Per-run recovery is not systematically digitized for the other drilling series, although log-sheet comments describe recovery qualitatively as reasonably good for many intervals.

10.6 Drilling Results Summary

Drillhole density is highest in and around the historical San Manuel stopes and the Kalamazoo sulfide envelope, where drillhole spacing of 164 × 164 ft or better is achieved over significant volumes. Drillhole density decreases outward into the hanging-wall and deep footwall, where spacing approaches approximately 500 ft between holes.

10.7 QP Opinion on Drilling

SRK notes that overall adequacy of the drilling to support a future Mineral Resource estimation under NI 43-101 is sufficient. Given the historical nature of much of the drilling and analysis, SRK notes that quality / consistency by drilling campaign, analytical method, logging, and other factors will be considered in any future Mineral Resource estimation and/or future Mineral Resource classification scheme. Considering that most of the historical core was not preserved a confirmatory drill program is required to bring a future Mineral Resource estimate to a NI 43-101 standard. Recommendations for supporting forward-looking work are summarized in Section 26 of this report.

11 Sample Preparation, Analysis and Security

11.1 Introduction

This Section describes the sampling, preparation, analysis, bulk-density determination, QA/QC and security procedures applied to the drill core, drill chips and rock samples. The drilling itself, hole counts, drilling methods by series, collar and downhole surveying, and core recovery (CRec), is described in Section 10.

Sampling practice, like drilling practice, evolved substantially over the seven decades covered by the database. This description of practices generally distinguishes between historical (pre-2013) Magma-era sampling, for which documentation is partial, and the modern (2013 to 2015) BHP program, which was conducted under contemporary industry protocols. The adequacy of sample-preparation, analytical and security procedures is assessed in Section 11.7 in light of the historical nature of the majority of the database and the standards of practice applicable when the work was conducted.

The San Manuel Property deposit has been explored through multiple phases of drilling from the 1940’s through 2015. A total of 2,214 drillholes are recorded in the database, organized into 14 distinct series reflecting different drilling campaigns and purposes. Primary drilling methods include diamond drilling (DD series), rotary methods, and specialized underground fan drilling. This section describes the drilling methods employed, sampling approaches, sample preparation and analytical methods, quality assurance and quality control protocols, and the security measures applied to drill core and samples.

The most significant drilling campaigns include:

- DD series: Exploration and definition drilling, 1950’s to 1990’s
- K series: Kalamazoo underground fan drilling, 1970’s to 1990’s
- PH series: Percussion drilling for shallow oxide zone definition
- ARM series: In situ leach monitoring and recovery wells
- CD series: Core drilling for mineralogical studies
- BHP series: Late 1990’s BHP core drilling in SM cave

11.2 Sampling Methods and Approach

11.2.1 Core Handling and Logging

Core from diamond-drill series was transported from the rig to a central core shed, laid out in sequence, and reconciled with drillers' run-blocks to confirm downhole position. Geological logging was conducted on the full core prior to any sample cutting, and included lithology, alteration and mineralization identification. For the BHP campaign, handling was generally similar to historical handling, although structural and geotechnical logs were completed in addition to the lithological log.

11.2.2 Core Cutting and Splitting

Cutting protocols varied with campaign:

- DD and MM series (1940's to 1990's): core was generally cut longitudinally with a diamond saw along a marked orientation line. One half was retained as reference (where storage permitted) and the other half was submitted for assay. In the earliest MM-series holes, whole-core sampling is reported in log comments for portions of the hole, reflecting the practice of the time
- K series (Kalamazoo fan holes): core was cut longitudinally at the underground drill station or at the Kalamazoo core shed. Half core was the standard sample submission
- CD series: No detailed methods for cutting and splitting of core were documented or made available, but the SRK 2013 inventory / validation work notes that pre-BHP methods were "*generally in accordance with best practices used today at exploration properties and existing operations with respect to logging, sampling / core splitting, sample preparation*" (SRK, 2013)
- BHP series (late 1990's): core was cut with diamond saw under the BHP Copper protocol, with half core retained and half submitted for assay. Quarter-core sub-sampling was used for metallurgical and mineralogical specimens. Detailed sample preparation methods are available in 1999 BHP reserve reporting supporting 20-F disclosure.

11.2.3 Sample-Interval Selection

Sample intervals were selected by the project geologist after logging was complete:

- DD holes: Nominal fixed-interval sampling at 5 ft through mineralized zones, broken at significant geological contacts. Sample intervals were shortened to 2 to 3 ft across narrow sulfide veins or alteration boundaries.
- K-series holes: Sample intervals were selected primarily by geological contact rather than by fixed length. This geological-boundary sampling provides finer grade resolution across contacts but can introduce sampling bias if narrow high-grade intervals are sampled preferentially.
- CD series: Features a nominal median sample interval of 5 ft.
- BHP series: San Manuel oxide surface drilling: sample intervals were 10 ft nominal, with cross-sectional interpretations drawn on 200 ft centers oriented N30°W.

11.2.4 Chip Sampling (Percussion, Rotary and ISL Series)

The PH percussion series and the ARM / LIH rotary-mud series produced drill chips (and, for rotary-mud wells, drill sludge) rather than core. Chip samples were recovered at the rig:

- PH series: a rig-mounted cyclone splitter captured chips per 5 ft rod-change interval; a riffle splitter was used at the rig to reduce the chip return to a submission sample. Reverse-circulation returns (where recorded) provide cleaner chip quality than conventional rotary.
- ARM / LIH series: rotary-mud cuttings were sluiced and decanted to remove drill-mud contamination, then sampled as wet cuttings or as dried chips. The risk of contamination from drilling mud and (in the case of LIH wells installed inside the active leach field) from residual lixiviant is the primary reason for the apparent bias in ARM holes.
- Other series or programs may not be documented.

11.3 Sample Preparation and Analysis

11.3.1 Historical Sample Preparation (pre-2013)

Historical sample-preparation flowsheets are not fully documented in the available archive for most of the Magma-era drilling. The laboratories used during the Magma production era are believed to include the Magma Copper on-site laboratory at San Manuel and one or more commercial laboratories contracted during peak drilling years, but specific laboratory identities, crushing and pulverizing equipment, and screen sizes are not systematically recorded. Preece (1998) and SRK (2013) both note the absence of formal preparation documentation as a limitation of the historical database.

Where flowsheet steps are documented on log-sheet comments, they follow the standard porphyry-sulfide pattern of the period: primary jaw crushing to nominal ~0.39 in, riffle or rotary splitting to a sub-sample of ~2.2 lb, secondary crushing to nominal 0.08 in, and pulverizing in a ring-and-puck mill to 90% passing 150 microns ([µm] −100 mesh) or finer. Pulp splits of ~100 to 200 grams (g) were submitted for the AA assay procedure.

11.4 Analytical Methods

Primary grade variables in the database are TCu, ASCu and molybdenum (reported as MoS_2). The principal analytical methods documented across campaigns are summarized below.

11.4.1 Total Copper

Historical TCu was generally determined by four-acid near-total digestion followed by atomic-absorption spectrophotometry (AAS) finish (SRK, 2013; SRK, 2017). The digestion used a combination of hydrofluoric, perchloric, nitric and hydrochloric acids, and is considered near-total for copper in porphyry-sulfide and oxide ores. Detection limits are of the order of 0.01% TCu, well below the cutoff grades used in the resource estimate.

11.4.2 Acid-Soluble Copper

ASCu was determined by cold sulfuric-acid leach (typically 5% H_2SO_4 at ambient temperature for a fixed contact time of 30 to 60 minutes) followed by AAS finish on the leachate. ASCu targets oxide and readily-leachable secondary copper species (chrysocolla, brochantite, malachite, azurite, and to a partial extent chalcocite), while refractory primary sulfides (chalcopyrite, bornite) do not contribute materially to the ASCu value. The ASCu / TCu ratio is therefore used as a mineralogical proxy for the oxidation state of the ore, a concept developed by Preece (1998).

11.4.3 Molybdenum (reported as MoS_2)

Molybdenum was determined by four-acid digestion and AAS (later ICP) finish. Results are reported as MoS_2 by applying the stoichiometric conversion factor of 1.668 ($Mo \times 1.668 = MoS_2$). The conversion assumes that all molybdenum resides in molybdenite, which is a reasonable approximation for the primary Cu-Mo porphyry mineralization at San Manuel but may slightly overstate MoS_2 in oxidized zones where molybdenum occurs as secondary ferrimolybdite or wulfenite.

11.4.4 Mineralogical Framework

Petrographic work by Preece (1998) established that the three end-member copper minerals at San Manuel (chalcopyrite, chalcocite and chrysocolla) are each expected to display a limited range of ASCu / TCu ratios. This mineralogical framework is used as an independent consistency check on historical assay data; interval records whose ASCu / TCu ratio falls outside the plausible mineralogical envelope are flagged for verification during reconciliation. SRK notes that this variability observed feeds directly into modeling practices for the material types.

11.4.5 ASCu > TCu Data Correction

During the 2026 reconciliation, 58 interval records across 38 holes were identified where reported ASCu exceeded reported TCu. This is mineralogically impossible; ASCu is by definition the acid-soluble portion of TCu. In accordance with IMC (2000) Section 3.2.1, and as re-affirmed by the Qualified Person in February 2026, these intervals have been corrected by resetting the ASCu / TCu ratio to 1.0 (i.e., setting ASCu equal to TCu for the offending interval) rather than being excluded from the database.

11.4.6 Assay Certificate Inventory

The SRK 2013 study (SRK, 2013) conducted a comprehensive inventory of physical records and digital data, tracking availability per hole of: collar location on log, collar survey records, downhole survey on log, downhole survey records, assays, assay certificates, re-assays, geology log, geology relog, geotechnical log, hole summary, and other supporting documentation. Assay values are available for the majority of holes, but original laboratory certificates are not retained for all series; particularly the older Magma-era campaigns. The per-hole outcome of the certificate inventory is one of the inputs to Flag B1 (Physical-Record Completeness) in the DQV framework.

11.5 Bulk Density Determination

11.5.1 Measurement Program

The bulk-density dataset combines historical measurements conducted during Magma production (predominantly water immersion of unwaxed core pieces).

11.5.2 Porosity, Moisture and Mining-Induced Dilution

For oxide domains with increased porosity, water immersion without wax coating systematically over-estimates specific gravity (SG) because water is drawn into pore space during the measurement. The SG values used in the database for these domains are therefore waxed-core values where available, and porosity-corrected unwaxed values where only uncoated measurements exist. For caved areas, the SG assignment reflects the historically caved and back-filled ground between the 2615 and 3440 levels and is intentionally lower than the intact-rock density of the source ore, to account for mining-induced dilation and void space.

11.6 Sample Security

11.6.1 Core Storage

Physical drill core from historical campaigns has limited availability. The SRK 2013 validation (SRK, 2013) noted that the absence of physical drill core impairs verification efforts, and the 2017 SRK assessment (SRK, 2017) recorded that only drillholes from the latest campaigns (BHP 1996 to 1997) have mineralogy fields populated in the database which implies that only those campaigns have intact core available for relogging. The disposal or loss of historical core is consistent with common industry practice following mine closure in 1999.

11.6.2 Chain of Custody

Chain-of-custody documentation is limited for historical campaigns; this is typical of the period in which the work was conducted. For historical drilling, samples passed from the rig to the core shed, to the Magma mine laboratory (or contract laboratory), and thence to data-entry, under Magma's internal procedures. No external audit of the custody chain is available for the historical campaigns.

Modern chain-of-custody procedures were implemented for the BHP 2013 to 2015 drilling: numbered sample bags, signed sample manifests, tracked transport from drill site to preparation laboratory, and continuous numbered-sample tracking through preparation, analysis and check-assay.

11.7 QP Opinion on Adequacy

On the basis of the documentation reviewed and the lines of evidence summarized above, it is the QP's opinion that the sample preparation, analytical, and security procedures applied to the drilling data can support a future Mineral Resource estimate for San Manuel Property are deemed adequate for the purposes of future Mineral Resource estimation and classification subject to the qualifications described herein. SRK recommends additional confirmation drilling in all relevant proposed resource / development areas to validate historical drilling as well as collect new information under modern standards.

The QP is satisfied that the sampling and analytical methods are fit for purpose and that all reasonable efforts have been made to research and surface possible concerns in the quality of the data.

12 Data Verification

12.1 Introduction

Data verification for the San Manuel Property deposit has been carried out in multiple phases by SRK (SRK, 2013; SRK, 2017) and by independent consultants (IMC, 2000). The supporting database contains 2,214 drillholes across 14 series. Verification work has addressed collar coordinates, downhole surveys, assay data, geological logging, and the internal consistency of the block-model estimates with the underlying drillhole data. This Section describes the database structure, the major verification studies, the multi-dimensional data-quality assessment, and the QP conclusions regarding the adequacy of the data to support a future Mineral Resource estimation under NI 43-101 requirements.

Data compilation and verification has been a significant effort over multiple years. This section describes that history as well as the current state of the data and information.

12.2 Quality Assurance / Quality Control

There has been no contemporaneous QA/QC program on the bulk of the San Manuel–Kalamazoo drillhole data. The deposit was primarily drilled over more than 50 years (1943 to 1997) by multiple operators, and as far as SRK is aware, only the BHP-era 1996 to 1997 drilling included a formal QA/QC program with external check assays and standards. The data quality understanding for the older holes is reconstructed retrospectively from two independent third-party reviews: IMC's 2000 audit (which used paired-composite comparisons in lieu of check assays) and SRK's 2013 inventory and database validation (which compared the digital database against original hard-copy records on a 10% hole sample). The general finding from both reviews is that the database is fit for future resource estimation purposes overall, with some caveats as described herein.

12.3 External Audits

External and independent audits of the historical San Manuel Property resource estimates have been conducted at several points. The key documents describing these efforts are:

- IMC 2000: corporate review of BHP Copper's North American assets under 1999 JORC Code; independent verification of database quality and resource-classification methodology
- SRK 2013: comprehensive database validation; addressed database integrity, collar coordinates, downhole surveys and assay accuracy
- SRK 2017: data summary and resource-estimate verification; most recent comprehensive technical review addressing block-model bias, smoothing and classification

12.4 SRK 2013 Data Validation

SRK completed a comprehensive drillhole database validation in May 2013 (SRK, 2013). The study examined the complete database of 2,214 holes across all series of drilling and addressed collar coordinates, downhole surveys, assay data, geological logging and the availability of physical records. This database persists as the authoritative drilling data for current evaluations or project reviews.

12.4.1 Collar Coordinate Verification

Collar coordinates were verified against original log records, survey plats and mine coordinate systems. Several series (notably CD) had coordinates recorded in a different coordinate system from the main database; these were transformed during the reconciliation. Remaining errors were generally minor (<10 ft) and were corrected in the database.

12.4.2 Downhole Survey Verification

Downhole-survey records were checked against database entries. The K series was found to contain a significant population of holes without formal downhole surveys. IMC (2000) comparisons with surveyed analogs indicate that deep, unsurveyed fan holes could carry positional errors of up to ~500 ft at depth.

12.4.3 Assay Data Verification

Assay values were compared against original certificates where available. Error rates are summarized below in Table 12-1.

Table 12-1: Data Validation Error Rates by Drillhole Series

Drillhole Series	Count	Error Rate (TCu) (%)	Description
DD (Diamond drill)	~285	0.08	Exploration and definition drilling (lowest error)
PH (Percussion/rotary)	~240	0.00	Shallow oxide definition (no errors found)
K (Kalamazoo underground)	~130	0.66	Underground fan drilling (moderate error)
ARM (ISL monitoring)	~87	0.91	In situ leach operations (highest error rate)
CD (Core / mineralogy)	~125	0.03	Metallurgical and mineralogical studies

Source: SRK, 2013
*Other series noted to have zero error rates.

Where errors were identified, corrections were made to the database. The low error rates demonstrate that the historical data have been accurately transcribed into digital form.

12.4.4 Physical Record Inventory

A systematic inventory was completed for each hole tracking: collar location on log; collar survey records; downhole-survey availability; assay data; assay certificates; re-assays; geology logs; geology relogs; geotechnical logs; hole summaries; and other documentation.

12.5 SRK 2017 Historical Resource Estimate Verification

Rick Preece, SRK, undertook a comprehensive review of the historical mineral resource and reserve estimates effective as of end of year 1999, which underpins the historical 20-F disclosure discussed in 6.4. This review / verification work was commissioned by BHP in October 2017 (SRK, 2017). The review included verification of both San Manuel (referred to as SMPO) and Kalamazoo (referred to as RECON) block models, addressing bias, smoothing and classification methodology, together with production reconciliation.

12.5.1 San Manuel Block Model Verification

Verification of the legacy SMPO block model compared block-model grades with declustered drillhole composite data and examined global and conditional bias using grade-tonnage curves and Krige's relationship. The kriged estimate for sulfides was found to be conservative (approximately 17% lower tons at 6% lower grade than theoretical values), with modest over-smoothing accounting for a small conditional bias at the 0.5% TCu cutoff. For oxides at a 0.2% ASCu cut-off, the estimate was approximately 13% high on tonnage and 12% low on grade, approximately equivalent contained copper, with a global bias of approximately 10% attributed to conservative ore-grade contacts.

12.5.2 Kalamazoo Block Model Verification

RECON verification compared block-model grades with declustered composites by domain, examined the geological model (alteration zones and grade shells) against drillhole data by back-tagging, and reconciled against historical mine production. The grade-shell model produced a slightly conservative estimate of the potassic alteration, and the 0.7% Cu isochore showed a reduced volume for the high-grade shell. Nearly 90% of drillhole footage was correctly captured in the modeled shells, with a systematic bias toward pushing marginal grade into lower-grade shells. Production reconciliation showed quarterly reconciliation comparisons generally within ±5% of actual over a 6-year period, with an overall range of 88% to 108%.

12.5.3 Mineralogical Model Verification

Cross-sectional mineralogy was verified using ASCu / TCu ratios compared with composite mineral-zone codes. This analysis tentatively suggested that 10% to 20% of samples may be misclassified by the mineralogical model, most commonly at zone contacts and within the chrysocolla zone where acid-insoluble copper minerals occur as inclusions in iron oxides. The misclassification may thus reflect genuine heterogeneity rather than errors in assay or geological logging.

12.5.4 Resource Classification Verification

The 2017 review found that classifying resources by distance to nearest drillhole was a poor indicator of local drilling grid, producing an Indicated population that formed narrow irregular zones and isolated patches within Measured. SRK recommended re-classifying the estimate using a drill-grid simulation approach at that time.

12.6 Independent Verification (IMC, 2000)

Independent Mining Consultants, Inc. were engaged by BHP in June 2000 to review the mineral resources and ore reserves of the San Manuel and Kalamazoo deposits under the 1999 JORC Code. Key conclusions included:

- San Manuel Oxide: tonnages and grades of ISL and sulfide material are correctly stated relative to the orebody model, which is constructed in a generally acceptable manner; assay data are acceptable for modeling. ARM-series and LIH-series leach holes are documented as high-biased for ASCu relative to other drilling.
- Kalamazoo Sulfide: assay and survey data have been properly entered; drill spacing is adequate for grade estimation in areas targeted for block caving; the procedures used to estimate total copper are acceptable; the criteria used for resource classification were considered subject to question.

Following the ARM-series finding, IMC elected not to categorize the in-situ resource as Measured.

12.7 QP Opinion on Data Verification

SRK has reviewed the available documentation describing data verification in the current digital drilling database as well as other digital data provided for this review. This review generally encompassed the historical drilling campaigns conducted prior to 2000, the 2013 data validation study, the 2017 mineralogical domain review, as well as review inherent to this study.

12.7.1 Historical Context

The drillhole database supporting the current resource estimate was generated through campaigns completed prior to 2000, principally during the period of active mining and exploration by the historical operators of the San Manuel and Kalamazoo deposits. These campaigns were conducted under the sample preparation, analytical, and QA/QC standards prevailing at the time, which predate the formal QA/QC protocols that constitute current industry best practice and that are expected under NI 43-101 for newly generated data. Documentation of certified reference material insertion, blank submission, duplicate sampling programs, and umpire laboratory check assaying for these historical campaigns is incomplete or absent, and chain-of-custody documentation for the historical sample stream is limited.

The QP recognizes that the absence of contemporaneous QA/QC documentation is, in itself, a source of uncertainty for resource estimation purposes, and that this limitation has been explicitly identified in other reviews as a risk factor relative to current best-practice standards. The absence of that modern QA/QC is not currently affecting the classification of the historical mineral resource or reserve disclosure.

12.7.2 QP Opinion on Adequacy

On the basis of the documentation reviewed and the lines of evidence summarized above, it is the QP's opinion that all reasonable efforts have been taken to ensure that digital drilling and sampling data supporting the San Manuel Property are adequate for the purposes of future Mineral Resource estimation and classification, subject to the qualifications described herein.

The QP is satisfied that the data, as it currently exists in the project database, has been accurately transcribed from the underlying source records and that the digital database constitutes a reliable foundation for eventual Mineral Resource estimation.

13 Mineral Processing and Metallurgical Testing

The San Manuel Property does not have current metallurgical test work. No representative bench, pilot, or feasibility-level test work has been conducted on Kalamazoo material at the level required to support an engineered process design. In lieu of a modern metallurgical test work program being completed, recovery assumptions could reasonably be made through interpretation of historical operating record of the integrated San Manuel mill, smelter, refinery and SX-EW plant (1956 to 2002) summarized in Section 17, and supplemented by published test work conducted by the historical operators in support of plant design and process changes during commercial operations.

This chapter describes (i) the procedures and sources from which the metallurgical understanding could be compiled, (ii) the key results that bear on potential recovery assumptions, and (iii) the significant factors that may affect economic extraction, including the test work that SRK considers necessary before the project can advance.

13.1 Historical Processing Performance Overview

The historical mine processed sulfide material in a conventional concentrator facility. Copper from oxide material was processed via heap leach methods and a SX-EW facility. ISR methods were also used with fluids processed at the SX-EW facility. The following sub-section provides an overview of historic processing and metallurgical performance for the project during its period of production.

The underground block cave fed material to a sulfide concentrator. A flotation process recovery of 89.1% Cu approximates the historical Cu plant-circuit recovery reported by Chadwick (1992) for the integrated San Manuel concentrator at the late-Magma operating state. Concentrate grade is assumed at 30% Cu, consistent with the cleaner concentrate spec reported by Brunskill (1985). The 89.1% figure reflects plant flotation recovery to bulk Cu-Mo concentrate at the concentrator boundary and is believed to not include downstream losses through Mo separation, smelting, or refining. Future work will need to be completed to determine byproduct recovery in payable quantities.

The historical information on heap leaching on transitional material from the 1999 BHP-internal SMRDP feasibility study (Brunskill, 2001, §2.6, Table 2.6), whose chrysocolla + chalcocite zone (Zone 7): 80% of ASCu + 30% of (TCu − ASCu) yielded approximately 57% of TCu at the historical chrysocolla + chalcocite grade. Post-1999 heap leach practice improvements (Witt et al., 1999; Braun et al., 2025) raised LoM ASCu extraction from 73% in 1993 to 88.3% at closure in 2002. The transitional zone is currently poorly characterized in the information reviewed and therefore, confirmation drilling and additional material type characterization is recommended to optimize future metallurgical performance in the event of site reactivation.

For situ recovery on residual oxide / secondary sulfide (leach + SX-EW), the historical records provide the following anchors:

- LoM heap leach AS-Cu extraction: 88.3% (Braun et al., 2025)
- LoM ISL Zone 6 AS-Cu extraction: 41.7% (Sutton, 2019)
- ISL achievable extraction estimation: ~50% AS Cu (Sutton, 2019, revised estimate)
  SX-EW conversion of Cu in PLS to refined cathode: >99% (industry-standard for oxime SX + EW; not separately reported in references)

13.2 Historical Records

No new metallurgical test work has been commissioned for this Technical Report. In the event that historical records wish to be utilized to inform recovery assumptions in lieu of modern test work, parameters could be guided by three categories of historical source information:

1. Historical operating data from the San Manuel concentrator, smelter, refinery and SX-EW plant, in the form of plant-design and operating-review papers presented at SME and TMS conferences and published in industry journals between 1965 and 2025 (Burke and Shirley, 1965; Davis, 1977; Korpi and Dopson, 1982; Brunskill, 1985; Chadwick, 1992; Briggs, 2014; Braun and Parker, 2006). These papers document plant configuration, throughput, head grades, plant-circuit recoveries and reagent regimes for the sulfide concentrator and Mo recovery circuit during the 1956 to 1999 operating life.
2. Published test work and operating reviews of the San Manuel oxide leach and in situ leach circuits (Jenkins, 1994; Wiley et al., 1994; Beane and Ramey, 1995; Williamson, 1998; Witt et al., 1999; Sutton, 2019; Braun et al., 2025). The Beane and Ramey (1995) paper documents a 551-day Resource Recovery Test (RRT) conducted in 1992 to 1993 on a three-cell well-to-well array; Sutton (2019) provides the only rigorous reconciliation of life-of-mine ISL extraction against the BHP block model.
3. Historical sample-preparation, analytical, and QA/QC documentation for the drillhole database that underpins the resource estimate, summarized in Section 11. The principal limitation relevant to metallurgical interpretation is the documented analytical high bias for ASCu in the ARM and LIH series identified by IMC (2000) and addressed in the resource classification framework described in Section 12.

The historical operating record is directly representative of the San Manuel deposit (sulfide block-cave plus open-pit oxide). For the period 1956 through 1999, mill feed averaged 0.66% Cu through the sulfide concentrator and 0.46% acid-soluble copper (≈ 0.61% total copper) through the heap leach (Jenkins, 1994; Witt et al., 1999; Briggs, 2014). The 4.65 M st of refined copper produced over the LoM (Briggs, 2014) provides a substantial empirical reconciliation between historical block-model grades and recovered metal that is independent of any contemporary metallurgical test program.

The historical record is directly representative of the Kalamazoo deposit, which is the principal forward resource likely to be targeted for future evaluation. The Kalamazoo segment was developed underground from 1977 onward but reached commercial sulfide production only in January 1997 from the lower Kalamazoo levels (Briggs, 2014); commercial Kalamazoo output through the San Manuel concentrator over the 1997 to 1999 period is partially captured in the Brunskill (1985) and Chadwick (1992) operating data but is not separately reported. The historical 1999 BHP internal ore-reserve statement (Table 6-5) identifies a Kalamazoo-specific mill recovery of 89.18% (compared with 83.4% for the San Manuel segment), but the basis for this distinction is not documented in any source reference.

The Kalamazoo deposit is largely hypogene and lacks the chalcocite enrichment blanket and oxide cap that characterized San Manuel and supported the heap-leach and ISL streams. Consequently, the historic oxide-leach and ISL operating record is not applicable to Kalamazoo at any meaningful confidence level for forward-design purposes at this time.

The historical record is directly relevant to a third processing route; heap leach of the remaining transitional material at San Manuel. The 1999 BHP-internal Resource Definition Study (Brunskill, 2001) defined eight mineralogical zones at San Manuel, each with a distinct recovery formula. Four of these zones span the transitional ore between the oxide cap and the primary sulfide (chalcocite + chalcopyrite (Zone 4), chrysocolla + chalcopyrite (Zone 6), chrysocolla + chalcocite (Zone 7), and chrysocolla + chalcocite + chalcopyrite (Zone 8)) and together accounted for approximately 54 Mt (~19 %) of the 1999 historical oxide resource.

13.3 Relevant Historical Results

The following plant recoveries in Table 13-1 are documented in the literature.

Table 13-1: Process Route Recoveries

Process Route	Plant Recovery / Extraction	Basis	Source
Sulfide Concentrator – Cu into bulk Cu-Mo con	Total recovery 88% at ~0.63% Cu head; flotation tailings 0.076% Cu (1990 lowest-ever)	1990-1991 operating data (excluding integrated slag retreatment)	Chadwick, 1992
Sulfide Concentrator – MoS_2 into bulk Cu-Mo con	79.7% (1984); 81.9% (1985 YTD)	Operating data	Brunskill, 1985
Mo Recovery Plant - MoS_2 into final Mo con	82.8% (1984)	Operating data	Brunskill, 1985
Mo Overall (Concentrator x Mo Plant)	65.9% (1984)	Operating data	Brunskill, 1985
Smelter Cu recovery	96.5%	BHP internal reserve estimate	Table 6-5
Heap Leach – Cumulative ASCu to PLS	88.3% LoM	1986-2002 Cumulative LoM leach	Braun et al., 2025
Heap Leach – Transitional material	Mineral-type specific recovery formulas	BHP-internal mineral-type recovery framework, 1999 SMRDP study	Brunskill, 2001
ISL – Zone 6 – LoM ASCu extraction	41.7%	Block-model reconciliation	Sutton, 2019
SX-EW – Cu in PLS to LME Grade A cathode	>99% typical for oxime SX with EW; 99.999% Cu cathode purity	Conventional industry value; LME Grade A certified Apr 1992	Briggs, 2014; Chadwick, 1992

The recovery figures above are reported on the basis used by each source. Three distinctions matter for design interpretation:

- Plant-circuit recovery for the concentrator, Mo plant, and smelter is the fraction of contained metal in the feed reporting to a sellable product at the circuit boundary.
- The smelter 96.5% Cu recovery was taken from a 1999 BHP internal reserve estimate and is not directly stated in any of the literature sources reviewed for this report. None of the smelter-specific papers report a smelter-wide Cu recovery percentage. The value is also typical for the industry for an integrated Outokumpu single-burner flash-furnace + Pierce-Smith converter smelter operating with a slag-retreatment circuit. Slag retreatment was documented at San Manuel as a separate flotation circuit at the concentrator, processing approximately 2,200 mt/d of flash-furnace and converter slag at ~3% Cu head with target tailings 0.30% Cu (Chadwick, 1992). This circuit recovered Cu otherwise lost to smelter slag and fed it back to the flash furnace, raising the integrated smelter system recovery into the typical 96% to 98% range.
- Extraction for heap leach and ISL is the fraction of contained acid-soluble copper (ASCu) that reports to PLS. SX-EW conversion of Cu in PLS to refined cathode is generally above 99%.
- The ISL extraction shortfall (41.7% actual vs the BHP 1999 internal forecast of 52%; Sutton, 2019) is attributed to faulting, block-cave-induced ground subsidence, channeling and gypsum precipitation in fractures, all of which reduce sweep efficiency. Sutton's revised estimate was 55% sweep × 90% leachability = 50%.

13.4 Risks and Recommendations

- **Deleterious elements (sulfides):** Bismuth concentration in the cathode product became a quality issue at the SM refinery in 1995, attributed to variable anode chemistries combined with increasing current density (Anzalone et al., 1997). The issue was managed at the refinery by operational adjustment to starter-sheet production and by an electrolyte bleed to the leach circuit. For a future operation that produces concentrate for sale (rather than running an integrated on-site smelter and refinery), Bi will be a smelter-specification consideration rather than a refinery-operation issue, but the underlying mineralogical occurrence is unchanged and should be evaluated in any modern Kalamazoo testwork.
- **Deleterious elements (oxide / leach):** No deleterious elements limiting cathode quality are identified in the literature reviewed for the heap-leach or ISL streams. The mature SX-EW circuit operated on a PLS feed with significant Fe (1.18 gram per liter (g/L)), Al (6.68 g/L), Mg (7.88 g/L) and SO_4^{2-} (81.8 g/L) loadings (Witt et al., 1999) and consistently achieved LME Grade A cathode at 99.999% Cu. ISL UG PLS was significantly less acidic (pH 3.2 vs surface PLS pH 1.8) and richer in Cu, reflecting longer rock-contact time in gravity-flow paths; the mature SX circuit accommodated both streams in a common feed pond.
- **Recoveries vary across mineralogical domains:** For the sulfides, the historical 1999 BHP estimate distinguishes mill recovery of 83.4% for the San Manuel segment from 89.18% for Kalamazoo and development material. The basis for this split is not documented in the source references reviewed. This distinction should be confirmed by representative composite testing of Kalamazoo material at the next stage of study.

The 1999 BHP-internal Resource Definition Study (Brunskill, 2001) extended this domain-recovery to the heap-leach route by assigning eight mineral-type-specific recovery formulas spanning pure chrysocolla, chalcocite and chalcopyrite plus four mixed-mineralogy zones.

- **The transitional zone is poorly characterized:** The transitional ore at San Manuel has no representative metallurgical test work in the information reviewed. The Brunskill 2001 mineral-type framework is itself a 1999 BHP-internal desktop study rather than test-work-derived data. Specific gaps that should be closed at the next stage of study, ahead of any PFS or feasibility-stage process design, are: (i) mineralogical characterization of the transitional estimation domain — the relative proportions of chrysocolla, chalcocite and chalcopyrite within the domain control the leach response and therefore the appropriate recovery formula; (ii) column-leach test work on representative composites of the mixed-mineralogy zones to establish ASCu and TCu extraction kinetics under modern practice; (iii) acid-consumption data for the transitional material as it may consume acid at very different rates; and (iv) sweep-efficiency / agglomeration testing to investigate if the transitional ore is amenable to ROM heap leach without crushing or agglomeration.
- **Coarse-fraction lock-up in residual leach material:** Witt et al. (1999) report that by 1999, more than 50% of residual ASCu in the heap was in the +0.98 in coarse fraction, attributed to slow H^+ diffusion into micro-fractures and to uncured coarse side slope material (Braun et al. (2025). Additional mineralogical characterization is needed to evaluate optimum particle size for leaching.
- **ASCu analytical bias in the historical drillhole database:** IMC (2000) identified a systematic ASCu high bias of approximately 7.2% for the ARM and LIH drillhole series. This bias is documented further in Sections 11 and 12. Sutton (2019) further notes that the "San Manuel method" ASCu assay performed at the on-site Magma laboratory through the LoM "would not meet today's best practice standards." This is a documented data-quality concern applicable to any forward-looking ISR design that relies on historical ARM- or LIH-series ASCu values.
- **Modern test work recommended:** While the historical processing record provides valuable operating context for the integrated 1956 to 2002 facility, SRK recommends that representative composites from the Kalamazoo resource, both sulfide for the block-cave scenario and any defined oxide / secondary-sulfide material for the ISR scenario, be subjected to modern metallurgical test programs and methods to confirm ASCu assays, recoveries, concentrate quality, deleterious-element behavior and process design parameters applicable to current mining and processing scenarios. The Kalamazoo orebody, which was not historically processed at mass scale, would require a dedicated metallurgical test program.

14 Mineral Resource Estimate

No current Mineral Resource estimate exists for the Property. The last resource and reserve disclosure on San Manuel available to Faraday was effective June 1, 1999, by BHP, as part of the 2001 Annual Report. These historical figures are described in detail in Section 6.4 of this Technical Report.

Recommended confirmatory work programs to support more advanced development studies are detailed in Section 26 of this Technical Report.

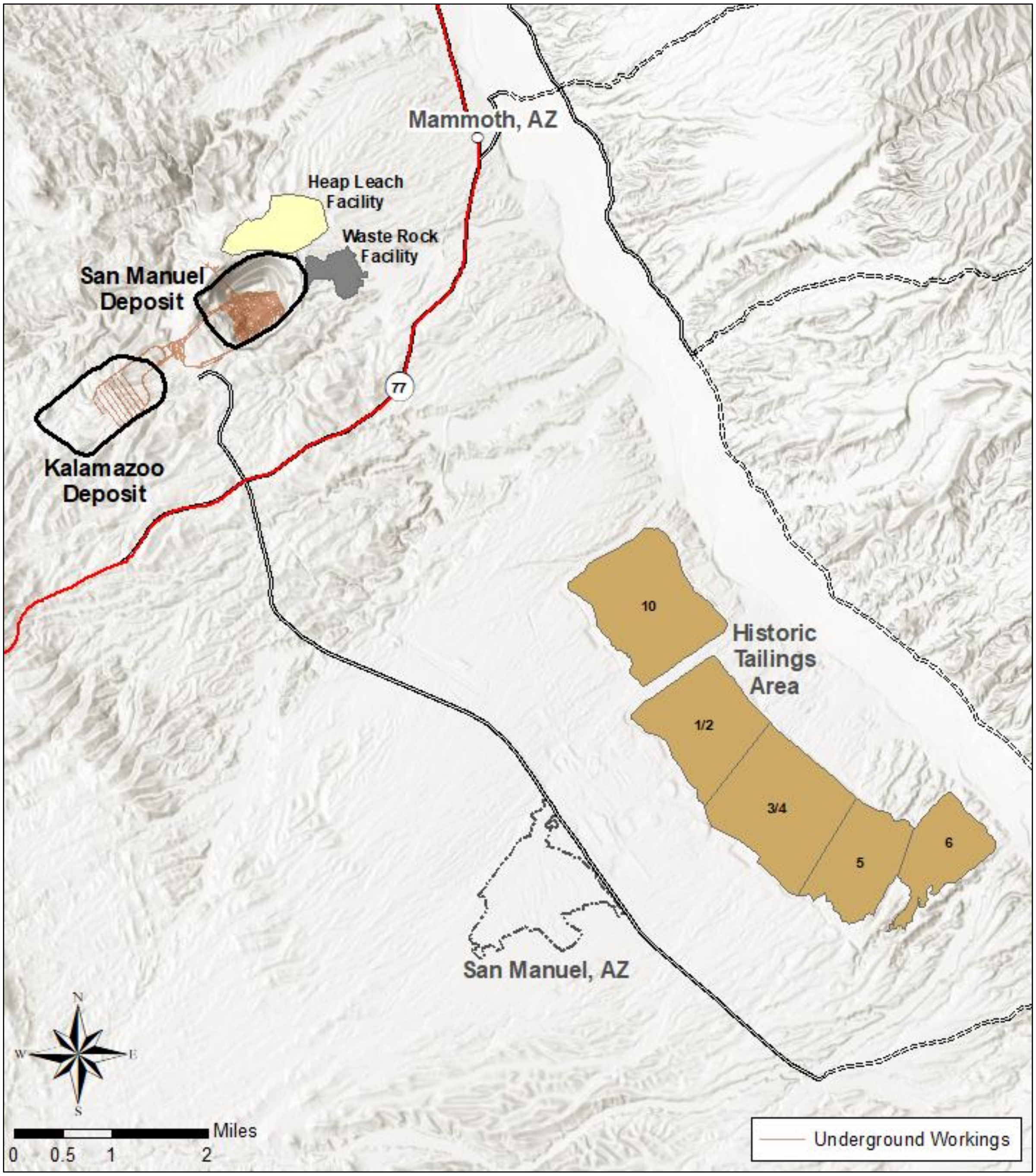
15 Mineral Reserve Estimate

A prefeasibility study (PFS) is required to demonstrate the economic merit of Mineral Resources for any conversion to Mineral Reserves. At this time, no current Mineral Resource estimate exists for the Property, and a PFS study has not been completed for the Property; therefore, the San Manuel Property has no current Mineral Reserves, according to CIM definitions and guidelines (CIM, 2014).

16 Mining Methods

There are no current mining plans for San Manuel. Faraday has not undertaken any engineering, scoping, or economic studies that would support the development of mining methods. San Manuel does not have a current Mineral Resource or Mineral Reserve, and no work has been completed that allows for evaluation of potential mining scenarios. Accordingly, this Technical Report cannot provide details on a mine plan or schedule at this time.

The San Manuel Property operated historically until approximately the late 1990s. It was mined via open pit, block cave, and ISR methods throughout its mine life. Figure 16-1 shows the location of the areas that were mined relative to the location of the processing and tailings storage facilities.



Source: Faraday, 2026

Figure 16-1: Historic San Manuel Mining Areas

The San Manuel Oxide operation operated a SX-EW facility that produced high-quality cathode copper. Traditional heap leaching and in situ leaching methods were employed. Open pit mining and heap leach construction took place from 1985 to 1995. Run-of-mine (ROM) oxide ore from the pit was hauled to the heap pads and leached. The heaps production reached 86% soluble copper recovery by the end of the 1990's.

In situ copper leaching was started in 1986 with deep injection leaching, solutions collected underground in sumps within the mined out upper levels of the San Manuel deposit. Solutions were pumped to the surface to the SX-EW feed pond. In addition to deep injection leaching, well-to-well leaching was established in 1989 on wide benches within the operating open pit mine. Raffinate was released into injection wells and PLS was collected with submersible pumps in the recovery wells and sent to the SX-EW feed pond. As the open pit mining continued through three more phases of mining, the well fields were mined out and then re-established.

Open pit mining was completed in 1993, the in situ operation was expanded, and permanent pump stations were constructed to collect and carry solutions to the SX-EW. Solution mining continued into the early 2000's.

As early as 1986, limited development was performed in the upper levels of the Kalamazoo orebody. With the end of mining in the San Manuel deposit in sight and the landmark agreement with the unions to successfully negotiate a 15-year labor contract, major development of the lower Kalamazoo deposit was approved in 1993. Production was achieved in early 1997 and mining continued until June of 1999 when the mine was placed in care and maintenance due to declining copper prices.

17 Recovery Methods

The historical processing complex at San Manuel comprised two distinct operational units: (i) a conventional crush-grind-flotation concentrator with downstream Mo recovery, smelting and electrolytic refining that treated sulfide ore from 1956 to 1999, and (ii) a heap-leach / in situ-leach / SX-EW circuit that treated oxide and secondary-sulfide ore from 1986 to 2002. Both units operated in parallel from 1986 onward, with shared on-site sulfuric acid supply from the smelter SO_2 off-gas. The mill, smelter and electrolytic refinery were integrated facilities on the San Manuel Plant Site itself; concentrate and intermediate streams transferred between them by short on-site rail and conveyors. All process facilities were placed on care and maintenance with the rest of the operation in June 1999, formally closed in October 2003, and demolished by 2007 (Briggs, 2014; Braun et al., 2025).

17.1 Operation Results (Historical)

17.1.1 Sulfide Concentrator (1956 to 1999)

Table 17-1 below shows the evolution of nameplate mill capacity throughout the plant's production life.

Table 17-1: Mill Capacity Over LoM

Date	Rated Capacity (stpd)	Source
Sep 1955	30,000	Briggs, 2014
1963	36,000	Briggs, 2014
1965	40,000	Briggs, 2014
1971	62,500	Briggs, 2014
1982	66,000	Korpi and Dopson, 1982
1991–H1 1992	62,500	Chadwick, 1992

LoM ore milled: 703,686,000 st of sulfide ore were processed over the 44-year operating life at an average feed of 0.66% Cu and approximately 0.03% MoS_2 (Briggs, 2014). In 1991 / 1992-H1 average operating throughput was approximately 55,685 stpd, running at approximately 89% of nameplate (Chadwick, 1992).

LoM Cu and Mo production: 4,651,600 st of refined Cu were produced over the LoM from 1956 to 1999 (Briggs, 2014); Mo produced over the same period as Mo in concentrate shipped for off-site processing was 73,200 st (Briggs, 2014).

Mill Cu recovery: Chadwick (1992) reports a 1991 total concentrator copper recovery of 89.5%. The concentrator processed two parallel feed streams – the ROM ore stream (~52,000 mt/d at 0.63% Cu feed grade) and the slag retreatment circuit (2,200 mt/d of smelter slag at ~3% Cu feed described in Section 17.2.1 below). The ROM final flotation tailings grade reached a low of 0.076% Cu in 1990. A ROM head-to-tails balance does not reconcile to 89.5% as the value also captures Cu recovered from smelter slag and returned to smelter feed. This is the only quantitative Cu plant-circuit recovery figure reported in the literature reviewed.

Mo Recovery: Concentrator MoS_2 recovery to bulk Cu-Mo concentrate was 79.68% in 1984 and 81.91% in 1985 YTD, while Mo recovery from bulk Cu-Mo concentrate to final Mo concentrate was 82.75% in 1984 and 65.93% overall (1984) (Brunskill, 1985). The final Mo concentrate specification was 91% to 92% MoS_2 at approximately 0.75% Cu and <10% moisture. In 1984 the production rate was approximately 254 mt/month declining to 140 mt/month by 1992 with Cu-circuit curtailment (Brunskill, 1985; Chadwick, 1992).

Cu Concentrate Spec: Final cleaner concentrate, which is the Cu concentrate shipped after Mo separation, was approximately 30% Cu and 0.90% to 1.00% MoS_2 (Brunskill, 1985). The rougher Cu concentrate was 9% to 12% Cu and 0.4% to 0.5% MoS_2 (Brunskill, 1985).

17.1.2 Heap Leach / SX-EW (1986 to 2002)

Phase 1 of the heap leach was commissioned in May 1986 (Jenkins, 1994; Briggs, 2014). The cumulative ASCu leach extraction from ore into PLS progressed from 73% around 1993 (Jenkins, 1994), 74.5% at end of open pit feed in Jan 1995 (Witt et al., 1999), 86% at end of 1998 (Witt et al., 1999), and 88.3% at the end of leaching in 2002 (Braun et al., 2025). The 1995 to 2002 increase was achieved through residual leaching with controlled surface, side slope and berm-walled sprinkler-cell irrigation described by Witt as “rice-paddy irrigation”. Subsequent SX-EW processing of Cu in PLS to refined cathode is typically above 99%. A progression for heap leach production is shown in Table 17-2.

Table 17-2: Heap Leach Copper Production over LoM

Metric	Value	Source
LoM oxide ore stacked	Approx 94M st (92,969,000 st Briggs reconciliation)	Witt et al., 1999 Briggs, 2014
Average head grade	0.46% ASCu (~0.61% TCu; ~0.75 ASCu/TCu)	Jenkins, 1994; Witt et al., 1999; Briggs, 2014
LoM ASCu extraction	88.3%	Braun et al., 2025
LoM heap cathode	~345,000 st; 690 Mlb	Braun et al., 2025

17.1.3 In Situ Leaching (1986 to 2002)

ISL operated in two parallel modes for most of the operating life. Surface-to-underground gravity-flow leaching (commissioned June 1986; sole mode through September 1989) injected acidified raffinate from the surface into partially rubblized supergene rock above the abandoned San Manuel block-cave underground levels and gravity-drained PLS into adapted underground haulage drifts, which was then pumped approximately 2,380 ft to the surface SX-EW (Wiley et al., 1994; Williamson, 1998). Well-to-well leaching (added September 1989) was operated in modified seven-spot patterns on open-pit catch benches with 40.0 ft corner-to-corner spacing through 1989 to 1998 (49.87 ft for the 1998 west-side expansion) where the active leach zone was 197 to 394 ft below surface (Wiley et al., 1994; Williamson, 1998). The two modes shared a common SX-EW plant. Production by ISL is shown in Table 17-3.

Table 17-3: In Situ Leaching Production

Year	ISL Cu Production (St)	Source
1986 (pilot)	614	Briggs, 2014
1990	12,500	Briggs, 2014
1993-94	~11,000	Beane and Ramey, 1995
1998	~22,000	Williamson, 1998
1999 (final)	~20,000	Sutton, 2019

LoM ISL extraction reconciliation: Sutton reconciled the BHP block-model ASCu against cathode-equivalent Cu produced for Zone 6, the longest-running ISL zone (eleven benches 2340 to 2940;

114.9M kg of contained ASCu) resulting in cumulative ASCu extraction at zone closure at 41.7%, against a BHP 1999 internal forecast of 52% (broken down as 70% sweep × 75% leachability). The difference is attributed to faulting, block-cave-induced ground subsidence, channeling and gypsum precipitation in fractures. Sutton revised the estimate to 55% sweep × 90% leachability = 50% ASCu extraction with continued operation. Independent confirmation was obtained from a paired pre-leach / post-leach drillhole comparison (ARM158 vs SMO9607, 60.0 ft apart, ~3 yr leach) which showed approximately 42% ASCu depletion (Sutton, 2019).

Resource Recovery Test (RRT, 1992 to 93): A controlled 551-day well-to-well test on a three-cell array located on bench 2460 of the San Manuel open pit produced 1 million kg of Cu (cathode-equivalent) where ASCu extraction was 45.5% (footwall cell) to 64.6% (hanging-wall cell), which proved structural control of sweep efficiency (Beane and Ramey, 1995).

17.2 Processing Methods

17.2.1 Sulfide Concentrator

Comminution

Comminution was comprised of a two-stage crushing circuit. Primary crushing was performed at the surface by four Nordberg gyratory crushers each rated at 1,100 million tonnes per hour (mt/h), located adjacent to the production shafts. ROM crushed ore was hauled by rail approximately 6.8 miles to the on-site concentrator (Briggs, 2014). Secondary crushing at the concentrator was performed by 11 Nordberg Symons cone crushers. Grinding consisted of 13 wet grinding sections, each comprised of one rod mill in open circuit plus two ball mills in closed circuit with hydrocyclones (Allis-Chalmers rod and Marcy ball mills throughout, in two size classes; 10.0 × 10.0-ft / 10.0 × 13.0-ft for the 10 small sections and 12.5 × 14.0-ft / 12.5 × 16.0-ft for the 3 large sections). Hydrocyclones were 20.0-in Krebs D20B units in 1982 (Korpi and Dopson, 1982) which were upgraded to 26.0-in Krebs units in the late 1980s to early 1990’s (Chadwick, 1992).

Bulk Cu-Mo Flotation Circuit

The flotation circuit employed conventional bulk sulfide flotation followed by selective copper-molybdenum separation, consistent with standard practice for porphyry copper-molybdenum deposits.

Hydrocyclone overflow fed bulk Cu-Mo rougher flotation where rougher concentrate was reground to 75% to 80% passing 325-mesh and cleaned in conventional cells through 1985 (Brunskill, 1985). By 1991 to 1992 the cleaner circuit had been reconfigured to use 16 Magma-designed column flotation cells, each 5.9-ft diameter x 39.0-ft high which replaced earlier 39-ft³ conventional cleaner cells. Chadwick reported eight independent flotation sections with rougher cells comprising ten Maxwell 2,000-ft³ and 143 Wemco 300-ft³ in service. The bulk Cu-Mo cleaner concentrate (feed to the on-site Mo recovery plant) contained approximately 30% Cu and 0.90% to 1.00% MoS_2 (Brunskill, 1985).

A separate on-site slag retreatment circuit treated approximately 2,200 mt/d of flash-furnace and converter slag at approximately 3% Cu feed, returning slag concentrate at approximately 30% Cu to the smelter and slag tailings at 0.45% Cu against a target of 0.30% (Chadwick, 1992).

Reagents used in the 1980’s are shown in Table 17-4.

Table 17-4: Concentrator Reagents (1982 to 1985 Representative; Doses per Metric Ton of Mill Feed)

Reagent	Function	Addition Point	Dose (kg/mt feed)
Minerec SM-8 (oily xanthate)	Primary Cu collector	Rod mill feed	0.004
Sodium isopropyl xanthate	Secondary Cu collector	Stage-added to rougher	0.002
MIBC (85%) + distillation bottoms	Frother	Rod mills + stage rougher	unknown
#2 diesel + kerosene (50/50)	Mo promoter	Rod and regrind mills	0.010
Dowfroth 250 (PPG ether)	Persistent froth modifier	Tailings thickener reclaim	0.0004
Lime (CaO or $Ca(OH)_2$)	pH modifier	Mill	unknown

Source: Brunskill, 1985

17.2.2 Mo Recovery Plant

The bulk Cu-Mo concentrate was treated in a selective separation circuit using reagents to depress copper sulfides, allowing molybdenite (MoS_2) to be floated into a separate molybdenum concentrate.

The Mo flotation circuit used three successive Cu-depressant chemistries over its operating life: NaOCl-ferrocyanide (January 1956 to January 1964); H_2O_2-ferrocyanide (January 1964 to January 1980); and NaHS + NaCN (from January 1980 onward) (Brunskill, 1985). The 1985 plant had two parallel flowsheets (north and south) of identical design (Brunskill, 1985).

Bulk Cu-Mo concentrate was thickened in a 125-ft Eimco thickener to 60% to 64% solids, held in a 25 × 36.1-ft holding tank with 7-h retention, conditioned in a 10.0 × 10.0-ft Denver overflow conditioner with NaCN + NaHS dosed at 44% to 46% solids and 20 min retention, then floated through an 8-stage countercurrent cleaning train (Galigher #36 cells in early stages, Denver #18 Specials in stages 4 to 8). A 4.00-ft square × 32.0-ft column flotation cell was installed in 1981 for fine-MoS_2 scavenger duty and by March 1985 had been repositioned to replace cleaners 2 to 4, contributing approximately 2% net Mo recovery uplift relative to the no-column case (Brunskill, 1985). The 8th-cleaner concentrate (~87% to 88 % MoS_2, 1.2% to 1.3% Cu) was repulped to 50% solids and held with NaCN at 0.2% free CN for 36-h before three-stage countercurrent recleaning with attrition scrubbing and sodium-silicate "insol" depressant. Final Mo concentrate contained approximately 91% to 92% MoS_2 and 0.75% Cu (Brunskill, 1985). Concentrate was filtered, dried in multi-hearth Skinner dryers to <10% moisture, and put in 55-gallon (gal) steel drums for off-site sale. There was no on-site Mo roaster. The shipped MoS_2 concentrate was sold to third-party Mo roasters / converters for downstream production of technical-grade molybdic oxide and ferromolybdenum, following standard porphyry-Cu industry practice for the period. Reagents for the moly plant are shown in Table 17-5.

Table 17-5: Molybdenum Recovery Plant Reagents

Reagent	Function	Total Dose (kg/mt conc)
NaHS (30% soln)	Cu mineral depressant	3.30
NaCN (30% soln)	Cu sulfide depression / surface clean	0.54
Fuel oil (50/50 #2 diesel + kerosene)	Mo promoter	0.11
Exfoam 636	Antifoam	0.12
Sodium silicate	Insol depressant in recleaner	unknown
Dowell 9N9	Fuel-oil emulsifier	unknown

Source: Brunskill, 1985
Note: 1985 representative; doses per metric ton of bulk Cu-Mo concentrate fed to the Mo plant; NaHS-NaCN regime, post-Jan 1980

17.2.3 Smelting and Refining

The on-site smelter and electrolytic refinery operated continuously from January 1956 commissioning to October 2003 final closure. The smelter began with one green-feed reverberatory furnace, three Pierce-Smith converters, two anode vessels and one anode casting wheel. Through the late 1960's and early 1970's it was expanded to three reverberatory furnaces, six converters, four anode vessels, and two casting wheels, with a two-train Monsanto sulfuric acid plant added in 1974 in response to the 1970 Clean Air Act (McCain and Rana, 1983; Briggs, 2014). In July 1988, under an EPA-Magma consent decree, the three reverberatory furnaces were replaced by a single 2,700 to 3,000 mtpd Outokumpu single-burner flash furnace, with the acid plant simultaneously modified from single-contact to double-absorption to treat both flash-furnace and converter off-gas (Gonzales and Jones, 1993; Jones et al., 1999). The 1991 sulfuric acid output was 857,674 mt/y (Chadwick, 1992). This acid supplied both market sales and the on-site SX-EW raffinate make-up after 1986. The first flash-furnace campaign (July 1988 to May 1999) ran for 10 years 9 months 23 days, a world-record campaign for an Outokumpu copper flash furnace and processed approximately 10.9 Mt of new sulfide concentrate yielding 3.1 Mt of new anode copper (Jones et al., 1999), drawing roughly two-thirds of feed from Magma's San Manuel, Pinto Valley and Superior mines and one-third from open-market toll smelting. About 35% to 40% of smelter output was finished on-site as continuous-cast 0.31-in wire rod (Braun and Parker, 2006). The refinery operated electro-refining at 27 A/ft² with a 12-day plating cycle and 350-lb cathodes (Chadwick, 1992). A 1995 bismuth quality issue in cathodes was managed by operational changes to starter-sheet production and electrolyte bleed (Anzalone et al., 1997). All on-site smelter, refinery and rod-plant equipment was placed on care and maintenance with the rest of San Manuel in June 1999, formally closed in October 2003, demolished by 2005, and the 500-ft smelter stacks demolished January 18, 2007 (Briggs, 2014; Braun and Parker, 2006).

17.2.4 Heap Leaching

A ROM leach facility was operated at San Manuel to treat copper oxide ore and low-grade secondary sulfide material that was not amenable to, or uneconomic for, flotation treatment. The leach operation utilized dilute sulfuric acid solutions applied to ore. PLS containing dissolved copper was collected in ponds for subsequent SX-EW processing.

In addition to primary heap leaching of oxide ore, the operation also included leaching of low-grade mineralized waste rock dumps generated over the life of the mine, utilizing the natural and/or applied acid drainage to recover residual copper values. This secondary leach stream supplemented PLS production from the primary heap leach facility.

Six phases of leach pad construction occurred from April 1986 to August 1992 which brought the cumulative pad area to approximately 10,322,600 ft² of Height Density Polyethylene (HDPE)-lined leach surface (Jenkins, 1994; Witt et al., 1999; Braun et al., 2025). The original 1985 to 1986 build was the first plastic-lined heap leach in Arizona built by Bechtel (Witt et al., 1999). The liner was 80-mil HDPE (40 to 100 mil) over compacted Gila Conglomerate / San Manuel Formation sub-base, with 18.1-inch sand cover and 1% to 8% base slope. Solution was collected in 11.8-inch perforated HDPE pipe in collection ditches surrounded by 0.51 to 3-inch gravel (Jenkins, 1994; Braun et al., 2025).

All ore sent to the heap leach was run-of-mine oxide ore at 90% passing 4-inch. Crushing and agglomeration were not employed at any stage of the heap-leach circuit (Jenkins, 1994; Witt et al., 1999). Crushing was deemed unnecessary because most of the chrysocolla mineralization occurs as fracture fillings easily contacted by lixiviant, and because the SM oxide rock is friable. Pad construction was performed by truck end-dump and spread by dozer, and cross-ripped to 5.9-ft+ depth in two directions to break up truck-induced compaction. When new lifts were placed on existing heaps, the old surface was first ripped to 3 to 4.6-ft before placing the new ore (Jenkins, 1994).

Lift height was 15-ft from 1986 through early 1992; reduced to 10-ft thereafter, which drove an increase of approximately 5% in cumulative recovery (Jenkins, 1994). Final stack configuration (1999) included 18 leach modules each approximately 400 × 300 ft, ultimate stack height ~300 ft, 30° side slope; subdivided into surface dumps, side slope panels, and "rice paddies" (98 × 49-ft berm-walled cells on old haul-road platforms) for residual leach (Witt et al., 1999).

Standard pre-cure practice was two sulfuric acid applications at 250 g/L: first 15 lb/ton of ore then a 4-day rest, then a second 10 lb/ton application then a 3-day rest, then ripped and brought online for raffinate irrigation (Jenkins, 1994). Operating raffinate was pH 1.5 to 1.6, 0.06 to 0.20 g/L Cu, 1.13 to 1.8 g/L Fe, and 15 to 18 g/L free H_2SO_4, applied at 5.15 gal/(h·m²) at active loading and reduced to 1.9 to 2.6 gal/(h·m²) for residual leach (Jenkins, 1994; Witt et al., 1999, Table II). Distribution used 4.02-inch HDPE feed pipes on 24.9-ft spacing with Senninger wobbler sprinklers (0.79-inch orifice) on 20-ft spacing, with alternating-pipe offset for staggered coverage. The residual-leach added Senninger series-30 / 40 / 50 side slope sprinklers and "rice-paddy" center-line emitters (Jenkins, 1994; Witt et al., 1999). A 35-ppm cationic fluorochemical surfactant was added to the barren leach during preconditioning from June 1992 onward as standard practice, following a 1990 to 1992 column- and full-scale heap-pair test program that demonstrated cumulative ASCu extraction above 73% with the surfactant versus 63% without (Jenkins, 1994).

Acid consumption is shown in Table 17-6.

Table 17-6: Heap Leach Acid Consumption

Item	Value
Preconditioning, 1st application	15 lb/ton at 250 g/L
Preconditioning, 2nd application	10 lb/ton at 250 g/L
Total preconditioning	**27.56 lb/ton**
Test work projection, heap	5.56 lb acid/kg Cu

Source: Jenkins, 1994

17.2.5 In Situ Leaching

The surface-to-underground (Phase 1) gravity-flow ISL mode was commissioned June 1986 with 26 injection wells and operated as the sole ISL mode through September 1989. The well-to-well mode was added in September 1989 on open-pit catch benches. Through the 1989 to 1998 period, modified seven-spot patterns at 40.03-ft corner-to-corner spacing were standard, with the 1998 west-side expansion increased to 49.87-ft (Wiley et al., 1994; Beane and Ramey, 1995; Williamson, 1998).

Injection wells were reverse-circulation drilled with 1.5-inch Schedule 80 PVC casing. Production wells were mud-rotary drilled with 6-inch Schedule 80 PVC casing, 328 to 492-ft deep, fitted with submersible 304 SS / 316 SS centrifugal pumps at 7.4 to 11 kilowatt (kW) (Beane and Ramey, 1995). The active leach zone in the well-to-well area was 200 to 394 ft below the bench surface, with the upper boundary set by future open-pit-wall slope-stability requirements rather than by leach optimum.

By late 1998 the operation comprised approximately 1,200 wells across six leaching zones (Zones 2, 3, 6, 10, 11, 12) spanning approximately 6,996,542 square feet (ft^2), about half of the open-pit footprint, with more than two-thirds of Cu collected from surface pump wells and the balance from underground drainage (Williamson, 1998; Sutton, 2019). At care and maintenance in June 1999, ISL alone was producing about 18,000 Mt Cu/y (~40M lb/y) (Sutton, 2019). Underground pumps were turned off and the underground flooded in February 2002 (Briggs, 2014).

17.2.6 Solvent Extraction and Electrowinning

The solvent extraction circuit processed PLS to selectively extract copper using an organic extractant (typically an oxime-based reagent, such as LIX or Acorga-series extractants), producing a high-purity copper-loaded electrolyte (rich electrolyte) for the electrowinning circuit and a raffinate solution returned to the leach pads. The SX circuit provided selectivity over iron and other impurities present in the PLS, enabling production of high-purity cathode copper.

The EW circuit deposited copper from the rich electrolyte onto copper starter sheets to produce London Metal Exchange (LME) Grade A copper cathodes (99.999% Cu).

The SX-EW plant was commissioned in May 1986 with rated cathode capacity of 25,000 st/y at 20 A/ft^2 but was expanded in 1988 to 50,000 st/y when the ISL streams were added (Jenkins, 1994; Witt et al., 1999; Chadwick, 1992). A chronology of SX-EW plant capacity is shown in Table 17-7.

Table 17-7: SX-EW Plant Capacity Chronology

Date	Milestone	Capacity (Mlb/y)	Source
May 1986	SX-EW commissioned at 20 A/ft^2	50 (design)	Jenkins, 1994; Witt, 1999
1988	Second tankhouse added (50,000 st/y combined design)	100 (design)	Jenkins, 1994; Witt, 1999
1988-1992	Heap pads expanded 83 to 264 acres	--	Brunskill, 2001
~1989	Operational ramp-up – each tankhouse stretched from 25,000 stpy design to 32,500 stpy[1]	130 (operational)	Brunskill, 2001
Aug 1991	COMEX certified (99.999% Cu)	--	Chadwick, 1992
1991-1992	Sparkler retrofit (SX 16,000 to 19,500 gpm)	--	Chadwick, 1992
Apr 1992	LME Grade A certified (2nd ever SX-EW)	--	Chadwick, 1992
1993	Peak annual production 124 Mlb (heap + ISL)	--	Brunskill, 2001
Jan 1995	Open-pit feed ceased; transition to residual leach	--	Brunskill, 2001
Mar 2002	Cathode production halted	--	Briggs, 2014; Braun, 2005

Notes:
(1) Same two-tankhouse plant – no physical change. 100 Mlb/y is the as-built design capacity (Jenkins, 1994; Witt et al., 1999; Brunskill, 2001 Section 7); the 130 Mlb/y Brunskill reports in its Section 4 is the same plant being run above design (1993 peak 124 Mlb; theoretical max 143 Mlb/y at full rectifier capacity).

The plant baseline (Brunskill, 2001) included two tankhouses, each with two rectifiers and 94 EW cells where each tankhouse was designed for 25,000 st/y but achieved 32,500 st/yr in operation. The theoretical maximum at full rectifier capacity and 93% current efficiency was 143 Mlb/y. Magma test work also indicated potential capacity uplift to 66,000 metric t per year (mt/y) cathode at 30 amperes per square foot (A/ft^2), but the plant never operated at this density at production scale (Chadwick, 1992).

Combined PLS feed (heap + ISL surface + ISL UG) of approximately 17,611 to 19,813 gallons per minute (gpm) were collected in a 1,341,600 ft^3 Plant Feed Pond, then to four parallel SX trains. The extractant was Henkel LIX 984 (oxime-class) in Phillips 85X7 diluent (Chadwick, 1992). A semi-automatic montmorillonite-clay treatment system on a Sparkler vertical-plate stainless filter, retrofitted in 1991 to 1992, cleaned circuit organic and recovered entrained organic from the raffinate pond and increased SX flow capacity from 16,000 to 19,500 gpm (Chadwick, 1992). Suspended solids were managed via settler weirs, valve trim and crud management (Witt et al., 1999). Raffinate / PLS solutions were saturated with gypsum and $Al_2(SO_4)_3$ (Witt et al., 1999).

The San Manuel SX-EW cathode was COMEX-certified in August 1991 and was LME-listed as Grade A Copper in April 1992. This was the second SX-EW product ever LME-certified (Cyprus Bagdad was the first, in the 1970s) (Chadwick, 1992).

The SX-EW facility produced cathode copper throughout much of the latter part of the mine's operating life, with annual production varying with ore availability, acid supply, and operating conditions as shown in Table 17-8.

Table 17-8 Historical San Manuel SX-EW Production

Year	Cathode Cu (Mlb)
1985	0 (pre-prod / commissioning)
1986	20.7
1987	49.1
1988	57.8
1989	60.4
1990	55.4
1991	66.9
1992	86.3
1993	100.2
1994	97.9
1995	47.6 (partial year – pit closed Jan 1995)
1986 to 1995 total	**642.2**
1985-2000 cumulative (incl. residual)	714.5

Source: Jenkins, 1994.

17.2.7 Gold Cyanidation Plant (Mo-plant by-product)

A small on-site gold cyanidation plant processed Mo-plant final concentrate to recover Au, Ag, and 20% to 30% of the contained Cu. Dissolving the Cu helped the site to relax the Cu specification on the upstream Mo concentrate (Burke and Shirley, 1965; McQuiston and Shoemaker, 1975; Davis, 1977). The plant was operating in 1965, 1974, and 1977. It was demolished with the rest of the San Manuel Plant Site around 2005 (Braun and Parker, 2006). In June 1974, the plant processed 12.2 st/d of Mo concentrate (~0.02% of mill throughput) at 0.462 oz Au/short ton, achieving 87% Au extraction by assay and 95% by independent gold balance. Annualized Au production was approximately 1,950 oz/y (McQuiston and Shoemaker, 1975).

18 Project Infrastructure

18.1 Project Layout

A project layout has not been completed at this time.

18.2 Tailings Disposal

During operations, the tailings were deposited in TSF 1 to 6, and TSF 10 as shown in Figure 16-1. These facilities have all been closed at this time and are being monitored. Studies would be needed to determine potential capacities for future reuse or expansion.

18.3 Power

The previous operation used grid power, and the project is located in Arizona Public Service's (APS) service territory. A Power study with APS will need to be undertaken to assess infrastructure capability and use of an existing APS 115kV substation located at the SMPS. It is anticipated that the SMPS and San Manuel Property may each require a 69kV substation to facilitate associated distribution to 13.8kV to accommodate likely future power demands.

18.4 Water

The Property lies within the upper San Pedro River watershed. Groundwater in the region is present in the Tertiary and Quaternary basin fill aquifers at depths that vary across the Property. Historical mine operations utilized groundwater for processing and dust suppression; the mine water management program also produced significant volumes of water. Work to define water sources or quantities for a future operation needs to occur at the next level of study.

18.5 Labor

The town of San Manuel is adjacent to the mining area. Peak population in the 1980's was approximately 5,500 people. Current population is approximately 3,500. As there is no current mining in the immediate area, a study on existing skills within the community or personnel build up requirements has not been completed at this time.

19 Market Studies and Contracts

A market study has not been completed at this time.

20 Environmental Studies, Permitting and Social or Community Impact

Under current conditions, SMMS and SMPS are in a closed and reclaimed condition with routine compliance monitoring and reporting obligations. Selected facilities remain in use at the Plant Site (i.e., administrative and ancillary shop facilities, landfill). Both sites are regulated under permits issued by ADEQ. The Aquifer Protection Permit (APP) at each site provides oversight of the facilities that have the potential to discharge impacted seepage to groundwater (i.e., TSFs, waste rock dumps, Heap Leach Facility), which may in turn impair downgradient aquifer water quality. The Arizona Pollutant Discharge Elimination System (AZPDES) Multi Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity – Mineral Industry to Protected Surface Waters ensures protection of downstream receiving waters (i.e., San Pedro River and tributaries) from impacted stormwater runoff that may occur from inactive and active sites. Controls are in place to manage impacted stormwater (i.e., diversion channels, non-discharging basins, sedimentation basins). Stormwater management plans are updated as needed to address temporary construction, exploration drilling, or other activity. Annual and quarterly compliance monitoring and reporting are required for both the APP and MSGP programs including groundwater level / quality monitoring, surface water monitoring at outfall locations, physical inspections, and maintenance as needed.

Note that BHP's site-wide APPs are transferable to a new owner with documentation of financial capability to support compliance obligations for the current conditions. Subsequent modifications to the APP would be needed by a new owner, however, to reflect any future proposed operational facilities, designs, and anticipated closure configuration. Any future APP or MLRP will require a closure and post-closure cost estimate reflecting future as built and reclaimed conditions and a financial assurance demonstration. Compliance monitoring and reporting will be required for various permit programs.

Future permits associated with a potential re-development or re-activation of the property have not been evaluated at this stage.

21 Capital and Operating Costs

Capital and operating costs have not been estimated. Faraday has not undertaken any technical or engineering work that would support the preparation of capital or operating cost estimates.

22 Economic Analysis

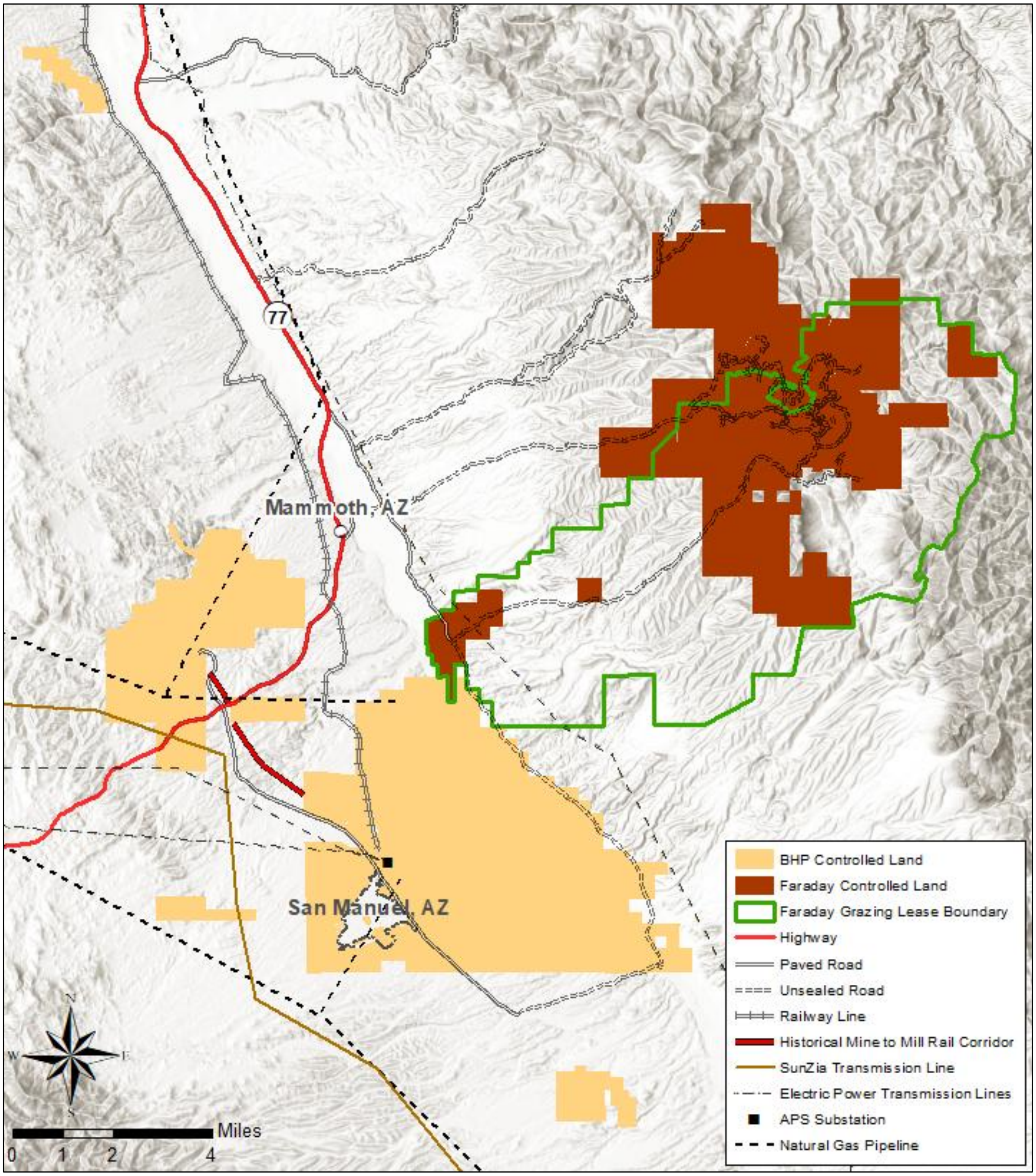
San Manuel does not have a current Mineral Resource or Mineral Reserve estimate that would support the preparation of an economic evaluation or analysis.

23 Adjacent Properties

The most significant adjacent mineral exploration property is the Copper Creek Project owned by a wholly-owned subsidiary of Faraday. Faraday's private land and grazing lease is contiguous with the private lands comprising the Property. Mineral claims with the Copper Creek Project land package are located approximately 10 mi to the northeast of the San Manuel historical tailings.

Copper Creek is a porphyry deposit with copper (silver, molybdenum) hosted in high-grade breccias and early halo veins with last public disclosure of mineral resource and preliminary economic assessment dated May 3, 2023 (Faraday, 2023).

In addition to Faraday's Copper Creek Project, a number of early-stage mineral exploration properties are present in the region. Publicly available data on the specific claims is limited. These additional exploration claims are not deemed material to this report. Figure 23-1 below shows a map of the Copper Creek Project relative to San Manuel and other mineral claims.



Source: Faraday, 2026

Figure 23-1: Map of Copper Creek Relative to San Manuel

24 Other Relevant Data and Information

SRK is not aware of any additional data and information relevant to this disclosure. The San Manuel Property is a historical mining area with extensive data and information developed over the exploration, operation, and closure history. Not all of this information has been reviewed or incorporated into this study but may provide additional context for future studies.

25 Interpretation and Conclusions

The San Manuel Property is a historical mine with an extensive history of exploration, development, production, and closure / reclamation. The historical mineral resources and reserves estimates suggest a significant remnant of mineralized material which, with additional data collection supported by confirmation drilling and study, could be brought into a current Mineral Resource and Mineral Reserve reporting framework.

26 Recommendations

The following discipline-level recommendations target only the generation of a current NI 43-101 compliant Mineral Resource estimate addressing the residual uncertainties identified in Section 25. The recommended work program would precede any further study. Subsequent work, including any follow-up drilling, baseline data gathering, metallurgical test work, technical studies, or otherwise would be informed by the completion of the recommended work plan and a current NI 43-101 compliant Mineral Resource estimate.

Recommendations are organized by geological and resource discipline.

26.1 Geologic Interpretation

Recommendations for geology are as follows:

- Update structural and geological interpretation, incorporating any historical underground mapping not currently digitized, validated where possible by recent surface mapping in areas of available exposure.
- Refine the late-dike framework at sub-block scale within the resource shell

26.2 Confirmation Drilling, Sampling and QA/QC

Recommendations for drilling, sampling and QA/QC are as follows:

- Conduct a confirmatory diamond-drilling program of approximately 82,000 ft (25,000 m)
  - Kalamazoo and San Manuel Extension: ~41,000 ft (12,500 m) over an anticipated 10 to 15 holes, targeting the Kalamazoo mineralization and selected unmined extensions of San Manuel, completed under modern protocol (gyroscopic downhole survey, digital logging, certified reference materials, blanks, coarse and pulp duplicates, and umpire-laboratory checks) to establish a contemporary QA/QC dataset that can be directly compared with the historical drilling.
  - In-Pit Oxide and Cave Zone: ~41,000 ft (12,500 m) focused on the oxide zone in the pit and cave zone to confirm material-type classification. This includes twinning selected ARM and MM-series holes to quantify possible analytical bias relative to modern practice.
- Re-assay a representative pulp sample population from the preserved historical core or pulp libraries at an independent ISO-accredited laboratory to constrain inter-laboratory and inter-method bias for TCu, ASCu, and Mo.
- Obtain mineralogical data for future geometallurgical models through short-wave infrared scanning of new drill core.

26.3 Material Type Definition

Recommendations for Material Type Definition include:

- Commission a systematic mineralogical characterization program (QEMSCAN, sequential leach, or comparable) on representative drill core to test and refine the ASCu / TCu ratio thresholds currently used to assign material type, with particular focus on the transitional / mixed domain in upper San Manuel.
- Extend the simplified ex-cave material-type model into a full 3D framework that resolves transitional / mixed material at block scale, in support of metallurgical recovery assumptions used in subsequent economic studies.
- Confirmatory metallurgical test work program to validate performance and recovery of metal from confirmatory drill program core.

26.4 Resource Reconciliation and Calibration

Undertake a structured reconciliation resulting block model(s) against historical production from the San Manuel block cave (1956 to 1999) and the in situ-leach operation, using available mill, smelter, refinery, and SX-EW records, to test global and local model performance, calibrate density assumptions and quantify any bias by domain or material type.

26.5 Mineral Resource Estimation

Develop a modern and integrated current Mineral Resource estimation for the combined San Manuel and Kalamazoo project areas. This should consider all relevant geological model inputs which would constrain / control grade distribution, estimate economic elements, integrate data quality / provenance into a conventional modern NI 43-101 compliant Mineral Resource classification approach, and standardize reporting of the Mineral Resources.

26.6 Reasonable Prospects for Eventual Economic Extraction

Conduct scoping level mining method and mineral extraction options assessment to underpin the selection of resource constraining volumes that demonstrate RPEEE. This evaluation is anticipated to consider extraction scenarios via both open pit and underground.

26.7 Proposed Budget Summary for Recommended Work Program

Table 26-1 summarizes the proposed budget for the recommended work program to support the generation of a current NI 43-101 compliant Mineral Resource estimate for the San Manuel Property . The budget has been prepared on a stand-alone basis and does not incorporate costs related to the advancement of the Copper Creek Project, potential synergies that may be realized between the two projects, Faraday owners costs, or otherwise.

Table 26-1: Proposed Budget Summary for Recommended Work Program

Recommended Work Package	Estimated Cost (US$)
Geologic Interpretation	100,000
Confirmation Drilling, Sampling and QAQC	16,250,000
Material Type Definition	350,000
Resource Reconciliation and Calibration	100,000
Mineral Resource Estimate	200,000
RPEEE	200,000
Total	**$17,200,000**

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28 Glossary

The Mineral Resources and Mineral Reserves have been classified according to CIM (CIM, 2014). Accordingly, the Resources have been classified as Measured, Indicated or Inferred, the Reserves have been classified as Proven, and Probable based on the Measured and Indicated Resources as defined below.

28.1 Mineral Resources

A **Mineral Resource** is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

An **Inferred Mineral Resource** is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

An **Indicated Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

A **Measured Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve.

28.2 Mineral Reserves

A **Mineral Reserve** is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.

The reference point at which Mineral Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. The public disclosure of a Mineral Reserve must be demonstrated by a Pre-Feasibility Study or Feasibility Study.

A **Probable Mineral Reserve** is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proven Mineral Reserve.

A **Proven Mineral Reserve** is the economically mineable part of a Measured Mineral Resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors.

28.3 Definition of Terms

The following general mining terms may be used in this report.

Table 28-1: Definition of Terms

Term	Definition
Assay	The chemical analysis of mineral samples to determine the metal content.
Capital Expenditure	All other expenditures not classified as operating costs.
Composite	Combining more than one sample result to give an average result over a larger distance.
Concentrate	A metal-rich product resulting from a mineral enrichment process such as gravity concentration or flotation, in which most of the desired mineral has been separated from the waste material in the ore.
Crushing	Initial process of reducing ore particle size to render it more amenable for further processing.
Cut-off Grade (CoG)	The grade of mineralized rock, which determines as to whether or not it is economic to recover its metal content by further concentration.
Dilution	Waste, which is unavoidably mined with ore.
Dip	Angle of inclination of a geological feature/rock from the horizontal.
Fault	The surface of a fracture along which movement has occurred.
Footwall	The underlying side of an orebody or stope.
Gangue	Non-valuable components of the ore.
Grade	The measure of concentration of metal or economic element of interest within mineralized rock.
Hangingwall	The overlying side of an orebody or slope.
Haulage	A horizontal underground excavation which is used to transport mined ore.
Hydrocyclone	A process whereby material is graded according to size by exploiting centrifugal forces of particulate materials.
Igneous	Primary crystalline rock formed by the solidification of magma.
Kriging	An interpolation method of assigning values from samples to blocks that minimizes the estimation error.
Level	Horizontal tunnel the primary purpose is the transportation of personnel and materials.
Lithological	Geological description pertaining to different rock types.
LoM Plans	Life-of-Mine plans.
LRP	Long Range Plan.
Material Properties	Mine properties.
Milling	A general term used to describe the process in which the ore is crushed and ground and subjected to physical or chemical treatment to extract the valuable metals to a concentrate or finished product.
Mineral/Mining Lease	A lease area for which mineral rights are held.
Mining Assets	The Material Properties and Significant Exploration Properties.
Ongoing Capital	Capital estimates of a routine nature, which is necessary for sustaining operations.

Term	Definition
Ore Reserve	See Mineral Reserve.
Pillar	Rock left behind to help support the excavations in an underground mine.
RoM	Run-of-Mine.
Sedimentary	Pertaining to rocks formed by the accumulation of sediments, formed by the erosion of other rocks.
Shaft	An opening cut downwards from the surface for transporting personnel, equipment, supplies, ore and waste.
Sill	A thin, tabular, horizontal to sub-horizontal body of igneous rock formed by the injection of magma into planar zones of weakness.
Smelting	A high temperature pyrometallurgical operation conducted in a furnace, in which the valuable metal is collected to a molten matte or doré phase and separated from the gangue components that accumulate in a less dense molten slag phase.
Stope	Underground void created by mining.
Stratigraphy	The study of stratified rocks in terms of time and space.
Strike	Direction of line formed by the intersection of strata surfaces with the horizontal plane, always perpendicular to the dip direction.
Sulfide	A sulfur bearing mineral.
Tailings	Finely ground waste rock from which valuable minerals or metals have been extracted.
Thickening	The process of concentrating solid particles in suspension.
Total Expenditure	All expenditures including those of an operating and capital nature.
Variogram	A statistical representation of the characteristics (usually grade).

28.4 Abbreviations

The following abbreviations may be used in this report.

Table 28-2: Abbreviations

Abbreviation	Unit or Term
A	ampere
AA	atomic absorption
ADEQ	Arizona Department of Environmental Quality
A/m^2	amperes per square meter
ANFO	ammonium nitrate fuel oil
Ag	Silver
APS	Arizona Public Service Company
ASARCO	The American Smelting and Refining Company
Au	Gold
AuEq	gold equivalent grade
BLM	United States Bureau of Land Management
°C	degrees Centigrade
CCD	counter-current decantation
CIL	carbon-in-leach
CoG	cut-off grade
cm	centimeter
cm^2	square centimeter
cm^3	cubic centimeter
cfm	cubic feet per minute
ConfC	confidence code
CRec	core recovery
CSS	closed-side setting
CTW	calculated true width
°	degree (degrees)
dia.	diameter
DGPS	Differential Global Position System
EIS	Environmental Impact Statement
EMP	Environmental Management Plan

Abbreviation	Unit or Term
FA	fire assay
ft	foot (feet)
ft^2	square foot (feet)
ft^3	cubic foot (feet)
g	gram
gal	gallon
g/L	gram per liter
g-mol	gram-mole
gpm	gallons per minute
g/t	grams per tonne
ha	hectares
HDPE	Height Density Polyethylene
hp	horsepower
HTW	horizontal true width
ICP	induced couple plasma
ID2	inverse-distance squared
ID3	inverse-distance cubed
IFC	International Finance Corporation
ILS	Intermediate Leach Solution
ISR	In situ recovery
kA	kiloamperes
kg	kilograms
km	kilometer
km^2	square kilometer
koz	thousand troy ounce
kt	thousand tonnes
kt/d	thousand tonnes per day
kt/y	thousand tonnes per year
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
kWh/t	kilowatt-hour per metric tonne
L	liter
L/sec	liters per second
L/sec/m	liters per second per meter
lb	pound
LHD	Long-Haul Dump truck
LLDDP	Linear Low Density Polyethylene Plastic
LOI	Loss On Ignition
LoM	Life-of-Mine
m	meter
m^2	square meter
m^3	cubic meter
Ma	Mega-annum
masl	meters above sea level
MARN	Ministry of the Environment and Natural Resources
MDA	Mine Development Associates
mg/L	milligrams/liter
mm	millimeter
mm^2	square millimeter
mm^3	cubic millimeter
MME	Mine & Mill Engineering
Mo	molybdenum
Moz	million troy ounces
Mt	million tonnes
MTW	measured true width
MW	million watts
MWr	Megawatts of refrigeration
m.y.	million years

Abbreviation	Unit or Term
NGO	non-governmental organization
NI 43-101	Canadian National Instrument 43-101
OSC	Ontario Securities Commission
oz	troy ounce
%	percent
PLC	Programmable Logic Controller
PLS	Pregnant Leach Solution
PMF	probable maximum flood
ppb	parts per billion
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
RC	rotary circulation drilling
RPEEE	Reasonable Prospects for Eventual Economic Extract
RoM	Run-of-Mine
RQD	Rock Quality Description
SEC	U.S. Securities & Exchange Commission
sec	second
SG	specific gravity
SPT	standard penetration testing
st	short ton (2,000 pounds)
St/d	Short tons per day
SX-EW	Solvent Extraction and Electrowinning
t	tonne (metric ton) (2,204.6 pounds)
t/h	tonnes per hour
t/d	tonnes per day
t/y	tonnes per year
TSF	tailings storage facility
TSP	total suspended particulates
µm	micron or microns
USBM	U.S. Bureau of Mines
USGS	U.S. Geological Survey
V	volts
VFD	variable frequency drive
W	watt
Wmt	Wet metric tonne
XRD	x-ray diffraction
y	year

SRK Consulting (U.S.), Inc.
Suite 400
999 Seventeenth Street
Denver, CO 80202

T: 303.985.1333
F: 303.985.9947

denver@srk.com
www.srk.com

CERTIFICATE OF QUALIFIED PERSON

I, Matthew Hastings, MSc Geology, MAusIMM (CP) do hereby certify that:

1. I am Principal Consultant Resource Geologist of SRK Consulting (U.S.), Inc., 999 Seventeenth Street, Suite 400, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled "Technical Report San Manuel Property, Pinal County, Arizona" with an Effective Date of June 1, 2026 (the "Technical Report").
3. I graduated with a degree in Geology from the University of Georgia in 2005. In addition, I have obtained a M.Sc. Geology in 2008 from the University of Nevada, Reno as well as a Citation in Applied Geostatistics from the University of Alberta in 2012. I am a Chartered Professional of the Australasian Institute of Mining and Metallurgy (AusIMM) as well as an Idaho registered professional geologist in the United States. I have worked as a Geologist for a total of 18 years since my graduation from university. My relevant experience includes exploration, development, and estimation of mineral resources in a variety of geological settings and deposit types.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the San Manuel Mine property and the BHP centralized core logging facility in Tucson in February 2026, for three days.
6. I am responsible for Sections 10 through 12 and 18, 20, 23 and portions of 1, 2, 3, 25, and 26 of the Technical Report. In addition, I am responsible for Sections 14, 15, 16, 19, 21, 22 and 24 of the Technical Report, which, given the current stage of the Project, contain little to no technical information requiring specialist qualified person input.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is conducting internal peer review support studies on behalf of BHP from 2025-2026.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 29th Day of July, 2026.

"Signed"

"Sealed"

Matthew Hastings, MSc, MAusIMM

SRK Consulting (U.S.), Inc.
Suite 400
999 Seventeenth Street
Denver, CO 80202

T: 303.985.1333
F: 303.985.9947

denver@srk.com
www.srk.com

CERTIFICATE OF QUALIFIED PERSON

I, Scott Burkett, BSc Geology, SME-RM do hereby certify that:

1. I am Principal Consultant of SRK Consulting (U.S.), Inc., 999 Seventeenth Street, Suite 400, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled “Technical Report San Manuel Property, Pinal County, Arizona” with an Effective Date of June 1, 2026 (the “Technical Report”).
3. I graduated with a Bachelor of Science degree in Geology from University of Idaho in 2007. I am a Registered Member of the Society for Mining, Metallurgy & Exploration and hold the designation of SME. I have worked as a Geologist for a total of 19 years since my graduation from university. My relevant experience includes resource development, ranging from greenfields to advanced exploration to open pit and underground production. Additionally, I have expertise in project management, generative exploration, geologic model development, resource estimates, and implementing data collection an database management systems that confirm to public reporting standards. I have worked on a variety of mineralized systems in various worldwide jurisdictions, including copper porphyry systems, bulk tonnage sediment-hosted gold, epithermal precious metals, carbonate replacement base metals, sedimentary exhalative zinc and more.
4. I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
5. I visited the San Manuel Mine property and the BHP centralized core logging facility in Tucson in February 2026, for three days.
6. I am responsible for Sections 4 and 5, 7 through 9 and portions of 1, 2, 3, 6, 25, and 26 of the Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have not had prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 29th Day of July, 2026.

“Signed”

“Sealed”

Scott Burkett, BSc Geology, SME-RM

SRK Consulting (U.S.), Inc.
Suite 400
999 Seventeenth Street
Denver, CO 80202

T: 303.985.1333
F: 303.985.9947

denver@srk.com
www.srk.com

CERTIFICATE OF QUALIFIED PERSON

I, Kimberly Mills, PhD, MMSA QP, do hereby certify that:

1. I am a Principal Consultant (Metallurgy) of SRK Consulting (U.S.), Inc., 999 Seventeenth Street, Suite 400, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled “Technical Report San Manuel Property, Pinal County, Arizona” with an Effective Date of June 1, 2026 (the “Technical Report”).
3. I graduated with a Bachelor of Science in Metallurgical and Materials Engineering from the Colorado School of Mines in 2006. In addition, I have obtained a PhD in Metallurgical and Materials Engineering from the Colorado School of Mines in 2014. I am a Qualified Professional (QP) Member of the Mining & Metallurgical Society of America. I have worked as a Metallurgist and Process Engineer for a total of 20 years since my graduation from university of which 13 have been in the mining industry and applied research. I worked for mining and exploration companies for 5 years, and engineering or consulting firms for 6.5 years. My relevant experience includes mineral processing and extractive metallurgy, copper metallurgical research, testing, process development, modeling, engineering design, commissioning, plant optimization and due diligence. My work has also included reviews of several copper in-situ recovery projects in Arizona.
4. I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
5. I have not visited the San Manuel Property.
6. I am responsible for Metallurgy and Processing Sections 13 and 17, and portions of Sections 1, 2, and 6.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have not had prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 29th Day of July, 2026.

"Signed"

“Sealed”

____

Kimberly Mills, PhD, MMSA QP