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Copper Flat Project

Form 43-101F1 Technical Report
Feasibility Study
New Mexico, USA

REVISION 0
Prepared For:

THEMAC RESOURCES

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LIST OF APPENDICES

APPENDIX	DESCRIPTION
A	Feasibility Study Contributors and Professional Qualifications • Certificate of Qualified Person ("QP") and Consent of Author

1 SUMMARY

M3 Engineering & Technology Corporation (M3) has been commissioned by THEMAC Resources Group Limited (THEMAC) to prepare a Feasibility Study for the Copper Flat Copper/Molybdenum Project (Copper Flat or the Project) compliant with Canadian Securities Administrators (CSA) National Instrument 43-101 (NI 43-101). The Project is owned and operated by New Mexico Copper Corporation (NMCC), a wholly owned subsidiary of THEMAC Resources Group Limited. NMCC was incorporated in New Mexico in July 2009. This section includes key elements from the study, including a brief description of the main results, and summaries of the property description and ownership, geology and mineralization, the status of exploration, development and operations, mineral resource and mineral reserve estimates, and the authors' conclusions and recommendations. All reference documentation is available in the NMCC corporate offices.

1.1 PRINCIPAL FINDINGS

The key results of this study are as follows:

- The Project currently has 113.1 million short tons of proven (78.9 Mst) and probable (34.2 Mst) mineral reserves.
- The Project currently has 305.2 million short tons of measured and indicated resources, as well as 27.6 million short tons of inferred resources, inclusive of reserves. Mineral resources that are not mineral reserves do not have demonstrated economic viability.
- The project is expected to process an average 10.8 million tons per year, for a total of 113.1 million short tons over the life of mine. The mine life based on reserves is expected to be 11.1 years.
- Estimated life-of-mine recoveries from the process include the following:
  - Copper 628,015 klbs
  - Molybdenum 15,717 klbs
  - Gold 227 kozs
  - Silver 5,950 kozs
- The operating costs average $11.29 per ton processed over the life of the mine, for a total of approximately $1,276 million.
- Initial capital costs total $360.5 million. The total life of mine sustaining capital is estimated to be $62.5 million (expended over an 8 year period).
- The base case net income after tax amounts to $408.7 million. The Project has an after-tax NPV@8% of 187 million, IRR of 20.0%, and a payback period of 3.6 years.
- The sensitivity analysis shows that metal prices have the most impact on the project while variance in the operating cost has the least impact on project economics. For example, if metals prices increased by 20% from the estimate, the IRR would increase to 31%.

- Water allocation rights and water usage must be addressed for the Project to proceed to production. NMCC has secured 7,481 acre-ft/yr of declared water rights, which is sufficient to operate the mine. At this time, the New Mexico Office of the State Engineer has acknowledged vested rights that are less than what is needed operated the mine. NMCC has engaged in mediation with the NMOSE with the goal of resolving this issue. Attorneys at Law & Resource Planning Associates, legal counsel to NMCC, consider NMCC's claim to the declared water rights to be very strong.
- M3 recommends proceeding to detail engineering. Cost of detailed engineering is included in the estimate.

1.2 INTRODUCTION

Copper Flat is a copper-molybdenum mining project located in South Central New Mexico, near the town of Hillsboro, approximately 150 miles south of Albuquerque, and approximately 20 miles southwest of Truth or Consequences. M3 Engineering & Technology Corporation (M3) has been commissioned by THEMAC to prepare a Feasibility Study for the Project compliant with the CSA NI 43-101. This report has been prepared in accordance with the guidelines provided in NI 43-101 Standards of Disclosure for Mineral Projects, and conforms to Form 43-101F1 for technical reports.

The goal of the work is to potentially re-open and expand the project facilities. This Feasibility Study Report is intended for the use of THEMAC for the further development and advancement of Copper Flat towards the detailed design stage. It provides a mineral resource estimate, a classification of resources in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) classification system and an evaluation of the property, which presents a current view of the potential project economic outcome. The intent of this report is to provide the reader with a comprehensive review of the potential economics of this mining operation and related project activities, and to provide recommendations for future work programs to advance the Project.

Imperial units (American System) of measurement are used in this report. Abbreviations and a glossary are included in Section 2. All monetary values are in U.S. dollars ($) unless otherwise noted.

The following authors were responsible for the study sections as listed in Table 1-1.

Table 1-1: List of Qualified Persons

Author	Company	Designation	Section Responsibility
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J. Steven Raugust	THEMAC	C.P.G.	4.5-4.7, 5, 6, 18, 20, 26.4
Raymond E. Irwin	THEMAC	SME-RM	4.1-4.4, 7, 8, 9, 23
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Mark A. Willow	SRK	SME-RM	20.6.5, 22.5.2

Site visits of study participants include:

- On behalf of Conrad Huss, P.E., and Thomas Drielick, P.E., M3 personnel visited the site on January 31, 2013. Visitors included Matt Murray and Tim Reiter (general arrangements); Shelby Madrid, (civil engineer); Shannon Orr, (lead estimator); Oscar Avilucea (structural lead); and Rick Zimmerman (M3 project manager). On January 15, 2013, Peter Olszewski (water supply system design), visited the site. During the site visit, M3's inspection included the access road, previous mill site area, waste dumps, the top of the primary crusher structure, most of the foundation of the former concentrator building, and the floor slab of the former truck shop.
- John Marek and Yvette Gengler of IMC visited the Copper Flat Project on September 7-8, 2011. The storage facilities for drill core were visited, and historic pulp data were reviewed.
- Eugene Muller of Golder has visited the project site several times. His most recent visit to the site was on March 2, 2012. His visits have included surface examinations of the proposed location of the tailings storage facility and surrounding areas that may be appropriate for obtaining materials for construction of the facility and reclamation cover.
- Mark Willow of SRK Consultants visited the Copper Flat Property on April 13, 2012 to observe existing conditions and gather information needed for the reclamation and closure estimate.

1.3 RELIANCE ON OTHER EXPERTS

The Copper Flat Technical Report relies on reports and statements from legal and technical experts who are not Qualified Persons as defined by NI 43-101. The Qualified Persons responsible for preparation of this report have reviewed the information and conclusions provided and determined that they conform to industry standards, are professionally sound, and are acceptable for use in this report. Documentation relied upon is included in the Reference Section 27. These other experts are as follows:

- Legal review of the Copper Flat property ownership and title was completed by Mr. Mark K. Adams, an attorney with the New Mexico law firm Rodey, Dickason, Sloan, Akin &

Robb, PA (the Rodey Law Firm). Mr. Adams review and legal opinion are summarized in a June 2013 report titled *Updated Title Report - Copper Flat Properties - Sierra County, New Mexico* (Adams, 2013). In a letter prepared on October 28, 2013, Mr. Adams summarized the content of the June 2013 Updated Title Report and concluded that on the basis of his examination, NMCC owns a 100% interest in the mineral and surface estates in the patented mining claims, other patented lands, and unpatented mining claims and millsites included in the Copper Flat Properties, subject only to the royalties and advance royalties described in Part B and C of the Updated Title Report (Adams, 2013b).

- Legal review of the status and validity of water rights intended for use by the Copper Flat Mine was completed by Mr. Charles DuMars and Ms. Catherine Robinson, attorneys with the New Mexico law firm Law and Resource Planning Associates, PC. Mr. DuMars' and Ms. Robinson's review and legal opinion are summarized in a June 2013 letter to NMCC regarding *New Mexico Office of the State Engineer Files No. LRG-4652 through LRG-4652-S-17, LRG-4654* (DuMars and Robinson, 2013).Guidance for development of smelter treatment and refining charges (TC-RC) and likely terms for Copper Flat concentrates was provided by Mr. Marc Ingelbinck, former Vice President of Base Metals Concentrates Marketing & Trading, BHP Billiton. Mr. Inglebinck documented his recommendations in emails and a memorandum to THEMAC dated June 3, 2013 (Inglebinck, 2013). Interpretation of royalty obligations for economic modeling was provided by Mr. Mark K. Adams of the Rodey Law Firm.

- Examination and interpretation of New Mexico resource tax obligations for economic modeling was provided by Ms. Bobbi Hayes, a Certified Public Accountant (CPA) with Accounting and Consulting Group, LLP (ACG), a New Mexico accounting firm.

  THEMAC also researched the utilization of a local Industrial Revenue Bond (IRB) to be issued by Sierra County to offset the New Mexico Gross Receipts tax obligations towards certain tangible personal equipment which includes eligible equipment and machinery to be installed and operated at the mine. The applicability of utilizing an IRB was evaluated by Alan Hall, J.D. of the Rodey Law Firm in a memorandum dated October 1, 2013 (Hall, 2013). The capital equipment review was performed by Marcus Mims, CPA of CliftonLarsonAllen LLP (Clifton) (Mims, 2013). By segregating IRB-qualifying equipment from disqualifying equipment, Clifton quantified the potential tax benefit dependent on issuance of an IRB by Sierra County.

- John Shomaker and Associates (JSAI) has been assisting THEMAC with site management of water resources and a Stage 1 Abatement Plan for the existing Quintana tailings storage facility, which has been approved by the New Mexico Environment Department. Mr. Steven T. Finch, Vice President and Principal Hydrogeologist – Geochemist with JSAI, has provided his expert opinion that THEMAC and its consultants have maintained compliance with all State and Federal environmental requirements at Copper Flat.

- Independent Mining Consultants and (IMC) and THEMAC have relied upon research and information provided by Ed Fidler in the technical memorandum titled *Used Mining Equipment Option, Updated 17 October 2013* (Fidler, 2013). Mr. Fidler researched the availability and costs for the used mining equipment market, which has been utilized for the mine equipment estimate presented in this study.

1.4 PROPERTY DESCRIPTION AND LOCATION

The Copper Flat Project is a copper-molybdenum porphyry deposit located in Sierra County, South Central New Mexico. Copper Flat is located in the Hillsboro Mining District in South Central New Mexico, in Sierra County. The center of the mineralization is at approximately 32.970300N latitude, 107.533527W longitude. The Project is approximately 150 miles south of Albuquerque, New Mexico and approximately 20 miles southwest of Truth or Consequences, New Mexico (straight line distances). Access from Truth or Consequences is by 24 miles of paved highway and 3 miles of all-weather gravel road. The Project location is shown in Figure 1-1.

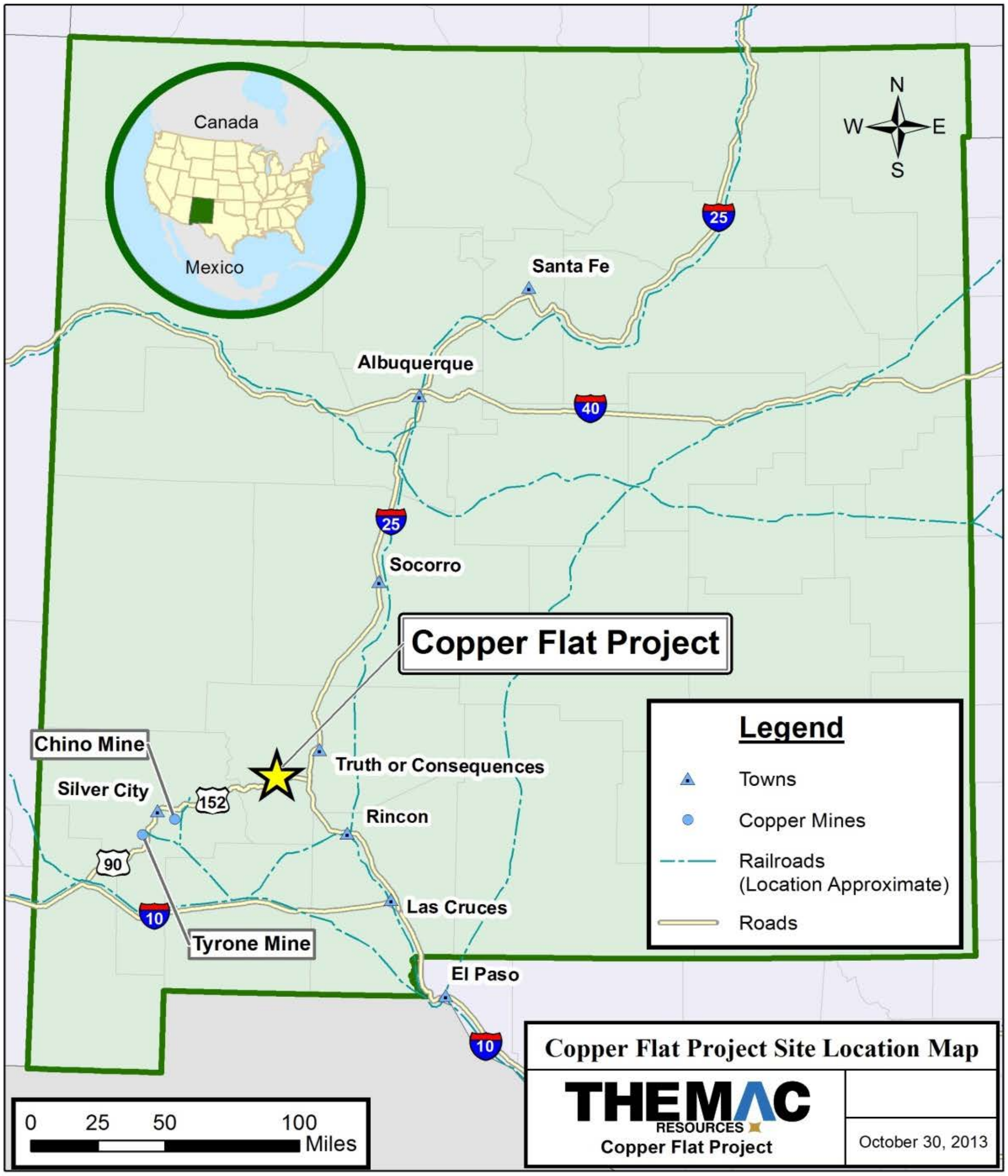


Figure 1-1: Copper Flat Project Location Map

In 1982, Quintana Minerals Corporation (Quintana Minerals) brought the property into production as an open pit mine with a mill and concentrator (rated at 15,000 short tons per day). The mine was in production for three and a half months, but operations were halted when copper prices declined. Figure 1-2 shows an aerial photo of the mine from 1982.

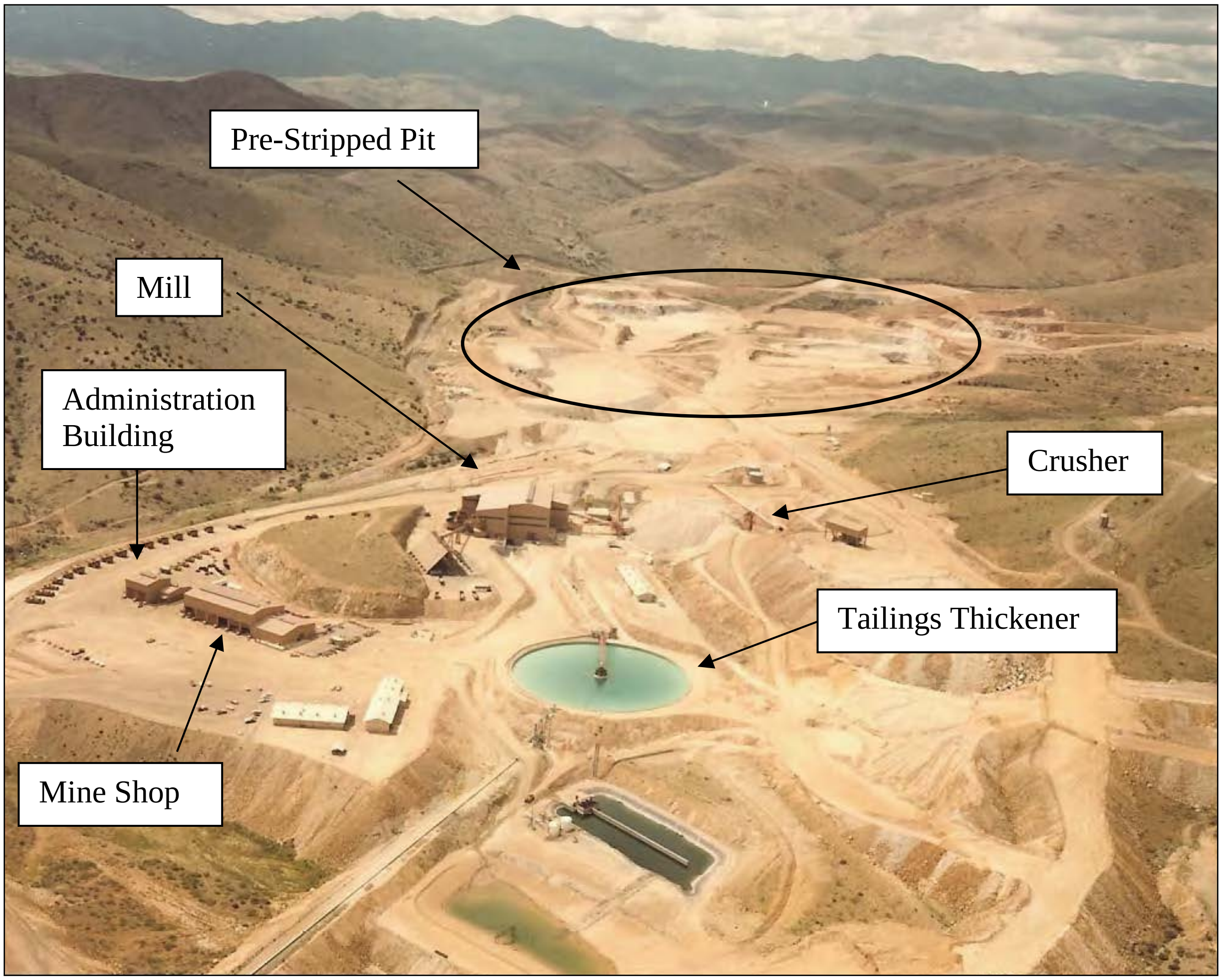


Figure 1-2: Copper Flat Mine in 1982

The property was placed on care and maintenance until 1986 at which point all the buildings and equipment were removed and sold. However, considerable foundations and other infrastructure remain on site.

The Project includes 26 patented mining claims and 231 unpatented mining claims, (202 lode claims and 29 placer claims), 9 unpatented mill sites, and 16 fee land parcels in contiguous and noncontiguous land parcels and claim blocks. An additional 1,200 acres in five tracts of land located within or adjacent to the property were acquired by NMCC through an agreement from a local rancher in April 2013, bringing the projects contiguous and non-contiguous land parcels and claim blocks to approximately 4,741 total acres. Within the project, a total of 2189.5 acres has been designated as the permit area. The permit area consists of both patented and unpatented mining claims and fee lands, all of which are controlled by NMCC, subject to royalties and agreements discussed below. Figure 1-3 shows the project land status.

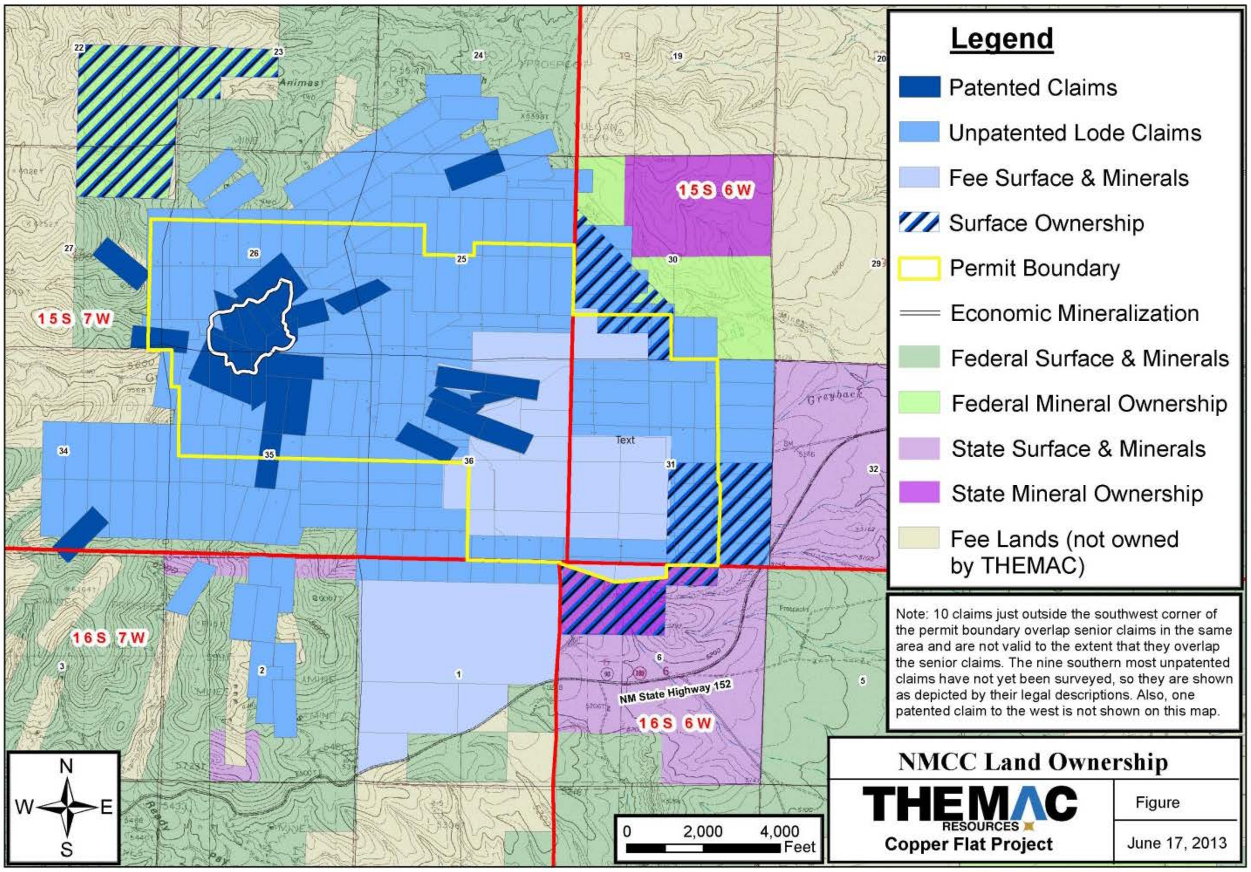


Figure 1-3: Copper Flat Claim and Land Right Map

The Project is subject to two substantive and one lessor royalty obligations:

1) Starting within the third calendar month following the calendar month in which NMCC has obtained all state and federal permits required for the commercial operation of the Mine, and continuing every three months thereafter, NMCC shall pay an Advance Royalty. If the copper price during the period of three calendar months preceding the month in which the Advance Royalty payment is due is $ 2.00 or more, the Advance Royalty payment will be $112,500. If the copper price during that period is less than $2.00, the Advance Royalty payment will be $50,000. NMCC's obligation to pay the Advance Royalty continues until the aggregate amount of all payments of the Advance Royalty and the NSR Royalty described in the following paragraph reaches $10,000,000, or when NMCC has relinquishes and terminates any and all rights to conduct commercial production on the Properties.

2) For any quarter in which there is "gross revenue" from the Properties, a 3.25% NSR Royalty may be due. The royalty agreement provides that the Advance Royalty payments shall be credited against NSR Royalty payments. NMCC's obligation to pay NSR Royalty does not start until after (i) "Mineral Products" produced from the Properties are sold and (ii) the aggregate amount of the NSR Royalty payments due exceeds the aggregate amount of the Advance Royalty payments. The NSR Royalty is payable on "Gross

Revenue" less "Permissible Deductions." "Gross Revenue," in essence, is revenue from the sale of "Mineral Products" produced from the Properties.

3) In addition to the advance and NSR royalties described above, the Chance, Feeder, Xmas and Extension patented claims are subject to a 5 percent net smelter return royalty owned by a third party. However, the likelihood of mineral production from these claims is small and payments associated with this royalty are not expected to be significant.

When the site was originally operated by Quintana Minerals in 1982, it was closed with some environmental issues unresolved. THEMAC prepared a Stage I Abatement Plan for the New Mexico Environment Department (NMED), which was approved on February 7, 2012 and initiated in January 2013. As of the publication of this report, four quarters of environmental data have been collected and a new groundwater monitoring well installed under the scope of the approved Abatement Plan.

Table 1-2 presents the permits required to proceed with the Copper Flat Project.

Table 1-2: Permits and Approvals Required for the Copper Flat Project

Permit/Approval	Granting Agency
Federal	
Approval of Mine Plan of Operations	U.S. Bureau of Land Management (BLM)
FCC License	Federal Communications Commission (FCC)
MSHA Registration	Mining Safety and Health Administration (MSHA)
Explosives Permit	Bureau of Alcohol, Tobacco, and Firearms (BATF)
State	
Mine Operations and Reclamation Plan	New Mexico Energy, Mineral and Natural Resources Department (NMEMNRD)- Mining and Minerals Division (MMD)
Mine Registration	NMEMNRD – Mine Registration Reporting, and Safeguarding Program – Mine Registration
Permit to Construct (Air Quality)	New Mexico Environment Department -Air Quality Bureau
Permit to Operate (Air Quality)	New Mexico Environment Department -Air Quality Bureau
Permit to Appropriate Water	New Mexico Office of the State Engineer (NMOSE)
Permits for Dam Construction and Operations	New Mexico Office of the State Engineer (NMOSE)
Approval to Operate a Sanitary Landfill	New Mexico Environment Department -Solid Waste Bureau
Groundwater Discharge Permit	New Mexico Environment Department -Groundwater Bureau (DP-001)
Stage I and Stage II Abatement Plans	New Mexico Environment Department- Groundwater Bureau
Cultural Resources Clearance Surveys	New Mexico Department of Cultural Affairs – State Historic Preservation Office (SHPO)

M3 believes that the Copper Flat property is currently in environmental compliance in that THEMAC is being proactive in addressing its environmental liabilities in accordance with the NMED's processes.

1.5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The project area lies within the Mexican Highlands section of the Basin and Range Physiographic Province. The Copper Flat Property is located in the Las Animas Hills, along the western edge of the Rio Grande Valley. The Rio Grande Valley is approximately 30 miles wide and trends north-south. The Rio Grande river flows north-south along the eastern edge of the valley, and is about 14 miles east of the site.

Elevations generally range from about 5,200 feet above mean sea level (famsl) on the southeast side of the property (tailings dam area), to around 5,700 famsl on the northwest side of the property. The highest elevation locally is Animas Peak (on the north side of the property), which tops at about 6,160 famsl. The mountains of the Black Range rise to elevations above 9,000 famsl about 25 miles west of the project site. The Project site exhibits plant communities dominated by desert grassland, creosote bush, and juniper woodlands (BLM, 1999).

Much of the project site has been disturbed by previous mining activities. Existing disturbance created by the Quintana Minerals Operation in the early 1980s includes a pre-stripped pit area, waste rock piles, mill site with concrete foundations, and the tailings storage facility. Additional disturbance within the project area includes historic placer mining disturbance and recent placer mining disturbance from recreational mining activities.

The climate in Sierra County is semi-arid high desert, with four distinct seasons. Summer temperatures are warm (maximum temperatures average 91°F; the recorded maximum is 107°F) and winter temperatures drop below freezing but are relatively mild (minimum temperatures average 25°F; the recorded minimum is -10°F).

The property is easily accessed by motor vehicle using Federal and State highway systems. From the east, the project site is reached by traveling north or south on US Highway 25, which is part of the US Federal Interstate Highway System, then west on State Highway 152 approximately 13 miles to the mine access road turnoff. Traveling from the west, the property access road is approximately 65 road miles using State Highway 152 from Silver City, NM, a major copper mining center located in southwestern New Mexico. After leaving State Highway 152, the property gate is reached by traveling approximately 2.5 miles on an existing all-weather gravel road. Road closures resulting from inclement weather in the area are extremely rare.

Power in Sierra County is supplied by Tri-State Generation and Transmission Association and distributed by Sierra Electric Cooperative, Inc. The Tri-State transmission line serving the mine area is a 115 kV voltage power line that parallels US Interstate Highway 25 approximately 12.5 miles east of the mine site. The dedicated 115 kV power line between the switching station and the mine is inactive; recent inspection determined that the line is in fair condition and can be returned to service with a limited amount of maintenance.

In addition to the Tri-State transmission lines, a 345 kV power transmission line owned by El Paso Electric, a regional electric utility providing generation, transmission and distribution service in southern New Mexico and west Texas, runs in a north-south direction and crosses the inactive 115 kV power line approximately 7.0 miles east of the mine site.

NMCC has secured via purchase or contract 7,481 acre-ft/yr of declared water rights. One thousand and nineteen acre-ft/yr were purchased from Hydro Resources, Cu Flat, and GCM in the Options and Purchase Agreement described in Section 4.4. The remaining 6,462 acre-ft/yr is under contract with William and Linda Frost and Harris Gray (Frost and Gray) dated September 9, 2010. NMCC has met all payment terms except the final payment due within 60 days of securing the Mine Permit from the New Mexico MMD. NMCC's position is that 1,267 acre-ft/yr out of the declared water rights have been perfected through prior beneficial use and has filed a request to schedule a hearing conference.

To fully utilize the water rights requires a hearing process before the NMOSE. NMCC requested the NMOSE join in a mediation process, which began in August 2013. NMOSE agreed mediation has value and may avert the need to take the conflict over NMCC's water rights further and NMCC and NMOSE have agreed to work together. The first mediation meeting was held Oct. 31, 2013 and additional mediation meetings will be held in coming months.

NMCC has substantial evidence of an on-going intent to develop and use water for mining purposes, a key argument that NMCC's water rights remain valid today. The water supply wells for the mine were drilled and the Quintana water delivery system was completed and operational prior to the date the NMOSE took jurisdiction of the Basin; attorneys at Law & Resource Planning Associates, legal counsel to NMCC, consider NMCC's claim to the declared water rights discussed above to be very strong.

In addition, NMCC has provided the NMOSE with a report detailing the groundwater model that JSAI has developed for the mine site and surrounding areas as well as the executable model files. NMCC has agreed to work with JSAI and NMOSE to develop groundwater model projections that will provide data regarding the potential impacts of mine operation to support the mediation process. NMOSE has been reviewing the groundwater model provided by NMCC and is verifying the groundwater model. Hydrologists from NMCC, JSAI, and NMOSE are working together to address questions with the goal of a groundwater model and model projections that all three entities agree are sufficient and reasonable to be used in water rights decisions within mediation discussions.

Should the mediation process be unsuccessful, a hearing date has been reserved for March 2014. If required, the hearing will culminate with a Recommendation by the Hearing Examiner and a decision by the NMOSE. If the NMOSE decision is unsatisfactory, NMCC will appeal the decision to the New Mexico district court.

In the event that this matter is appealed to the district court, Law & Resource Planning Associates attorneys believe that the outcome will be favorable to NMCC. Legal review of the status and validity of water rights intended for use by the Copper Flat Mine was completed by Mr. Charles DuMars and Ms. Catherine Robinson, attorneys with Law and Resource Planning Associates, PC. Mr. DuMars' and Ms. Robinson's review and legal opinion are summarized in a June 2013 letter regarding *New Mexico Office of the State Engineer Files No. LRG-4652 through*

LRG-4652-S-17, LRG-4654 (DuMars and Robinson, 2013).NMCC has prepared an overall site water balance for the Copper Flat Operation. This water balance results in a fresh water make-up requirement equal to approximately 5,847 acre feet of water per year (approximately 3,625 gallons per minute). Fresh water make-up will come from multiple sources, including captured storm water, mine pit dewatering, and water supply wells.

Water for the operation will come from four primary fresh water wells located approximately 8 miles east of the project site, backed up by several secondary water supply wells located in and around the project site.

The primary production wells and an 8-mile long, 20" diameter steel pipeline from the production wells to the mine were constructed in the 1980s by Quintana Minerals to supply water to the operation; the secondary wells were constructed at different points in time primarily to support local ranching operations. NMCC installed pumps in two of the primary wells for an aquifer and well test in late-2012. JSAI performed a specific capacity analysis of the primary and secondary wells; results demonstrated that these wells remain capable of supplying the quantity of water needed for the operation. A physical inspection of the pipeline was conducted along a 1-mile section of the pipeline. The inspection and subsequent engineering evaluation of the pipeline determined that the pipeline is in good condition and can be returned to service. Furthermore, engineering analysis by M3 concludes that the existing pipeline is capable of providing water in excess of 6,000 gallons per minute (9,660 acre feet per year).

1.6 HISTORY

The first recorded production of placer and lode gold from the Hillsboro Mining District (the District), New Mexico occurred in 1877. Over 285,000 oz of placer and lode gold, valued at $8.5 million, was produced over the next 100 years. Most of the gold and silver production came from underground and placer operations, located in and around the Copper Flat area (Harley, 1934; Segerstrom et al., 1975; Dunn, 1982, 1984). Gold was initially recovered using arrastras (stone grinding) and then by stamp mills in the district prior to 1881. A tent city named Gold Dust was founded in 1881 in the district and was home to numerous prospectors looking for placer gold deposits. A 10-stamp mill operated at the Bobtail mine on the Snake vein from about 1881 to 1884 and had a capacity of 20 to 25tpd. Placer deposits in Snake Gulch located southwest of the Project were also mined using hydraulic mining methods. Mills operated at the Richmond (1890-1892), Bonanza (1890-1910), Ready Pay/Porter (1898-1913), Snake (1910), and Wicks mines. A copper-matte smelter (capacity 30tpd) in the town of Hillsboro was built in 1892 and operated until the early 1900's. The Stenburg copper mine, located at the Project, was in operation between 1911 and 1931. Small-scale copper and precious metals mining took place in the district up until 1941 (Harley, 1934; Segerstrom et al., 1975; Dunn, 1982, 1984; Raugust, 2003).

Newmont Mining Company (Newmont) explored the District for copper in 1952, followed by Hilltop Mining, Bear Creek Mining Company (BCMC), and Inspiration Development Company (Inspiration). Hilltop Mining worked in the area prior to BCMC, which was involved with the Project between 1958 and 1959. Inspiration acquired the Project in 1967 and leased it to Quintana Minerals in 1974 (Segerstrom et al., 1975; Dunn, 1982, 1984).

In 1979, Quintana Minerals formed a partnership with Phibro Minerals Enterprises, Inc. forming the Copper Flat Partnership, which was financed by Canadian Imperial Bank of Commerce (CIBC) located in Toronto, Ontario, Canada. Under this partnership, Quintana Minerals was the operator (Segerstrom et al., 1975; Dunn, 1982, 1984).

In August 1987, Inspiration leased its mining claims to Hydro Resources with the option to purchase, which was finalized by 1989. In 1989, Rio Gold optioned Copper Flat from Hydro Resources.

The Copper Flat Partnership, which at this time included Copper Flat Mining Co. Ltd, a subsidiary of Rio Gold, maintained control of the Project and held the property until 1993 when Gold Express optioned the Project. Gold Express acquired Copper Flat from Rio Gold with the intent of placing the property into production employing the 1982 design parameters. The following year, in June 1994, Alta Gold acquired the option on the Project from Gold Express. Alta Gold held the Project until its bankruptcy in 1999.

The property reverted back to Hydro Resources in 2001, in conjunction with Cu Flat and GCM (collectively the vendors). In July 2009, NMCC acquired an exclusive option over the Copper Flat property from the vendors. In May 2011, NMCC made the final payment on the exclusion option and now owns the property in total.

In mid-March 1982 after a $112 million capital investment, the Copper Flat open pit copper mine began full production at a rated capacity 15,000 tpd, a waste to ore ratio of 1.8:1, and a cut-off grade of 0.25 percent copper. After just 3.5 months of production, the mine shut down on June 30, 1982, due to low copper prices ($0.70/lb) and high interest rates on the CIBC loan. The mine produced 1.48 Mst of ore recovering 7.4 Mlbs of copper, 2,301 oz of gold, and 55,966 oz of silver during the period.

1.7 GEOLOGY AND MINERALIZATION

Copper Flat is a porphyry copper-molybdenum deposit containing minor recoverable gold and silver mineralization hosted by a quartz monzonite stock which intrudes an andesitic volcanic complex. The Cretaceous (75 million years before present [Ma]) Copper Flat quartz monzonite (CFQM) hosts mineralization dominated by pyrite and chalcopyrite with subsidiary molybdenite, minor bornite and minor concentrations of recoverable gold and silver. A recent rhenium-osmium (Re-Os) age date on molybdenite yielded an age of 76.2 Ma, which is in close agreement with previous age dates of the andesite and CFQM. The mineralization is focused along intersecting northeast- and northwest-trending faults, and these intersections may have originally controlled emplacement of the CFQM. The surface geology of the Copper Flat region is shown in Figure 1-4.

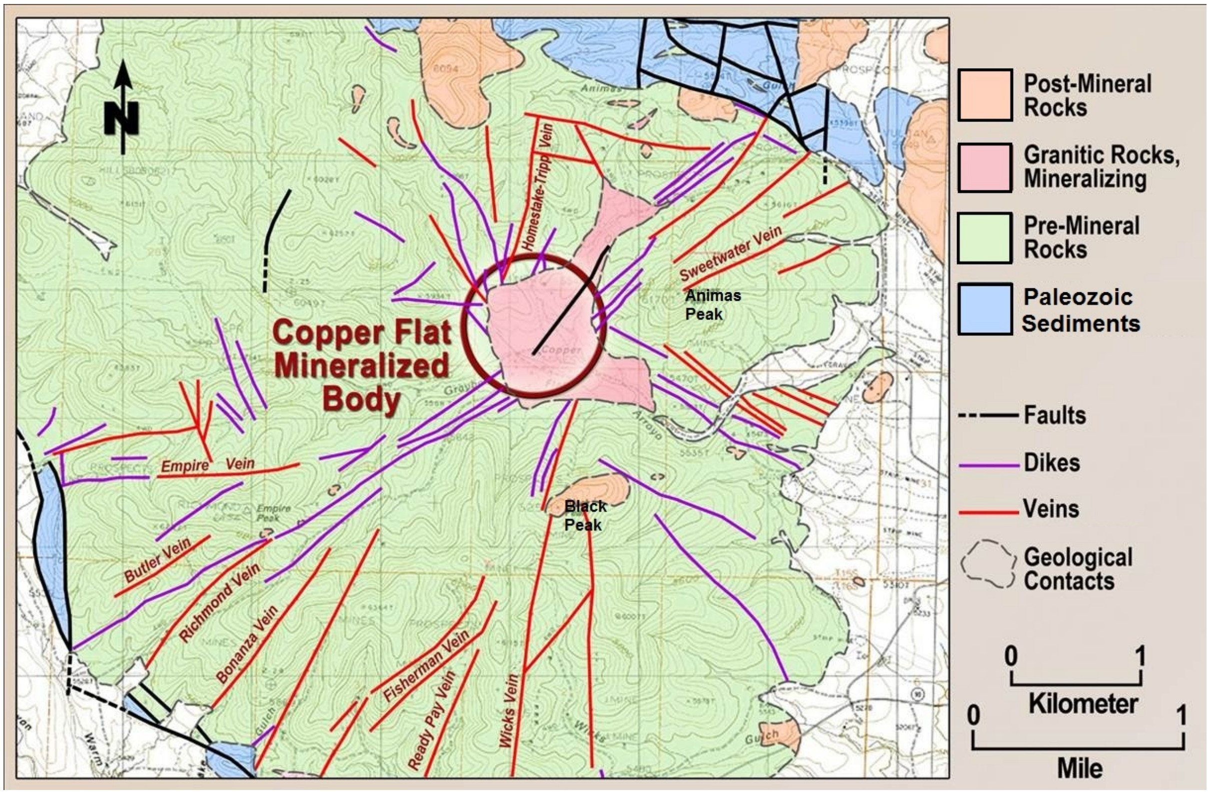


Figure 1-4: Regional Geology of Copper Flat Project Altered from P. Dunn (1982)

Sulfide mineralization is present as veinlets and disseminations in the quartz monzonite, but is most strongly developed in and adjacent to the west end of a steeply dipping breccia pipe, that is centrally located within the CFQM stock and elongated in the northwest-southeast direction roughly along, but south of the Patten fault. The sulfide mineralization first formed in narrow veinlets and as disseminations in the quartz monzonite with weakly developed sericitic alteration. This stage of mineralization was followed by the formation of the breccia pipe and the introduction of coarse "clotty" pyrite and chalcopyrite along with veinlet controlled molybdenite and milky quartz, and the development of strong potassic alteration. Typically, the total sulfide content ranges from 1 percent (by volume) in the eastern part of the breccia pipe and the surrounding CFQM to 5 percent in the CFQM to the south and west. Sulfide content is highly variable within the breccia, with portions in its western part reportedly containing as much as 20 percent sulfide minerals.

The breccia pipe, which can best be described as a crackle breccia, consists of rotated angular to subangular fragments of quartz monzonite varying from 1 inch to more than 18 inches in diameter. Previous workers have suggested that the breccia may have formed by autobrecciation resulting from retrograde boiling. Two types of breccia have been identified as distinguishable units based on the dominant mineral filling the matrix between clasts. Drilling has shown that the two breccia types, biotite breccia and feldspar breccia, grade into one another as well as with the CFQM. Interestingly from a recovery perspective, metallurgical testing has shown that the mineralization behaves virtually the same irrespective of the lithology.

Molybdenite occurs occasionally in quartz veins or as thin coatings on fractures. Minor sphalerite and galena are present in both carbonate and quartz veinlets in the CFQM stock. Preliminary evaluations of the mineralization at Copper Flat in 2011 indicate that copper mineralization concentrates and trends along the N50°W structural influences, whereas the molybdenum, gold and silver appear to favor a N10°-20°E trend.

The mine geology itself is shown in Figure 1-5 and Figure 1-6.

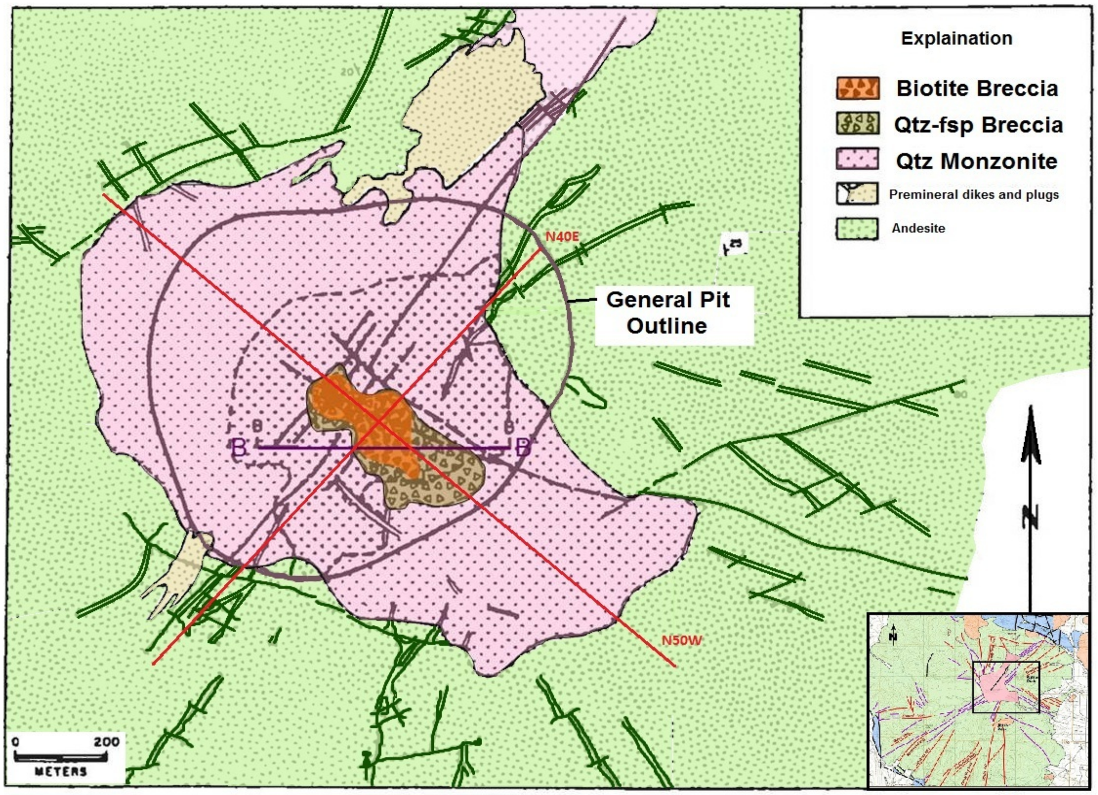


Figure 1-5: Geology of the Copper Flat Mine, Dunn, 1982

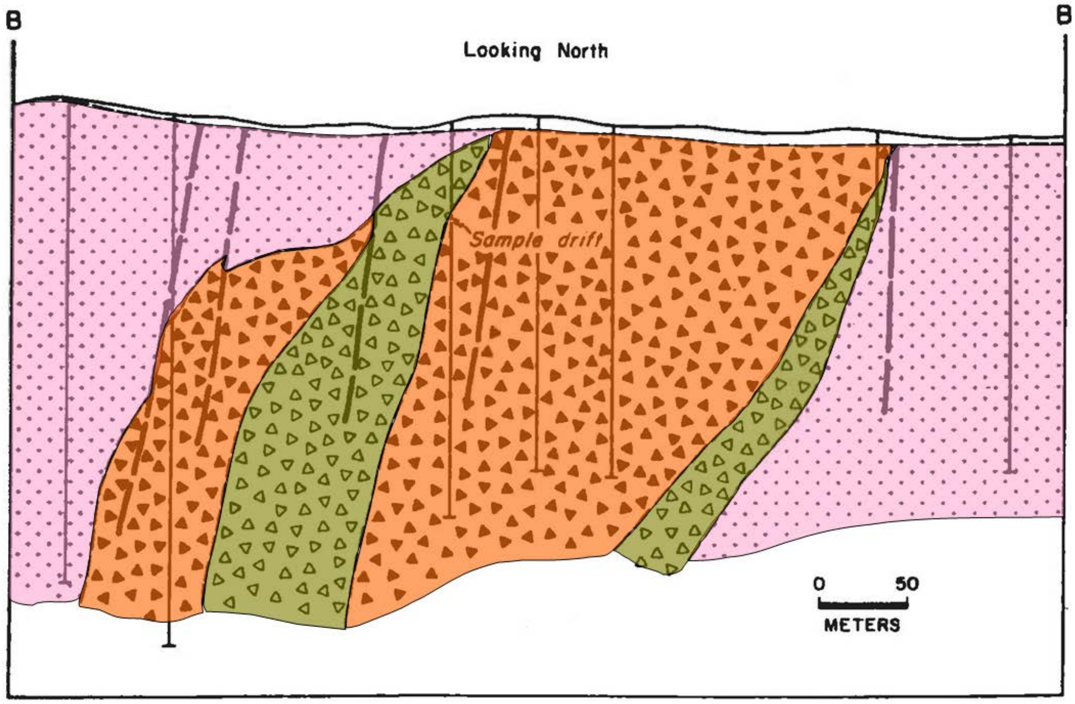


Figure 1-6: East-West Section Looking North, Dunn, 1982

1.8 DEPOSIT TYPES

Copper Flat is a porphyry copper- molybdenum deposit that is approximately 1,400 by 2,100 ft in plan view occurring within a small structurally controlled quartz monzonite stock that has intruded a circular block of andesite approximately 4 miles in diameter. The porphyry includes a variably mineralized west-northwest-trending hydrothermal "breccia pipe," that lies immediately south of the Patten fault, that is about 1,400 ft long and 500 ft wide.

1.9 EXPLORATION

Copper Flat is an advanced development project that was in production for only a few months in the early 1980's. As such, most of the exploration completed since that time has been the addition of diamond drilling to confirm, expand, and better understand the deposit.

During the 2012 exploration program, THEMAC personnel completed detailed surface mapping of all exposures within the historical pit, drainage cuts, and most of the outlying project area. Surface geochemical sampling was also completed to improve the understanding of the precious metal distribution outside of the deposit, as well as identify other potential exploration targets.

In addition to drilling, all of the historical core has been relogged to obtain lithologic and structural information using core photographs; additional mineralogical and metallurgical studies have been undertaken; geotechnical studies have been completed and a CSAMT geophysical survey completed in the central part of the project that was designed to investigate and define the extent of the CFQM and sulfide mineralization.

With the completion of the 2012 drilling program, the Copper Flat deposit is now considered to be characterized to the extent necessary for a Feasibility Study. However, upon commencement of mining, it may be possible to expand the copper known reserve and resource with additional drilling. This drilling should be focused on attempting to extend the deposit to depth (below the planned pit bottom), better defining the margins of the deposit and extending and better defining the extreme northeastern lobe of the deposit.

1.10 DRILLING

Most of the drilling since 1982 has been diamond drilling. THEMAC personnel have completed detailed surface mapping of all exposures within the old pit, drainage cuts, and much of the remaining project during the last two years. Additionally, some surface sampling has been completed to improve the understanding of the precious metal distribution outside of the main ore zone, and most of the historical core has been re-logged using core photographs.

During the period 2009-2012, THEMAC undertook annual drilling programs designed to better define the known mineralization; upgrade and expand existing resources; convert resources to reserves with increased drilling density; gain a better understanding of the lithologic and structural controls of mineralization; obtain material for metallurgical testing; extend and evaluate the mineralization at depth and undertake geotechnical studies.

Table 1-3 summarizes the drill programs completed on the project where there is data available for the determination of mineral resources. All of the drilling summarized below is diamond core drilling.

Table 1-3: Copper Flat Drill Data, Available for Determination of Resources

Company	Dates	Drill holes	IMC comments	Elements Asayed	IMC Summary
Inspiration Consolidated	1967-1973	CF-1 to CF-20	20 drill holes, 4 with no assay CF-14,CF-15,CF-20 and CF-5	Totcu (%) Moly (%)	769 assay intervals, 9,350 ft of drilling
Inspiration Development	1968-1971	IDC-1to IDC-29	31 drill holes, 4 holes no assay IDC-20, -29,-30,-31	totcu (%) moly (%) gold(opt) silver (opt)	3,290 assay intervals, 27,183 ft of drilling
Quintana Minerals	1974-1978	H Series	134 drill holes total, 129 w/total copper, 21 holes assayed for gold and silver	Totcu (%) Moly (%) Gold(opt) Silver (opt)	9,709 assay intervals, 97,210 ft of drilling
NMCC	2009-2012	CF Series & CNI Series	48 drill holes, 2 holes no assay CF-12-19,-20	Totcu (%) Moly (%) Gold(ppb) Silver (ppm)	8,422 assay intervals, 47,583 ft of drilling

1.11 SAMPLE PREPARATION, ANALYSES AND SECURITY

The majority of the database available of Copper Flat sample results was developed by Quintana during the 1970's and 1980's. Recent drilling by THEMAC has been added to the data base to confirm and expand the historic information. Sample results for diamond core drilling conducted by Inspiration and Quintana appear to be acceptable, though the documentation may not meet current standards. Quintana adopted a rigorous sample preparation procedure when early checks on reproducibility were not acceptable.

Recent drilling by ECR Minerals, PLC (formerly Mercator Gold PLC) and THEMAC follow industry-standard sampling preparation, handling, and documentation procedures. Sample analyses have been undertaken by Skyline Assayers & Laboratory in Tucson, Arizona using industry-standard procedures. Quality assurance and quality control procedures include inserting blanks, standards, and duplicates it the sample shipments and conducting check assays at the rate of 5 percent. Additionally, in the 2012 program, duplicate pulps of every tenth sample, including historical pulps, were submitted to ALS Minerals, Reno, NV for check assay using methods similar to that used by Skyline. Historical data was compiled from electronic and paper records and combined with results from the 2009 to 2012 drilling results by Independent Mining Consultants (IMC) to form the basis for the current reserve and resource estimation.

IMC and John Marek (QP) hold the opinion that the sample preparation, analysis, and security of the database is reliable based on the result of the comparison between historic and modern data and site review of the modern procedures that are being followed.

1.12 DATA VERIFICATION

The drill hole data base for Copper Flat has been in existence since the 1980's. Previous work in 2010 and 2011 by THEMAC and their contractors completed a number of verifications steps to develop some confidence in the historic data. During 2011 and 2012, THEMAC drilled additional holes in order to: 1) provide additional confirmation of the historic drilling, 2) test for extensions to the mineralization, and 3) provide geotechnical information for slope stability.

IMC and John Marek (QP) hold the opinion that the database as assembled for this study is reliable for the purposes of estimating mineral resources and mineral reserves. In assembling the data set for determination of mineral resources and reserves, some questionable historic data items have been removed from the data base.

1.13 MINERAL PROCESSING AND METALLURGICAL TESTING

A significant amount of process design and metallurgical testing was accomplished prior to the Quintana operation of the property in 1982. Additional testing has been accomplished since then by others contemplating redevelopment of the property, including recent work by Minerals Advisory Group Research and Development (MAG), of Tucson, Arizona, commissioned by THEMAC. The process flow design and recovery estimation presented here is supported by the current test data as well as results from the Quintana operation. The flow sheet was developed for processing 29,600 tpd for the first 6 years followed by 27,125 tpd for the remaining mine life. The mill is planned to operate 92.5% efficiency. The Copper Flat conceptual processing flow sheet is shown in Figure 1-7.

M3 conducted a thorough review of the metallurgical testing conducted to date on the Copper Flat ores and concluded that there are no adverse processing factors that require any extraordinary process engineering or deleterious elements in the ore, and that the ore is of medium hardness, amenable to copper/moly flotation, gives products that thicken and filter readily and will produce saleable copper and moly concentrates. Testing reviewed included comminution, flotation, concentrate dewatering, and tailing dewatering. Table 1-4 below provides estimated recoveries of copper, molybdenum, silver, and gold.

Table 1-4: Estimated Metal Recoveries

Product	LOM Average	Years 1 – 5	Years 6 - LOM
Copper	93.1 %	94.6%	91.2%
Molybdenum	78.0%	81.9%	73.4%
Gold	73.7%	73.7%	73.7%
Silver	82.7%	82.7%	82.7%

* Includes additional 2.6% recovery from gravity circuit

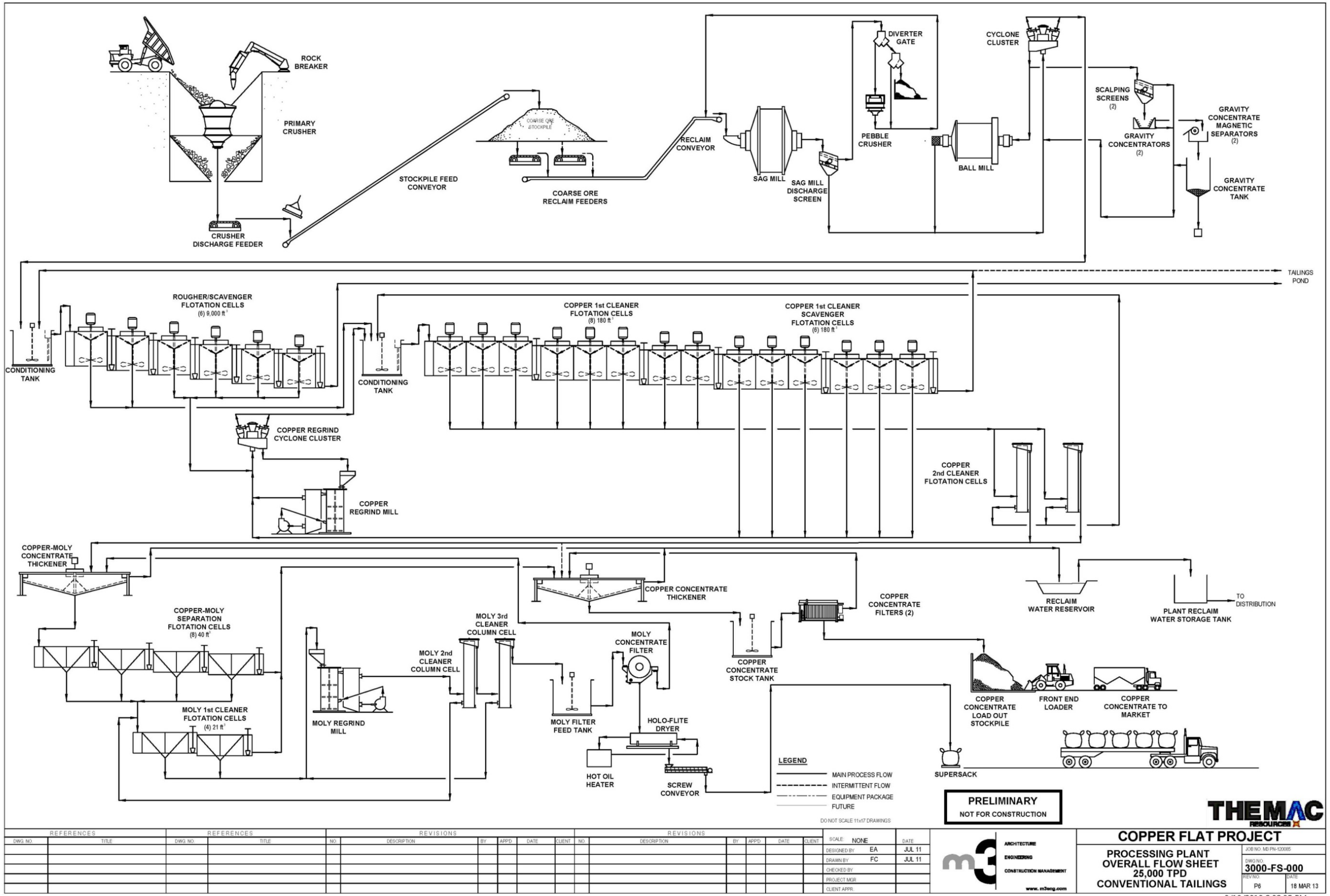


Figure 1-7: Conceptual Process Flowsheet

1.14 MINERAL RESOURCE ESTIMATES

The Resource and Reserves definitions are as set forth in the Appendix to Companion Policy 43-101CP, CIM – Definitions Adopted by CIM Council, June 30, 2011. Mineral Resources for Copper Flat are as summarized in Table 1-5. Mineral resources that are not mineral reserves do not have demonstrated economic viability.

Table 1-5: Mineral Resources (7 October 2013)

Classification	Cutoff Grade NSR/Ton	Tonnage and Grade					Contained Metal			
		Ktons	Copper %	Moly %	Gold Oz/ton	Silver Oz/ton	Copper Lbs x 1000	Moly Lbs x 1000	Gold ozs x1000	Silver ozs x 1000
Measured	$6.11	126,655	0.28	0.009	0.003	0.06	709,268	22,798	380	7,599
Indicated	$6.11	178,571	0.19	0.005	0.002	0.04	678,570	17,857	357	7,143
Meas + Ind		305,226	0.23	0.007	0.002	0.05	1,387,838	40,655	737	14,742
Inferred	$6.11	27,646	0.20	0.004	0.001	0.02	110,584	2,212	28	553

Notes:

Mineral Resources stated above include the mineral reserve
Mineral Resources are contained within a floating cone pit geometry at prices listed in text
Ktons means 1000 short tons. Short tons = 2000 lbs
Copper and Molybdenum grades are percent of dry weight
Gold and Silver are reported in Troy ounces / short ton

Metal Prices:
$3.00/lb Copper, $8.00/lb Mo, $1350 /oz Gold, $20.00/oz Silver

1.15 MINERAL RESERVE ESTIMATES

The mineral reserve was developed by tabulating the contained measured and indicated (proven and probable) material inside of the designed pit at an NSR cutoff grade of $6.11/ton. The mine plan and schedule indicates that the operating cutoff is slightly higher during the first five years in an effort to improve front end head grade and maximize return on investment. The NSR for application of cutoff grade includes a benefit from copper, molybdenum, gold and silver.

Low grade material that is above the internal cutoff of $6.11/ton NSR and less than mill feed cutoff in the early years will be stored in two low-grade stockpiles that are located to the northeast of the pit and northeast of the crusher. That material is planned to be re-mined and delivered to the mill in years 13 and 14. The mineral reserve is summarized on Table 1-6. The mineral resource in addition to the mineral reserve is included for clarity.

Table 1-6: Copper Flat Project Mineral Reserves (7 October 2013)

Classification	Cutoff Grade NSR/Ton	Mineral Reserves Ktons	Copper %	Moly %	Gold Oz/ton	Silver Oz/ton	Contained Metal Copper Lbs x 1000	Moly Lbs x 1000	Gold ozs x1000	Silver ozs x 1000	Recovered, Saleable Metal Copper Lbs x 1000	Moly Lbs x 1000	Gold ozs x1000	Silver ozs x 1000
	Variable By Year													
Proven	$12.75 to $6.11	78,857	0.32	0.010	0.003	0.07	504,685	15,771	237	5,520	432,538	9,169	117	3,424
Probable	$12.75 to $6.11	34,227	0.25	0.007	0.003	0.04	171,135	4,792	103	1,369	146,670	2,786	51	849
Total Prov + Prob		113,084	0.30	0.009	0.003	0.06	675,820	20,563	340	6,889	579,208	11,955	168	4,273

Mineral Resources in Addition to Mineral Reserves

Classification	Cutoff Grade NSR/Ton	Tonnage and Grade Ktons	Copper %	Moly %	Gold Oz/ton	Silver Oz/ton	Contained Metal Copper Lbs x 1000	Moly Lbs x 1000	Gold ozs x1000	Silver ozs x 1000
Measured	$6.11	47,798	0.21	0.007	0.003	0.04	204,583	7,027	143	2,079
Indicated	$6.11	144,344	0.18	0.005	0.002	0.04	507,435	13,065	254	5,774
Meas + Ind		192,142	0.19	0.005	0.002	0.04	712,018	20,092	397	7,853
Inferred	$6.11	27,646	0.20	0.004	0.001	0.02	110,584	2,212	28	553

Notes:

Mineral reserves equal the total ore planned for processing from the mine plan
Mineral Resources stated above do not include the mineral reserve
Mineral Resources are contained within a floating cone pit geometry at prices listed below.
Ktons means 1000 short tons. Short tons = 2000 lbs
Copper and Molybdenum grades are percent of dry weight
Gold and Silver are reported in Troy ounces / short ton

Metal Prices:
Mineral Reserve $3.00 Copper, $8.00 Moly $1350 Gold, $20.00 Silver, No Economic Credit to Inferred
Mineral Resource $3.00 Copper, $8.00 Moly $1350 Gold, $20.00 Silver

1.16 MINING METHODS

The Copper Flat project is planned for production using conventional hard rock open pit mining methods. Ore production to the mill is planned at 29,600 tpd (10,800 ktons/yr) for the first 6 years followed by 27,125 tpd (9,900 ktons/yr) for the remaining mine life. The mine production schedule was developed with the goal of filling the mill at required ore rate and maximizing the project return on investment. The total material rate is tied to equipment productivity and amounts to 17,500 ktons/yr or 47,945 tpd for the first 5 years. The mine is scheduled to operate 365 days/yr with two, 12 hour shifts/day. Bench heights are currently planned to be 25 ft high. Drilling will be completed with three rotary blast hole rigs with 45,000 lb pull down capacity and 6.5 in diameter blast holes. The blasted rock will be loaded into 100 ton haul trucks using two 19 cu yd front end loaders.

The mine plan was developed with a phased approach. The floating cone algorithm was used as a guide to the design of the phases or pushbacks. Three phases were designed for the Copper Flat project with approximately 300 ft of operating width on each bench within a phase. Phase 1 was sized to contain roughly 1.5 years of ore. The phases were tabulated from the block model and those three tabulations were used as input to the development of the mine production schedule.

The mine production schedule was developed with the goal of feeding the mill at through put rates of 29,600 tpd (years 1-5) and 27,125 tpd (remaining LOM) and maximizing the project return on investment. Multiple mine production schedules were developed that analyzed alternative cutoff grade strategies versus mine total material movement. The best overall production schedule on an economic and practical basis is summarized in Table 1-7.

Table 1-7: Copper Flat Mine Production Schedule

Mine Plan Schedule											
Year	Cutoff NSR/ton $/ton	Direct Mill Feed Ore						Waste			Total Material Ktons
		Ore Ktons	NSR $/ton	Copper %	Moly %	Gold oz/ton	Silver Oz/ton	WSF 1 Ktons	WSF 2 Ktons	WSF 3 Ktons	
Preprod	$12.00	360	22.824	0.43	0.007	0.003	0.06	32	30	48	470
Yr1 Q1	$12.75	1,540	20.681	0.38	0.008	0.003	0.07	719	678	1,438	4,375
Yr1 Q2	$12.75	2,000	22.960	0.41	0.012	0.004	0.08	541	279	1,555	4,375
Yr1 Q3	$12.75	2,700	23.354	0.41	0.012	0.004	0.08	440	199	1,036	4,375
Yr1 Q4	$12.75	2,700	23.533	0.42	0.013	0.004	0.08	373	190	1,112	4,375
Yr2	$11.25	10,800	23.050	0.40	0.011	0.004	0.09	1,055	2,333	3,312	17,500
Yr3	$10.00	10,800	16.338	0.29	0.007	0.003	0.06		2,544	4,156	17,500
Yr4	$10.00	10,800	20.475	0.36	0.010	0.003	0.07		1,756	4,944	17,500
Yr5	$9.25	10,800	18.193	0.32	0.011	0.003	0.07		628	6,072	17,500
Yr6	$6.11	10,025	11.761	0.21	0.005	0.002	0.05			5,924	15,949
Yr7	$6.11	9,900	11.986	0.21	0.005	0.002	0.05			2,491	12,391
Yr8	$6.11	9,900	13.752	0.24	0.007	0.002	0.05			718	10,618
Yr9	$6.11	9,900	16.008	0.28	0.008	0.002	0.06			71	9,971
Yr10	$6.11	9,900	16.208	0.29	0.010	0.002	0.06			3	9,903
Yr11	$6.11	9,900	15.940	0.27	0.012	0.003	0.06			1	9,901
Yr12	$6.11	1,059	12.722	0.21	0.010	0.002	0.05			4	1,063
Totals		113,084	16.965	0.30	0.009	0.003	0.06	3,160	8,637	32,885	157,766

Mineral Reserve is the direct feed ore planned for processing.
Stockpiles are not included in the statement of mineral reserves.

The waste storage facilities are built to at 3 to 1 slopes (18.4 degrees) in order to facilitate reclamation at the end of the mine life. Dump lifts are 75 ft high and are dumped at angle of repose (35.54 degrees) with 120 ft setbacks left between lifts to maintain the 3 to 1 overall angle for future reclamation.

The three waste storage facilities have been segregated by cutoff grades. Waste Storage Facility 1 (WSF 1) contains the highest grade material. Waste Storage Facility 2 (WSF 2) contains the next highest grade material. Waste Storage Facility 3 (WSF 3) contains all the remaining material. WSF 1 & 2 are planned so that they could be remined for a future processing opportunity or reclaimed in their current configuration.

Waste Storage Facility 1 is located to the northeast of the mine pit. The location of WSF 1 was selected to be a reasonable haul during the mine life for the storage of the material as well as a short haul distance to the crusher if becomes economical to remine it. WSF 1 will store 3,160 ktons over the mine life.

Waste Storage Facility 2 is located northeast of the crusher and west of WSF 3. WSF 2 will be placed above WSF 3 starting at the 5500 elevation. The location of WSF 1 was selected to be a reasonable haul during the mine life for the storage of the material as well as a short haul distance to the crusher if becomes economical to remine it. WSF 1 will store 8,637 ktons over the mine life.

Waste Storage Facility 3 is located 3,000 to 4,000 ft east of the pit exit. The storage of waste material over the mine life is 32,885 ktons.

1.17 RECOVERY METHODS

Recent metallurgical testing (MAG, 2012) confirms the original testing and operational data from the Quintana Minerals operations. Those all lead to the conclusion that there are no deleterious elements in the ore or adverse processing factors that require extraordinary process engineering. The ore is of medium hardness, amenable to copper/moly flotation, gives products that thicken and filter readily and will produce salable copper and moly concentrates.

The process for recovering copper and molybdenum (moly) minerals from the Copper Flat ore is very similar to the one used successfully by Quintana in the 1980s with certain upgrades to reflect the current state-of-the-art in mineral process technology. The process consists of crushing and grinding to a fine size, flotation to concentrate sulfide particles, regrinding and cleaning to develop copper and moly concentrates, thickening and filtering concentrates, and disposal of tailings in a lined surface impoundment.

Crushing and grinding begins with run of mine ore crushed by a gyratory crusher to reduce the size to less than 175 millimeters and conveying the coarse ore to a covered stockpile. Coarse ore reclaimed from beneath the stockpile is conveyed to a 32 ft by 14 ft semi-autogenous (SAG) mill for primary grinding and to a 24 ft by 35 ft ball mill. Oversized pebbles are removed from the SAG mill discharge, crushed, and returned to the SAG mill. The ball mill operates in a closed circuit with hydrocyclones to deliver slurry with 80 percent of the particles less the 140 microns (μ) to the flotation circuit.

Flotation begins by separation of a bulk copper-moly concentrate with a series of six 9,000-cubic foot (ft^3) rougher flotation cells. Flotation concentrate is reground in the copper regrind mill in a closed circuit with hydrocyclones. Regrind cyclone overflow is cleaned and scavenged. Eight, 180- ft^3 tank-type cleaner flotation cells, six, 180- ft^3 tank-type first cleaner scavenger cells, and two copper second cleaner column cells are used to produce the copper-moly concentrate. Moly will be separated from the copper minerals in a moly flotation circuit. The moly flotation circuit will consist of moly separation (rougher) flotation, moly first cleaner flotation, concentrate regrind, moly second cleaner flotation and moly third cleaner flotation. The result of flotation is a final copper concentrate and a molybdenite concentrate.

Final copper concentrate is a combination of tailings from copper-moly separation flotation and moly first cleaner flotation cells. The copper concentrate is pumped to the copper concentrate thickener, to a copper concentrate stock tank, and to an automatic pressure filter for copper concentrate. Filter cake batches discharge to a covered concentrate stockpile and the copper concentrate will be loaded into highway haul trucks and transported to market.

Moly concentrate from the third moly cleaner column cell flows by gravity to the moly filter feed tank that feeds the moly filtering and drying circuit. Filter cake is discharged to a conveyor that feeds a Holoflite-type hot oil dryer and a screw conveyor to the moly concentrate storage bins and bagged in 2-ton super sacks for shipment by trucks to market.

Water systems for the plant site include fresh water and reclaim water systems. Fresh water is supplied from offsite wells. Water from the wells is pumped through two booster stations to a fresh water tank at the reclaim water reservoir where it can flow by gravity to the reclaim water reservoir or be pumped to the fresh-fire water storage tank. Fresh water from the storage tank flows by gravity to feed the fire water loop, potable water tank system, gland seal water tank, water trucks for dust control, and process use points (e.g. crusher dust suppression, column flotation, reagent mixing, moly plant).

Reclaim water is recovered from thickeners, the tailings storage facility, pit dewatering, storm water, and moisture in the ore. Overflow from the copper-moly, and copper concentrate thickeners and molybdenite concentrate filtering circuit are collected in the reclaim water reservoir. Reclaim water from the tailings (cyclone overflow) thickener, seepage collection sump, and supernatant water pond is pumped to the reclaim water reservoir. Make up water from the fresh water tank is added at the reclaim water reservoir and pumped to reclaim water storage tank for gravity flow to the concentrator usage points.

1.18 PROJECT INFRASTRUCTURE

Significant infrastructure upgrades are necessary for operation of the Copper Flat Project including site facilities such as stockpiles and a new tailing storage facility, road improvements, power lines, and water supply. Stockpiles will be constructed near the crusher (east of the mine pit). The tailing storage facility will be constructed in the location of the existing Quintana Minerals facility. Road improvements include adding turn lanes on Highway 152 for the mine access road, regrading the access road, and relocating approximately 2,500 ft of the access road that is within the new tailings footprint. Railcar loading facilities will also be constructed to ship concentrate. A new substation needs to be constructed to bring 345 kV power from an El Paso Electric transmission main to the Quintana 115kV power line, which needs to be refurbished, and a new power line installed between the mine and fresh water supply wellfield. The fresh water supply system needs to be refurbished with groundwater pumps, pumping stations, and water line improvements.

The Project receives significant benefit from existing infrastructure that remains from the Quintana Minerals operation. The estimated value of the existing infrastructure is $53.9 Million. Components of the existing infrastructure that will be placed back into service for the new operation are:

- Concrete foundations and structures required for the primary crusher, concentrator, mine substation, truck shop, assay lab and administration building;
- Conveyor tunnels for the crusher discharge belt and the coarse ore stockpile reclaim system;
- Four fresh water wells, two of which are equipment with pumps at this time, and eight miles of 20” steel pipeline to convey fresh water from the well field to the mill site;
- Twelve miles of 115 kV power line and structures connecting the mine substation to the utility power grid;
- Several mine roads, including a 2.5 mile gravel access road connecting the mine site to State Highway 152 and more than 2 miles of mine haul roads and service roads connecting the pit to the crusher, the mine shop and material stockpile areas.
- Other earthworks including mill site and mine shop grading, storm water culverts, and a water diversion structure and channel to divert a major watershed around the pit; and
- Nearly 2 million tons of pre-preproduction stripping to expose the ore body.

1.19 MARKETING STUDIES AND CONTRACTS

No Market Studies were undertaken or purchased in conjunction to the preparation of this Technical Report. The annual (or total) volume of mine metal production from concentrates (after smelter deductions) will not impact world supply, demand or prices.

As such, Copper Flat will sell into a world market for these metals and will be accepting the market price for the metals, and Copper Flat will be subject to changes in the global supply, demand and prices for these metals. Details on the current supply and demand for these metals are available free and at cost from numerous of sources, including government entities, banks, investment houses, mineral related consulting firms and academic institutions. Because of the global nature of these commodities and the availability of reports on these metals, market summaries for the supply and demand for copper, molybdenum, gold and silver have not been included in this Feasibility Study.

Copper Flat is not currently in production and has no operational sales contracts in place at this time. Should the project go into production, smelter agreements for the treatment and refining of copper and molybdenum concentrates (including recovery of gold and silver) will be put into place.

1.20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

Environmental and socioeconomic baseline studies were completed as part of prior efforts to reopen the Copper Flat Mine in the late 1990s. Data from these past studies were incorporated as appropriate or otherwise updated in newly completed and on-going studies that have been undertaken in accordance with state and federal standards of data acquisition, quality assurance and reporting.

1.20.1 Studies

In addition to baseline data studies and survey that have been conducted at the Copper Flat Mine and the surrounding areas since 2010 and the implementation NMED approved Stage 1 Abatement Plan in 2013, additional studies that are being completed and have been or will be submitted to meet State and federal (NEPA Environmental Impact Statement) requirements include:

- Geochemical characterization of the site's potential for acid rock drainage and predictive geochemical modeling for the tailings storage facility and waste rock disposal facility. This report was issued to reviewing agencies in June 2013.
- Geochemical characterization of the existing pit lake and modeled predications of future pit lake quality. This report was issued to reviewing agencies in September 2013.
- Analysis of an aquifer pumping test conducted in 2012 using two of the mine site production wells with observation equipment in the other two production wells and in significant locations in the vicinity of the production well field and along Las Animas Creek.
- These additional groundwater and surface water data were used to develop a numerical hydrologic/hydrogeological model of the site and surrounding area to provide a quantitative framework in which to evaluate the effects of project development. A report regarding this groundwater model, as well as the executable model files was distributed to reviewing agencies in August 2013.

1.20.2 Environmental Issues

The proposed Copper Flat Mine project has identified several key environmental issues, including the pit lake, acid rock drainage, and historic tailing facility groundwater plume, discussed below.

1.20.2.1 Pit Lake

In their report, *Predictive Geochemical Modeling of Pit Lake Water Quality at the Copper Flat Project, New Mexico* (SRK, September 2013) SRK indicates that at the end of mine life, the pit lake will refill with water and, eventually the water in the pit will exceed wildlife surface water standards for selenium (0.05 mg/L) and mercury (0.00077 mg/L). Mercury concentrations are predicted to be marginally above the recently promulgated wildlife standard. However, this exceedence may not represent a true ecological risk to the wildlife area within the Copper Flat area. The proposed post mining land use (PMLU) in the pit area is wildlife habitat; therefore, THEMAC will pursue long term mitigation strategies based on the predictive model results through regulatory processes, engineering controls, or both.

1.20.2.2 Acid Rock Drainage

In *Geochemical Characterization Report for the Copper Flat Project, New Mexico* (SRK, June 2013), SRK concludes that ARD will not negatively impact the environment at future proposed waste rock disposal facilities (WSF-2 and WSF-3) provided that they are designed, constructed, operated, and reclaimed in accordance with the current THEMAC mine plans. This report was submitted to reviewing agencies in June 2013. WSF-1 was not included in this evaluation; however, it is located within the open pit surface drainage area and only requires that surface water contact with the stockpiled material be minimized.

The potential for acid rock drainage will be monitored throughout the life of mine operations. Through the State and federal permitting processes that are on-going at Copper Flat, all the data will be utilized and analyzed to guide operational management of the waste rock disposal facility (WRDF) tailings storage facility (TSF) to ensure long-term physical and geochemical stability during operations and post closure.

1.20.2.3 Historic Tailings Seepage

Historic and Baseline Data Collection groundwater monitoring downgradient of the tailings facility indicated the presence of elevated concentrations of some constituents (TDS and sulfate), and it is believed that water from the existing, unlined impoundment has seeped into a localized area of the aquifer to the east of the existing tailings storage facility (TSF).

Per an NMED approved Stage 1 Abatement Plan, quarterly groundwater sampling and analyse have been conducted in 2013 to characterize this impact to the east of the TSF. The first three quarters of groundwater sampling downgradient of the TSF found no exceedance of the groundwater standard for sulfate (the groundwater standard for sulfate is 600 mg/L). Three wells show concentrations of TDS over the standard (1,000 mg/L) however these concentrations have been decreasing over time.

In October 2013 an additional monitoring well was drilled to the east of the tailings storage facility. Because field analysis indicted this well is not within groundwater impacted by elevated levels of sulfate or TDS, a second monitoring well further east was not required. This new well was included in the last quarter of sampling at Copper Flat. The tailings facility and the area downgradient of it will be monitored for possible groundwater impact throughout the life of mine operations.

1.20.3 Tailing Disposal and Waste Management

1.20.3.1 Tailings

A new tailings storage facility (TSF) will be constructed at Copper Flat in the location of the former Quintana Resources facility that was constructed and briefly operated in 1981 and 1982. The new TSF will occupy the site of the old facility, and will extend approximately 1,000 feet to the east of the old starter dam (the tailings expansion area). While the old Quintana TSF was an unlined facility, the new TSF will be underlain by a geomembrane liner and tailings drainage collection system.

Design studies completed in support of the feasibility level design of the TSF include the following:

- Site exploration and geotechnical testing;
- Tailings characterization;
- Foundation settlement potential evaluation; and
- Consolidation modeling and storage capacity estimation

The new TSF design will be required to comply with the design and dam safety guidelines and regulations of the OSE Dam Safety Bureau. The NMED Groundwater Division will be the permitting authority for the State of New Mexico discharge permit program. NMED has provided guidance on anticipated design requirements for the impoundment liner system, which have been incorporated in the feasibility level design.

Drainage from future tailings will be collected in two separate underdrain systems and routed to the seepage collection pond. Drainage from the impoundment interior will be collected in a continuous underdrain constructed over the geomembrane liner. A separate blanket drain will underlie the tailings dam (dam underdrain).

The seepage collection pond will contain seepage from the impoundment underdrain and the dam underdrain, as well as runoff from the downstream face of the tailings dam.

The TSF reclaim system will consist of a set of submersible turbine pumps placed in the seepage collection pond in a reinforced concrete sump. These pumps will be capable of completely draining the seepage collection pond. Barge mounted pumps will also be placed in the TSF for water reclaim purposes. Reclaimed water will be returned to the process water reservoir. Reclaim pump capacity will be 13,500 gpm from the TSF barge and 4,000 gpm from the seepage reclaim pond. On average, approximately 12,000 to 13,000 gpm of water will be delivered to the TSF with the cyclone overflow and underflow. The estimated average process water recovery rate is 9,215 gpm. The estimated average TSF make-up water requirement will be approximately 3,169 over the life of the project.

The TSF water balance examines reclaim rates for average rainfall conditions. If the site experiences periods where precipitation rates vary from average conditions, reclaim rates and make-up water requirements can also be expected to vary. The water reclaim system is capable of recovering water at an adequate rate to meet make-up water requirements and temporarily reduce demand on external water sources. The water balance does not consider additions from the open pit or waste rock disposal facility stormwater ponds.

1.20.3.2 Waste Rock

Three waste rock disposal facilities (WRDFs) were designed by Independent Mining Consultants (IMC). These WRDFs are designated as WSF-1, WSF-2, and WSF-3. Three runoff and sediment collection ponds will be constructed to contain runoff from the waste rock disposal facilities. Stormwater impoundments will be lined and designed for containment of the runoff volume associated with a 100-year, 24-hour storm event. Stormwater collected in the runoff and sediment collection ponds is pumped to the mill as process water or will have evaporated. At closure, the runoff and sedimentation ponds will be reclaimed. The WRDFs will be covered, graded and vegetated such that surface water runoff from the reclaimed facility will be non-impacted surface water.

Based on the IMC layout, a schedule of capital and reclamation costs for the WRDF site work has been estimated and incorporated in the economic analysis. Capital costs cover topdressing and reclamation cover salvage and stockpiling and construction of conveyance and diversion ditches, runoff and sediment collection pond construction. Reclamation costs address reclamation cover placement and seeding.

1.20.4 Permitting

A table listing permits for Copper Flat is shown in Section 1.4. Permitting initiatives for the project include:

- Facilitation of monthly meetings with cooperating agencies to discuss progress of the Copper Flat mine project and the status of the various studies and permit applications in process.
- THEMAC prepared a Stage 1 Abatement Plan for the NMED, which NMED approved in a letter dated February 7, 2012. In accordance with this approved plan, groundwater levels and samples have been collected from 20-22 wells across the site as well as at the pit lake, depending on access and availability. Sample events took place in January, April, July and October 2013. In addition, three locations were selected for opportunistic sampling of surface water, if present. Rains at the site caused some intermittent surface water flow in Grayback Arroyo and surface water samples were collected at the site in July, September, and October.
- A Sampling and Analysis Plan (SAP) (September 2010) was prepared for review by the New Mexico Mining and Minerals Division (MMD). The SAP describes data to be collected including proposed sampling methodology and frequency, data sources, and sampling locations, to document existing resource conditions both within and outside the permit boundary in support of the required Baseline Data Report (discussed below).
- A Baseline Data Report (BDR) was completed and submitted to the cooperating federal and state regulatory agencies for review in June 2012. Responses to agency comments

were submitted in July 2013. The BDR summarizes 12 months or more of data collection at the site and in the region including: vegetation, wildlife, topsoil, geology, surface water, groundwater, cultural properties, air quality, and meteorological data.

1.20.5 Social

The Arrowhead Center at New Mexico State University was contracted in September 2011 to complete a socioeconomic study of the Copper Flat Mine project in Sierra County. The final socioeconomic study was completed in August 2012.

The report conclusions are presented in 2012 dollars and indicated that the mine would create over 181 jobs in Sierra County and an additional 1,170 jobs within the state. The reported noted that the number of jobs projected to be generated in the county was larger than the average number of unemployed.

The report indicates the mine operation will generate significant monies to the state of New Mexico and Sierra County by payment of severance taxes, processor's tax, property taxes, gross receipts taxes, compensating taxes, personal income tax and corporate tax.

1.20.6 Mine Closure and Reclamation

The Mining Act Reclamation Program (MARP) was created under the New Mexico Mining Act of 1993 to regulate hardrock mining activities for all minerals, and requires the preparation of a reclamation plan for submittal and approval by MMD and NMED. THEMAC has submitted the Copper Flat Permit Application Package (PAP), which includes the Mine Operation and Reclamation Plan (MORP) and BDR. The PAP was submitted on July 18, 2012 and deemed administratively complete on August 22, 2012. The PAP is currently undergoing technical review by State regulatory agencies and their comments and concerns will be addressed once received. Closure of the tailing facility must comply with requirements of the NMOSE.

As proposed, the current project will be developed, operated and closed with the objective of leaving the property in a condition that will mitigate potential environmental impacts and restore the land to an agreed-to land use and capability. The reclamation plan will be developed with State and federal agency input and coordination. Closure and reclamation activities will be carried out concurrent with mine operations wherever possible, and final closure and reclamation measures will be implemented at the time of mine closure.

Surface facilities, equipment and buildings related to the mining project will be removed. Foundations on federal lands will be broken up and removed to nearby THEMAC controlled land and foundations on THEMAC controlled lands will be broken and left in place. All broken foundation material will be covered, and the site facilities restored to self-sustaining plant communities similar to those that are currently present on-site and on adjacent undisturbed lands. The topography, slopes and aspects of the disturbed and reclaimed areas will be developed to blend in with the present, existing physiographic forms of the Copper Flat area, as feasible.

The un-inflated and un-discounted direct mine closure costs (excluding the contingency costs) for the Copper Flat Project range from $30.3 million (including all physical reclamation activities and tailings solution management) to $42.5 million (including pit water management). With indirect costs for engineering and permitting, project and construction management, procurement and insurances, the estimated total reclamation and closure cost is anticipated to be as much as $44.1 million.

1.21 CAPITAL AND OPERATING COST ESTIMATES

Capital and operating cost estimates were developed for the Copper Flat project, as defined in this document. Capital costs were estimated by IMC for the mine, M3 for the processing plant, Golder Associates Inc. (Golder) for the tailing storage facility, Livingston Associates for the water supply system, and T&D services, a New Mexico power engineering consulting firm for the cost to reestablish power.

1.21.1 Operating Cost

The average cash operating cost over the life of the mine is estimated to be $11.29 per ton of ore processed, excluding the cost of the capitalized pre-stripping. Cash operating cost includes mine operations, process plant operations, general administrative cost, smelting and refining charges and shipping charges. Table 1-8 shows the estimated operating cost by area per metric ton of ore processed, and the total over the life of mine assuming 113.1 million short tons of ore are processed.

Table 1-8: Life of Mine Operating Cost

Cost Center	$/Ore Ton	$/lb Cu
Mine	$2.61	$0.47
Process Plant	$4.83	$0.87
General Administration	$0.56	$0.10
Smelting/Refining Treatment	$3.29	$0.59
Total Operating Cost Before By-Product Revenue	$11.29	$2.03
By-Product Revenue		($0.88)
Total Operating Cost After By Product Credits		$1.15

1.21.2 Capital Cost

The total initial capital cost for Copper Flat is expected to be $360.5 million, as shown in Table 1-9.

Table 1-9: Initial Capital

	$ in millions
Mining (includes preproduction)	$15.3
Process Plant	$310.2
Owner's Cost	$35.0
Total	**$360.5**

The total life of mine sustaining capital is estimated to be $62.5 million. The sustaining capital will be expended during a 12-year period.

1.22 ECONOMIC ANALYSIS

The design basis for the process plant is 10.8 million tons per year. The recoveries are projected to average the following for the life of the mine:

- Copper 93.1%
- Molybdenum 78.1%
- Gold 73.7%
- Silver 82.7%

Metal sales prices used in the evaluation are as follows:

- Copper $3.00/pound
- Molybdenum $9.50/pound
- Gold $1,350.00/ounce
- Silver $22.00/ounce

Estimated life-of-mine recoveries from the process plant are presented in Table 1-10.

Table 1-10: Recovered Metal Production

Metal	Life of Mine Production
Copper (klbs)	628,015
Molybdenum (klbs)	15,717
Gold (kozs)	227
Silver (kozs)	5,950

The base case Net Income After Tax amounts to $408.7 million and indicates that the project has an Internal Rate of Return (IRR) of 20.0 percent with a payback period of 3.6 years. Table 1-11 compares the base case project financial indicators with the financial indicators when different variables are applied. The results show that metal prices have the most impact on the project while variance in the operating cost has the least impact on project economics.

Table 1-11: After-Tax Sensitivity Analysis

		NPV @ 0%	NPV @ 8%	IRR	Payback (yrs)
Base Case		$457,118	$186,944	20.0%	3.6
Metal Prices	+20%	$787,573	$390,861	31.0%	2.7
	-20%	$114,851	($29,883)	5.8%	8.7
Capital Cost	+20%	$401,599	$130,690	15.2%	4.2
	-20%	$510,775	$241,299	26.5%	3.1
Operating Cost	+20%	$324,695	$104,824	15.1%	4.2
	-20%	$584,950	$264,129	24.2%	3.3

1.23 ADJACENT PROPERTIES

Adjacent lands include federal, state and private property. Federal lands are administered by the BLM, and locally there are numerous placer and lode claims on the federal land held by individuals and clubs for recreational gold panning from surface mineral concentrations. There are no other known porphyry copper deposits within 30 miles of the Copper Flat project.

1.24 PROJECT DEVELOPMENT

The development schedule forming the basis of the Feasibility Study assumes the following significant milestones:

Receive EIS Record of Decision:	June 2015
Receive State Mine Permit:	August 2015
Start Plant Basic Engineering:	August 2014
Begin Construction:	August 2015
Start Plant Operations:	December 2016
Achieve Design Production:	April 2017

1.25 INTERPRETATION AND CONCLUSIONS

A significant amount of development-level work has been recently completed as part of the overall development and evaluation of the Copper Flat Project. This includes metallurgical testing, environmental and economic assessment, evaluation of existing foundations and infrastructure, as well as the complete assessment of the project's reserves. The economic analysis provided in this report demonstrates that the project is economically viable.

The reserve model and reserve classification developed for this report meets or exceeds CIM reporting standards. It is believed that the quality and quantity of the data used to develop the reserve model is sufficient and the methodology used to prepare the reserve model is correct. Consequently, it is believed that the reserve model will be a reasonable predictor of the copper and molybdenum grades and tonnages specified in the report's mine plan.

Comprehensive metallurgical testing conducted on the Copper Flat mineralization more than thirty years ago and the process used in the 1982 Quintana Minerals operation are still valid, as confirmed by recent metallurgical test results. The results of the CSMRI pilot plant tests, recent metallurgical testing, and operation of the Quintana concentrator for three and-a-half months in 1982 demonstrate the success of the process and that there are no adverse processing factors that require any extraordinary process engineering or deleterious elements in the Copper Flat ore. The ore is of medium hardness, amenable to copper/moly flotation, gives products that thicken and filter readily and will produce saleable copper and moly concentrates. The conceptual process flow sheet and processing design developed as part of this study is considered "Standard" practice in the mining industry. It is believed that the processing plant is capable of achieving an average of 10.8 million tons per year and that the process will yield metal recoveries as stated in the report.

The tailings storage facility design developed for this study utilizes best technological practices to ensure containment of the processed tailings. Additionally, the design capacity of the tailings storage facility is sufficient to contain the reserves stated in this report in an environmentally sound manner.

Access to electrical power and water necessary to sustain the operation as specified in this report is believed to be reasonable and achievable. Access to all of the land within the permit boundary has been secured removing uncertainties concerning the ability to implement the plans in this report in terms of land access.

1.25.1 Risks

The following risk aspects are noted:

- Market risks associated with base metal and precious metal mining projects always exist. The economics of this project used a base case of $3.00 copper price, $9.50 molybdenum price, $1,350 gold price and $22 silver price.
- Capital costs and construction estimates were based on current prevailing costs in the construction industry, which are presently competitive. If the competitiveness of the construction industry were to change, the cost of the project could increase at the time of actual construction.
- Water allocation rights and water usage must be addressed for the Project to proceed to production. NMCC has secured 7,481 acre-ft/yr of declared water rights, which is sufficient to operate the mine. However, at this time, the New Mexico Office of the State Engineer has acknowledged vested rights that are less than what is needed operated the mine. NMCC has engaged in mediation with the NMOSE with the goal of resolving this

issue. Attorneys at Law & Resource Planning Associates, legal counsel to NMCC, consider NMCC's claim to the declared water rights to be very strong. However, the outcome of the mediation cannot be guaranteed. Furthermore, even if successful, the overall process may cause unforeseen delays to project execution.

- A pit lake will form after operations have ceased based on the current pit configuration. Geochemical characterization predictive modeling was developed for the Copper Flat project. The model simulations demonstrate that all of the modeled chemical parameters are expected to be below New Mexico livestock standards (NMAC 20.6.4.900) in the 100 year post-closure pit lake with the possible exception of selenium. In addition, mercury concentrations are anticipated to increase over time, but remain below the livestock standard (0.01 mg/L). It is predicted that the future pit water will exceed wildlife surface water standards for selenium (0.05 mg/L) and mercury (0.00077 mg/L). Mercury concentrations are predicted to be marginally above the recently promulgated wildlife standard by year 25. However, this exceedence may not represent a true ecological risk to area wildlife within the Copper Flat area. The proposed post-mining land use for the mine pit is wildlife habitat (not necessarily aquatic habitat); therefore, NMCC will pursue long-term mitigations strategies through regulatory processes or engineering controls or both.

The following risks with respect to the TSF are noted:

- Unexpected site conditions could impact borrow material availability and construction costs.
- Alternatives for TSF construction are constrained by existing permit limits.
- Buried infrastructure from the old Quintana TSF may impact construction costs.
- Unthickened cyclone overflow delivered at the proposed processing rate will exhibit less than optimum consolidation behavior under field conditions due to the fine grained nature of the tailings and a high rate of rise inside the TSF. Failure to maximize sand recovery through cyclone plant operation will result in the discharge of whole tailings into the TSF and as a consequence, sand and storage capacity will be lost.
- Variations in the mined ore and the tailings delivered to the impoundment could potentially impact predicted TSF operation and performance.
- Given the current site constraints, mine processing plan and ore reserve, designing a TSF with the capacity to meet tailings storage requirements places a high demand on the availability of cyclone underflow sand for dam construction. The operator will be required to commit to continuous cyclone plant operation and rigorous cyclone plant operating procedures.

1.25.2 Opportunities

The following opportunity aspects are noted:

- Upside market potential associated with base metal and precious metal pricing exists.

- Other activities as discussed in the recommendations section of this report, once implemented, have the potential to improve Project economics.
- The economic model forming the basis of the study assumes all mill processing equipment is purchased new. However, the standard mining and ore treatment methods considered create an opportunity to reduce project capital costs through the utilization of used, refurbished equipment or equipment that becomes available through canceled orders.
- The study assumes mining is self-performed and includes a capital cost for mining equipment. An opportunity to reduce upfront capital requirements exists through employment of a contract miner. Life-of-mine costs are typically increased with a contract miner; however, the resulting reduction in initial capital cost may improve the overall economics of the project.

The following opportunities with respect to the TSF are noted:

- Initial earthwork requirements could be substantially reduced if alternative sources for construction borrow and reclamation cover materials could be developed outside the TSF footprint.
- The operator should monitor tailings consolidation and post deposition density during operations. If tailings consolidation rates exceed predictions, it may be possible to decrease cyclone plant utilization and reduce the ultimate height of the TSF, and reduce sand demand.

There are several tailings distribution system design features that will facilitate high cyclone plant utilization.

- The plant will contain 20 cyclones in a single cluster with 16 cyclones required to process the tailings inflow. There will be extra cyclones that can be brought on line if one fails. Normal maintenance of the cyclones can be undertaken while the plant is in operation.
- Cyclones have no moving parts and while subject to wear they are relatively maintenance free.
- It is assumed that the operator will monitor cyclone plant conditions and conduct maintenance of other cyclone plant components coincident with process facility maintenance shutdowns.
- If the cyclone plant cannot be operated for short periods of time, discharge from the flotation plant can be routed to an emergency pond for temporary storage.
- The cyclone underflow distribution system has two legs, one routed southward and one northward around the TSF. Each leg is capable of transporting the entire cyclone underflow and can be operated independently. Underflow discharge can be maintained in one leg while the other is serviced or relocated. The availability of two underflow distribution pipes will facilitate continuous sand placement on the dam.
- Replacement of individual cyclones is a relatively easy process. The operator should have spares on site to cover this eventuality.

1.26 RECOMMENDATIONS

Because the economic analysis provided in this report demonstrates that the project is economically viable, the THEMAC management team should focus on further development and evaluation of the project including moving forward on detailed engineering. Costs for detailed engineering are included in the feasibility study cost estimate.

1.26.1 Mining and Modeling

THEMAC should consider the following regarding mining and modeling:

1) Geologic interpretation of rock type and structure should continue as detailed engineering advances. Improved definitions of rock and structure could improve grade estimation and prediction of process response.
2) Communication should be continued between the project geology team and the process design engineers. Updated understanding of geology could impact process design and testing in the future.
3) Geotechnical work in the pit may be considered as detailed engineering advances. Improved understanding of pit slope stability could have an impact on future pit designs.

1.26.2 Metallurgy

Metallurgical testing was conducted as part of the feasibility study, as presented in Section 13. The results of that work in conjunction with previous testing and review of production data from the previous operation of the mine are deemed to be sufficient to support development of the project. No additional metallurgical testing is recommended at this time.

1.26.3 Tailings Storage Facility

No additional testing work is recommended at this time. Detailed engineering of the TSF should include the development of an operating plan that will facilitate meeting cyclone plant operation and sand production requirements.

1.26.4 Environmental

The mine waste dumps will be constructed to facilitate final grading for reclamation. During detailed operating plan development, consider and advance strategies to complete final grading, topsoil spreading and seeding concurrently with mining activities.

1.27 REFERENCES

All supplemental reference documentation is available in NMCC's corporate offices. See Section 27 for a complete list of references for this study.

2 INTRODUCTION

2.1 PURPOSE

M3 Engineering & Technology Corporation (M3) has been commissioned by THEMAC Resources Group Limited (THEMAC) to prepare a Feasibility Study for the Copper Flat Copper/Molybdenum Project (Copper Flat or the Project) compliant with Canadian Securities Administrators (CSA) National Instrument 43-101 (NI 43-101). The Project is owned and operated by New Mexico Copper Corporation (NMCC), a wholly owned subsidiary of THEMAC Resources Group Limited. NMCC was incorporated in New Mexico in July 2009. Copper Flat is located in South Central New Mexico, near the town of Hillsboro, approximately 150 miles south of Albuquerque, and approximately 20 miles southwest of Truth or Consequences (straight-line distances).

This report has been prepared in accordance with the guidelines provided in NI 43-101 Standards of Disclosure for Mineral Projects, and conforms to Form 43-101F1 for technical reports. The Resource and Reserves definitions are as set forth in the Appendix to Companion Policy 43-101CP, CIM – Definitions Adopted by CIM Council, June 30, 2011. THEMAC may also use this Feasibility Study Report for any lawful purpose to which it is suited. The intent of this report is to provide the reader with a comprehensive review of the potential economics of this mining operation and related project activities, and to provide recommendations for future work programs to advance the Project.

The Copper Flat Project is a brownfield project located in the Hillsboro Mining District (also known as the Las Animas Mining District), which has a history of gold and silver mining dating back to 1877 and copper mining back to 1911 (McLemore, 2001). Modern exploration activities date back to 1952 and ultimately led to the development and construction of a 15,000 ton per day commercial copper mining operation in 1982, which was operated by Quintana Mining Corporation (Quintana). Low copper prices and high interest rates led to the cessation of the Quintana Mill after 3 months of operation; however, the Quintana mill produced 7.4 million pounds of copper during this period (Raugust, 2003). A significant amount of infrastructure was left in place when the mine was reclaimed in 1986. The remaining Quintana infrastructure is described and quantified in Section 21.2.4 of this report. Subsequent to Quintana, Alta Gold Co. of Nevada implemented permitting activities to reactivate the Copper Flat Mine, which was unsuccessful due to the financial failure of the company in 1999, but not before significant environmental and other studies were completed. NMCC has obtained copies of several of the studies and other information prepared by Alta Gold for its use.

Building on historic information and experience, NMCC carried out due diligence on the Project. A preliminary economic assessment of the project was prepared for THEMAC and summarized in a NI 43-101 Technical Report dated June 30, 2010 (SRK, 2010). A prefeasibility study has also been prepared for the project, which was summarized in a NI 43-101 Technical Report prepared by M3 dated August 22, 2012 (M3, 2012a). Both reports are available on SEDAR (www.sedar.com) operated by the Canadian Securities Administrators. THEMAC has advanced the Project with a Feasibility Study which is summarized in this NI 43-101 Technical Report.

2.2 SOURCES OF INFORMATION

The sources of information include data and reports supplied by THEMAC personnel, and documents referenced in Section 27. M3 used its experience to determine if the information from previous reports was suitable for inclusion in this report and adjusted information that required amending. Revisions to previous data were based on research, recalculations and information from other projects. The level of detail utilized is appropriate for this level of study.

This Feasibility Study is based on the following sources of information.

- Personal inspection of the Copper Flat site and surrounding area.
- Technical information provided to M3 by THEMAC through various reports.
- Information provided to M3 by Independent Mining Consultants (IMC) related to resource model generation and the mine plan.
- Budgetary quotes from vendors for engineered equipment.
- Information provided to M3 by Golder Associates, Inc. (Golder) concerning the tailings disposition and water reclamation design.
- Technical and cost information provided by Tri-State Generation and Transmission Association, Inc. (Tri-State) concerning power supply for the project.
- Technical and economic information subsequently developed by M3 and associated consultants.
- Information provided by other experts with specific knowledge and expertise in their fields as described in Section 3 of this report, Reliance on Other Experts.
- Additional information obtained from public domain sources.

The information contained in this report is based on documentation believed to be reliable. Information utilized in this report will either be retained in THEMAC's offices in Albuquerque, New Mexico, or will be readily available from THEMAC's consultants project files subject to an appropriate level of confidentiality and non-disclosure. The recommendations and conclusions stated in this report are based on information provided to M3.

2.3 LIST OF QUALIFIED PERSONS

The individuals who have provided input to this Feasibility Study have extensive experience in the mining industry and are members in good standing of appropriate professional institutions. Conrad E. Huss, P.E. (M3) is the primary Qualified Person (QP) for this report, especially plant operating and capital costs and financial analysis (Sections 1-3, 19, 24, 25, and 27). John Marek, P.E. (IMC), is the QP for drilling, sample analysis, data verification, resource and reserve estimation, and mining methods and costs (Sections 10-12, 14-16, 21, and 26.1). Thomas Drielick, Principal Metallurgist (M3), is the QP for the mineral processing, metallurgical testing, and recovery methods (Sections 13, 17, 21.1, 21.2.2, 22, and 26.2). Raymond E. Irwin, SME-RM (THEMAC) is the QP for geology, deposit characterization, exploration, and adjacent properties (Sections 4.1-4.4, 7, 8, 9, and 23). J. Steven Raugust, C.P.G. (THEMAC), is the QP for property, accessibility, history, infrastructure, environmental studies, and permitting (Sections 4.5-4.7, 5, 6, 18, 20, and 26.4). Eugene Muller, P.E. (Golder) is the QP for tailings design and costs (Sections 20.2, 21.2.3, 25.2.1, 25.3.1 and 26.3). Mark A. Willow, SME-RM, (SRK) is the QP for the reclamation cost estimate (Sections 20.5.5 and 22.5.2). Certificates for each QP are provided in Appendix A.

The following authors were responsible for the sections as listed in Table 2-1.

Table 2-1: List of Qualified Persons

Author	Company	Designation	Section Responsibility
Conrad E. Huss	M3 Eng.	P.E.	1, 2, 3, 19, 24, 25, 27
J. Steven Raugust	THEMAC	C.P.G.	4.5-4.7, 5, 6, 18, 20, 26.4
Raymond E. Irwin	THEMAC	SME-RM	4.1-4.4, 7, 8, 9, 23
John Marek	IMC	P.E.	10, 11, 12, 14, 15, 16, 21.1.7, 21.2.1, 26.1
Thomas L. Drielick	M3 Eng.	P.E.	13, 17 (M3 drawings), 21.1, 21.2.2, 22, 26.2
Eugene Muller	Golder	P.E.	20.2, 21.2.3, 25.2.1, 25.3.1, 26.3
Mark A. Willow	SRK	SME-RM	20.6.5, 22.5.2

2.4 SITE VISIT & PERSONAL INSPECTIONS

M3 personnel have made two site visits, the latest of which was on January 31, 2013. M3 personnel participating in the site visit included Matt Murray and Tim Reiter, who designed the general arrangements; Shelby Madrid, the civil engineer for the project; Shannon Orr, the lead estimator; Oscar Avilucea; the structural lead; and Rick Zimmerman, the M3 project manager. Peter Olszewski, who was responsible for the water supply system design, visited the site on January 15, 2013. During the site visit, M3's inspection included the access road, previous mill site area, waste dumps, the top of the primary crusher structure, most of the foundation of the former concentrator building, and the floor slab of the former truck shop.

John Marek and Yvette Gengler of IMC visited the Copper Flat Project September 7-8, 2011. The storage facilities for drill core were visited, and historic pulp data were reviewed. During that visit, IMC observed the following procedures in progress:

- Diamond Drilling
- Core Photography
- Core Geotechnical Logging
- Core Geologic Logging
- Core Sawing for Sample Shipment
- Sample Handling and Labeling Procedures

The visit provided familiarity with the local terrain and site conditions for mine and waste storage design. Observation of the primary rock types in pit wall exposure and in core with guidance from the Copper Flat site geologists was also accomplished by IMC personnel. Additional data regarding drillhole locations, orientations, and logging information was gathered during the visit that was integrated into the data base for determination of mineral resources and mineral reserves.

Gene Muller of Golder has visited the project site several times. His most recent visit to the site was on March 2, 2012. His visits have included surface examinations of the proposed location of the tailings storage facility and surrounding areas that may be appropriate for obtaining materials for construction of the facility and reclamation cover.

Mark Willow of SRK Consultants visited the Copper Flat Property on April 13, 2012 to observe existing conditions and gather information needed for the reclamation and closure estimate.

2.5 TERMS OF REFERENCE AND UNITS OF MEASURE

This Feasibility Study Report is intended for the use of THEMAC for the further development and advancement of Copper Flat into the detailed design stage. This report provides a mineral resource estimate, a classification of resources in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) classification system and an evaluation of the property to provide a current view of the potential project economic outcome.

Imperial units (American System) of measurement are used in this report. Abbreviations are given in Section 2.5.4. All monetary values are in U.S. dollars ($) unless otherwise noted.

2.5.1 Mineral Resources

The mineral resources and mineral reserves have been classified according to the “CIM Definition Standards on Mineral Resources and Mineral Reserves (November 2010). Accordingly, the Resources have been classified as Measured, Indicated or Inferred, and the Reserves have been classified as Proven, and Probable based on the Measured and Indicated Resources as defined below.

A Mineral Resource is a concentration or occurrence of natural, solid, inorganic or fossilized organic material in or on the Earth’s crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.

An ‘Inferred Mineral Resource’ is that part of a Mineral Resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes.

An ‘Indicated Mineral Resource’ is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes that are spaced closely enough for geological and grade continuity to be reasonably assumed.

A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes that are spaced closely enough to confirm both geological and grade continuity.

2.5.2 Mineral Reserves

A Mineral Reserve is the economically mineable part of a Measured or Indicated Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified. A Mineral Reserve includes diluting materials and allowances for losses that may occur when the material is mined.

A 'Probable Mineral Reserve' is the economically mineable part of an Indicated, and in some circumstances a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified.

A 'Proven Mineral Reserve' is the economically mineable part of a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction is justified.

2.5.3 Glossary

Term	Definition
Assay	The chemical analysis of mineral samples to determine the metal content.
Capital Expenditure	All other expenditures not classified as operating costs.
Composite	Combining more than one sample result to give an average result over a larger distance.
Concentrate	A metal-rich product resulting from a mineral enrichment process such as gravity concentration or flotation, in which most of the desired mineral has been separated from the waste material in the ore.
Crushing	Initial process of reducing ore particle size to render it more amenable for further processing.
Cut-off Grade (CoG)	The grade of mineralized rock, which determines as to whether or not it is economic to recover its gold content by further concentration.
Dilution	Waste, which is unavoidably mined with ore.
Dike	A sheet of rock that that formed in a crack in a pre-existing rock body. It is a type of tabular or sheet intrusion, that either cuts across layers in a planar wall rock structures, or into a layer or unlayered mass of rock.

Dip	Angle of inclination of a geological feature/rock from the horizontal.
Fault	The surface of a fracture along which movement has occurred.
Gangue	Non-valuable components of the ore.
Grade	The measure of concentration of copper within mineralized rock.
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.
Lithological	Geological description pertaining to different rock types.
LOM	Life-of-Mine.
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.
ROM	Run-of-Mine.
Sedimentary	Pertaining to rocks formed by the accumulation of sediments, formed by the erosion of other rocks.
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.
Sustaining Capital	Capital estimates of a routine nature, which is necessary for sustaining operations.
Tailings	Finely ground waste rock from which valuable minerals or metals have been extracted.
Thickening	The process of increasing the solids content of a slurry.
Total Expenditure	All expenditures including those of an operating and capital nature.
Variogram	A statistical representation of the characteristics (usually grade).

2.5.4 Copper Flat Rock Types

Term	Definition
Andesite	Volcanic flow rock surrounding the Copper Flat, Quartz Monzonite ore body, generally not mineralized, but does contain localized sulfides in the form of pyrite.
Breccia Pipe	Copper Flat Ore - Best described as a crackle breccia, which consists of largely subangular blocks of mineralized Quart Monzonite, with locally abundant mineralized latite sourced from local dikes.
Biotite Breccia	Copper Flat Ore – One of two types of Quartz Monzonite Breccia with higher percentage of biotite in the matrix groundmass between the Quartz Monzonite rock fragments.
Chalcopyrite	Sulfide mineral which is the primary source of copper in the Copper Flat ore body. It is composed of copper, iron, and sulfur.
Diabase	Minor intrusive igneous rock local mapped in contact with Quartz Monzonite.
Feldspar Breccia	Copper Flat Ore - One of two types of Quartz Monzonite Breccia with higher percentage of quartz and feldspar in the matrix groundmass between the Quartz Monzonite rock fragments. Also known as Quartz Feldspar Breccia.
Latite	Igneous intrusive rock that occur at Copper Flat as dikes that primarily trend northwest or northwest.
Quartz Monzonite	Copper Flat Ore – Primary rock type in the Copper Flat ore body. The Quartz Monzonite hosts mineralization by pyrite, chalcopyrite, molybdenite, minor bornite, minor gold, and minor silver.
Pyrite	Sulfide mineral composed of iron and sulfur.

2.5.5 Abbreviations

Abbreviation	Unit or Term
A	Ampere
AA	atomic absorption
ABA	Acid Base Accounting
a/m^2	amperes per square meter
ANFO	ammonium nitrate fuel oil
Ag	Silver
ARD	acid rock drainage
ASTM	American Society for Testing Materials
Au	Gold
CuEq	copper equivalent grade
BDR	Baseline Data Report
bft^3	billion cubic feet (feet)
BLM	US Department of the Interior, Bureau of Land Management
CoG	cut-off grade
cfm	cubic feet per minute
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CPA	Certified Public Accountant
CRec	core recovery
Cu	Copper
°	degree (degrees)
dia.	Diameter
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
°F	degrees Fahrenheit
FA	fire assay
famsl	feet above mean sea level
FLPMA	Federal Land Policy Management Act
FOS	Factor of Safety
Ft	foot (feet)
ft^2	square foot (feet)
ft^3	cubic foot (feet)
ft^3/st	cubic foot (feet) per short ton
gal	Gallon
gpm	gallons per minute
HDPE	Height Density Polyethylene
hp	Horsepower
ICP	induced couple plasma
ID2	inverse-distance squared
ID3	inverse-distance cubed
ILS	Intermediate Leach Solution
In	Inch
koz	thousand troy ounces
kst	thousand short tons
kst/d	thousand short tons per day
kst/y	thousand short tons per year
kV	Kilovolt
kW	Kilowatt
kWh	kilowatt-hour
kWh/st	kilowatt-hour per short ton
Lb	Pound
LLDDP	Linear Low Density Polyethylene Plastic
LCRS	Leakage Collection and Recovery System
LRGB	Lower Rio Grande Basin
LoM	Life-of-Mine

Ma	Million years ago
mi	Mile
mi^2	Square mile
Mlbs	million pounds
MARP	Mining Act Reclamation Program
MDA	Maximum Design Earthquake
MMD	New Mexico Dept. of Energy, Minerals and Nat. Res. - Mining and Minerals Division
MME	Mine & Mill Engineering
MORP	Mine Operation and Reclamation Plan
Mo	Molybdenum
Moz	million troy ounces
MPO	Mine Plan of Operations
MSHA	Mine Safety and Health Administration
Mst	Million short tons
Mst/y	Million short tons per year
MW	Million watts
MVA	Megavolt Ampere
m.y.	million years
NAG	Net Acid Generating
NEPA	National Environmental Policy Act of 1969 (as Amended)
NGO	non-governmental organization
NMAC	New Mexico Administrative Code
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environment Department
NMGFD	New Mexico Game and Fish Department
NMOSE	New Mexico Office of the State Engineer
NI 43-101	Canadian National Instrument 43-101
NOAA	National Oceanic and Atmospheric Administration
NSR	Net Smelter Return
OSE	New Mexico Office of the State Engineer
oz	troy ounce
oz/s	troy ounce per short ton
%	Percent
QP	NI 43-101 Qualified Person
PAP	Permit Application Package
PCPE	Perforated Corrugated Polyethylene
PLS	Pregnant Leach Solution
PGA	Peak Ground Acceleration
PMF	probable maximum flood
POO	Plan of Operations
ppb	parts per billion
ppm	parts per million
psi	pounds per square inch
QA/QC	Quality Assurance/Quality Control
RC	rotary circulation drilling
RoM	Run-of-Mine
RQD	Rock Quality Description
SEC	U.S. Securities & Exchange Commission
sec	Second
SG	specific gravity
SHPO	New Mexico State Historic Preservation Office
SLERA	Screening Level Ecological Risk Assessment
SPT	Standard Penetration Test
St	short ton (2,000 pounds)
T	tonne (metric ton) (2,204.6 pounds)
st/h	short tons per hour
st/d	short tons per day
st/y	short tons per year

TC-RC	treatment charges – refining charges, which are smelter charges
TDS	Total Dissolved Solids
TSF	tailings storage facility
TSP	total suspended particulates
µ	micron or microns, micrometer or micrometers
UAA	Use Attainability Analysis
USGS	US Geological Survey
V	Volts
VFD	variable frequency drive
W	Watt
WRDF	Waste Rock Disposal Facility
XRD	x-ray diffraction
Y	Year
yd^2	square yard
yd^3	cubic yard

3 RELIANCE ON OTHER EXPERTS

The Copper Flat Technical Report relies on reports and statements from legal and technical experts who are not Qualified Persons as defined by NI 43-101. The Qualified Persons responsible for preparation of this report have reviewed the information and conclusions provided and determined that they conform to industry standards, are professionally sound, and are acceptable for use in this report.

3.1 PROPERTY OWNERSHIP AND TITLE

Legal review of the Copper Flat property ownership and title was completed by Mr. Mark K. Adams, an attorney with the New Mexico law firm Rodey, Dickason, Sloan, Akin & Robb, PA (the Rodey Law Firm). Mr. Adams review and legal opinion are summarized in a June 2013 report titled *Updated Title Report - Copper Flat Properties - Sierra County, New Mexico* (Adams, 2013). In a letter prepared on October 28, 2013, Mr. Adams summarized the content of the June 2013 Updated Title Report and concluded that on the basis of his examination, NMCC owns a 100% interest in the mineral and surface estates in the patented mining claims, other patented lands, and unpatented mining claims and millsites included in the Copper Flat Properties, subject only to the royalties and advance royalties described in Part B and C of the Updated Title Report (Adams, 2013b). Detail regarding NMCC's landownership and title are described in Section 4.4 of this report. THEMAC is in possession of the Updated Title Report.

3.2 WATER RIGHTS

Legal review of the status and validity of water rights intended for use by the Copper Flat Mine was completed by Mr. Charles DuMars and Ms. Catherine Robinson, attorneys with the New Mexico law firm Law and Resource Planning Associates, PC. Mr. DuMars' and Ms. Robinson's review and legal opinion are summarized in a June 2013 letter to NMCC regarding *New Mexico Office of the State Engineer Files No. LRG-4652 through LRG-4652-S-17, LRG-4654* (DuMars and Robinson, 2013). THEMAC is in possession of this letter.

3.3 CONCENTRATE OFFTAKE

Guidance for development of smelter treatment and refining charges (TC-RC) and likely terms for Copper Flat concentrates was provided by Mr. Marc Ingelbinck, former Vice President of Base Metals Concentrates Marketing & Trading, BHP Billiton. Mr. Inglebinck documented his recommendations in emails and a memorandum to THEMAC dated June 3, 2013 (Inglebinck, 2013). THEMAC is in possession of Mr. Inglebinck's emails and memorandum.

3.4 ROYALTIES

Interpretation of royalty obligations for economic modeling was provided by Mr. Mark K. Adams of the Rodey Law Firm. The royalty obligations are discussed in the June 2013 Updated Title Report prepared by Mr. Adams as discussed in Section 3.1 of this report (Adams, 2013). The royalty obligation details are also summarized in Section 4.4 of this report. THEMAC is in possession all option and purchase agreements as well as correspondence with Mr. Adams that defines the royalty obligations.

3.5 TAXES

Examination and interpretation of New Mexico resource tax obligations for economic modeling was provided by Ms. Bobbi Hayes, a Certified Public Accountant (CPA) with Accounting and Consulting Group, LLP (ACG), a New Mexico accounting firm. ACG's analysis is documented in a memorandum dated May 16, 2013 (ACG, 2013).

THEMAC also researched the utilization of a local Industrial Revenue Bond (IRB) to be issued by Sierra County to offset the New Mexico Gross Receipts tax obligations towards certain tangible personal equipment which includes eligible equipment and machinery to be installed and operated at the mine. The applicability of utilizing an IRB was evaluated by Alan Hall, J.D. of the Rodey Law Firm in a memorandum dated October 1, 2013 (Hall, 2013). The capital equipment review was performed by Marcus Mims, CPA of CliftonLarsonAllen LLP (Clifton) (Mims, 2013). By segregating IRB-qualifying equipment from disqualifying equipment, Clifton quantified the potential tax benefit dependent on issuance of an IRB by Sierra County. THEMAC is in possession of supporting tax and IRB information provided by AGC, the Rodey Law Firm and Clifton.

3.6 ENVIRONMENTAL COMPLIANCE

John Shomaker and Associates (JSAI) has been assisting THEMAC with site management of water resources and a Stage 1 Abatement Plan for the existing Quintana tailings storage facility, which has been approved by the New Mexico Environment Department. The details of the THEMAC's environmental management at Copper Flat are described in Sections 4 and 20 of this Technical Report. Mr. Steven T. Finch, Vice President and Principal Hydrogeologist – Geochemist with JSAI, has provided his expert opinion that THEMAC and its consultants have maintained compliance with all State and Federal environmental compliance requirements at Copper Flat. Furthermore, the Copper Flat Site has been secured and current activities are implemented with best management practices for protecting the environment (JSAI, 2013b).

3.7 MOBILE EQUIPMENT COST ESTIMATING

Independent Mining Consultants and (IMC) and THEMAC have relied upon research and information provided by Ed Fidler in the technical memorandum titled *Used Mining Equipment Option, Updated 17 October 2013* (Fidler, 2013). Mr. Fidler researched the availability and costs for the used mining equipment market, which has been utilized for the mine equipment estimate presented in this study. IMC has relied on Mr. Fidler as an expert in this area.

4 PROPERTY DESCRIPTION AND LOCATION

The Copper Flat Project is a copper-molybdenum porphyry deposit located in Sierra County, South Central New Mexico. In 1982, Quintana Minerals Corporation (Quintana Minerals) brought the property into production as an open pit mine with a mill and concentrator (rated at 15,000 st/d). The mine was in production for three and a half months, but operations were halted when copper prices declined. The property was placed on care and maintenance until 1986 at which point all the buildings and equipment were removed and sold. However, considerable foundations and other infrastructure remain on site.

4.1 LOCATION

Copper Flat is located in the Hillsboro Mining District in South Central New Mexico, in Sierra County. The Hillsboro Mining District is also identified as the Las Animas Mining District in some references. The center of the mineralization is at approximately 32.970300N latitude, 107.533527W longitude. The Project is approximately 150 miles south of Albuquerque, New Mexico and approximately 20 miles southwest of Truth or Consequences, New Mexico (straight line distances). Access from Truth or Consequences is by 24 miles of paved highway and 3 miles of all-weather gravel road. The Project location is shown in Figure 4-1.

The property is located north of New Mexico State Highway 152 between the communities of Caballo and Hillsboro.

The project occupies all or parts of Sections 30 and 31, Township 15 South, Range 6 West; Sections 23-27 and 34-36, Township 15 South, Range 7 West; Section 6, Township 16 South, Range 6 West; and Section 2, Township 16 South, Range 7 West; all of the New Mexico Principal Meridian. The property is within the Hillsboro 15’ USGS quadrangle.

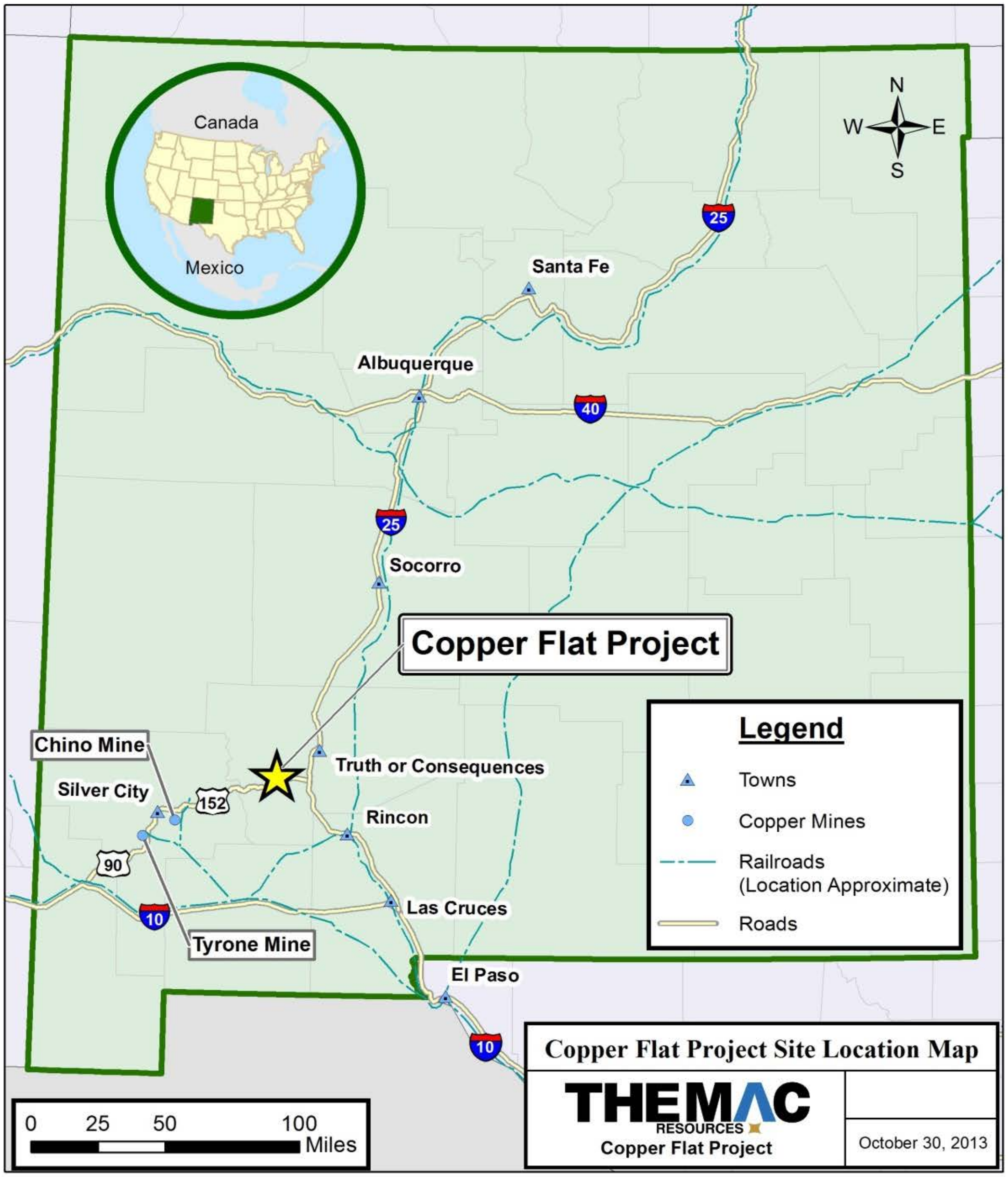


Figure 4-1: Project Location Map

4.2 MINERAL TENURE

Per New Mexico law, the owner of unpatented mining claims in the state must file a *Notice of Intention to Hold* with the County Clerk of the county in which the claims were located each year prior to December 31. The recording fee for a *Notice of Intention to Hold* is based on the number of entries to the county recording index; for each unpatented mining claim, such entries include (1) the name of the claim owner, (2) the name of each claim and/or " The Public," and (3) a land description. Fees are $25 for the first 10 entries and $25 for each additional 10 entries or portion thereof.

The recording fee for NMCC's *Notice of Intention to Hold* for the year ending December 31, 2012 was $575 and has been filed. Patented claims and other fee lands are subject to county and state property taxes, payable annually.

The Project includes 26 patented mining claims and 231 unpatented mining claims, (202 lode claims and 29 placer claims), 9 unpatented mill sites, and 16 fee land parcels in contiguous and noncontiguous land parcels and claim blocks.

An additional 1,200 acres in five tracts of land located within or adjacent to the property described in Section 4.1 were acquired by NMCC through an option to purchase an agreement from a local rancher in April 2013, bringing the projects contiguous and non-contiguous land parcels and claim blocks to approximately 4,741 total acres.

As described in Section 3.1, Reliance on Other Experts, legal review of the Copper Flat property ownership and title was completed by Mr. Mark K. Adams, an attorney with the Rodey Law Firm in New Mexico. Mr. Adams review and legal opinion are summarized in a June 2013 report titled *Updated Title Report - Copper Flat Properties - Sierra County, New Mexico* (Adams, 2013). In a letter prepared on October 28, 2013, Mr. Adams summarized the content of the June 2013 Updated Title Report and concluded that on the basis of his examination, NMCC owns a 100% interest in the mineral and surface estates in the patented mining claims, other patented lands, and unpatented mining claims and millsites included in the Copper Flat Properties, subject only to the royalties and advance royalties described in Part B and C of the Updated Title Report (Adams, 2013b). These royalty obligations are described in Section 4.4.2 of this report.

Within the project, a total of 2189.5 acres has been designated the permit area. The permit area consists of both patented and unpatented mining claims and fee lands all of which are controlled by NMCC.

Fee lands vary in acreage from parcel to parcel. All listed properties are owned by NMCC, purchased from Hydro Resources Corporation (Hydro Resources), CU Flat, LLC (Cu Flat), and GCM, Inc. (GCM) pursuant to the *Option and Purchase Agreement* described below or from Ryan and Wendy Fancher. Appendix B of the *Options and Purchase Agreement* contains a complete list of claims, millsites, and fee lands owned by NMCC. As with the project as a whole, all of the patented and unpatented claims, as well as, all fee lands located within the permit area are owned or controlled by NMCC. Approximately 30 of the 213 unpatented mining claims are located on lands patented under the federal Stock Raising Homestead Act, whereby NMCC owns the claims and right to explore for development and mine minerals, and the surface is owned by another non-governmental party.

Unpatented claims located before 2009 and the unpatented millsites were staked using compass and chain traverses and later surveyed. Unpatented claims located in 2009 and thereafter were staked using a Trimble GPS ground station and a handheld GPS. All fee lands were surveyed by licensed surveyors at various times during the Project's history, primarily in the 1970s and early 1980s. During late 2010 and in 2011, a licensed surveyor obtained data on all existing land survey points (to the extent they could be found on the ground) using modern high-tech equipment, including Trimble GPS ground stations. The attached map was created using this point data. Any missing points were extrapolated from pertinent documents, including mining claim location notices, deeds, U.S. mineral surveys and other surveys.

In 2012 and early 2013, a registered surveyor, re-surveyed and re-monumented all of the unpatented lode and placer mining claims, as part of a comprehensive claim maintenance program.

The United States has reserved by federal statute any oil, gas, coal, and certain other nonmetallic minerals not subject to the location of mining claims from the unpatented mining claims located after 1955 that are included in the Project. These reservations do not affect any of the patented claims or any of the unpatented claims located before 1955 over and around the mineral deposit. Figure 4-2 shows land status in the permit area and Figure 4-3 shows the millsite claims located east of the permit area and used for water wells.

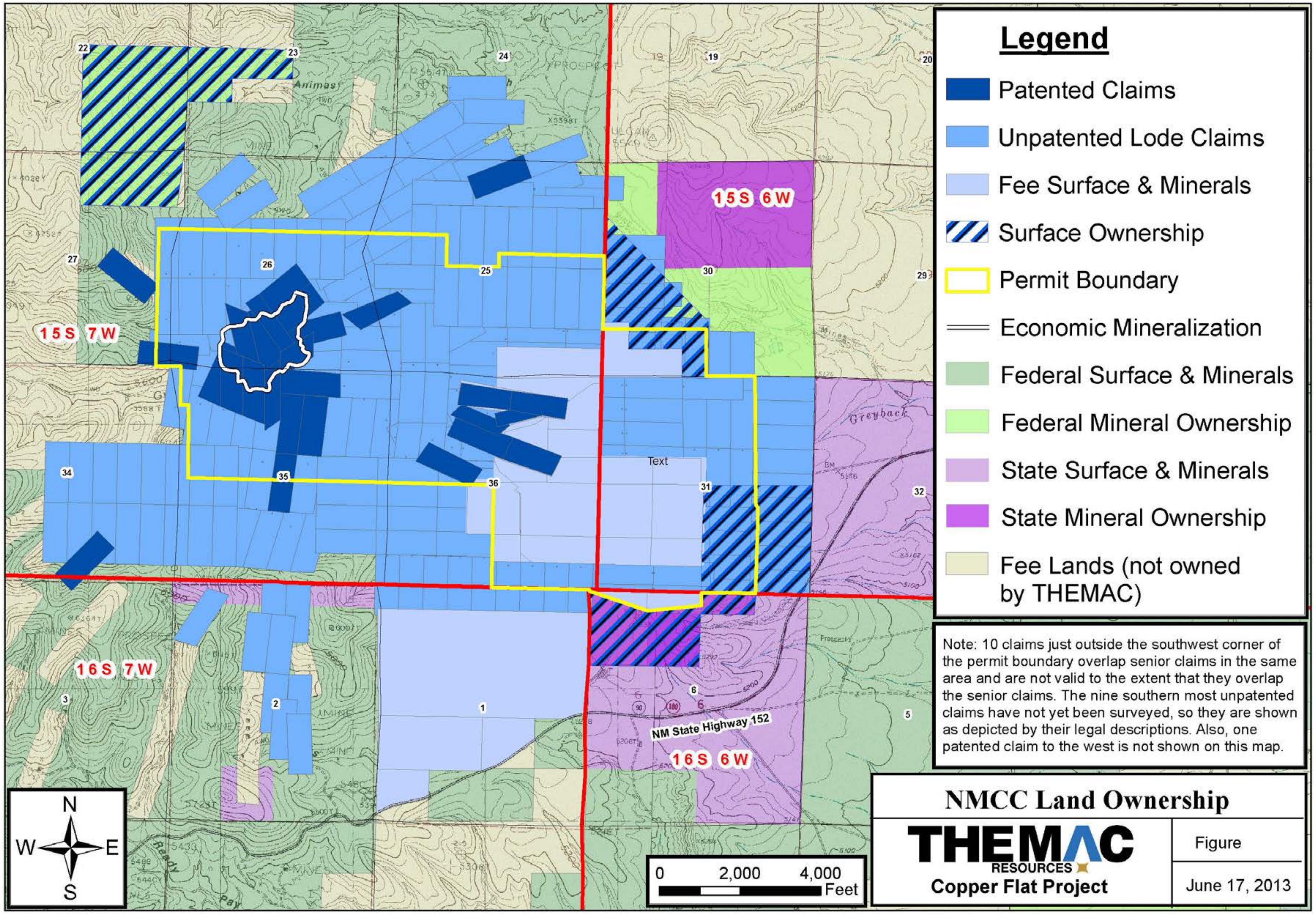


Figure 4-2: Land Status Map

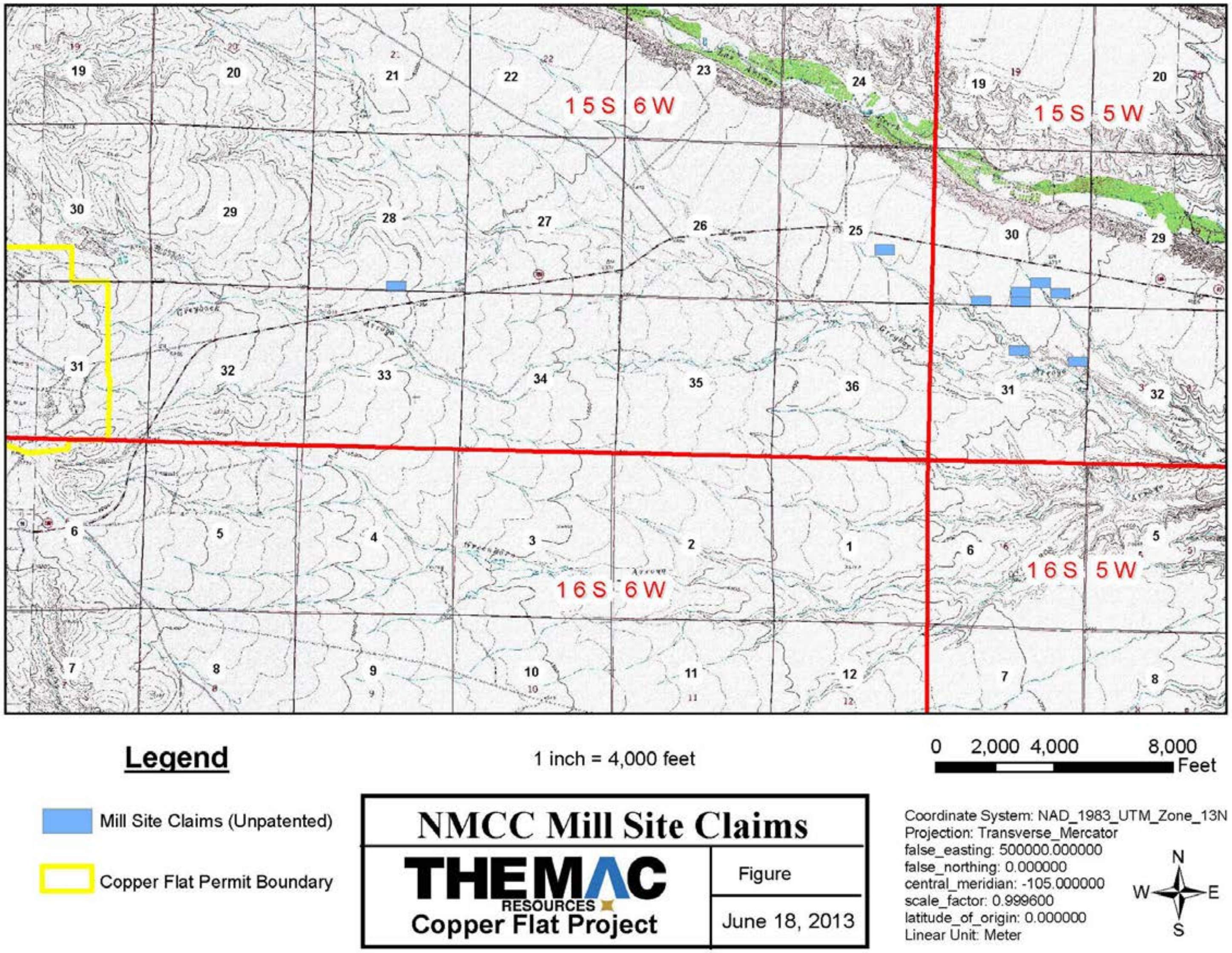


Figure 4-3: Noncontiguous Mill Site Map

4.3 LOCATION OF MINERALIZATION

The Copper Flat deposit is located entirely on patented and unpatented claims controlled by NMCC under the agreements discussed in Section 4.2. The deposit is hosted by the Cretaceous age CFQM and related breccia pipe that intrudes a roughly circular block of andesitic volcanic rocks about 4 miles in diameter. Although copper-molybdenum mineralization is contained within the Copper Flat porphyry stock and its associated breccia pipe, higher grade copper-molybdenum mineralization is localized in the western part of the breccia pipe and bordering CFQM in the vicinity of the Patten fault- Hunter fault zone intersection. Based on drilling, the Copper Flat deposit occupies an elliptically shaped area roughly 1,400ft wide and 2,100ft in length, and is composed almost entirely of hypogene sulfide mineralization. Pyrite and chalcopyrite are the dominant sulfide minerals and nearly all of the copper mineralization is in the form of chalcopyrite.

4.4 ROYALTIES, AGREEMENTS AND ENCUMBRANCES

4.4.1 Initial Option and Purchase Agreement

In 2009, NMCC obtained from Hydro Resources, Cu Flat LLC, and GCM the exclusive option described below to acquire their Copper Flat properties, which consisted of the following:

- The surface and mineral estates in 26 patented mining claims.
- The surface and mineral estates in 16 parcels of other fee land.
- Mining rights in 174 unpatented mining claims.
- Surface rights in nine unpatented millsites.

Table 4-1: Summary of Copper Flat Properties

Mineral Tenure	Patented Mining Claims	Fee Land Parcels	Unpatented Mining Claims	Unpatented Millsites
Surface and Mineral Estates	26	16	-	-
Mining Rights	-	-	174	-
Surface Rights	-	-	-	9

NMCC obtained its exclusive option in an *Option and Purchase Agreement* effective July 23, 2009 with Hydro Resources, Cu Flat, and GCM, which owned the properties. The *Option and Purchase Agreement* was amended five times through a First Amendment effective January 20, 2010, a Second Amendment effective April 1, 2010, a Third Amendment and Supplemental Memorandum effective May 28, 2010, a Fourth Amendment effective August 2, 2010, and a Fifth Amendment effective September 30, 2010. To exercise its option, NMCC paid Hydro Resources and GCM a total of $10,000,000 in installments pursuant to the *Option and Purchase Agreement*, with the final payment being made in May 2011, and now owns all properties covered by the *Option and Purchase Agreement*, as amended.

Table 4-2: Summary of Option and Purchase Agreement and Amendments with Hydro Resources, Cu Flat, and GCM

Agreement or Amendment	Date
Option and Purchase Agreement	July 23, 2009
First Amendment	January 20, 2010
Second Amendment	April 1, 2010
Third Amendment and Supplemental Memorandum	May 28, 2010
Fourth Amendment	August 2, 2010
Fifth Amendment	September 30, 2011
Final Payment and 100% Ownership	May 18, 2011

4.4.2 Royalties

The amended *Option and Purchase Agreement* with Hydro Resources, Cu Flat LLC, and GCM requires payment of the following royalties:

4) Starting within the third calendar month following the calendar month in which NMCC has obtained all state and federal permits required for the commercial operation of the Mine, and continuing every three months thereafter, NMCC shall pay an Advance Royalty. If the copper price during the period of three calendar months preceding the month in which the Advance Royalty payment is due is $ 2.00 or more, the Advance Royalty payment will be $112,500. If the copper price during that period is less than $2.00, the Advance Royalty payment will be $50,000. NMCC's obligation to pay the Advance Royalty continues until the aggregate amount of all payments of the Advance Royalty and the NSR Royalty described in the following paragraph reaches $10,000,000, or when NMCC has relinquishes and terminates any and all rights to conduct commercial production on the Properties.

5) For any quarter in which there is "gross revenue" from the Properties, a 3.25% NSR Royalty may be due. The royalty agreement provides that the Advance Royalty payments shall be credited against NSR Royalty payments. NMCC's obligation to pay NSR Royalty does not start until after (i) "Mineral Products" produced from the Properties are sold and (ii) the aggregate amount of the NSR Royalty payments due exceed the aggregate amount of the Advance Royalty payments. The NSR Royalty is payable on "Gross Revenue" less "Permissible Deductions." "Gross Revenue," in essence, is revenue from the sale of "Mineral Products" produced from the Properties.

6) In addition to the advance and NSR royalties described above, the Chance, Feeder, Xmas and Extension patented claims are subject to a 5 percent net smelter return royalty owned by a third party. However, the likelihood of mineral production from these claims is small and payments associated with this royalty are not expected to be significant.

An expert opinion regarding THEMAC's royalty obligations was provided by Mr. Mark K. Adams of the Rodey Law Firm as discussed in Section 3.4, Reliance on other Experts (Adams, 2013b).

4.4.3 Fancher Agreement

NMCC successfully concluded negotiations with a neighboring property owner in April 2013 and both parties signed a binding letter of intent to purchase approximately 1220 acres of land located within or bordering the Copper Flat Permit Area at that time. The agreed purchase price is to be paid in 5 installments. The initial payment required under this agreement is due immediately upon approval of the agreement by the NMCC Board of Directors. The NMCC Board approved the agreement in April 2013 and the initial payment occurred in May 2013. Subsequent payments are due on the anniversary date of the initial payment until Year 5, when the full amount of the principle balance is due.

The agreement provides the seller with access to an existing well and the ability to continue an existing grazing lease as long as the continued activities do not conflict with mining operations. The purchase agreement does not include a royalty provision of any type.

4.4.4 Other Encumbrances

The Copper Flat properties are not subject to any other royalties, payment obligations, or other agreement, encumbrances, or back-in rights.

4.5 ENVIRONMENTAL LIABILITIES

The site was developed and operated by Quintana Minerals in 1982. Since closure, known and suspected potential impact to groundwater due to remaining site facilities were identified by the New Mexico Environment Department (NMED). THEMAC prepared a Stage 1 Abatement Plan for the NMED, which NMED approved in a letter dated February 7, 2012. New Mexico Administrative Code (NMAC) 20.6.2.4106 C. states: "The purpose of Stage 1 of the abatement plan shall be to design and conduct a site investigation that will adequately define site conditions, and provide the data necessary to select and design an effective abatement option." By NMED direction, three specific areas were identified for further characterization at Copper Flat:

1. The pit lake,
2. Legacy waste rock piles, and
3. The tailings storage facility.

The approved Stage 1 Abatement Plan includes data collection at wells and surface water locations chosen to better define site conditions and the extent and magnitude of known or suspected groundwater impact or potential groundwater impact in these areas. The Stage 1 Abatement Plan also includes a requirement to drill one or two monitoring wells to the east of the existing tailings storage facility. Much of the field work proposed in the Stage 1 has been completed and the next step in required abatement actions is summarizing collected data and making recommendations to the NMED based on findings.

4.5.1 Characterization Work Completed

Groundwater levels and samples have been collected from 20-22 wells across the site as well as at the pit lake, depending on access and availability. Sample events took place in January, April, July and October 2013. In addition, three locations were selected for opportunistic sampling of surface water, if present. Rains at the site caused some intermittent surface water flow in Grayback Arroyo and surface water samples were collected at the site in July, September, and October. Data for the first two sampling events has been compiled and summarized and presented to the NMED in the *Status Report for Stage 1 Abatement at the Copper Flat Mine Site Near Hillsboro, New Mexico* by John Shomaker and Associates, Inc. (JSAI), June 27, 2013.

A groundwater monitoring well was drilled to the east (downgradient) of the tailings storage facility in October 2013. Samples from this well show the groundwater at this point is not impacted by elevated levels of sulfate or total dissolved solids (TDS). Additional wells down gradient are not needed.

Results of the Stage 1 program will be used to characterize groundwater impacts from the pre-existing Quintana acilities and develop recommended actions to address. Recommended actions could be a continuation of Stage 1 Abatement work if more data collection is deemed necessary for site characterization, or, if collected data adequately characterizes the site characteristics, the next step will be the development of a Stage 2 Abatement Plan. NMAC 20.6.2.4106 E. states: “The purpose of Stage 2 of the abatement plan shall be to select and design, if necessary, an abatement option that, when implemented, will result in attainment of the abatement standards and requirements set forth in Section 20.6.2.4103 NMAC (the code regarding abatement standards and requirements), including post-closure maintenance activities.” The NMED will review these data and recommended actions and may approve them, approve them with conditions, or request additional characterization work which could include additional monitoring wells and/or additional quarters of data collection.

4.5.2 Status of Areas of Concern at Copper Flat

4.5.2.1 Pit Lake Characterization

Pit Lake water samples were collected during the Baseline Data Characterization efforts in 2010 and 2011; within the context of the Stage 1 Abatement Plan, pit lake water samples have been collected quarterly in 2013. Wells drilled around the pit lake in 2011 were used to establish that the pit lake is a hydraulic sink. The pit capture zone encompasses the pit excavation area (JSAI, 2013).

The NMED required analyses for water quality samples from the existing pit lake in the first three quarters of 2013 have been compared to water standards for existing uses of the water body: livestock and wildlife. These samples exhibit concentrations below New Mexico livestock surface water standards for cadmium, cobalt, and zinc; however, the July 2013 sample showed a concentration of 0.059 mg/L, slightly above the livestock surface water standard for selenium, which is 0.05 mg/L. The concentration of selenium in the pit water also exceeds wildlife surface water standard for total recoverable selenium (0.005 mg/L).

Water quality samples from the existing pit lake have not been compared to acute or chronic aquatic life standards as there is no known existing use of aquatic life in this water body. These standards are considered “designated uses” due to NMED’s identification of the pit water body as a "perennial unclassified water of the state" under 20.6.4.99 NMAC. THEMAC has discussed this situation with the NMED surface water quality bureau and plans to pursue a Use Attainability Analysis (UAA). NMED has indicated the preparation of a UAA would be an appropriate and supportable approach to demonstrate that the designated uses of acute and chronic aquatic life should be limited or removed.

In late 2013, THEMAC and JSAI will examine the latest pit lake chemistry and data from surrounding wells including all four quarters of data collected in 2013 and make recommendations to either collect additional data or take measures to abate impacts.

4.5.2.2 Pit Lake Mitigation

As the pit lake is a hydraulic sink, it will not impact groundwater outside of the pit capture zone. THEMAC plans to address immediate concerns about the pit lake water quality in the near future by obtaining mine permits and dewatering the pit during mine operation. Water obtained by pit dewatering will be incorporated into process flow and the pit will be kept dry during operations.

In order to obtain a mine permit, THEMAC must demonstrate to state agencies, specifically the Mining and Minerals Division (MMD) and the NMED, how the pit lake would be addressed to insure impact to surface water and groundwater is not a long term concern after mine closure.

In their report, *Predictive Geochemical Modeling of Pit Lake Water Quality at the Copper Flat Project, New Mexico* (SRK, September 2013) SRK Consulting (SRK) indicates that at the end of mine life, the pit lake will refill with water and, eventually the water in the pit will exceed wildlife surface water standards for selenium (0.05 mg/L) and mercury (0.00077 mg/L). SRK recommended that a Screening Level Ecological Risk Assessment (SLERA) be conducted "to quantitatively evaluate the potential toxicological risks posed by the future pit lake at Copper Flat." SRK asserts that "the predicted concentration of selenium and mercury in the future Copper Flat pit lake are unlikely to present an environmental or ecological risk." THEMAC is acting on this recommendation at the time of this report. In addition, THEMAC is working with its environmental consultants to develop operation management strategies to limit environmental impacts.

4.5.2.3 Legacy Waste Rock Piles Characterization

Potential for groundwater impacts caused by acid rock drainage (ARD) from the existing exposed waste rock has been identified as a concern by the NMED. THEMAC has conducted an extensive site wide geochemistry program that includes both static and dynamic ARD testing. This work was used to develop a comprehensive geochemical characterization and defensible predictive geochemical modeling to quantify the mine's potential to generate ARD. These studies were initiated in 2010 and were completed by SRK in May and September 2013.

In *Geochemical Characterization Report for the Copper Flat Project, New Mexico* (SRK, June 2013), SRK concludes that ARD will not negatively impact the environment at future proposed waste rock disposal facility provided that it is designed, constructed, operated, and reclaimed in accordance with the current THEMAC mine plans.

In addition to this geochemical investigation, potential impact to groundwater by legacy waste rock piles and the former mining operation at Copper Flat has been investigated in 2013 by opportunistic surface water sampling and four quarters of groundwater sampling at wells up gradient and down gradient from waste rock piles and the mill site areas.

The direction of groundwater flow at Copper Flat is west to east and preferentially along Grayback Arroyo (JSAI, 2013). In their report, the *Status Report for Stage 1 Abatement at the Copper Flat Mine Site Near Hillsboro, New Mexico*, JSAI notes that results from three wells east of the mill area "provide evidence that a sulfate-TDS plume exists in the alluvium and Santa Fe Group sediments below the waste rock and mill site area along Grayback Arroyo." The source of elevated sulfate and TDS concentrations is likely leachate from the waste rock and mill site area that has mixed with storm-water runoff and infiltrated into groundwater along Grayback Arroyo. The downgradient extent of this sulfate-TDS impact has been determined through sampling existing wells in the area.

4.5.2.4 Legacy Waste Rock Piles Mitigation

In late 2013, THEMAC and JSAI will examine the groundwater and surface water data from data collected in 2013 up-gradient and down-gradient of waste rock piles and the mill site area and make recommendations to either collect additional data or take measures to abate impacts due to these areas.

It the near term THEMAC plans to mitigate this concern by controlling surface water run-off flow at the mine site during construction and operation. Controlling surface water run-off will inhibit the transport of leachate from waste rock and the mill site area and reduce or eliminate its infiltration into groundwater.

At the end of mine life, reclamation activities will cover waste rock disposal areas and the mill site area as required by state agencies in a manner known to inhibit infiltration of precipitation and prevent these areas from impacting surface run-off and groundwater with elevated sulfate and TDS. Reclamation activities will be designed and executed to prevent groundwater impact in the future.

4.5.2.5 Tailings Storage Facility Characterization

The first three quarters of groundwater sampling downgradient of the tailings storage facility (TSF), found no exceedance of the groundwater standard for sulfate (the groundwater standard for sulfate is 600 mg/L). Three wells show concentrations of TDS over the standard (1,000 mg/L) however these concentrations have been decreasing over time.

In October 2013, THEMAC contracted to have a new monitoring well installed to the east of the TSF (downgradient) per NMED requirements. This well was completed in time for inclusion in the fourth quarter groundwater sampling event and results will be included in JSAI's next report on data collected at Copper Flat. Field measurements indicate this well has sulfate and TDS concentrations similar to background conditions in the area. As no evidence of sulfate or TDS impact was observed in this well, a second monitoring well further east was not required by NMED. This new well, GWQ13-28, indicates the eastern edge of impacted groundwater has been defined and satisfies NMED's requirement for characterization of the tailings storage facility.

4.5.2.6 Tailings Impoundment Facility Mitigation

Groundwater data east of the TSF indicates that sulfate concentrations have dropped below the standard and remaining TDS impact is decreasing in concentration and size (JSAI, 2013). JSAI believes that pumping from wells to the north and the south of the TSF has caused drawdown and capture of residual TDS in groundwater in this area.

Localized pumping has caused concentrations of sulfate in groundwater near the TSF to meet groundwater standards and concentrations in TDS are also being remediated; addressing the immediate concern regarding groundwater impact near the TSF although additional data collection may be required to confirm this. In the future, THEMAC plans to remove the former unlined TSF and to build a lined facility for the proposed operation of Copper Flat, using the existing tails as bedding material below the new liner. This will effectively isolate the existing tailings from the environment and eliminate them as a source of elevated levels of TDS and sulfate in groundwater at the TSF.

4.6 PERMITTING

Table 4-3 presents the major permits for a new mining activity in New Mexico where a combination of private and public lands will be used; these are the permits necessary for the Copper Flat project. Public land in the project area is managed by the Bureau of Land Management (BLM).

Table 4-3: Major Permits and Approvals Required for the Copper Flat Project

Permit/Approval	Granting Agency
Federal	
Approval of Mine Plan of Operations	U.S. Bureau of Land Management (BLM)
FCC License	Federal Communications Commission (FCC)
MSHA Registration	Mining Safety and Health Administration (MSHA)
Explosives Permit	Bureau of Alcohol, Tobacco, and Firearms (BATF)
State	
New Mine Operation Permit	New Mexico Energy, Mineral and Natural Resources Department (NMEMNRD)- Mining and Minerals Division (MMD)
Mine Registration	NMEMNRD – Mine Registration Reporting, and Safeguarding Program – Mine Registration
Permit to Construct (Air Quality)	New Mexico Environment Department -Air Quality Bureau
Permit to Operate (Air Quality)	New Mexico Environment Department -Air Quality Bureau
Permit to Appropriate Water	New Mexico Office of the State Engineer (NMOSE)
Permits for Dam Construction and Operations	New Mexico Office of the State Engineer (NMOSE)
Approval to Operate a Sanitary Landfill	New Mexico Environment Department -Solid Waste Bureau
Groundwater Discharge Permit	New Mexico Environment Department -Groundwater

	Bureau (DP-001)
Stage I and Stage II Abatement Plans	New Mexico Environment Department- Groundwater Bureau
Cultural Resources Clearance Surveys	New Mexico Department of Cultural Affairs – State Historic Preservation Office (SHPO)

All mining and environmental permits from the 1982 Quintana Mine have expired or have been closed due to lack of activity, with the exception of the NMED Groundwater Discharge Permit, which is inactive and must be renewed through the same process required of a new permit applicant. THEMAC is in the process of obtaining new permits.

An updated Groundwater Discharge Permit Application was submitted by THEMAC on March 31, 2011 to the NMED. The updated Groundwater Permit Application was deemed administratively complete on May 13, 2011. Since that time, the NMED has informally provided comments on additional information they will require for a successful discharge permit process. THEMAC has created a draft monitoring plan for NMED review; the NMED provided informal comments on how the plan should be revised to meet requirements.

Changes in the mine plan resulting from this feasibility study will change the anticipated discharge volume from that discussed in the March 2011 permit application and thus the THEMAC must re-apply for a discharge permit and re-initiate the discharge renewal process including public notice requirements. This is necessary to obtain the benefit of the refinements developed in the feasibility study.

A condition of a discharge permit is action to address the environmental liabilities discussed in Section 4.5; this work is underway and proceeding per NMED requirements. BLM access agreements have been obtained for all well locations. Four quarters of monitoring activities began in January 2013 and were completed in October 2013. In late 2013, THEMAC and JSAI will examine the data collected in 2013 and make recommendations to either collect additional data or take measures to abate impacts. The NMED will review these data and recommended actions and may approve them, approve them with conditions, or request additional characterization work which could include additional monitoring wells and/or additional quarters of data collection.

THEMAC submitted a Mine Plan of Operations (MPO) to the BLM in 2010, this plan was determined by the BLM to contain the information required by 43 CFR 3809.401 as documented in a certified letter to NMCC dated August 1, 2011. This initiated the required National Environmental Policy Act (NEPA) environmental impact analysis. The Environment Impact Statement (EIS) effort began in January 2012, following publication of the Notice of Intent to conduct an EIS in the Federal Register. THEMAC is advancing this process through regular communication with the BLM, the lead federal agency. The draft EIS is expected to be published in the second quarter of 2014 barring any significant unforeseen delays.

THEMAC initiated the MMD mine permit process as of January 2010 with a baseline data collection program per MMD requirements. THEMAC collected baseline data under a Sampling and Analysis Plan reviewed and commented on by the MMD, the NMED, the NMOSE, the New Mexico Department of Game and Fish (NMDGF) (the Cooperating State agencies), and the New

Mexico State Historic Preservation Office (SHPO). THEMAC completed the Baseline Data Characterization Report (BDR) and submitted it to the BLM and cooperating State agencies for review in June 2012. THEMAC's responses to agency comments were submitted in the form of a Baseline Data Report Addendum in July 2013.

In July 2012, THEMAC submitted the Mine Operation and Reclamation Plan (MORP) to the MMD. The MORP designs are based on the prefeasibility study information which will require updating the feasibility-level design. BLM has entered into a cooperating agency agreement with MMD that provides for information developed in the EIS to satisfy the MMD's requirement for an Environmental Evaluation, although MMD will have to perform their own review of the EIS and formally concur. This arrangement increases the efficiency of the process by eliminating duplicate effort by the MMD to conduct a separate environmental evaluation.

As part of the MMD-required baseline data collection program, THEMAC has been collecting on-site meteorological and air quality data, which has been used as input for the air quality modeling required by the NMED Air Quality Bureau. THEMAC has completed the required one year of pre-mine meteorological and air quality monitoring and has received a new source air permit from NMED dated June 25, 2013 for the Copper Flat Mine.

Based on the results of the baseline studies, no endangered plant or wildlife species have been identified inside the permit boundary. During surveys conducted for the Baseline Data Report, cultural resources were identified within the mine permit boundary and some may be eligible for the National Register of Historic Places. Subject to completion of an ongoing Section 106 consultation between the BLM and SHPO, THEMAC will enter into a Programmatic Agreement with the BLM, the SHPO, and possibly with tribes and the Cultural Resources Advisory Council, to be followed by development and execution of a cultural resources data recovery plan.

4.7 COMPLIANCE EVALUATION

The Copper Flat property is considered to be currently in environmental compliance in that THEMAC is proactively addressing its environmental liabilities in accordance with the NMED's processes. JSAI has given a professional opinion in a letter dated October 31, 2013, regarding this environmental compliance (JSAI, 2013b). THEMAC maintains a standard of care at the site that includes site security and good housekeeping. The letter from JSAI is described in Section 3.6, Reliance on Other Experts. THEMAC knows of no way in which operations at the site are out of compliance with state or federal environmental laws.

Additional data collection required as part of the Stage 1 Abatement Plan was successfully completed in October 2013, and a report on this data with recommendations about how to proceed will be compiled for NMED review as required.

Predictive hydrogeological and geochemical modeling required by State and federal authorities were completed in May, August, and September of 2013. Reports on geochemical modeling and the hydrogeologic model have been submitted to MMD, NMED, and NMOSE as part of the state mine permit process. These reports were also provided to BLM for review in the EIS process.

As of September 10, 2013, the NMED has approved new groundwater protection regulations specific to Copper Mine Facilities. These new regulations are now part of the NMAC as NMAC 20.6.7 and are also known in New Mexico as the Copper Rule. These regulations were filed with the New Mexico State Records Center on October 16, 2013 and will go into effect on December 1, 2013. Compliance with these regulations will be required prior to obtaining the groundwater discharge permit. THEMAC has been aware of the development of the Copper Rule and had staff members directly participating in advisory committees that contributed content to the draft regulations. As a result, THEMAC anticipated much of the design, operational, and reclamation specifications and criteria documented in the Copper Rule and communicated that information to the design consultants involved in the feasibility study. Therefore, the large majority of the Copper Rule requirements have been incorporated in the feasibility study design and cost estimate. However, because the final version of the Copper Rule has just been made available, THEMAC will review the newly approved regulations and update its design documents as required. THEMAC performed an internal audit of the feasibility study based on a draft Copper Rule dated February 2013. This audit determined that the plans and designs used for this Feasibility Study are generally in compliance with requirements of the new Copper Rule. Plans will be reviewed and revised as needed during detail design; changes in plans are not expected to result in a material difference to the Project.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 PHYSIOGRAPHY AND VEGETATION

The project area lies within the Mexican Highlands section of the Basin and Range Physiographic Province. The Copper Flat Property is located in the Las Animas Hills, along the western edge of the Rio Grande Valley. The Rio Grande Valley is approximately 30 miles wide and trends north-south. The Rio Grande river flows north-south along the eastern edge of the valley, and is about 14 miles east of the site.

Elevations generally range from about 5,200 feet above mean sea level (famsl) on the southeast side of the property (tailings dam area), to around 5,700 famsl on the northwest side of the property. The highest elevation locally is Animas Peak (on the north side of the property), which tops at about 6,160 famsl. The mountains of the Black Range rise to elevations above 9,000 famsl about 25 miles west of the project site.

The Project site exhibits plant communities dominated by desert grassland, creosote bush, and juniper woodlands (BLM, 1999). Desert grassland is predominant and is characterized by a dominant herbaceous layer consisting of grasses and forbs with scattered shrubs. The creosote bush community lies mostly east of the tailings storage facility and is characterized by a dominant overstory of creosote bush and tarbush with an understory of grasses and forbs. The juniper woodland community is located along streams and slopes and is characterized by a dominant overstory of juniper with an understory of forbs and grasses.

Much of the project site has been disturbed by previous mining activities. Existing disturbance created by the Quintana Minerals Operation in the early 1980s includes a pre-stripped pit area, waste rock piles, mill site with concrete foundations, and the tailings storage facility. Additional disturbance within the project area includes historic placer mining disturbance and recent placer mining disturbance from recreational mining activities. Recent studies determined that approximately 1,000 acres within the 2,190 acre permit area boundary has been previously disturbed.

5.2 CLIMATE

The climate in Sierra County is semi-arid high desert, with four distinct seasons. Summer temperatures are warm (maximum temperatures average 91°F; the recorded maximum is 107°F) and winter temperatures drop below freezing but are relatively mild (minimum temperatures average 25°F; the recorded minimum is -10°F).

On average, Sierra County experiences 291 sunny days per year and 44 days per year with measurable precipitation. The project area receives approximately 13 inches of precipitation annually, which occurs mostly as rainfall during July to September. Total snowfall at site averages five to eight inches per year. Snowfall is possible from October through April; however, it's most likely between December and February.

The predominate wind direction is from the west, and secondarily from the north. Wind speeds typically average 10 to 15 mph; wind speeds in excess of 50 mph and gusts to 90 mph may occur as major storms pass through the area.

5.3 ACCESSIBILITY

The property is easily accessed by motor vehicle using Federal and State highway systems. From the east, the project site is reached by traveling north or south on US Highway 25, which is part of the US Federal Interstate Highway System, then west on State Highway 152 approximately 13 miles to the mine access road turnoff. Traveling from the west, the property access road is approximately 65 road miles using State Highway 152 from Silver City, NM, a major copper mining center located in southwestern New Mexico.

After leaving State Highway 152, the property gate is reached by traveling approximately 2.5 miles on an existing all-weather gravel road. Road closures resulting from inclement weather in the area are rare.

Driving time to the project site is approximately 3 hours from Albuquerque, NM; 2 hours from El Paso, TX; and 5 hours from Tucson, AZ.

5.4 LOCAL COMMUNITIES

Sierra County is a rural county. Historically, the economy of the region has been tied to mining, ranching, agriculture, and tourism.

Population centers in the project vicinity include:

- Hillsboro, NM. Population 125 (population statistics cited in this section are taken from the 2010 U.S. Census). Hillsboro is located approximately 4 miles (straight line) and 8 road miles southwest of the project site and is the closest community to the project site. Hillsboro was founded in 1877 following the discovery of gold in the area. The community was once the county seat of Sierra County and is now home to ranchers and artists.
- Truth or Consequences, NM. Population 6,475. Located on the Rio Grande River approximately 30 road miles northeast of the project site. Truth or Consequences is the county seat of Sierra County.
- Silver City, NM. Population 10,300. Located approximately 68 road miles west of the project site. Silver City was founded in 1870 after discovery of silver deposits in the area. The City is now a copper mining center in southwest New Mexico.
- Albuquerque, NM Metropolitan Statistical Area. Population 887,100. Located approximately 180 road miles northeast of the project site. Albuquerque was founded in 1706 as a Spanish military outpost and the city is now the largest City in the State of New Mexico.

- El Paso-Las Cruces, TX-NM Combined Statistical Area. Population 1,013,400. Located approximately 115 road miles southeast of the project site. The statistical area consists of the metropolitan areas of El Paso, Texas and Las Cruces, New Mexico.

5.5 REGIONAL TRANSPORTATION

Several major highways serve the region. The project area is bracketed by US Interstate Highway 25 to the east, US Interstate Highway I-10 to the south and US Interstate Highway I-40 to the north. New Mexico State Highway 152 runs west from I-25 to Silver City and passes within 3 miles of the property gate. Several commercial trucking firms operate in the region and freight pricing is expected to be competitive.

Two major railroads operate in southern New Mexico. Major rail yards closest to the mine are located at Rincon, NM, (BNSF Railroad, 45 miles from Copper Flat); Las Cruces, NM, (BNSF Railroad, 75 miles); Deming, NM, (Union Pacific Railroad, 75 miles); and El Paso, TX, (Union Pacific Railroad, 125 miles).

Ocean ports accessible by highway and rail transportation are located in Guaymas, Mexico (600 miles); Texas Gulf Coast (800 miles); California Pacific Coast (800 miles); and Vancouver, WA (1,800 miles).

Commercial airports providing passenger airline and air freight services are located in Albuquerque, NM, and El Paso, TX. Public use, general aviation airports serving private and charter flights are located at Truth or Consequences, NM, and Las Cruces, NM.

5.6 POWER SUPPLY

Power in Sierra County is supplied by Tri-State Generation and Transmission Association and distributed by Sierra Electric Cooperative, Inc. The Tri-State transmission line serving the mine area is a 115 kV voltage power line that parallels US Interstate Highway 25 approximately 12.5 miles east of the mine site.

Quintana Minerals constructed the Caballo power switching station at the I-25 and State Highway 152 interchange and a dedicated 115 kV power line in order to bring power from the Tri-State Transmission line to the mine substation for the 1982 operation. Ownership of the Caballo switching station and the 115 kV line transferred to the power utilities following closure of the mine. The switching station has been maintained and is currently used to isolate sections of the power grid when needed for maintenance. Space at the switching station for the equipment necessary to supply power to the mine is available and the local utility has stated willingness to reconnect the mine. The dedicated 115 kV power line between the switching station and the mine is inactive; recent inspection determined that the line is in fair condition and can be returned to service with a limited amount of maintenance.

In addition to the Tri-State transmission lines, a 345 kV power transmission line owned by El Paso Electric, a regional electric utility providing generation, transmission and distribution service in southern New Mexico and west Texas, runs in a north-south direction and crosses the inactive 115 kV power line approximately 7.0 miles east of the mine site.

Tri-State has stated that sufficient power generating capacity exists to meet mine needs; however, the utility identified an issue with the capacity of the power transmission system feeding the Caballo switching station. Alternatives to upgrade the Tri-State transmission lines have been developed by the utility; all are currently rejected due to high cost and/or significant delay to the project timeline. An alternative to connect the currently inactive Tri-State 115 kV line to the El Paso Electric 345 kV power transmission line has been identified as the most favorable alternative and is being pursued. Costs and schedules for permitting and construction have been developed by Tri-State and are included in the project estimate.

5.7 WATER SUPPLY

The New Mexico Office of the State Engineer and Interstate Stream Commission (NMOSE) is responsible for administering water resources in the State of New Mexico. Copper Flat falls within the Lower Rio Grande Water Basin, which follows the Rio Grande River from Elephant Butte Dam south to the Texas State Line and the International Border with Mexico. Rapid population growth, especially in the El Paso area, coupled with extended drought is placing ever increasing demands on the Basin's water resources.

NMCC has secured via purchase or contract 7,481 acre-ft/yr of declared water rights. One thousand and nineteen acre-ft/yr were purchased from Hydro Resources, Cu Flat, and GCM in the Options and Purchase Agreement described in Section 4.4. The remaining 6,462 acre-ft/yr is under contract with William and Linda Frost and Harris Gray (Frost and Gray) dated September 9, 2010. NMCC has met all payment terms except the final payment due within 60 days of securing the Mine Permit from the New Mexico MMD. NMCC's position is that 1,267 acre-ft/yr out of the declared water rights have been perfected through prior beneficial use and have filed a request to schedule a hearing conference.

To fully utilize the water rights requires a hearing process before the NMOSE. NMCC requested the NMOSE join in a mediation process, which began in August 2013. NMOSE agreed mediation has value and may avert the need to take the conflict over NMCC's water rights further and NMCC and NMOSE have agreed to work together. The first mediation meeting was held October 31, 2013 and additional mediation meetings will be held in coming months.

NMCC has substantial evidence of an on-going intent to develop and use water for mining purposes, a key argument that NMCC's water rights remain valid today. The water supply wells for the mine were drilled and the Quintana water delivery system was completed and operational prior to the date the NMOSE took jurisdiction of the Basin; attorneys at Law & Resource Planning Associates, legal counsel to NMCC, consider NMCC's claim to the declared water rights discussed above to be very strong.

In addition, NMCC has provided the NMOSE with a report detailing the groundwater model that JSAI has developed for the mine site and surrounding areas as well as the executable model files. NMCC has agreed to work with JSAI and NMOSE to develop groundwater model projections that will provide data regarding the potential impacts of mine operation to support the mediation process. NMOSE has been reviewing the groundwater model provided by NMCC and is verifying the groundwater model. Hydrologists from NMCC, JSAI, and NMOSE are working together to address questions with the goal of a groundwater model and model projections that all three entities agree are sufficient and reasonable to be used in water rights decisions within mediation discussions.

Should the mediation process be unsuccessful, a hearing date has been reserved for March 2014. If required, the hearing will culminate with a Recommendation by the Hearing Examiner and a decision by the NMOSE. If the NMOSE decision is unsatisfactory, NMCC will appeal the decision to the New Mexico district court.

In the event that this matter is appealed to the district court, Law & Resource Planning Associates attorneys believe that the outcome will be favorable to NMCC. Legal review of the status and validity of water rights intended for use by the Copper Flat Mine was completed by Mr. Charles DuMars and Ms. Catherine Robinson, attorneys with Law and Resource Planning Associates, PC. Mr. DuMars' and Ms. Robinson's review and legal opinion are summarized in a June 2013 letter regarding *New Mexico Office of the State Engineer Files No. LRG-4652 through LRG-4652-S-17, LRG-4654* (DuMars and Robinson, 2013).

Using design information provided by John Shomaker and Associates, M3 Engineering, and Golder Associates, NMCC has prepared an overall site water balance for the Copper Flat Operation. This water balance results in a fresh water make-up requirement equal to approximately 5,847 acre feet of water per year (approximately 3,625 gallons per minute). Fresh water make-up will come from multiple sources, including captured storm water, mine pit dewatering, and water supply wells. Table 5-1 presents the calculated mine water balance.

Table 5-1: Copper Flat Mine Water Balance

Water In	GPM	Acre-Ft per Year
Moisture in Ore (Net of Evaporation)	160	258
Storm Water - TSF	190	306
Storm Water - Non TSF	36	58
Pit De-Watering	24	39
Well Supply Wells	3,375	5,444
Total Sources	3,785	6,105
Water Out		
Dust Control and other mine uses	600	968
Concentrates	8	13
Retained in Tailings	2,816	4,542
Evaporation - TSF	353	569
Evaporation - Reclaim Reservoir	8	13
Total Uses	3,785	6,105

Water for the operation will come from four primary fresh water wells located approximately 8 miles east of the project site, backed up by several secondary water supply wells located in and around the project site. The primary production wells and a 20" diameter steel pipeline were constructed in the 1980s by Quintana Minerals to supply water to the operation; the secondary wells were constructed at different points in time primarily to support local ranching operations. NMCC installed pumps in two of the primary wells for an aquifer and well test in late-2012. JSAI performed a specific capacity analysis of the primary and secondary wells; results demonstrated that these wells remain capable of supplying the quantity of water needed for the operation (JSAI, 2013c). A physical inspection of the pipeline was conducted along a 1-mile section of the 8-mile-long pipeline. The inspection and subsequent engineering evaluation of the pipeline determined that the pipeline is in good condition and can be returned to service. Furthermore, engineering analysis by M3 concludes that the existing pipeline is capable of providing water in excess of 6,000 gallons per minute (9,660 acre feet per year).

Table 5-2 summarizes the water sources and declared water rights either purchased or under contract to NMCC for the proposed mining operation.

Table 5-2: NMCC Controlled Water Rights

LRG #	Common Name	Current Water Right Owner	Land Status	Well Status (current)	Water Right (Acre-Ft/Yr)
4652	PW-1	Frost & Gray (NMCC Purchase Pending)	BLM	usable	6,462
4652-S-1	PW-2	Frost & Gray (NMCC Purchase Pending)	BLM	usable	
4652-S-2	PW-3	Frost & Gray (NMCC Purchase Pending)	BLM	usable	
4652-S-3	PW-4	Frost & Gray (NMCC Purchase Pending)	BLM	usable	
4652-S-4	GWQ-8	NMCC	BLM	usable	439
4652-S-5	McCravey-Greyback	NMCC	Private	usable	
4652-S-6	GWQ-2	NMCC	Private	usable	
4652-S-7	Irwin Well; 15.6.31.431	NMCC	Private	usable	
4652-S-8	Office Well, GWQ-7	NMCC	Private	usable	
4652-S-9	GWQ-9, South inspiration	NMCC	BLM	usable	121
4652-S-10	GWQ-1, North Inspiration	NMCC	BLM	usable	242
4652-S-11	MW-1	Frost & Gray (NMCC Purchase Pending)	Private	usable	Included in the 6,462 above
4652-S-12	MW-2	Frost & Gray (NMCC Purchase Pending)	BLM	usable	Included in the 6,462 above
4652-S-13	MW-4	Frost & Gray (NMCC Purchase Pending)	BLM	usable	Included in the 6,462 above
4652-S-14	MW-5	Frost & Gray (NMCC Purchase Pending)	BLM	usable	Included in the 6,462 above
4652-S-15	MW-6	Frost & Gray (NMCC Purchase Pending)	BLM	usable	Included in the 6,462 above

4652-S-16	MW-8	Frost & Gray (NMCC Purchase Pending)	BLM	usable	Included in the 6,462 above
4652-S-17	Pit Lake	NMCC	Private	usable	120
4654	Deloris Well	NMCC	BLM	not usable	97
				Totals	7,481

*Hydro Resources totals based on April 22, 2010 Memorandum from John Shomaker and Associates to Mark Adams, Esq. Frost and Gray Totals based on the State Engineer Amendment of Declarations of Ownership of Underground Water Right dated September 24, 2010.

5.8 PLANT SITE

Earthworks and grading of the plant site, including areas for the concentrator, mine shop, mine substation, ancillary buildings, and mine service roads, was completed with construction of the Quintana Minerals Operation in the early 1980s. Facilities for the new operation will be constructed at the original Quintana plant site and there is sufficient area for the new facilities.

The primary crusher, concentrator, mine shop, warehouse, laboratory, and ancillary buildings will utilize building foundations that remain from the Quintana Operation. The foundations were uncovered for inspection in 2012 and 2013. Inspection and analysis by M3 Engineering determined that the foundations are acceptable for the planned re-use.

5.9 TAILINGS STORAGE AREA

An existing 370 acre tailings storage facility was constructed during the Quintana Minerals operation. The existing tailings storage site will continue to be used to store tailings, but the facility will be completely rebuilt to accommodate a new 536 acre tailings storage facility. Sufficient area to store tailings generated by the ore reserves developed by this study exists within the permit boundary for the project. Details regarding plans for the tailings storage area are provided in Section 18.

5.10 MATERIAL STOCKPILES

Sufficient area to store economic and uneconomic materials developed by the life-of-mine plan exists within the project permit boundary. Details regarding plans for the material stockpiles are provided in Section 18.

5.11 SOURCE OF PERSONNEL

During operation, the mine workforce will total 250 to 300 personnel. Southwestern New Mexico and Sierra County has a history of mining and agriculture, and NMCC will provide employment opportunities to individuals living in the immediate area of the mine. It is likely that personnel from outside the local area will be required to meet the full staffing needs of the mine; however, the Southwestern United States provides a large base of experienced personnel to complete the employee roster.

There are several communities within commuting distance from the mine and camps for construction and operating employees are not planned.

5.12 SUFFICIENCY OF SURFACE RIGHTS FOR MINING OPERATIONS

NMCC has access to 100 percent of the 2,190 acres of land inside the mine permit boundary with unpatented mining claims, patented mining claims and fee lands. In 2011, NMCC obtained 1,654 acres through an options and purchase agreement from Hydro Resources Corporation (Hydro Resources), CU Flat, LLC (Cu Flat), and GCM, Inc. (GCM). The remaining 300 acres is under an April 2013 option to purchase agreement with a local rancher. Details of NMCC land position are presented in Section 4.2 and 4.4 of this report.

6 HISTORY

The first recorded production of placer and lode gold from the Hillsboro Mining District (the District), New Mexico occurred in 1877. Over 285,000 oz of placer and lode gold, valued at $8.5 million, was produced over the next 100 years. Most of the gold and silver production came from underground and placer operations, located in and around the Copper Flat area (Harley, 1934; Segerstrom et al., 1975; Dunn, 1982, 1984). Gold was initially recovered using arrastras (stone grinding) and then by stamp mills in the district prior to 1881. A tent city named Gold Dust was founded in 1881 in the district and was home to numerous prospectors looking for placer gold deposits. A 10-stamp mill operated at the Bobtail mine on the Snake vein from about 1881 to 1884 and had a capacity of 20 to 25st/d. Placer deposits in Snake Gulch located southwest of the Project were also mined using hydraulic mining methods. Mills operated at the Richmond (1890-1892), Bonanza (1890-1910), Ready Pay/Porter (1898-1913), Snake (1910), and Wicks mines. A copper-matte smelter (capacity 30st/d) in the town of Hillsboro was built in 1892 and operated until the early 1900's. The Stenburg copper mine, located at the Project, was in operation between 1911 and 1931. Small-scale copper and precious metals mining took place in the district up until 1941 (Harley, 1934; Segerstrom et al., 1975; Dunn, 1982, 1984; Raugust, 2003).

Underground development was primarily focused on the Bigelow and Jackpot vein systems. The U.S. government's War Production Limitation Board, L-208, closed the last documented underground activity in 1942. Historic placer workings occupy almost every stream channel radiating from the Copper Flat intrusive center (Segerstrom et al., 1975; Dunn, 1982, 1984). Minor placer mining activity continues today conducted primarily by local prospecting clubs and weekenders.

6.1 OWNERSHIP

Prior to 1952, the Project was held by various owners. Newmont Mining Company (Newmont) explored the District for copper in 1952, followed by Hilltop Mining, Bear Creek Mining Company (BCMC), and Inspiration Development Company (Inspiration). Hilltop Mining worked in the area prior to BCMC, which was involved with the Project between 1958 and 1959. Inspiration acquired the Project in 1967 and leased it to Quintana Minerals in 1974 (Segerstrom et al., 1975; Dunn, 1982, 1984).

In 1979, Quintana Minerals formed a partnership with Phibro Minerals Enterprises, Inc. forming the Copper Flat Partnership, which was financed by Canadian Imperial Bank of Commerce (CIBC) located in Toronto, Ontario, Canada. Under this partnership, Quintana Minerals was the operator (Segerstrom et al., 1975; Dunn, 1982, 1984).

In August 1987, Inspiration leased its mining claims to Hydro Resources with the option to purchase, which was finalized by 1989. In 1989, Rio Gold optioned Copper Flat from Hydro Resources.

The Copper Flat Partnership, which at this time included Copper Flat Mining Co. Ltd, a subsidiary of Rio Gold, maintained control of the Project and held the property until 1993 when

Gold Express optioned the Project. Gold Express acquired Copper Flat from Rio Gold with the intent of placing the property into production employing the 1982 design parameters. The following year, in June 1994, Alta Gold acquired the option on the Project from Gold Express. Alta Gold held the Project until its bankruptcy in 1999.

The property reverted back to Hydro Resources in 2001, in conjunction with Cu Flat and GCM (collectively the vendors). In July 2009, NMCC acquired an exclusive option over the Copper Flat property from the vendors. In May 2011, NMCC made the final payment on the exclusion option and now owns the property in total.

6.2 HISTORIC EXPLORATION AND DEVELOPMENT

In 1952, Newmont initiated the first modern exploration program for porphyry copper mineralization in the district. This included 3,369 ft of drilling in six angle holes in the central quartz monzonite (Kuellmer, 1955). The results were not encouraging enough for Newmont to continue. The Newmont drill and assay data is recorded and is available. BCMC followed in 1958-59 and drilled 9,346 ft in 20 widely spaced core holes. BCMC was testing for an enrichment blanket of secondary copper, which was not found. The BCMC drill and assay data is still available (Dunn, 1984).

Inspiration continued porphyry copper exploration starting in the late 1960's. By 1973, Inspiration had completed 30 core drillholes. Employing this drilling and the second splits from the BCMC data, Inspiration calculated a minable resource of 66 Mst with an average grade of 0.45 percent copper. Inspiration purchased the patented claims, performed metallurgical work, and completed two water wells on the property (Dunn, 1984).

Inspiration leased the property to Quintana Minerals in 1974. By late 1975, Quintana Minerals had drilled 141 holes using five rigs, drilling around the clock. Quintana Minerals' exploration program lead to a comprehensive mine development program which included extensive metallurgical work, underground drifting, bulk sampling, and drillhole composite testing) all performed by Colorado School of Mines Research Center. Quintana Minerals' program included detailed geologic investigations into the relationship between the breccia pipe and the quartz monzonite host rocks, as well as the relationship between host rocks and mineralization. In late 1976, the Project was placed on hold awaiting an improvement in metals prices.

In the first half of 1979, the Project was reactivated due to higher copper prices. Processing methods were reviewed and semi-autogenous grinding (SAG), and copper-molybdenum flotation separation became the basis for subsequent design work. In January 1980, a decision was made to develop the mine. Quintana Minerals' production history is discussed under Section 6.4, Production History.

In 1989, Hydro Resources of Albuquerque, New Mexico, acquired the Copper Flat property from Inspiration, along with all royalties. Hydro Resources maintains a considerable archive of information related to the Project dating back to Inspiration's involvement in the Project. This includes over 14,000 sample pulps and skeleton core from the Quintana drilling programs.

Rio Gold and Tenneco Minerals (Tenneco) drilled six large-diameter reverse circulation drillholes in 1990 and Tenneco left without further interest. Gold Express optioned the property in 1993, but performed no exploration or development.

Alta Gold then acquired the property from Gold Express in June 1994, and went as far as obtaining a draft final EIS for the Project issued in March 1999, but went bankrupt (due to financial problems with other assets) before any permits were issued.

Hydro Resources reacquired all the properties in 2001 (having previously temporarily owned the property), along with all royalties.

During late 2009, 2010, and 2011, NMCC conducted a sample verification programs that included pulp reject analysis and drilling. These recent activities are discussed in Sections 10 and 12 respectively.

6.3 HISTORIC RESERVE ESTIMATES AND AUDITS

The historical mineral resource and reserve estimates presented in this report are based on exploration and development activities, which started in the 1960's. Historic resource estimates do not comply with the CIM terminology under NI 43-101 guidelines, and the reader is cautioned that these estimates are not mineral resources or mineral reserves as defined by NI 43-101 (2002), and should not be relied upon.

The Copper Flat history of published ore reserve estimates and reserve audits begins with Inspiration Development in 1974. Prior to Dunn-Behre Dolbear's (DBD) reserve audit in 1993 for Gold Express, four previous reserve estimates were made for Copper Flat. This included Western Knapp Engineers (WKE) in 1976 for Quintana Minerals, Pincock, Allen & Holt (PAH) in 1980 and 1989 for Quintana Minerals, and Rio Gold and N.A. Degerstrom Inc. (NAD) who completed a mine plan in 1991 for Gold Express (Dunn-Behre Dolbear, 1993). Reserve comparisons are made on the most significant calculations in Table 6-1.

Table 6-1: Historical Mine Reserve Estimates Comparison for Copper Flat*

	WKE (1976)	PAH (1989)	NAD # (1991)
Cut-off-Grade (% Cu)	0.25	0.23	0.23
Tons (st) Ore (1,000)	59,897	60,720	59,119
Tons (st) Waste (1,000)**	105,016	60,007	60,164
Stripping Ratio	1.75:1	0.99:1	1.02:1
Ore Grade (% Cu)	0.43	0.425	0.425
Ore Grade (% Mo)	0.013	0.012	Not provided

*From Dunn Behre Dolbear, 1993, Table 7.1
**Includes low grade stockpile tonnage
Note: Historic resource and reserve estimates do not comply with the CIM terminology under Canadian Securities Administrators NI 43-101 guidelines. The reader is cautioned that these estimates are not mineral resources or mineral reserves and should not be relied upon.

With respect to historical mine reserve estimates; a qualified person has not done sufficient work to classify these historical estimates as current Mineral Resources or Mineral Reserves, and THEMAC is not treating these historic estimates as current Mineral Resources or Mineral

Reserves. This information is being provided to the reader for historical context. Readers should review and rely upon the Mineral Resources or Mineral Reserves reported in Section 14 and 15 of this report.

6.4 HISTORIC PRODUCTION

Quintana Minerals prepared an Environmental Assessment report for state and federal agencies in 1975, and by mid-1976, an independent engineering firm Western Knapp Engineering (WKE) had prepared a formal Feasibility report. Final engineering was started with power contracts signed, when copper prices slumped and the open pit mining project was shelved in early 1977. With the recovery of metal prices in 1979, Quintana Minerals re-evaluated the economic viability of the Project, and authorized a new formal detailed engineering study. By this time, the value of the molybdenum, gold, and silver affected the mine economics.

Quintana Minerals formed a 70/30 percent partnership with Phibro Mineral Enterprises in late 1979, with Quintana Minerals as the operator. Financing was arranged through the CIBC, and construction was started in June of 1980 under the Copper Flat Partnership. The mineable reserves at that time were 60 Mst grading 0.42 percent copper and 0.012 percent molybdenum, plus credits in gold and silver.

Wright Engineers of Vancouver, B.C., Canada, were responsible for design engineering while W-J Engineers of San Bruno, California, were responsible for detailed engineering. M.M. Sundt Construction Company of Tucson, Arizona was the general contractor for construction. Quintana Minerals assumed responsibility for overall project management.

Figure 6-1 shows the Copper Flat mine of Quintana Minerals, in a photo taken in 1982. The photo shows the pre-stripped open pit in the background, as it is today. The then state-of-the-art milling facility is in the middle with mining equipment shops on the left, tailings thickener in the lower middle (tailings out of sight to lower left), crushing facilities on the right of mill, waste rock dumps out of sight on the right, and beyond the pit.

In mid-March 1982 after a $112 million capital investment, the Copper Flat open pit copper mine began full production at a rated capacity 15,000 st/d, a waste to ore ratio of 1.8:1, and a cut-off grade of 0.25 percent copper. After just 3.5 months of production, the mine shut down on June 30, 1982, due to low copper prices ($0.70/lb) and high interest rates on the CIBC loan. The mine produced 1.48 Mst of ore recovering 7.4 Mlbs of copper, 2,301 oz of gold, and 55,966 oz of silver during the period. Table 6-2 shows the production.

Table 6-2: Quintana Minerals, Inc. Mine Production at Copper Flat

	Actual	Planned
Tons Ore (st) Mined	1,478,047	1,892,387
Tons Waste (st) Mined	3,098,330	3,361,478
Grade, Copper (%)	0.448	0.433
Grade, Molybdenum (%)	0.0088	0.013
From Dunn Behre Dolbear, 1993, Table 7.1		

The Copper Flat mine passed its project stabilization with CIBC during this initial mining period before going into receivership. By late 1985, the surface facilities equipment were sold to the Ok Tedi mine in Papua New Guinea, and the site was reclaimed by CIBC as formally approved by state and federal requirements. The structural foundations, power lines, water wells, and in-ground infrastructure were left in-place.

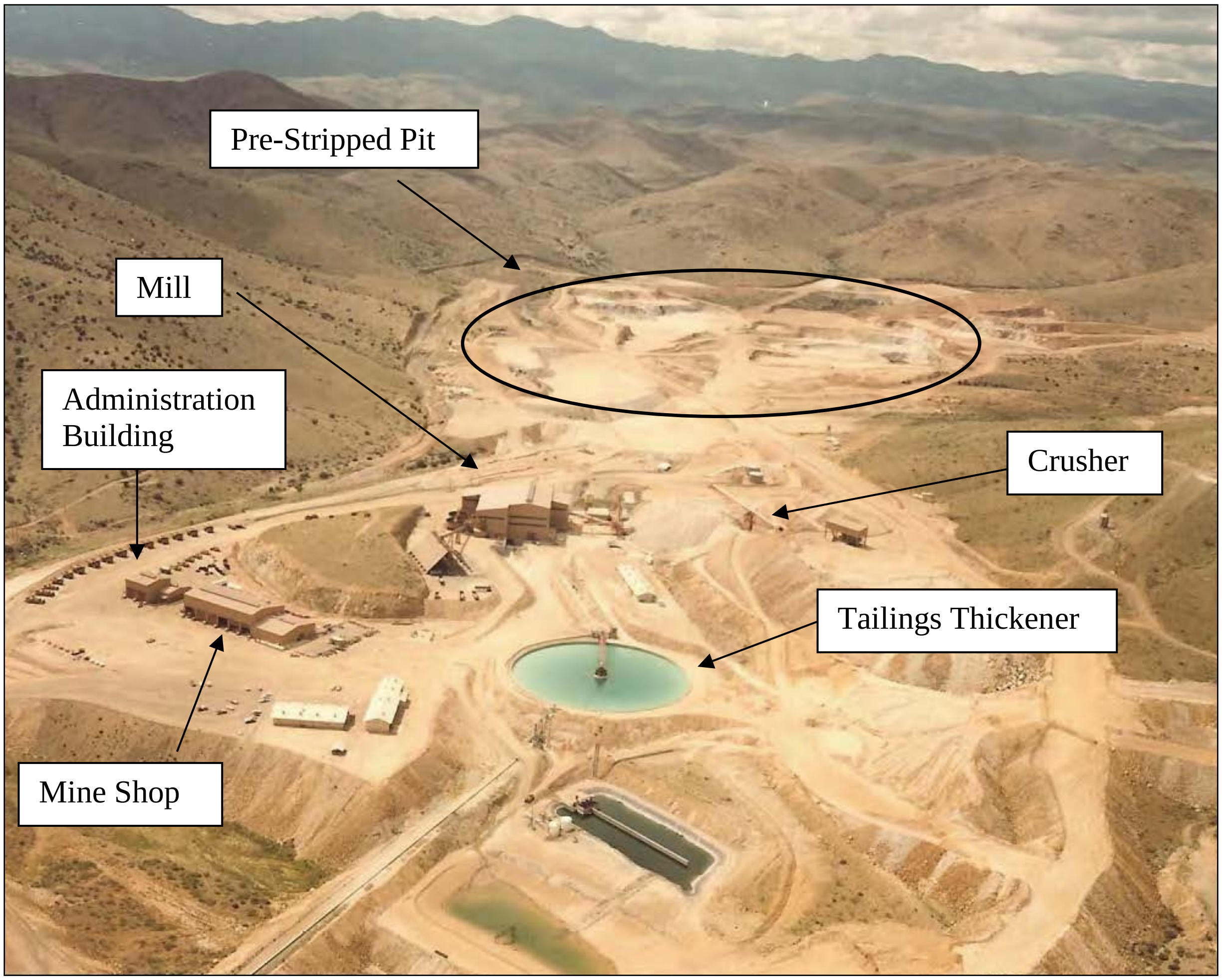


Figure 6-1: Copper Flat Mine in 1982

7 GEOLOGICAL SETTING AND MINERALIZATION

Copper Flat is a porphyry copper-molybdenum deposit located on the western margin of the Rio Grande Rift. The deposit is hosted by a small quartz monzonite stock having a porphyritic texture that intrudes a sequence of andesitic volcanic rocks of similar age covering an area approximately 4 miles in diameter.

7.1 REGIONAL GEOLOGY

The Copper Flat Mine lies within the Mexican Highlands portion of the Basin and Range Physiographic Province. It is located in the Hillsboro Mining District in Las Animas Hills, which are part of the Animas Uplift, a horst on the western edge of the Rio Grande valley. The Animas Uplift is separated from the Rio Grande by nearly 20 miles of Santa Fe Group alluvial sediments, referred to as the Palomas Basin of the Rio Grande valley. To the west of the Animas Uplift is the Warm Springs valley, a graben that parallels the Rio Grande valley. Further west, the Black Range forms the backbone of the Continental Divide, rising to about 9,000 ft above sea level. The surface geology of the Copper Flat region is shown in Figure 7-1.

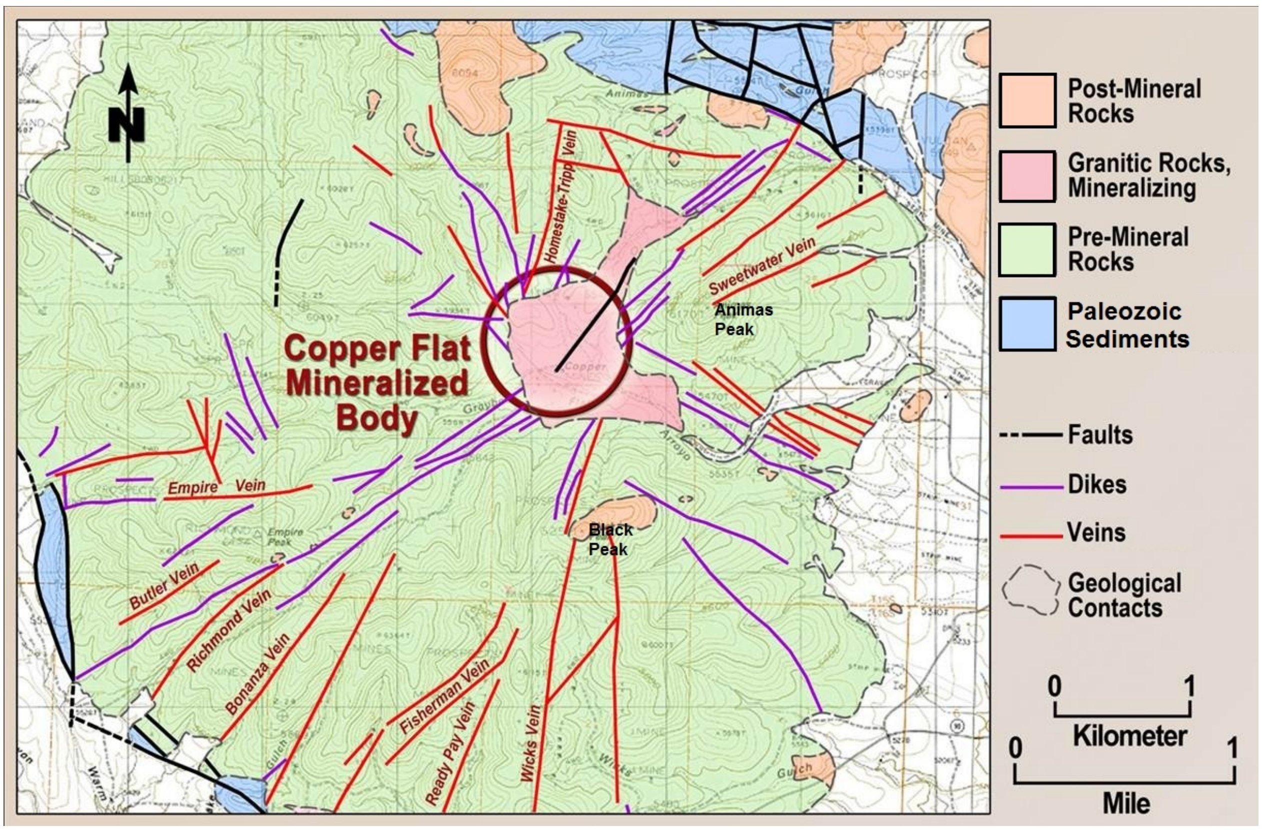


Figure 7-1: Regional Geology of Copper Flat Project Altered from P. Dunn (1982)

Basement rocks in the area consist of Precambrian granite and Paleozoic and Mesozoic sandstones, shales, limestones, and evaporites. Sedimentary units that crop out within the Animas Uplift include the Ordovician Montoya Limestone, the Silurian Fusselman Dolomite, and the Devonian Percha Shale. The Cretaceous-age Laramide orogeny, which was characterized by the intrusion of magma associated with the subduction of the Farallon plate beneath the North American plate, affected this region between 75 and 50 million years ago (Ma). Volcanic activity during the late Cretaceous and Tertiary periods resulted in localized flows, dikes, and intrusive bodies, some of which were associated with the development of the nearby Tertiary Emory and Good Sight-Cedar Hills calderas. Later basaltic flows resulted from the tectonic activity associated with the formation of the Rio Grande rift. Tertiary and Quaternary alluvial sediments of the Santa Fe Group and more recent valley fill overlie the older Paleozoic and Mesozoic units in the area.

7.2 LOCAL GEOLOGY

The district geology is modified from Raugust (2003) and McLemore et al., (2000). The predominant geologic feature of the Hillsboro mining district is the Cretaceous Copper Flat andesite. The Hillsboro mining district comprises the Animas Hills, a low range formed by the Animas Hills horst at the western edge of the Rio Grande rift. Faults that bound the Animas Hills horst are related to the tectonic activity of the Miocene-age Rio Grande Rift (Dunn, 1982). Due to the difference in ages and in spite of its close proximity, there is no known connection between the Rio Grande rift and the older Copper Flat volcanic/intrusive complex. The Copper Flat volcanic/intrusive complex has been interpreted as an eroded stratovolcano based on the presence of agglomerate and flow band textures in some of the andesites (Richards, 2003).

Two quartz monzonite stocks, the Copper Flat Quartz Monzonite (CFQM) and the Warm Springs Quartz Monzonite (WSQM), intrude the core of the volcanic complex. The CFQM stock has a surface expression of approximately 0.4mi^2 and has been dated by the argon-argon ($^{40}Ar/^{39}Ar$) techniques to be 74.93 ±0.66 million years old (McLemore et al., 2000). The surrounding andesites also have been dated using argon-argon techniques to be 75.4 ±3.5 million years old (McLemore et al., 2000). The barren WSQM was emplaced after the period of mineralization, but is still related to the other igneous rocks. Hedlund (1974) reported a K-Ar age date of 73.4 million years from biotite concentrate taken from drill core.

7.3 GEOLOGY OF THE COPPER FLAT OREBODY

The dominant geologic feature of the Animas Hills and Hillsboro district is the Copper Flat stratovolcano, a circular body of Cretaceous andesite that is 4 miles in diameter (Figure 7-1). The andesite is generally fine-grained with phenocrysts of plagioclase (andesine) and amphibole in a groundmass of plagioclase and potassium feldspar and rare quartz. Some agglomerates or flow breccias are locally present, but the andesite is generally massive. Magnetite is a common association with the mafic phenocrysts, and accessory apatite is found in nearly every thin section.

Although the depth of erosion is uncertain, the center of the stratovolcano was eroded to form a topographic low; the total depth of erosion is uncertain. To the east of the site, this andesite body is in fault contact with Santa Fe Group sediments, which are at least 2,000 ft thick in the immediate area of Copper Flat and thickening to the east. Near-vertical faults characterize the contacts on the remaining perimeter of the andesite body; these faults juxtapose the andesite with

Paleozoic sedimentary rocks. Historical drill holes indicate the andesite is locally more than 3,000 ft thick. This feature, combined with the concentric fault pattern, indicate that the local geology represents a deeply eroded Cretaceous-age volcanic complex. Figure 7-2 is a simplified map of lithology on surface. Figure 7-3 is an east west cross section that illustrates the rock type geometries at depth.

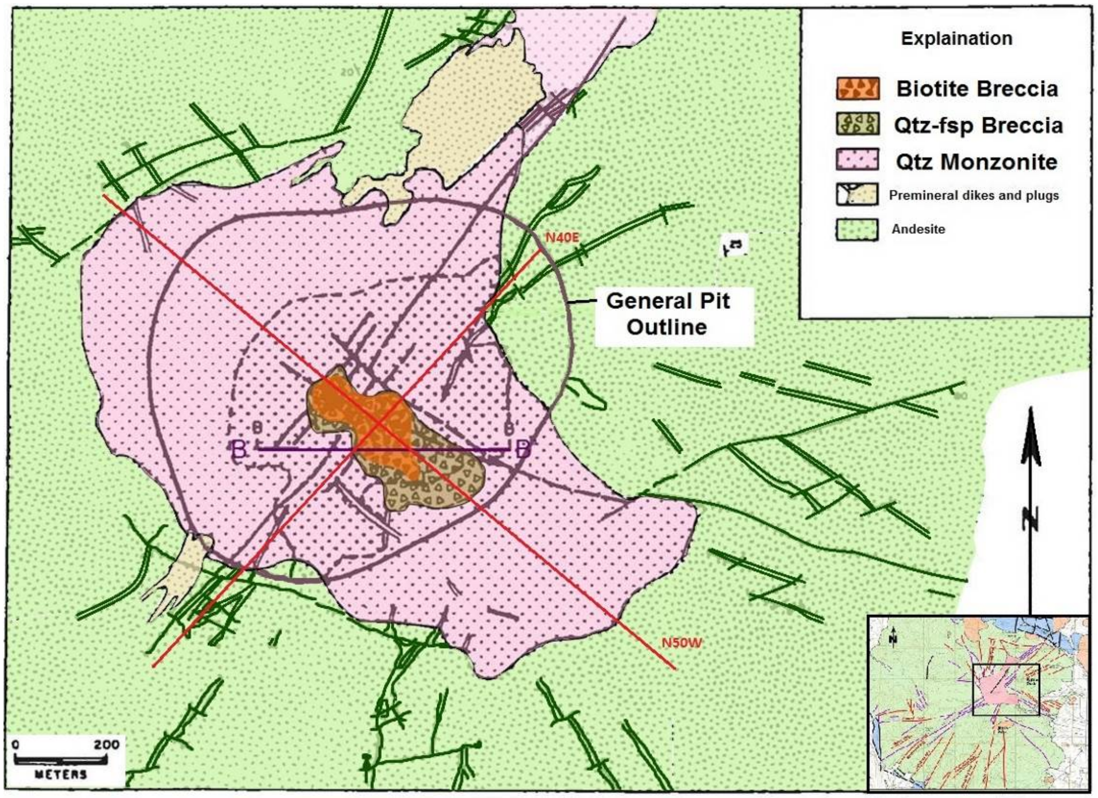


Figure 7-2: Geology of the Copper Flat Mine, Dunn, 1982

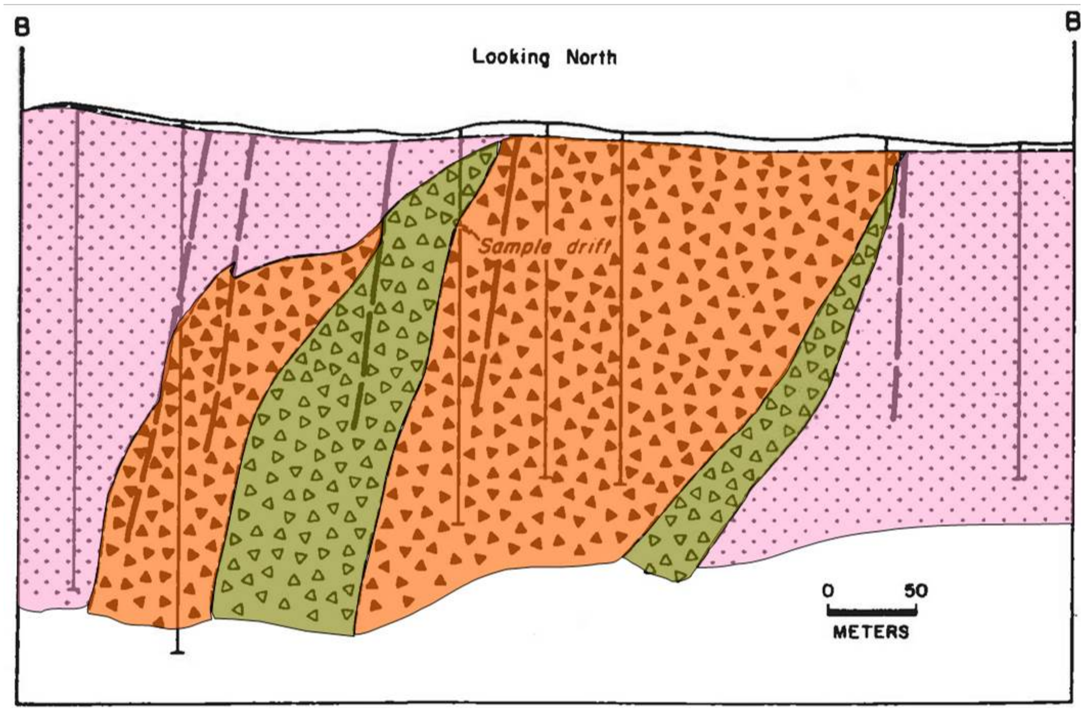


Figure 7-3: East-West Section Looking North, Dunn, 1982

7.3.1 Lithology

The core of the volcanic complex is a Cretaceous-age quartz monzonite stock that intruded into the center of the andesite sequence at the intersection of two principle structures that trend respectively N50°W and N20°E. The CFQM is an irregular-shaped stock underlying a surface area of approximately 0.40 square miles and has been dated to approximately 75 Ma. In the few exposures in which the CFQM is in contact with the andesite, the andesite shows no obvious signs of contact metamorphism. The CFQM is a medium- to coarse-grained, holocrystalline porphyry composed primarily of potassium feldspar, plagioclase, hornblende, and biotite; trace amounts of magnetite, apatite, zircon, and rutile are also present, along with localized mineralized zones containing pyrite, chalcopyrite, and molybdenite. About 15 percent of the monzonite is quartz, which occurs both as small phenocrysts and as part of the groundmass; however, quartz is absent in some parts of the stock.

Numerous dikes, some of which are more than a mile in length and mostly of latite composition, radiate from and cut the CFQM stock. Most of the dikes trend to the northeast or northwest and represent late stage differentiation of the CFQM stock. Immediately south of the quartz monzonite, the andesite is coarse-grained, perhaps indicating a shallow intrusive phase. An irregular mass of andesite breccia along the northwestern contact of the quartz monzonite contains potassium feldspar phenocrysts and andesitic rock fragments in a matrix of sericite with minor quartz. This may represent a pyroclastic unit. Magnetite, chlorite, epidote, and accessory apatite are also present in the andesite breccia.

7.3.2 Structure

Three principal structural zones are present at the Site and surrounding area, the most prominent of which is a northeast-striking fault that trends N 20°-40°E that includes the Hunter and parallel faults or the Hunter fault zone. In addition, west-northwest striking zones of structural weakness (N50°-70°W) are marked by the Patten and Greer faults, and east-northeast striking zones are marked by the Olympia and Lewellyn faults. All faults have a near-vertical dip; the Hunter fault system dips 80°W, the Patten dips approximately 70°S-80°S, and both the Olympia and Lewellyn fault systems dip between 80°S and 90°S. These three major fault zones appear to have been established prior to the emplacement of the CFQM and controlled subsequent igneous events and in the case of the Patten and Hunter controlled mineralization.

As previously stated, the CFQM emplacement is largely controlled by the three structural zones. The southern contact parallels and is cut by the Greer fault, although the contact is cut by the fault, and the southeastern and northwestern contacts are roughly parallel to the Olympia and Lewellyn faults, respectively. The CFQM stock is principally elongated along the Patten fault, as well as along the Hunter fault zone.

Although latite dikes strike in all the three principal fracture directions, most of the dikes strike northeast. The northeast trending fault zones contain a high proportion of wet gouge, often with no recognizable rock fragments. Reportedly in underground exposures, the material comprising the Hunter fault zone has the same consistency as wet concrete and has been observed to flow in underground headings. Based on recent drilling the Patten fault consists of a mixture of breccia and gouge. However, the material in the east-northeast fault zones contains only highly broken rock and minor gouge. The width of individual structures in all three systems varies along strike from less than a foot to nearly 25 ft. in the Patten fault east of the Project. Despite intense brecciation, the total displacement along the faults does not appear to exceed a few tens of feet. At the western edge of the Site, a younger porphyritic dike was emplaced in a fault that had offset an early latite dike, indicating that fault movement occurred during the time that dikes were being emplaced.

Post-dike movement is evident in all the three principal fault zones, and both the Hunter and Patten fault systems show signs of definite post-mineral movement. Fault movement has smeared sulfide deposits and offset the breccia pipe as well as the zones within the breccia pipe. Post-mineral movement along faults has resulted in wide, strongly brecciated fault zones. Some of the post-mineral dikes have been emplaced within these fault zones.

THEMAC has mapped the pit area and diversion cuts in detail at 1 inch equals 40 ft (1:480) and has examined the pre- and post-mineral stress orientations in the andesites and CFQM. Findings indicate no significant difference in the stress fields before and after mineralization.

7.3.3 Mineralization

Although copper occurs almost exclusively as chalcopyrite locally accompanied by trace amounts of bornite, minor amounts of chalcocite and copper oxide minerals are locally present near the surface and along fractures. The supergene enrichment typical of many porphyry copper deposits in the Southwest is virtually non-existent at Copper Flat. During the early mining days, a 20- to 50-ft leached oxide zone existed over the ore body, but this material was stripped during the mining activities that occurred in the early 1980s. Most of the remaining ore is unoxidized and consists primarily of chalcopyrite and pyrite with some molybdenite and locally traces of bornite, galena and sphalerite. Recently completed mineralogical studies indicate that fine grained disseminated chalcopyrite is often intergrown with pyrite and occurs interstitial to silicate minerals. Bornite and digenite coat and locally replace chalcopyrite but also occur interstitially to chalcopyrite and the silicates. Although deposition of chalcopyrite and molybdenite (76.2 Ma) was within the same mineralizing event with minor pyrite, bornite-digenite appears to represent a weaker and slightly later event of continuous copper mineralization.

Although low concentrations of gold (less than 100 parts per billion [ppb]) and silver (<2.0 ppm) occur throughout the deposit, intervals of higher gold concentrations (150 to more than 2,000 ppb) may be structurally controlled and are more commonly present in the eastern half of the deposit.

The sulfide mineralization first formed in narrow veinlets and as disseminations in the quartz monzonite with weakly developed sericitic alteration. This stage of mineralization was followed by the formation of the breccia pipe with the introduction of coarse, clotty pyrite, chalcopyrite, as well as molybdenite with strong potassic alteration either biotite or k-spar dominant.

The “breccia pipe”, which can best be described as a crackle breccia, consists largely of subangular fragments of mineralized CFQM, with locally abundant mineralized latite where dikes exposed in the CFQM projected into the brecciated zone that range in size from an inch to several inches in diameter. Andesite occurs only as mixed fragments partially in contact with intrusive CFQM and appears to represent the brecciation of relatively unaltered andesite xenoliths in the CFQM. The matrix contains varying proportions of quartz, biotite (phlogopite), potassium feldspar, pyrite, and chalcopyrite, with magnetite, molybdenite, fluorite, anhydrite, and calcite locally common. Apatite is a common accessory mineral. Breccia fragments are rimmed with either biotite or potassium feldspar, and the quartz and sulfide minerals have generally formed in the center of the matrix. It should be noted that the biotite breccia is graditional into both the quartz-feldspar breccia as well as the CFQM.

The total sulfide content ranges from 1 percent (by volume) in the eastern part of the breccia pipe and the surrounding CFQM to 5 percent in the CFQM to the south, north, and west. Sulfide content is highly variable within the breccia, with portions in the western part of the breccia containing as much as 20 percent sulfide minerals. Based on drilling, the strongest copper mineralization is concentrated in the western half of the breccia pipe and in the adjoining stockwork veined CFQM in the vicinity of the intersection of the Patten fault and the Hunter fault zone. Sulfide mineralization is concentrated in the CFQM and breccia pipe, and drops significantly at the andesite contact. Minor pyrite mineralization extends into the andesite along the pre-mineral dikes and in quartz-pyrite-bearing structures, some of which were historically prospected for gold.

Molybdenite occurs in some steeply dipping quartz veins or as thin coatings on fractures. Minor sphalerite and galena are present in both carbonate and quartz veinlets in the CFQM stock. Preliminary 2011 evaluations of the mineralization at Copper Flat indicate that copper mineralization concentrates and trends along the N50°W structural influences, whereas the molybdenum, gold and silver appear to favor a N10°-20°E trend.

8 DEPOSIT TYPES

Copper Flat is a porphyry copper-molybdenum deposit that is approximately 1,400 by 2,100 ft in plan occurring within a small structurally controlled quartz monzonite stock that has intruded a circular block of andesite approximately 4 miles in diameter. The porphyry includes a variably mineralized west-northwest-trending hydrothermal "breccia pipe," that lies immediately south of the Patten fault, that is about 1,400 ft long and 500 ft wide.

Copper Flat has been categorized as an alkalic copper-gold bearing breccia pipe, surrounded by and genetically linked to an alkalic porphyry system. The deposit is situated along the eastern edge of the Cretaceous Arizona-Sonora-New Mexico porphyry copper belt and along with Tyrone, New Mexico, forms a linear mineralized feature known as the Santa Rita lineament (SRK, 2010; McLemore et al., 2000).

Analogous deposits include Terrane Metal's Mount Milligan, British Colombia deposit and the Continental breccia pipe located in the Central Mining district of New Mexico (SRK, 2010).

Lowell (1988) was the first to suggest that the Hillsboro district was a gold-rich porphyry system type that develops in alkaline igneous settings. In 1992, Jones described metal zoning associated with gold-rich porphyry systems that is directly applicable to the Copper Flat deposit and the Hillsboro mining district. In addition, McLemore et al., (2000) and McLemore (2001) documented chemical characteristics that identify the Copper Flat deposit as an alkalic copper-gold system.

Copper-Molybdenum mineralization at the Copper Flat deposit occurs in a WNW trending, steeply dipping breccia pipe and the surrounding CFQM. The strongest Cu-Mo mineralization occurs in the western half of the breccia pipe and in strongly stockwork veined CFQM adjacent to the northern edge of the breccia pipe near the intersection of the Patten fault and the Hunter fault zone. A recent Re-Os age date performed on molybdenite yielded an age of 76.2 Ma.

Although low but recoverable gold (<100ppb) and silver (2.0 ppm) values occur throughout the deposit, the highest gold and silver values occur in the eastern part of the deposit. This mineralization is thought to be structurally controlled and related to northeast trending structures within or related to the Hunter fault zone.

Previous workers have spent a great deal of time describing and trying to explain the genesis of the "breccia pipe", which can best be described as a crackle breccia. These people concluded that the absence of rock flour or gouge in the matrix suggests that brecciation was not the result of significant tectonic movement. The apparent lack of appreciable movement between the fragments and the gradational contact between true breccia and the zone of stockwork veining preclude any explosive mechanism for the brecciation. The mechanism for the formation of the Copper Flat mineralized breccia pipe that appears most compatible with the above observations is autobrecciation resulting from retrograde boiling, perhaps coupled with minor structural displacement. This occurs when the pressure of the mineralizing hydrothermal fluid exceeds the confining pressure (Phillips, 1973).

Unlike most porphyry copper deposits in the southwestern U.S there was very little supergene enrichment at Copper Flat. This was probably due to factors such as the low sulfide content, buffering nature of the host rocks, a static water table and burial beneath post-mineral volcanics. As a result, mineralization is primarily hypogene and pyrite dominant. Additionally, the Copper Flat deposit does not show the symmetrical and telescoped zoning of alteration types that is considered typical of most porphyry copper deposits. This may be due to the small size of the deposit, coupled with a relatively low fluid volume during the mineralizing process, and the alkaline nature of the mineralizing fluids. Alteration includes, potassic, two separate episodes of sericitic and propylitic, but on a smaller scale than other more “typical” porphyry systems. The geology of Copper Flat indicates that the hypogene mineralization and alteration, including the formation of the zone of brecciation (breccia pipe), was the result of the final crystallization of the CFQM melt and related dikes.

9 EXPLORATION

Copper Flat is an advanced development project that was in production for only a few months in the early 1980's. As such, most of the exploration completed since that time has been the addition of diamond drilling to confirm, expand, and better understand the deposit. The current and historic drilling will be discussed in Section 10.

During the 2012 exploration program, THEMAC personnel completed detailed surface mapping of all exposures within the historical pit, drainage cuts, and most of the outlying project area. Surface geochemical sampling was also completed to improve the understanding of the precious metal distribution outside of the deposit, as well as identify other potential exploration targets.

In addition to drilling, all of the historical core has been relogged to obtain lithologic and structural information using core photographs; additional mineralogical and metallurgical studies have been undertaken; geotechnical studies have been completed and a CSAMT geophysical survey completed in the central part of the project that was designed to investigate and define the extent of the CFQM and sulfide mineralization.

With the completion of the 2012 drilling program, the Copper Flat deposit is now considered to be characterized to the extent necessary for a Feasibility Study. However, upon commencement of mining, it may be possible to expand the reserve and resource with additional drilling. This drilling should be focused on attempting to extend the deposit to depth (below the planned pit bottom), better defining the margins of the deposit and extending and better defining the northeastern lobe of the deposit.

10 DRILLING

The Copper Flat deposit has been drilled over several iterations from 1952 through 2011. The majority of the drilling was completed in the late 1970's and early 1980's.

Drilling was first initiated at Copper Flat in the 1950's by Newmont mining. Previous technical reports indicate that Bear Creek mining also completed 20 holes in the late 1950's. The assay information from the 1950's programs are not in the current drill hole data base that is being used for mineral resources.

The majority of the drilling at Copper Flat was core completed between 1968 and 1978 by Inspiration and Quintana Minerals. During 1989 through 1991, Rio Gold and Tenneco drilled 6 large diameter reverse circulation (RC) holes but did not pursue the project. The Rio Gold assay results are not in the active Copper Flat data base.

The Inspiration and Quintana holes were diamond core drilling and most were reported to have been predominately NX size.

THEMAC drilled 48 holes from 2009-2012. THEMAC also re-assayed all available historic pulps for gold and silver. THEMAC drilling was all diamond core drilling and was predominately HQ size core.

Table 10-1 summarizes the drill programs completed on the project where there is data available for the determination of mineral resources. All of the drilling summarized below is diamond core drilling.

Table 10-1: Copper Flat Drill Data, Available for Determination of Resources

Company	Dates	Drill holes	IMC comments	Elements Asayed	IMC Summary
Inspiration Consolidated	1967-1973	CF-1 to CF-20	20 drill holes, 4 with no assay CF-14,CF-15,CF-20 and CF-5	Totcu (%) Moly (%)	769 assay intervals, 9,350 ft of drilling
Inspiration Development	1968-1971	IDC-1to IDC-29	31 drill holes, 4 holes no assay IDC-20, -29,-30,-31	totcu (%) moly (%) gold(opt) silver (opt)	3,290 assay intervals, 27,183 ft of drilling
Quintana Minerals	1974-1978	H Series	134 drill holes total, 129 w/total copper, 21 holes assayed for gold and silver	Totcu (%) Moly (%) Gold(opt) Silver (opt)	9,709 assay intervals, 97,210 ft of drilling
NMCC	2009-2012	CF Series & CNI Series	48 drill holes, 2 holes no assay CF-12-19,-20	Totcu (%) Moly (%) Gold(ppb) Silver (ppm)	8,422 assay intervals, 47,583 ft of drilling

Figure 10-1 illustrates the drill holes on site. The recent drilling completed by THEMAC is shown in red. Only the drill holes that have assay data that were used for mineral resources are shown on the map.

No reverse circulation drilling was used in the estimation of resources. All available historic information indicates that all of the drilling that was used for estimation of resources and reserves was diamond core drilling.

The drill hole assay data base is stored in electronic format at THEMAC offices with backup on file within the IMC data archives. The data base contains current and historic information regarding lithology and assay information. In addition to the electronic files, Quintana drill hole logs are available at the project site in their original paper format.

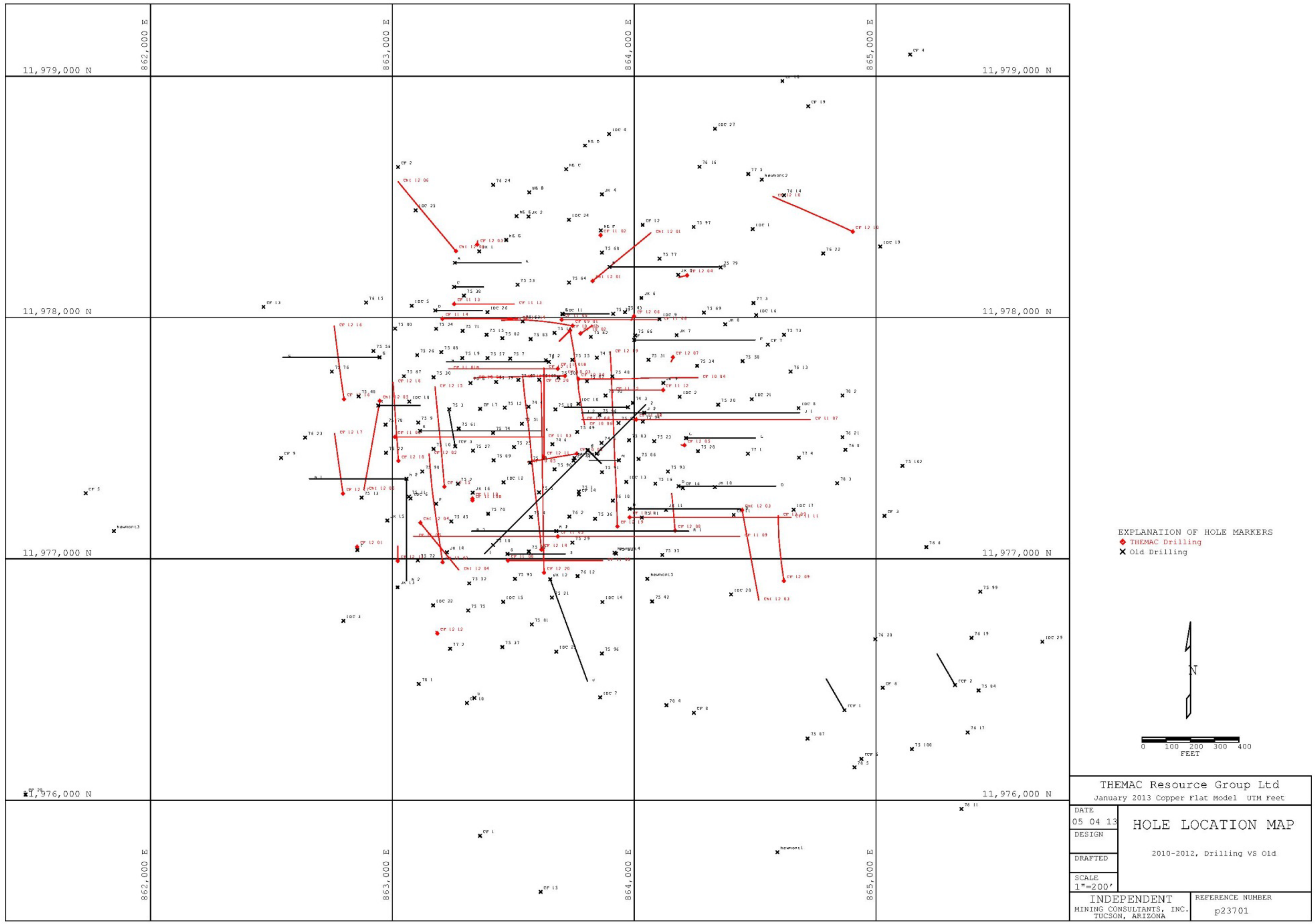


Figure 10-1: Copper Flat Drill Holes with Data

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

The majority of the data base that is available for Copper Flat was developed by Quintana during the 1970's and 1980's. Recent drilling by THEMAC has been added to the data base to both confirm and expand the historic information.

This section will present the sample preparation procedures for:

1) the historic procedures applied by Quintana based on historic documents, and
2) the procedures currently being applied by THEMAC.

The procedures that were applied by IMC to assemble the working data base for development of mineral resources will be summarized at the end of this section.

The recent drill holes that have been completed by THEMAC were used to confirm the historic drilling when the new holes were located close to historic data. That confirmation process will be discussed in Section 12 regarding data verification.

IMC and John Marek (QP) holds the opinion that the sample preparation, analysis, and security of the data base is reliable based on the result of the comparison between historic and modern data and site review of the modern procedures that are being followed.

11.1 HISTORIC SAMPLE PREPARATION

The historic procedures applied by Quintana were documented by Peter Dunn in the 1992 Mining Engineers Handbook. This section will paraphrase that information.

The historic drilling by Inspiration and Quintana was diamond core drilling. Most of the Quintana holes were NX diameter. Drilling prior to 1975 utilized standard techniques of splitting the core and preparing ½ core for assay. Core recoveries were reported to range between 88% and 96% depending on the program and a later incentive bonus for core recovery.

During 1975, Quintana completed a comparison between the assay of both halves of split core. Dunn reports that the results were not satisfactory, so the sample preparation procedure was modified and a sample preparation facility was built on site. About 30 holes had been completed by the time the issue was identified and nearly 2,000 samples were re-prepared and re-assayed to correct the problems with the initial data. The modified procedure crushed the sample to a finer size before sample splitting.

The final sample preparation procedures applied by Quintana was:

1) The entire core (about 36 lbs) was crushed to ½ inch before being split
2) A 1/8th split was taken within a Jones splitter.
3) The split was crushed to 10 mesh before being split again.
4) The resulting split was about 2 lbs, which was pulverized to -100 mesh.
5) Of the -100 mesh pulp, about ½ lb was selected for assay.

Other documentation from Dunn in 1984 was reported by SRK in their earlier technical report on Copper Flat. That report states that the sample was crushed to 0.2 inch and split 3 times by riffle splitter to obtain a 1/8th split prior to crushing to 10 mesh.

Samples were assayed for total copper and moly. Near surface samples were also assayed for non-sulfide copper. Dunn states that samples were sent to Tucson for assay. At that time, the two commercial labs in Tucson were Skyline Labs, and Jacob's Assay Labs. Certifications on the labs at that time are not known. Standards that were made from Copper Flat material were sent with each assay shipment. Assay checks were completed, but the extent and procedures were not reported.

Many of the details of the historic sample and assay procedures are not known. Therefore, the recent drilling by THEMAC becomes important to verify the historic drill and assay results.

11.2 THEMAC PROCEDURES

THEMAC started drilling in late 2009 which continued into 2010. Drilling was predominately HQ diameter core holes. A second program by THEMAC was completed during 2011. The core handling and sampling procedures that are followed by THEMAC are summarized below:

1) Core is boxed at the drill rig by the drill contractor and labeled with drill depth and drill run intervals. Core is transported to the on-site logging facility by THEMAC employees.
2) Core photos are taken of the hole core.
3) The core is laid out in the core logging facility where geotechnical and geologic logging is completed by THEMAC geology staff. Sample intervals are marked by the geologist. Sample intervals are a minimum of 5 ft and a maximum of 10 ft long. The calculated average is 6.7 ft.
4) The core is diamond sawn and ½ of the core is packaged for shipment to the Skyline labs. The other ½ is retained in the permanent core storage.
5) Sample transport to the laboratory is provided by Skyline Assayers & Laboratory in Tucson, Arizona.

Skyline Assayers & Laboratory (Skyline) receives the samples and logs them into their LIMS system for tracking and reporting. Skyline is ISO/IEC 170215 Certified. Sample preparation procedures are as follows:

1) Samples are oven dried at 255-240° F for 8 to 24 hours
2) Samples are tagged and bar coded
3) Samples are crushed to 75% passing -10 mesh
4) Samples are homogenized by splitting 3 times in a riffle splitter, and then recombined for a final split of about 250 gm.
5) The 250gm sample is pulverized to 95% passing 150 mesh

Assay procedures are as follows at Skyline:

1) Copper and Moly by ICP methods. Typically multi-element ICP is ordered. Some 2010 copper assays were reported by AA methods.

2) Gold is assayed by Fire assay methods with an AA finish. (FA-1)
3) Silver is reported with Aqua Regia dissolution with AA finish. (FA-8)

QAQC procedures by THEMAC are as follows:

1) Blank samples are inserted 1 out of every 20 samples
2) Standards are inserted 1 out of every 20 samples
3) Field duplicates are shipped 1 out of 20 samples. Field duplicates are a second split of the other ½ of the split core as a check on sample preparation.
4) Independent check assays are planned to represent 5% of the samples. The selected check lab is ALS Chemex.

Analysis of the blanks, standards, field duplicates and independent check assays are discussed in Section 12.

11.3 DRILL HOLE COLLAR SURVEYS

The historic coordinate system for the Copper Flat project was a local mine grid in English units that was established in the 1970's. Recent work at site began to take advantage of GPS survey to locate samples and drill holes. Some of that work was completed using UTM metric units.

THEMAC has now established a standard coordinate system for the project based on the UTM NAD83 system converted to Feet. THEMAC contracted Earl Watts of Geodetic Analysis, LLC to check the field survey of many drill collars and convert the mine grid and other coordinate information to the standard project system of UTM NAD83 Feet. The drill collars for the 2011 and 2012 drilling programs were surveyed by E. Schaff and Associates, Delta, Colorado. The UTM coordinates were subsequently provided to IMC.

IMC spot checked the resulting final coordinate system by plotting the drill hole locations on a paper map from the UTM NAD83 Feet coordinates that were provided. A historic map of drill coordinates in mine grid was also prepared at the same scale. The two maps were compared against each other and topographic information. The two maps located all drill holes in the proper position relative to each other.

IMC verification of the collar survey information indicates that the data base is consistent in the UTM NAD83 Feet coordinate system. As a result the survey information is reliable and can be used for the determination of mineral reserves and mineral resources.

From this point forward, the block model, mine plan and project evaluation will be in the established project coordinate system.

11.4 ASSEMBLY OF DATABASE

As noted earlier, the available drill hole information is a collection of historic and recently completed drill data. Some historic pulps were re-assayed and utilized when available.

THEMAC was able to find 34 original paper drill logs for drill holes that were drilled by Inspiration and Inspiration development. Within those logs there were assays for copper, moly, gold, and silver. IMC and THEMAC staff entered that data and compared it to the historic digital data base that was acquired by THEMAC upon acquisition of the property.

The paper logs are not identical to the electronic data base because the 34 holes all predate 1975 and are likely the holes that were re-prepared and re-assayed as described earlier in this section.

Statistical comparisons between the paper logs and the historic digital data base did not show a bias but did indicate a moderately higher variance within the paper log data than the digital data. This would be consistent with the reasoning behind the re-preparation process reported by Dunn.

However, there were more assays available in the paper logs for those 34 holes than in the digital data base. The digital data contained un-populated intervals that were populated within the paper logs. This amounts to about 1680 additional copper assays, 63 additional moly assays, and about 420 gold and silver assays. As a result of the IMC comparison between paper logs and the digital data base, the paper log assays were added to the data base when the digital data was not available.

The historic electronic data base that was provided by THEMAC to IMC was the starting basis for assembly of the working data base. IMC assembly variables were added to the data base for each metal and initialized to a code for “no assay” for each of the metals: copper, moly, gold, and silver. The assembly variables were populated by the priorities outline below.

The assembly priority for each of the metals was:

1) Historic digital assay data.
2) If the digital assays were not valued, the paper log entries from 34 of the drill holes were used in addition to the digital values.
3) 2009 – 2012 assays from THEMAC drilling were added.
4) If SRK and/or Skyline re-assays were available for the metal, they replaced the historic assay data.

The assays of historical pulps obtained during the re-assay program by THEMAC during 2010, 2011, and 2012 have been included in the current model.

12 DATA VERIFICATION

The drill hole data base for Copper Flat has been in existence since the 1980's. Previous work in 2010 and 2011 by THEMAC and their contractors completed a number of verifications steps to develop some confidence in the historic data. During 2011 and 2012, THEMAC drilled additional holes in order to: 1) provide additional confirmation of the historic drilling, 2) test for extensions to the mineralization, and 3) provide geotechnical information for slope stability.

This section presents an independent verification of the data base by IMC and John Marek (Qualified Person for this chapter). Previous work will be drawn upon and analyzed along with recent drill results.

In summary, IMC and John Marek (QP) hold the opinion that the data base as assembled for this study is reliable for the purposes of estimating mineral resources and mineral reserves. In assembling the data set for determination of mineral resources and reserves, some questionable historic data items have been removed from the data base.

The basic steps that will be discussed in this section are:

1) Reassay of historic pulps by THEMAC and SRK to confirm historic data.
2) Verification of THEMAC internal QAQC procedures and the results of those procedures.
3) Comparison of THEMAC drilling completed in 2010 and 2011 versus the historic drilling on a nearest neighbor basis.
4) Corrections and modifications to the data set applied by IMC prior to determination of mineral reserves and mineral resources.

12.1 PULP REASSAYS BY THEMAC AND SRK

During 2009 and 2010, THEMAC selected pulps from the available stored pulps on site for re-assay. Those samples were sent to Skyline Assayers in Tucson, Arizona for analysis. IMC obtained 601 of these pulp assay results which had values for both copper and moly.

During 2010, a second set of pulps was pulled from the historic pulp library for additional verification of the historic data and assay. During this effort SRK, acting as a contractor to THEMAC, selected the intervals for re-assay in an effort to provide broader spacial coverage and a representative distribution of the project grades. This second set of pulp re-assays was also submitted to Skyline in Tucson for assay.

In addition to copper and moly, gold and silver were also assayed during this program. The re-assay results are positive for copper and moly and provide confidence in the use of historic copper and moly value. A thorough statistical analysis of both of the pulp re-assay programs during 2012 by IMC indicated that all of the historic information could be combined with the more recent re-assays.

In addition, a substantial component of the historic drilling had not been assayed for gold or silver. As are result, IMC recommended re-assay of the remaining historic pulps that could be reliably located, sampled and re-assayed with particular emphasis on gold and silver assays.

THEMAC has followed up on that recommendation so that the historic pulp values have been re-assayed and incorporated into the data base. Gold and silver were the primary focus of this effort in order to bring the assay coverage for precious metals up to the same level as the project base metal assays.

At this time, there are 542 gold assays and 547 silver assays within the combined data base that are from the original Almberg data base. These historic values amount to 3.5% of the entire data base that was used to estimate the model.

The analysis of the historic assays versus pulp re-assays was presented in the previous Technical Report dated 22 August 2012.

12.2 THEMAC QAQC

The drilling completed by THEMAC during 2010, 2011, and 2012 utilized industry standard procedures for QAQC. This section will address the results of that QAQC analysis. Based on the positive results from this QAQC effort, the confidence in the drilling programs from THEMAC was established. The new drilling from THEMAC was used to verify the historic information on a nearest neighbor basis.

The QAQC procedures that were applied by THEMAC during 2010, 2011 and 2012 were as follows:

1) Blanks are inserted approximately 1 out of 20 samples submitted to the lab.
2) Standards are submitted on a 1 out of 20 basis as blind samples to the lab.
3) Field Duplicates are based on the second half of sawn core. These are submitted to the lab as a check on sample preparation. A "slab" of core is retained in the core tray rather than use the entire remaining split.
4) Independent check assays were sent on a 1 in 20 basis for shipment to ALS Chemex.

The results of blank, standard, and field duplicate submissions for all of the THEMAC data are summarized in the following sub-sections.

12.2.1 Blanks

There were 392 blank samples (1 out of 20) submitted for the THEMAC drill program. From that set of blanks there was one interval that reported out of range for all four metals. The copper and gold grades reported for that blank were close to one of the standards values used in the same year. The high value blank could have been the result of a standard insertion as blank.

Metal	Number of Blanks	Highest Value
Copper	392	0.45% and 0.21%
Moly	392	0.013%
Gold	392	0.0025 oz/ton
Silver	392	0.111 oz/ton

The high value for all of the results above were from drill hole number CF12-11 at 382-387 ft. Copper results have one additional high sample at 0.21% copper.

In summary, 2 out of 392 out of tolerance for copper is an acceptable result for blanks. The other metals have only 1 out of 392 out of tolerance.

12.2.2 Standards

Standards were submitted as pulps within the split core sample submissions to the Skyline assay lab. Standards were obtained from WCM minerals as certified values. A total of 384 standards were submitted as part of the regular sample submission program to Skyline labs.

Figure 12-1 summarizes the results of THEMAC standards submission for copper, moly, gold, and silver. The graphs indicate that about 3 samples out of 384 were likely standards swaps. The results do not indicate a bias and a swap rate of 3 out of 384 is acceptable.

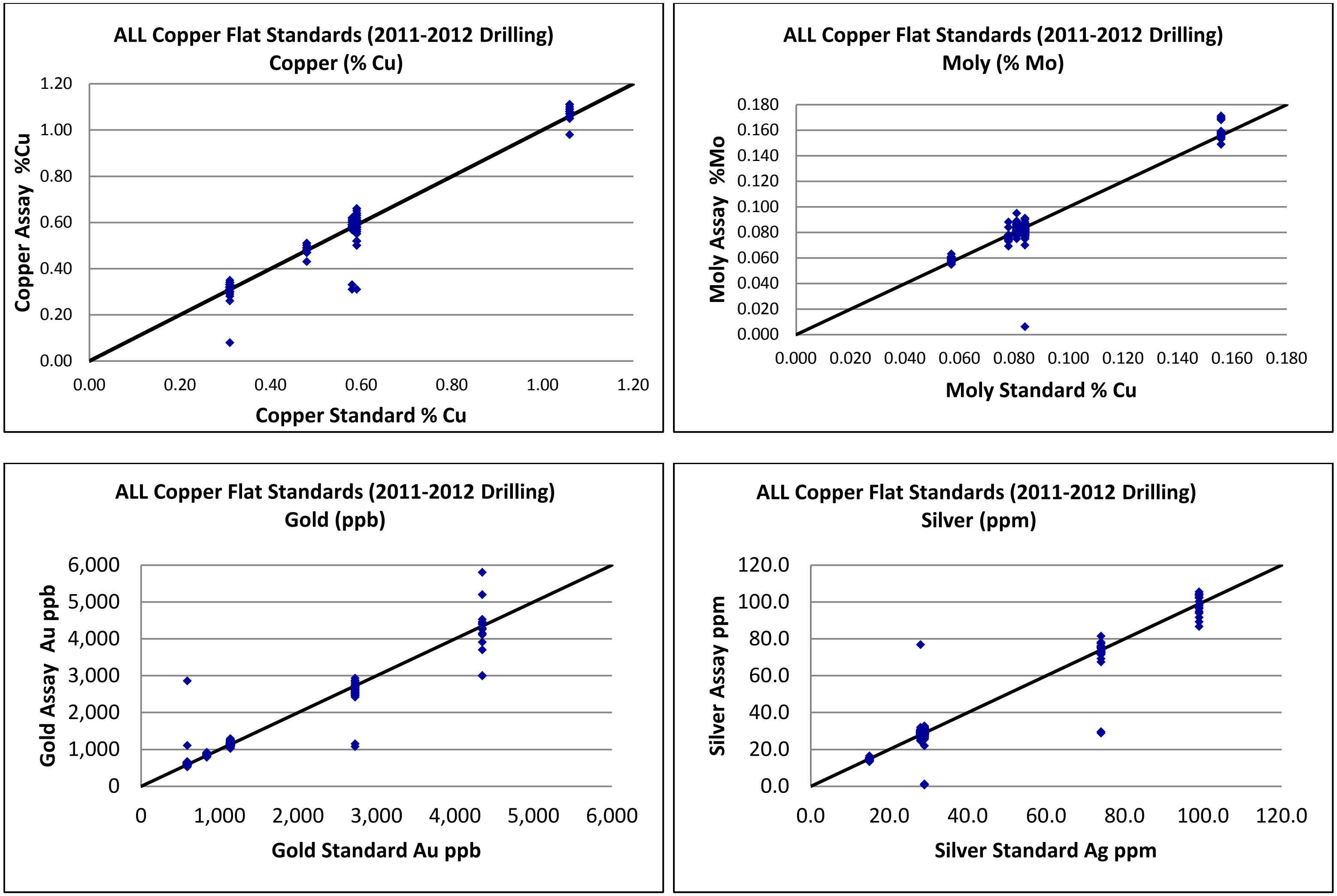


Figure 12-1: Standards Results for THEMAC 2010, 2011 & 2012 Drilling

12.2.3 Field Duplicates

THEMAC submitted 382 field duplicates of split core to Skyline for assay. The results are summarized on Figure 12-2. The mean of the duplicates for all metals is within a close tolerance of the original mean. No bias has been observed with the core splitting, preparation, or assay procedures from this data.

12.2.4 Check Assays

THEMAC submitted 421 pulps to the ALS Chemex lab as third party checks on the original Skyline assays. Figure 12-3 summarizes the results of those assay values on X-Y plots. The plots do not indicate a bias or significant issue with the check assay results.

Comparisons of the mean values are summarized below as an indication of the positive check assay results for the 421 submitted pulps.

Metal	Skyline Mean	ALS Chemex Mean
Copper	0.178%	0.166%
Moly	0.005%	0.006%
Gold	0.0546 g/t	0.056 g/t
Silver	1.26 g/t	1.23 g/t

All means of all four metals pass the Student's T test for being from the same populations.

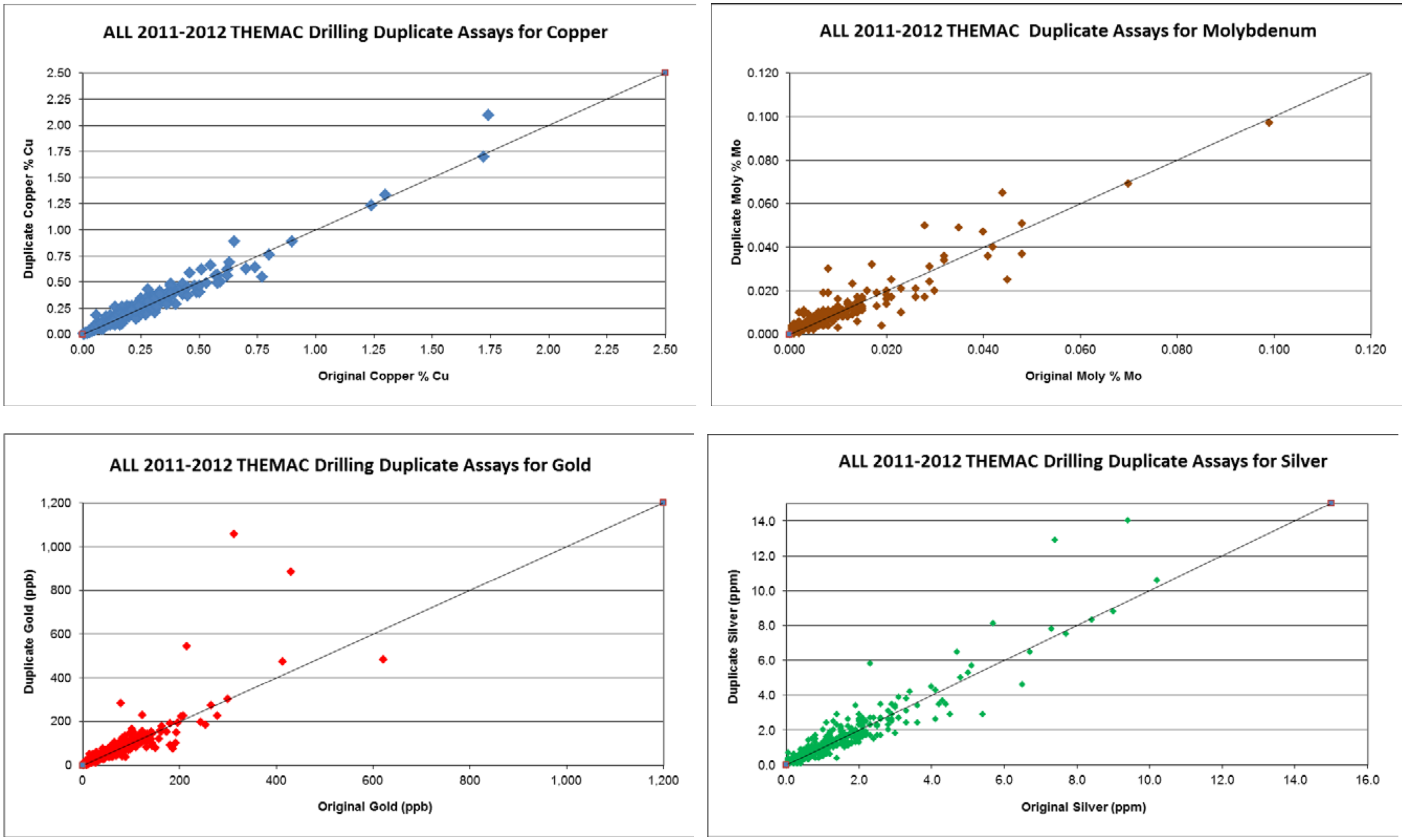


Figure 12-2: THEMAC Field Duplicate Assay Results for 2010-2012

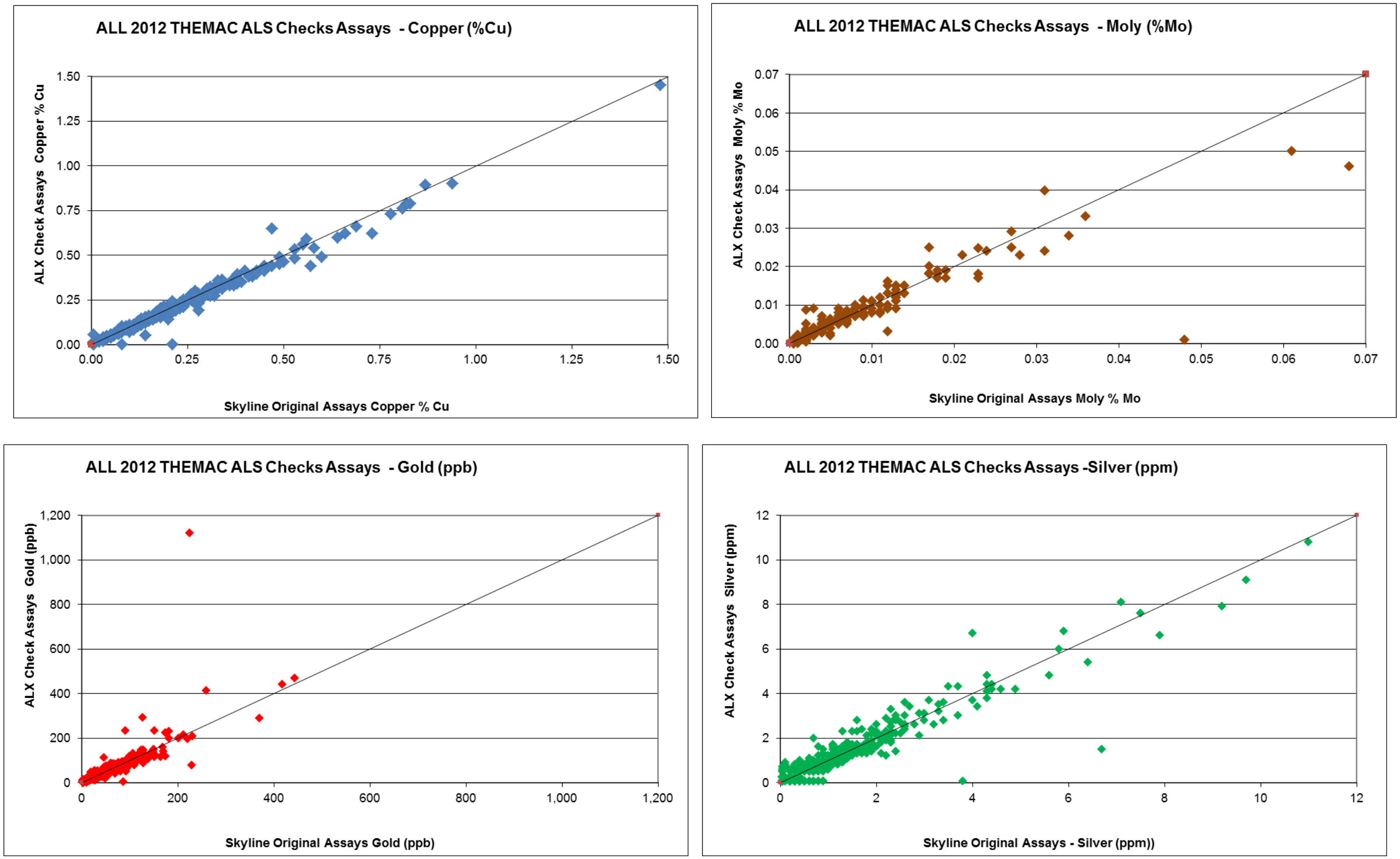


Figure 12-3: Check Assay Results, Skyline vs ALS Chemex

12.3 HISTORIC DRILLING VS THEMAC DRILLING

The 2011 THEMAC drill program was intended to confirm previous drilling as well as investigate new mineralization. The 2011 program generated data pairs that were physical close to previous Quintana drill holes. The THEMAC drilling was compared to the historic drilling to investigate the reliability of the historic drill data. Within the following discussion, the term "new" holes mean THEMAC drilling from 2010 and 2011. "Old" holes mean the historic data base prior to THEMAC drilling and comprised primarily of Quintana drill holes.

The additional holes completed during 2012 did not add a significant number of sample pairs to the nearest neighbor comparison of New vs Old. As a result, the nearest neighbor work was not updated, but is reported here for completeness.

Several of the new drill holes were planned to "scissor" old drill holes, meaning that they cross the old holes at an angle and are not specifically twin holes. They do however; generate local twins of a number of old drilling intervals with new drilling.

IMC paired the new drilling and old drilling on a nearest neighbor basis. The drill hole data was first composited to 25 ft down hole (length) composites as summarized Section 14. The comparison was completed between old and new composites that were at spacing of 25, 50, 75, and 100 ft. All of the discussion in this section will focus on the pairs of data that are less than 50 ft apart.

Figure 12-4 illustrates the results of pairing new vs old drilling for copper with a maximum spacing between composites of 50 ft (one model block). The new composite value is on the X axis and the nearby paired old composite value is on the Y axis. One will immediately note that there are 8 high values above 1.5% copper in the old data that are not reflected in the new drill hole data.

More detailed investigation showed that the 8 high composites are contained within two old drill holes numbered: 75-14 and 75-8. This result was initially caused for some concern because the new holes did not see the high grade.

The following observations were noted.

1) Old drill holes 75-14 and 75-8 were logged from photographs and the intervals in question were logged as intermittent breccia and quartz monzonite.
2) The new paired drill holes CF-10-06b and CF-11-04 were carefully logged in the core tray and both holes were logged as quartz monzonite with no breccia noted in these intervals.
3) The pulps from the entire drill hole 75-8 have been re-assayed by THEMAC. The pulp re-assays closely match the original high grade assays and easily pass the T-statistic hypothesis tests.
4) Removing the 8 high values from consideration results in 141 data pairs that show no bias and comfortably pass the hypothesis tests as being from the same population.

The above points indicate one of two options: 1) The old drill hole pulp preparation was high biased in selected locations or: 2) The boundaries between brecciated high grade and nearby low grade can be abrupt.

The historic description of sample preparation by Quintana does not indicate any issues regarding sample preparation bias. In addition, it is difficult to bias copper assays as compared to other metals.

Historic writing by the Quintana staff indicates the grade variability that occurs in the breccia zones. The change in logged rock type between brecciated and non-brecciated rock within 25 to 50 ft is likely the explanation for the new holes not seeing the same high grade.

The above comparisons and observations have contributed to the mineral resource procedures whereby high grade zones are separated from surrounding low grade and high value composites receive limited search radius as it appears that high grade zones can be of limited extent.

The same situation occurs in the other metals (moly, gold, silver) in the same places as identified in the copper discussion above.

Table 12-1 summarizes the nearest neighbor results before and after removal of high grade composite values from the old data set. The results further support the limitation of high grade area impact from both old and new drilling during the estimation of mineral resources.

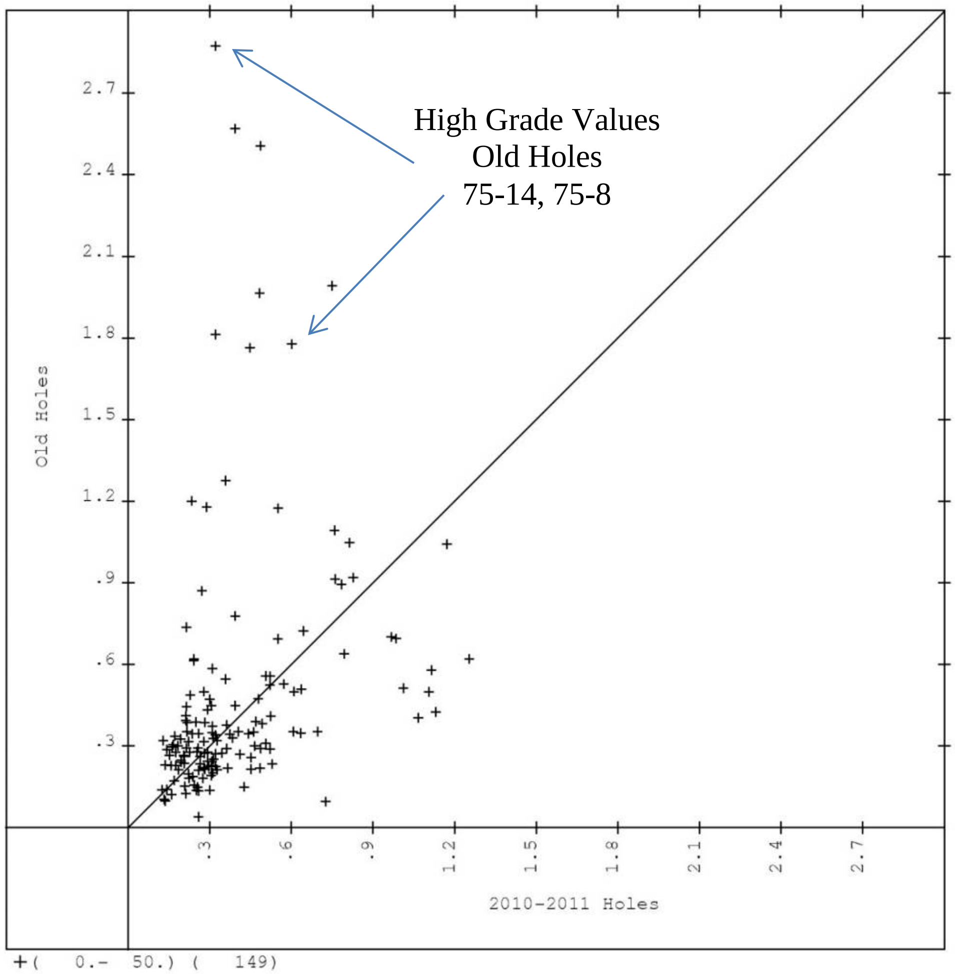


Figure 12-4: Nearest Neighbor Comparison of New vs Old Holes for Copper (Samples are 25 ft composites, Grades are in % Total Copper)

Table 12-1: Nearest Neighbor Comparison – 2010 and 2011 THEMAC Drilling vs. Historic Drilling – 25 ft Down Hole Composites Spaced 50 ft Apart

Metal	New vs Old, No Grade Limits				New vs Old, Remove Old High Grades				
	Number of Pairs	2010-2011 Mean	Historic Mean	Hypothesis Test Summary	Remove Old HG Above	Number of Pairs	2010-2011 Mean	Historic Mean	Hypothesis Test Summary
Copper %	149	0.392	0.484	Fail	1.50%	141	0.387	0.389	Pass
Moly %	135	0.017	0.020	Pass	0.090%	128	0.015	0.015	Pass
Gold oz/ton	62	0.003	0.006	Fail	0.010 oz/ton	48	0.003	0.004	Pass
Silver oz/ton	66	0.090	0.131	Fail	0.25 oz/ton	56	0.081	0.093	Pass

Hypothesis Tests include: T-statistic on Means, Paired T
Impact of High Grade values in old drilling within 50 ft is illustrated.

12.4 DATA CORRECTIONS

Two corrections were applied to the historic database by IMC prior to the development of mineral resource estimates. Those are discussed as follows:

12.4.1 2010-2011 Down Hole Surveys

THEMAC requested down hole surveys to be completed by the drilling contractor on all of the 2010 and 2011 drill holes. Reviews of the 2011 down hole survey data by IMC indicated substantial discrepancies in the data including 180 degree reversals and 90 degree turns in the drill holes within one sampling interval.

Discussions with the site geologist and reviews of the original set up orientations of the drill holes proved that the down hole surveys should not be trusted during the 2011 time period.

Further reviews of the 2010 drilling noted that the first down hole survey in every hole varied from the set up bearing by about 9 degrees. IMC understands that the down hole tools uses a magnetic compass and the magnetic declination at Copper Flat is 9 degrees. It appears that the drill contractor did not adjust for the local magnetic declination and some users did not know how to operate instrument.

As a result, IMC set all of the drill hole bearings for 2010 and 2011 drilling equal to the set up bearing established by and confirmed by the site geologists. Changes in down hole plunge from the down hole surveys were allowed to be used as they were likely a simple gravimetric devise that required no correction or interpretation.

The IMC correction would have little or no impact on the first several hundred feet of a drill hole. As the holes approach 1,000 ft in depth, there could be changes in hole location that could move the samples as much as 50 ft.

During the 2012 drilling program, all of the down hole surveys appear to be reliable and show little deviation other than the normal expectation from their planned bearing and inclination.

12.4.2 Underground Drift Data

The historic data base contained the channel assays from 4 underground drifts that had been driven to obtain metallurgical samples, sometime in the past. Reviews of maps and sections indicated that these drift samples appeared high valued compared to the nearby diamond drill hole data.

IMC completed a nearest neighbor comparison of the drift data versus nearby diamond drilling and found the drift channel data to be substantially high biased relative to drilling.

As a result of this outcome, the channel data was removed from the data set and not used for the development of mineral resources or mineral reserves.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

The Copper Flat deposit is a porphyry-type copper deposit with recoverable concentrations of molybdenum, silver, and gold. The primary copper mineral is chalcopyrite. Considerable process design and metallurgical testing were accomplished prior to the Quintana operation of the property in 1982. Additional testing has been accomplished since then by others contemplating redevelopment of the property, including recent work by Minerals Advisory Group Research and Development (MAG), of Tucson, Arizona, commissioned by THEMAC. The process flow design and recovery estimation presented here is supported by the current test data as well as results from the Quintana operation.

13.1 METALLURGICAL TESTING PROGRAM

Metallurgical testing was conducted for Quintana prior to the development and operation of the mine in 1982. Additional work has been done for various companies investigating redevelopment of the property. M3 reviewed the test work and commissioned additional testing to complete a feasibility-level evaluation of process design and metal recoveries for THEMAC.

The primary process development was conducted by Colorado School of Mines Research Institute (CSMRI) (1976a and 1976b). This work included grindability testing, precious metal recovery investigation, and pilot plant testing. Lightner (1976) reported on molybdenite circuit testwork. Pincock Allen and Holt (PAH) (1979a, 1979b, and 1979c) reviewed the metallurgical information, performed statistical analyses, and reported on a flotation investigation conducted by the Koppers Company. Shantz (1981a and 1981b) reported on grind versus recovery information and sulfide content of the ores. Hood, et al. (undated) reported on testing and scale-up for the semi-autogenous grinding (SAG) mill. Operational data obtained from Quintana files was used to confirm metallurgical testing results and testifies to its validity.

Additional metallurgical testing has been conducted since the Quintana operation which provides additional information concerning the characteristics of the ore and supports the historical findings. METCON Research, Inc. (METCON) (1993) conducted preliminary flotation investigations in support of efforts to redevelop the property. Robinsky (1996) investigated tailings disposal for the redevelopment. Recently, comminution testing has been conducted by Hazen Research, Inc. (Hazen) (2011a, 2011b, and 2012) to confirm the grindability of three ore types, test the abrasiveness of the ore, and evaluate changes in grinding characteristics with depth in the orebody. Pocock Industrial (2011) conducted solid-liquid separation testing on tailings samples supplied by METCON from a blend quartz monzonite and breccia ore samples from recent drill core including sample characterization and particle size analysis, flocculant screening, gravity sedimentation, pulp rheology, pressure filtration, and vacuum filtration.

Feasibility metallurgical testing concluded with a battery of testing designed to evaluate gold deportment, recovery changes with respect to mining phase, and gravity recoverable gold. G&T Technical Services (G&T) (2012) investigated the presence of free gold in flotation tailings from samples with high gold contents. FL Smidth-Knelson (2012a) conducted testing on tailings from ore samples of more typical grades to investigate the potential for enhancing gold recovery using gravity methods.

MAG (2012) conducted flotation testing to validate the parameters established by CSMRI, evaluate a variety of reagent suites, and produce sufficient concentrate to conduct testing for production of a molybdenum concentrate. Test work was conducted on recent drill core of three identified ore types: quartz monzonite (QM), biotite breccia (BB), and quartz feldspar breccia (QFB). Testing was further stratified between composites of ore that would be mined in the first five years and those mined later in the mine plan. Both composites consisted of 65 percent QM, 15 percent BB, and 20 percent QFB. Testing included bulk sample preparation (crushing and mixing and splitting test charges), test product sample preparation (pulverization), grind and regrind characterization, batch rougher, cleaner, and scavenger flotation, and locked-cycle flotation. Cu-Mo separation of bulk Cu-Mo concentrate and cleaning of molybdenum concentrate. The “mine phase” composites were used to evaluate reagent suites that may be more selective at a lower pH. A six-cycle, locked-cycle test was conducted on an early mine phase composite.

Comparison of the results from the CSMRI 1976 locked-cycle test and 1982 mill operating results with MAG flotation results, presented in Table 13-1 below, showed that results have been reproduced by MAG on fresh ore. Testing of the current drill core produced low rougher flotation tailings of 0.02-0.03% copper which was consistent with the other results demonstrating that the core samples contained principally sulfide mineralization.

Table 13-1: Comparative Flotation Response from CSMRI 1976 Locked Cycle Test/1982 Mill Operating Results and MAG R&D Flotation Tests

CSMRI June 23, 1976 Rpt. Mill Monthly Report July 1, 1982 & MAG R&D July 2012 Report

Test Identification	Time Period	Product	Weight	Assay Values					Distribution				
				Cu	Fe	Mo	Au	Ag	Cu	Fe	Mo	Au	Ag
			%	%	%	%	oz/t	oz/t	%	%	%	%	%
CSMRI Testing of Core	1975-1976	Final Conc.	1.49	29.400			0.156	4.728	91.07			46.30	88.00
		Tail		0.024									
		Calc. Head		0.405			<0.005	0.083					
Milling Statistics/CuS	April/May/June 1982	Final Conc.		28.420			0.164	4.030	73.00				
		Tail		0.094	1.05	0.0055							
		Calc. Head		0.350		0.0074							
MAG R&D Testing of Core	2012	Final Conc.	1.12	27.217	27.67	0.8960	0.150	4.078	90.45	15.10	69.19	71.10	82.7
		Tail		0.025	1.79	0.0041	0.001	0.032	9.55	84.91	30.81	28.90	17.3
		Calc. Head		0.355	2.12	0.0144	0.003	0.079	100.00	100.00	100.00	100.00	100.00

Samples of flotation products and tailings produced by MAG (2012) were subjected to additional testing and analysis by other laboratories. Inductively Coupled Plasma/Mass Spectroscopy (ICP) work conducted on the concentrates demonstrated that the quality of the products was adequate and that no deleterious substances were contained in the concentrates.

Bulk rougher scavenger tails from both composites were examined by QEMSCAN at the Colorado School of Mines Advanced Mineralogy Research Center (CSM AMRC) to determine the occurrence of gold and silver. The QEMSCAN results indicate silver locked in silica, feldspar and muscovite/kaolinite. The average grain size of un-floated Ag-minerals was determined to be about 3-6 µm. Additional settling and rheological characterization were conducted by Pocock Industrial, Inc. on tailings from individual rock type and composite samples. Pocock’s test results are summarized in Section 13.2 below.

13.2 METALLURGICAL TESTING RESULTS

Metallurgical testing results and properties of the ore, concentrates, and tailings are derived from the metallurgical testing program described in sections below and confirmed by the production statistics from the Quintana operation. Key characteristics with influence on the process design are comminution, flotation, solid-liquid separation, and gold deportment and recovery.

13.2.1 Comminution

Testing of grinding characteristics by Hazen (2012) provides the foundation for the grinding circuit design. Samples from Copper Flat were subjected to JKTech full drop-weight, SAG Mill Comminution (SMC), Bond ball mill work index (BWi), Bond rod mill work index (RWi), Bond abrasion work index (Ai), and Bond crusher impact index (CWi) testing, as summarized in Table 13-2.

Table 13-2: Comminution Test Results

Ore Type (Mine Phase)	BW_i kWh/t	RW_i kWh/t	A_i g	CW_i, kWh/t
Quartz Monzonite (Years 0-5)	13.1	11.5	0.1875	IS
Quartz Monzonite (Years 5+)	14.5	14.3	0.2281	IS
Biotite Breccia (Years 0 - 5)	13.6	12.8	0.3214	9.80
Biotite Breccia (Years 5+)	13.7	12.8	0.2120	13.61
Quartz Feldspar Breccia (Years 0-5)	13.5	13.3	0.1820	IS
Quartz Feldspar Breccia (Years 5+)	14.5	14.6	0.2142	IS

IS = Insufficient Sample

The SMC test was developed by SMC Testing Pty Ltd. to provide a cost-effective means of obtaining drop-weight parameters from drill core samples, as well as in situations in which limited quantities of material are available. The results of the evaluation were sent to JKTech to determine the JKSimMet parameters, as shown in Table 13-3.

Table 13-3: Comminution Test Results

Sample ID	SG	A	b	Axb	DW_i kWh/m³	DW_i,%	M_{ia}, kWh/t	M_{ih}, kWh/t	M_{ic}, kWh/t	t_a
52978-1	2.57	61.9	1.06	65.6	3.93	26	13.3	8.9	4.6	0.66
52978-2	2.62	66.8	0.66	44.1	5.97	54	18.3	13.2	6.8	0.43
52978-3	2.59	62.4	1.00	62.1	4.15	29	13.8	9.3	4.8	0.62
52978-4	2.70	61.2	1.21	74.1	3.65	23	12.0	7.8	4.1	0.71
52978-5	2.62	71.5	0.72	51.5	5.07	41	16.0	11.2	5.8	0.51
52978-6	2.49	64.1	0.90	57.7	4.31	31	14.9	10.1	5.2	0.60

SMC Parameters:

SG: Specific Gravity
A: maximum breakage
A × b: overall AG–SAG hardness
Mia: work index, coarse particle component
Mic: work index, crusher component
DWi: Drop Weight Index
b: relation between energy and impact breakage
kWh/m^3: kilowatt hours per cubic meter
Mih: work index, HPGR component
ta: low energy abrasion component of breakage

Contract Support Services (2012) used the results of a drop-weight evaluation to calculate SAG mill parameters, as well as crusher appearance functions using JKSimMet parameters. The results of the comminution tests indicate that the Copper Flat Deposit samples were moderately soft to medium hardness with Bond work Indexes ranging from 13.1 to14.5 kWh/t. The comminution test results confirm the previous JKTech work conducted for the Quintana Mines.

Hazen (2011) conducted testing for Bond Abrasion Index on Copper Flat samples. An average abrasion index (A_i) of 0.2756 was obtained for the quartz monzonite (0.2755) and breccia (0.2756) samples, and wear rates are presented in Table 13-4.

Table 13-4: Wear Rates for Copper Flat Samples

Equipment	Equation ($A_i > 0.021$)	Qtz. Monz. Wear Rate (lb/kWh)	Breccia Wear Rate (lb/kWh)
Wet Rod Mill	Rods: $0.35(A_i – 0.020)^{0.2}$ Liner: $0.35(A_i – 0.015)^{0.3}$	0.2664 0.0234	0.2664 0.0234
Wet Ball Mill (overflow and grate discharge)	Balls: $0.35(A_i – 0.015)^{0.33}$ Liner: $0.026(A_i – 0.020)^{0.2}$	0.2245 0.0174	0.2246 .0174
Dry Ball Mill (grate discharge, $A_i < 0.22$)	Balls: $0.05A_i^{0.5}$ Liner: $0.005A_i^{0.5}$	0.0262 0.0026	0.0262 0.0026
Crushers (gyratory, jaw, cone)	Liner: $(A_{i+}0.22)/11$	0.0450	0.0451
Roller Crushers	Rod Shell: $(0.1A_i)^{0.67}$	0.911	0.911

13.2.2 Solid-Liquid Separation

Solids-liquid separation (SLS) parameters for the Copper Flat Project are based on testing reported by Pocock (2011) on combined flotation tails and flotation concentrate materials. The test work was conducted to generate data to design and size SLS equipment.

- The flocculant product selected from screening tests for best performance was Hychem AF 303, a medium to high molecular weight 7 percent charge density anionic polyacrylamide.
- The minimum flocculant dose anticipated varied by individual sample and thickener type or application desired, but was in the overall range of 20 to 40 g/MT in the tested pH range of 9.0 to 9.9.
- Dynamic (high-rate) thickening tests indicated optimal feed solids concentration in the overall maximum range of 15 to 20 percent for the tails and concentrate materials for high rate-type thickeners to maintain sufficient settling velocities for minimum hydraulic equipment sizing basis recommended herein. Dynamic thickening tests conducted on the samples indicated a hydraulic net feed loading rate design basis in the maximum range of 4.5 to 5.5 $m^3/m^2{\cdot}hr$ for the tails material, and 3.5 to 4.5 $m^3/m^2{\cdot}hr$ for the concentrate material for optimal performance. Note: All thickening design basis given assume that maximum feed solids and minimum flocculant dose recommendations given in this report are followed.

- The overall maximum underflow density range for the tails material is 60 to 65 percent (but this could be limited to 60 to 62 percent with rake torque considerations based on un-sheared data). Likewise, the overall maximum underflow density range for the concentrate material is 61 to 66 percent (but this could be limited to 61 to 63 percent with rake torque considerations based on un-sheared data)
- Pressure filter testing for the tails material based on a tonnage throughput of 24,544 metric tons per day (mtpd) indicates a minimum sizing requirement of 898 chambers for a horizontal recess plate type press (with 2300 x 2500 mm plates, and 15 mm recess (30 mm full chamber)) with no cake wash.
- Pressure filter testing for the concentrate material based on a tonnage throughput of 450 mtpd indicates a minimum sizing requirement of 77 chambers for a horizontal recess plate type press (with 1000 mm plates, and 25 mm recess (50 mm full chamber)) with no cake wash.
- Results of vacuum filtration tests conducted on the concentrate material indicated maximum achievable production rates in the range of 341 kg/m^2-hr with no excess flocculant used for filter aid (16.4 percent discharge cake moisture), and 454 kg/m^2-hr with 60 grams per metric ton of filter aid used (20.4 percent discharge cake moisture).

13.2.3 Flotation

Extensive flotation testing has been conducted on the Copper Flat ore samples mainly by the CSMRI (1976a and 1976b) and PAH (1979a, 1979b, and 1979c) from which a process flow sheet was designed for the Quintana operation. The results of the CSMRI pilot plant demonstrated that the ore was amenable to conventional copper-moly flotation process with 92.5 percent of the copper and 81.2 percent of the molybdenum recovered in a copper-moly bulk concentrate with a 30 percent copper grade. Results of the molybdenite circuit tests showed that molybdenite was easily rejected from the concentrate and upgraded to a marketable product containing more than 53 percent molybdenum with an overall moly recovery of 62 percent.

PAH (1979a and 1979b) reviewed metallurgical test information and conducted statistical evaluation of the Pilot Plant metallurgical information on the Copper Flat Project for Quintana. The modified process flowsheet suggested by PAH consisted of crushing and grinding ore followed by bulk copper-moly rougher flotation. The bulk rougher flotation concentrate was reground and subjected to two stages of cleaner flotation. The cleaner concentrate was sent to a copper-moly separation circuit using a standard scheme of depressing copper with sodium hydrosulfide (NaHS) and floating molybdenite. The flotation tailing from the copper-moly separation circuit was the final copper concentrate assaying 28 percent copper. The rougher molybdenite concentrate was reground and cleaned to produce a saleable product.

MAG (2012) conducted metallurgical testing program to evaluate the mineral processing parameters developed by CSMRI and evaluate other options that might enhance concentrate grade, recovery, and/or reagent consumption. The copper recoveries MAG reported were similar to those achieved in the CSMRI testing. Recoveries reported by MAG (2012) for mine-stage composites and locked cycle testing are shown in Table 13-5.

Table 13-5: Flotation Test Results

Ore Type (Mine Phase)	Recovery (percent)			
	Copper	Moly	Gold	Silver
Early Mining Phase				
Composite (Years 0-5)	94	61	79	82.7
Late Mining Phase				
Composite (Years 6+)	91	60	76	82.7
Two Cycle Locked Test				
Average Locked Cycle (Years 0-5)	95	92.7	71.1	82.7

Flotation tests of individual rock type samples for each of the mining phases were conducted prior to testing the composite samples. Problems during the tests combined with assaying issues, especially for silver and gold, lead MAG (2012) to conclude that the results of the composite tests are more reliable than the tests on individual rock types. The locked-cycle testing appears to confirm the recoveries for the early mining phase, but the precious metal recoveries are variable due, in part, to low concentrations of these metals in the samples (head assays) and difficulties in assaying gold and silver assay at these low values. Gold recovery is set at 71.1 percent and silver recovery at 82.7 percent based on results of additional assays conducted by five different laboratories. Bulk flotation testing were conducted to generate rougher concentrate for the molybdenum circuit testing which were expected to give better precious metals recovery results for comparison with the CSMRI testing and historical recoveries achieved during the Quintana operation.

Head assays for the pilot-scale molybdenum evaluation test program conducted on the new 0-5 year mine life interval composite was 0.32% copper, 2.71% iron, 0.0090% molybdenum, 0.71g/t gold, and 3.0g/t silver. The same CSMRI standard reagents, conditions, and procedures utilized in the original bench scale bulk rougher and bulk cleaner flotation test program were employed in the pilot scale molybdenum evaluation test program.

The final molybdenum concentrate was 49.92% Mo, 0.49% copper, 0.95% Iron, 1g/t Au and 29g/t Ag. The final molybdenum rougher tail (final copper concentrate) gave 90.9% copper recovery with 25.08% Cu grade, 29.6% Fe, 4g/t Au, and 135g/t Ag and 0.004% molybdenum. Based on the results of this test regime, it has been demonstrated that a moly concentrate of 50% Mo is achievable with iron content below 1% and copper content below 0.5%. The testwork has indicated that it is possible to produce a moly final product that meets industry specifications for saleable moly concentrates.

13.2.4 Gold Deportment and Recovery

Historical Quintana production from Copper Flat suggested a recovery rate for gold at about 50 percent. Increases in gold recovery have an impact on the projected revenues for the operation. G&T (2012) evaluated the presence of gold in tailings by size fraction and evaluated the occurrence of that gold in terms of whether or not it was liberated or bound with pyrite or gangue minerals. FLSmidth-Knelson (2012a) conducted gravity gold recovery tests on Copper Flat composite sample of drill core from the deposit.

13.2.4.1 Gold Deportment

G&T (2012) searched rougher concentrate and a pre-concentrated rougher tailing for gold occurrences using an Automated Digital Imaging System (ADIS). The goal of this last step was to identify the deportment of gold in the tailing sample to identify whether gold recovery could be improved through gravity concentration. A size analysis was completed on a representative subsample and results are shown below in Table 13-6.

Table 13-6: Particle Size and Chemical Analysis

Size fraction microns	Weight grams	Metal Assays – percent or grams/tonne							
		Cu	Mo	Fe	S	C	As	Ag	Au
>150	12.3	0.21	0.065	4.16	1.68	0.61	0.002	2	1.21
<150>106	18.9	0.60	0.051	6.80	2.39	0.73	0.002	4	0.87
<106>75	15.9	0.81	0.057	8.00	2.30	0.75	<0.001	6	1.03
<75>53	11.9	0.79	0.033	7.30	2.16	0.69	<0.001	6	0.66
<53>38	9.4	1.08	0.026	8.30	2.07	0.72	<0.001	6	0.97
<38	31.7	1.15	0.020	8.80	1.83	0.99	<0.001	12	0.86
Calculated	100	0.83	0.039	7.50	2.05	0.80	<0.001	7	0.92
Measured Head	-	0.81	0.038	7.85	1.99	0.80	<0.001	6	0.83

ADIS searches on the rougher concentrate and final rougher tailing after pre-concentrating the tails produced the following observations.

- Gold occurrences in the rougher concentrate were in binary form with pyrite (35 percent), as liberated gold (24 percent) and in binary form with gangue (24 percent). The remaining occurrences were in binary form with chalcopyrite (17 percent).
- Gold in the pre-concentrated rougher tailings occurred interlocked in binary form with pyrite (56 percent) and as liberated gold (35 percent).
- Examination of gold occurrences in the rougher concentrate, tailing and recalculated feed reveals that about 42 percent of the gold was interlocked with pyrite in the rougher feed.

G&T (2012) concludes about 35 percent of the gold reporting to rougher tailings was liberated and addition of a gold gravity recovery stage to the process might increase overall gold recovery.

13.2.4.2 Gravity Gold Recovery

FL Smidth-Knelson conducted gravity gold recovery testing on a 73 kg sample of Copper Flat ore by progressively grinding the sample and passing it through a Knelson concentrator at a feed rate of approximately 800 g/min, sampling, and assaying the results, which are presented below in Table 13-7.

Table 13-7: Gravity Recovery with Grind Size

Grind Size	Grind Stage	Product	Mass g	%	Assay Au (g/t)	Units Au	Distribution (%)
P_{80} = 830 µ	1	Concentrate	87.4	0.1	6.14	0.7	5.9
		Tails	247.4	0.3	0.12	0.0	0.3
P_{80} = 174 µ -75µ = 46.2%	2	Concentrate	367.5	0.5	2.35	1.2	9.5
		Tails	256.0	0.4	0.11	0.0	0.3
P_{80} = 78µ	3	Concentrate	254.3	0.3	4.78	1.7	13.3
		Tails	17121	98.3	0.09	8.8	70.7
	Head Totals		72934	100.0	**0.12**	12.5	100.0
	Knelson Concentrate		709.1	1.0	3.69	3.6	**28.7**

FLSmidth-Knelson (2012a) concludes that overall 28.6 percent of the gold in the sample was recovered by gravity. The gold head grade of the sample was calculated to be 0.12 g/tonne with a final gravity gold tailings grade of 0.08 g/tonne. The grind P80 of the final stage was 78 µ. The concentrate gold recovered is classified as fine with grain size P20 of 110, P50 of 45 and P80 of 22.

FLSmidth-Knelson (2012b) applied a mathematical model to the data from gravity gold recovery testing to predict gravity recovery within a grinding flotation circuit. The model calculates a gravity recoverable gold population balance in a grinding flotation circuit. Data from a database is used for preliminary modeling, and detailed audits may be carried out to “calibrate” the model to an operating circuit. Modeling results for gravity recovery of the Copper Flat Project are presented in Table 13-8.

Table 13-8: Gravity Recoverable Gold Modeling Results

Number of Units	Gravity Feed Rate (mtph)	Gravity Feed Rate (% CL)	Gravity Recovery (% Au)	Gravity Recovery (% GRG)	Gravity Recovery (kg/day)	Concentrate Weight (kg/day)	Concentrate Grade (g/t)	Grav./Flot Recovery (%)	Overall Rec. Benefit (%)
0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	69.4	0.00
1	600	20	5.1	27.2	0.15	2640	56	78.5	1.69
2	1200	39	7.2	38.5	0.21	5280	40	82.1	2.36
3	1800	59	8.5	45.5	0.25	7920	32	84.4	2.79
4	2400	78	9.4	50.6	0.28	10560	26	86.0	3.10
5	3000	97	10.2	54.6	0.30	13200	23	87.3	3.34

The results show that two XD70 Knelson concentrators with screens, concentrate pumping, feed system, and structure would theoretically provide an increase in gold recovery of 2.36 percent, which equates to about 1.77 ounces per day extra gold.

13.3 BASIS FOR RECOVERY ESTIMATES

CSMRI (1976b) conducted flotation tests to determine optimum grind size, reagent screening and dosage tests, and locked-cycle tests to select flotation sequence and times. The results of the Pilot Plant investigation demonstrated approximately 92.5 percent of the copper and 81.2 percent of the molybdenum was recovered into a high-grade Cu-Mo bulk concentrate with a 30 percent copper grade. Results of the molybdenite circuit tests showed that molybdenite was easily rejected from the concentrate and upgraded to a marketable product containing more than 53 percent molybdenum with expected overall moly recovery of 62 percent. The process employed to obtain these results consisted of grinding to approximately 96 percent minus 65 mesh (250 µ), or a P_{80} of about 140 µ, followed by flotation at pH of 11 with dithiophosphate and xanthate collectors. The rougher concentrate was reground to approximately 90 percent minus 325 mesh (44 µ), or a P_{80} of about 53 µ, and then upgraded in two stages of cleaner flotation.

MAG (2012) conducted metallurgical tests to validate the CSMRI tests and to evaluate other options that might enhance concentrate grade, recovery, and/or reagent consumption. Results described in Sec. 13.2.3 indicate copper recovery of 95 percent, moly recovery of 92.7 percent, silver recovery of 82.7 percent and gold recovery of 71.1 percent.

FLSmidth-Knelson (2012) conducted test work and modeling that indicate an additional 2.6 percent gold is recoverable with two Knelson concentrators in the circuit. Estimated metal recoveries are presented in Table 13-9.

Table 13-9: Estimated Metal Recovery Rates

	Copper Flat Ore Metal Recoveries -%			
Composite	Copper	Molybdenum	Silver	Gold
Years 1 to 5	94.6	81.9	82.7	73.7
Years 6 and up	91.2	73.4	82.7	73.7

13.4 REPRESENTATIVENESS OF TESTING AND CHARACTERIZATION

Process development to determine concentrator unit operations and to set design criteria for the unit operations reported by CSMRI (1976a and 1976b) was validated by MAG (2012) on samples of three ore types and composites from early and late phases of mining. M3 has reviewed the available metallurgical test data and concluded it was of sufficient quality and consistency to design the process facilities. The metallurgical testing program has followed industry accepted practices and is believed to be technically sound and representative for the deposit, although there can be no guarantee that all mineralogical assemblages have been tested. In addition, results obtained by testing ore samples may not always be representative of results obtained from production scale processing of the whole ore deposit. M3 has extrapolated the design criteria included in this document from test results. These preliminary design criteria may change as more computer simulation, results of recommended laboratory testing, or plant performance testing becomes available.

CSMRI's (1976a and 1976b) bench-scale and pilot froth flotation test data from samples of sulfide ore has shown that 92.5 percent copper recovery at a concentrate grade of 30 percent copper from feed grades between 0.30 and 0.60 percent copper is achievable. This was confirmed by the results of regression equations developed by PAH (1979b) that the overall copper recovery range between 91.4 and 93.5 percent with molybdenum recovery to a copper-moly concentrate of 80 percent can be consistently achieved. The results of the metallurgical tests conducted by MAG (2012) confirmed those of the CSMRI tests with copper recovery of

91.8, Moly recovery of 60.7, silver recovery of 82.7% and a better gold recovery of 71.1. Gold recovery will improve by additional 2.6% to a total of 73.7% as a result of the addition of the Knelson's gravity concentrator in the grinding circuit.

13.5 PROCESSING FACTORS AND DELETERIOUS ELEMENTS

Although comprehensive metallurgical tests were conducted on the Copper Flat ore more than thirty years ago, the methodology and conclusions are technically feasible and the flowsheet of the previous 1982 mill is essentially still valid. Quintana Minerals designed and built the concentrator in 1982 with the rated capacity of 15,000 st/d with copper recovery reaching 88 percent in June 1982. The molybdenum circuit operated for only a short time in 1982 producing a 46 percent moly concentrate without the final cleaning stage. With a longer operating period, the plant could have achieved a saleable molybdenum concentrate product (greater than 50 percent moly) at an overall plant recovery of 62 percent. This is consistent with plant practices and recoveries for similar by-product operations.

Advances in equipment manufacturing technology, process control technology as well as reagent research in the last thirty years mean that the details in the flow sheet being proposed by M3 will be different from 1982 Quintana plant. It was therefore deemed prudent to conduct metallurgical tests recommended by M3 to take advantage of the technological advances achieved in the last thirty years. Test results reported by MAG (2012) validate the metallurgical tests conducted by CSMRI and show that the parameters used by CSMRI gave better recoveries than the "modern" parameters.

CSMRI (1976b) conducted a pilot plant test and produced saleable molybdenum concentrate by floating copper and depressing molybdenum (weight ratio Cu:Mo = 35:1), so there is no reason to doubt that saleable moly concentrate can be produced using the modern flow sheet being used in the mining industry. It can be concluded from the results of the CSMRI pilot plant tests, the historical operation of the Quintana Minerals concentrator, and recent MAG (2012) testing that there are no adverse processing factors that require any extraordinary process engineering or deleterious elements in the Copper Flat ore. The ore is of medium hardness, amenable to copper/moly flotation, gives products that thicken and filter readily and will produce saleable copper and moly concentrates.

13.6 CONCEPTUAL PROCESS FLOWSHEET

The conceptual process flowsheet (Figure 13-1) was developed for processing 1,333st/hr to achieve a throughput of 10.8 million tons per year with an overall availability factor of 92.5 percent. The basis for the flowsheet and the capital and operating cost are given in Table 13-10.

The process flowsheet is very similar to the one developed by Quintana. The major equipment is also the same as originally installed by Quintana. The present flowsheet design incorporates modern equipment where applicable. For example, larger flotation cells have been selected for the rougher flotation, bulk cleaner flotation cells are column cells and vertical mills replaced the regrind mills. The design incorporated in this study is considered "Standard" practice in the mining industry today.

Table 13-10: Design Parameters for the Conceptual Process Flowsheet

Item	Amount
Tonnage/day	32,000
Availability	92.5%
Tons/hr	1333
Tons/yr	10,800,000
Feed Grade	
% Cu	0.42
% Mo	0.012
Oz/ton Au	0.003
Oz/ton Ag	0.08
Cu Concentrate Grade	
% Cu	28
Mo Concentrate Grade	
% Mo	>50
Concentrate Tonnage/day	
Cu	311
Mo	1.9
Recovery %	
Cu	91.8
Mo	60.7
Au	73.7
Ag	82.7

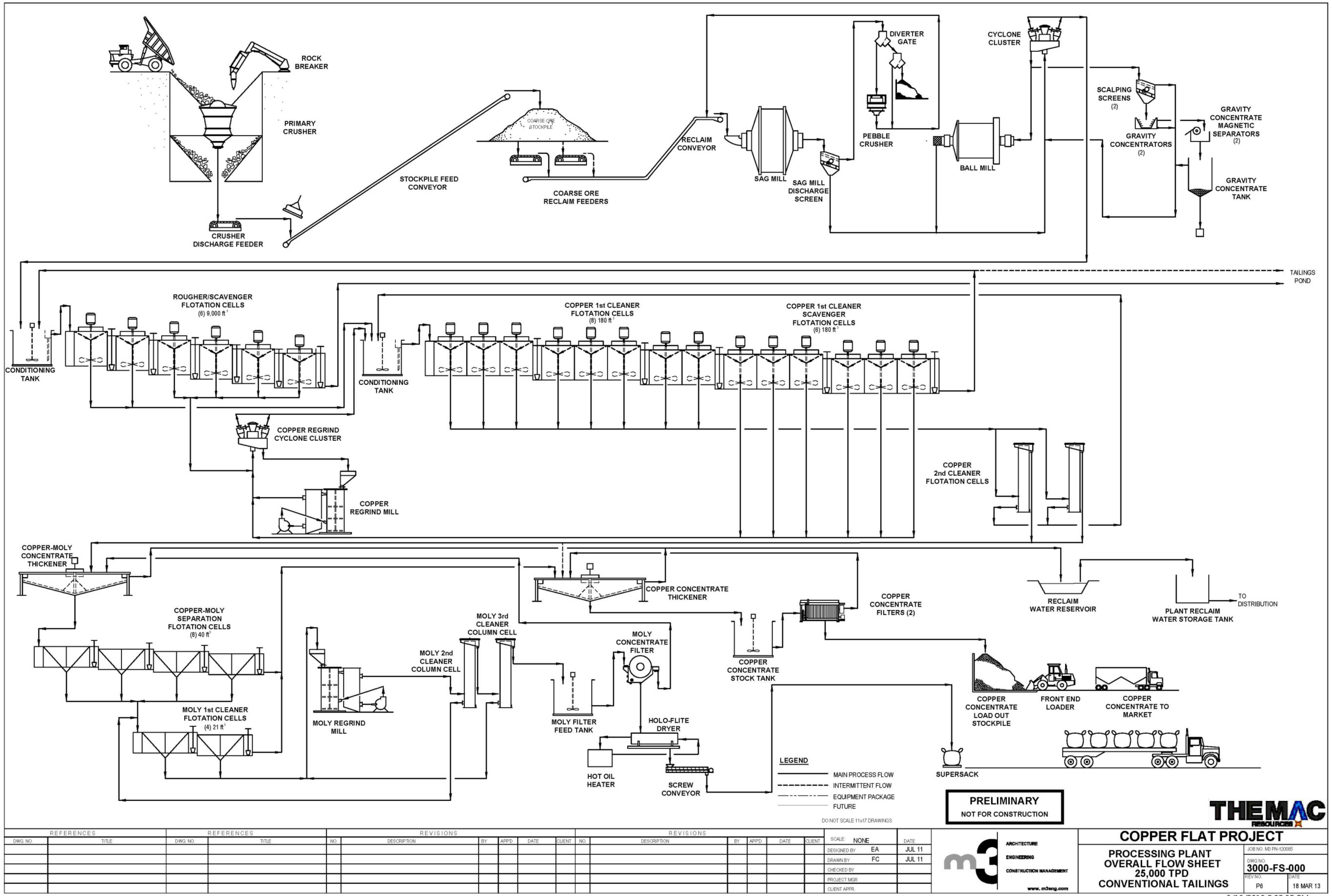


Figure 13-1: Conceptual Process Flowsheet

14 MINERAL RESOURCE ESTIMATES

The mineral resource and mineral reserve was developed from a computer based block model that was based on the drill hole data base and geologic interpretation assembled for the Copper Flat Deposit.

The block model assembly and the component of the model that represents the mineral resource will be discussed in this section. Section 15 will discuss the sub-set of the resource that constitutes the mineral reserve.

The component of the mineralization that meets the mineral resource requirements for "reasonable prospects of economic extraction" was based on the floating cone pit guidance algorithm. The results of that work are summarized at the end of this section.

14.1 BLOCK MODEL

14.1.1 Model Location

The block model was assembled in the UTM NAD83 coordinate system converted to "feet". This was established as the standard data location and mine planning grid for the project. Table 14-1 summarizes the block size and model location.

Table 14-1: Block Model Size and Location

Size and Location				
	Southwest	Northwest	Northeast	Southeast
Easting	861,000	891,000	866,500	866,500
Northing	11,975,000	11,980,500	11,980,500	11,975,000
Elevation Range		4,000	6,125	
Model Rotation	None			
		Columns	Rows	Levels
Size		110	110	85
Block Size		50 x 50 x 25 ft	Bench Ht = 25 ft	

The limited bench height is unusual for copper porphyry. However, the planned production rate does not require large loading units. The 25ft bench height was selected as a reasonable value for production loading by front end loaders of the 15 to 19 cubic yard capacity.

The central portion of the deposit is drilled with spacing of 100 to 150 ft. The selection of the 50ft horizontal block size corresponds to ½ to ⅓ of the drilling spacing. Roughly 3½ model blocks will be mined every day.

14.1.2 Drill Hole Data

As discussed in previous sections, IMC removed the underground drift sampling from the data base prior to grade estimation because that data appears to be high biased relative to the surrounding diamond drilling. Both historic diamond drilling, and the new holes drilled by THEMAC have been combined for use in block grade estimation.

The drill hole assay data was composited to 25 ft down hole (length) intervals. Individual assays were capped prior to compositing. The cap values are summarized below:

Assay Cap Values:

Copper	3.00%
Molybdenum	0.40%
Gold	0.08 oz/ton
Silver	0.70 oz/ton

The cap levels were established based on the review of cumulative frequency plots.

Table 14-2 summarizes the assay data after capping and the composite data that was applied prior to grade estimation.

Table 14-2: Drill Hole Data

Copper Flat Drill Hole Data				
Metal	Assays		25 ft Composites	
	Number	Mean	Number	Mean
Copper %	21,642	0.249	6,662	0.264
Molybdenum %	19,996	0.009	6,330	0.009
Gold, oz/ton	15,217	0.003	4,788	0.003
Silver, oz/ton	15,569	0.059	4,872	0.062

The counts presented above reflect the drill hole data that was used in the assembly of the block model after removal of the underground drift sampling.

14.1.3 Model Geology

Geologic interpretation of the major lithologic units was completed by THEMAC personnel and verified by IMC. That information was digitized on plan, and assigned to the block model.

The initial interpretation addressed the major rock types of:

	Model Code
Quartz Monzonite	7
Coarse Crystaline Porphyry	14
Andesite	6
Breccia	12

The mineralization is contained within the Quarts Monzonite, Coarse Crystaline Porphyry, and Breccia Units. Andesite is barren and no grade has been assigned to that unit. Block grades in the andesite rock type were set to zero after completion of the grade estimation.

THEMAC geologists updated the estimate of "Breccia" which was amended for this model update. The material defined as Breccia is likely a stockwork alteration rather than a true breccia. Because the past terminology has been utilized throughout the project, the term breccia will still be applied to the hydrothermal stockwork zone. The only impact of the breccia code on the resource model was the application of a slightly heavier density in the breccia zone.

Structural boundaries and structure zones defined by faulting were interpreted by THEMAC geologists and verified by IMC. Faults were interpreted on plan and projected vertically downward. Blocks between the faults were assigned as codes to the block model. In addition, the major faults were assigned zones that surrounded the fault and could potentially control mineralization.

The 25 ft drill hole composites were assigned the codes of the fault blocks and fault zones. Basic statistics and a nearest neighbor approach were used to investigate if any of the structural blocks ore zones were boundaries or controls on mineralization. The results of this work did not identify any structural controls that should be hard boundaries to mineralization outside of the grade boundaries that were utilized.

The fault blocks and fault zones were combined and simplified into a set of Structural Domains that were used to control the orientation of the search ellipse but they were not boundaries to mineralization.

The Domain Codes for Modeling were as follows:

Domain	Description
1	Central East with the Patton Zone
2	Central West, With Patton 2 and North Zones
3	Northeast
4	Northwest
5	Southeast
6	Southwest
7	Hunter Zone

Figure 14-1 illustrates the domain codes used in the model assembly process.

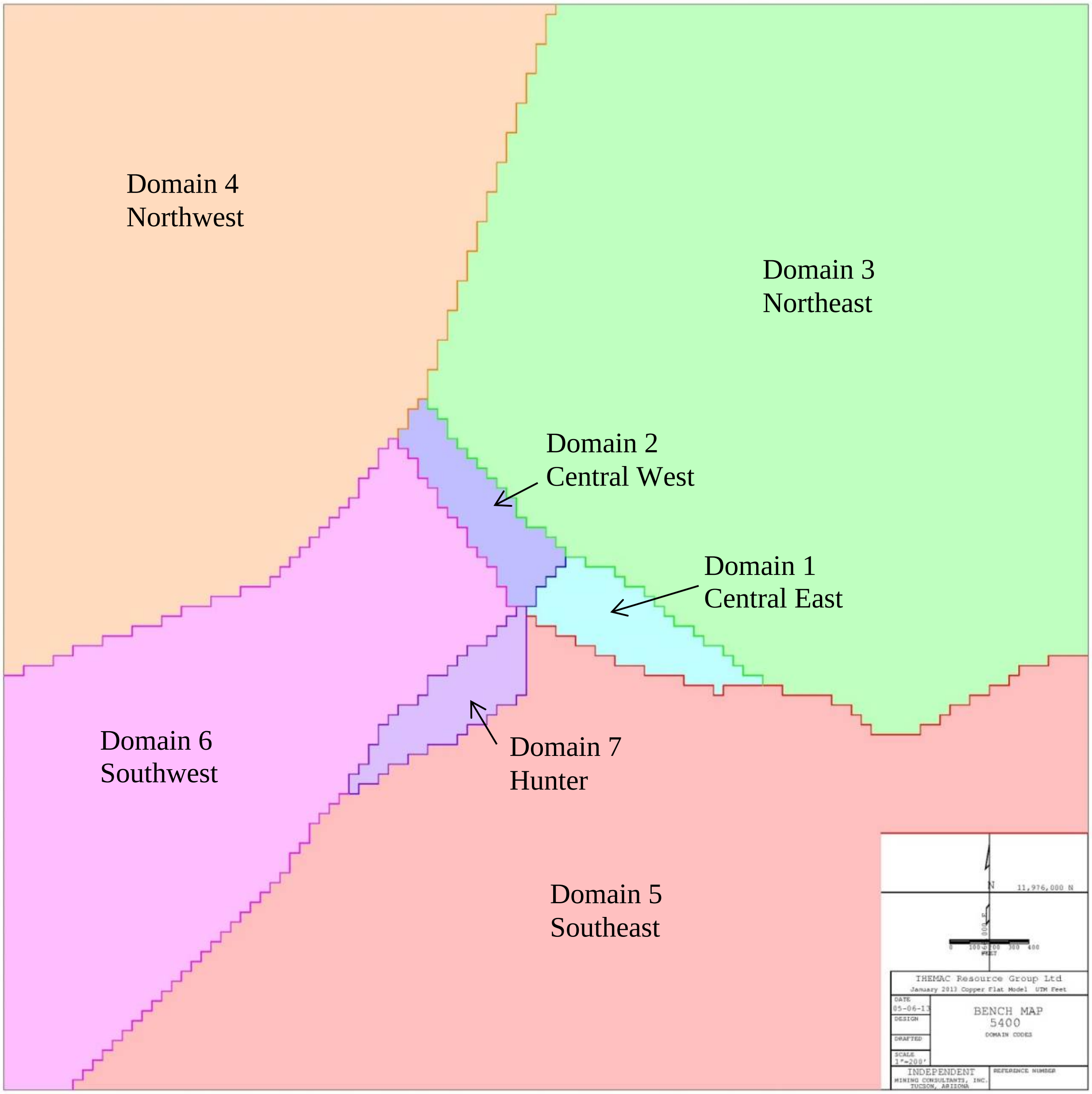


Figure 14-1: Map of Grade Estimation Domains Based on Structural Blocks and Zones (The Map Covers the Model Area)

14.1.4 Variography and Grade Boundaries

Basic statistics, probability plots and variograms were completed within the defined domain boundaries. Domains 1 through 6 all generally show preferred orientation parallel to the Patton and Patton Splay Faults at bearings of 307 degrees. The Hunter Domain (Domain 7) indicates the local structural control with a preferred north-south orientation.

Figure 14-2 and Figure 14-3 illustrate selected global indicator variograms for copper and moly which support the selection of search and orientation that are summarized in the next sub-section.

Variogram ranges up to 600 ft could be interpreted from the various plots that were completed. However, maximum ranges of 400 to 450 ft were selected to be in line with other copper-moly porphyry systems and to allow for better local estimation.

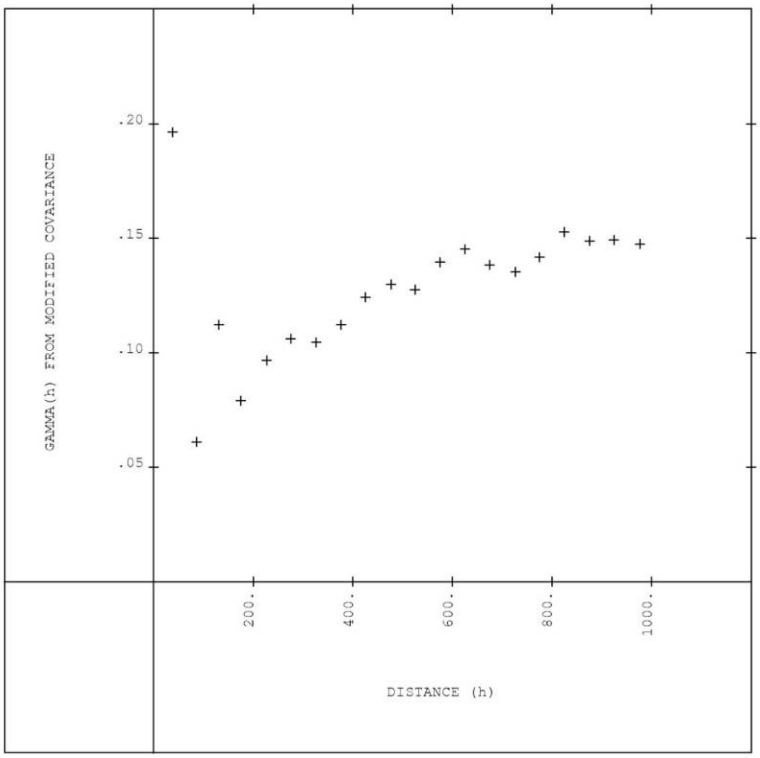
In all cases, vertical variograms showed good continuity and long ranges of influence. This is a typical response for deposits with predominately vertical drilling and represents an unavoidable spacial bias in the data collection process.

The cumulative frequency population plots applied to the 25 ft composites for copper and moly resulted in the selection of the following grade discriminator boundaries for copper, moly, and gold.

Copper Indicator Boundary	0.40% copper
Moly Indicator Boundary	0.012%
Gold Indicator Boundary	0.005 oz/ton

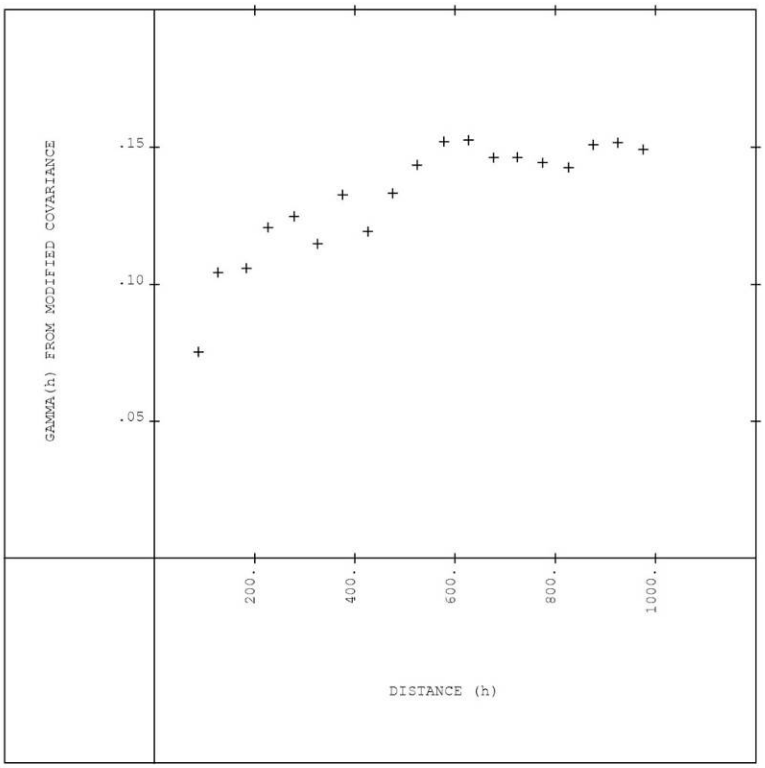
Review of geologic and assay cross sections often indicate abrupt grade changes between high values and low values as supported by the observed indicator discriminators. As a result, the vertical search was limited to 100 ft and the maximum number of composites from any drill hole was set at 3. This limits the vertical averaging or smearing of grades in the deposit and results in better local estimation for mine planning guidance.

The resulting grade estimation procedures and kriging parameters are presented in the next sub-section.



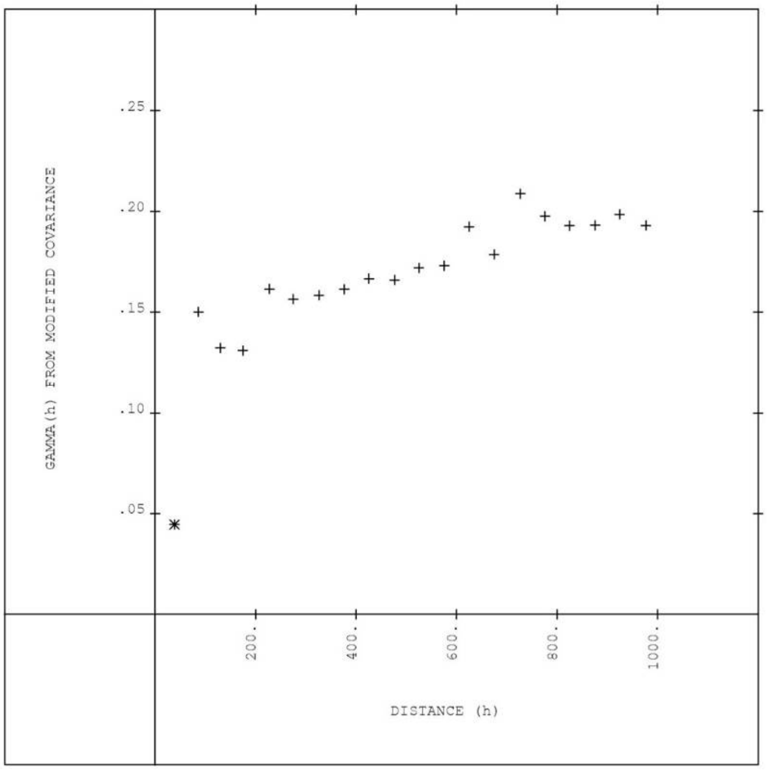
Gamma(h) from Modified Covariance

310 Degree Bearing Horizontal



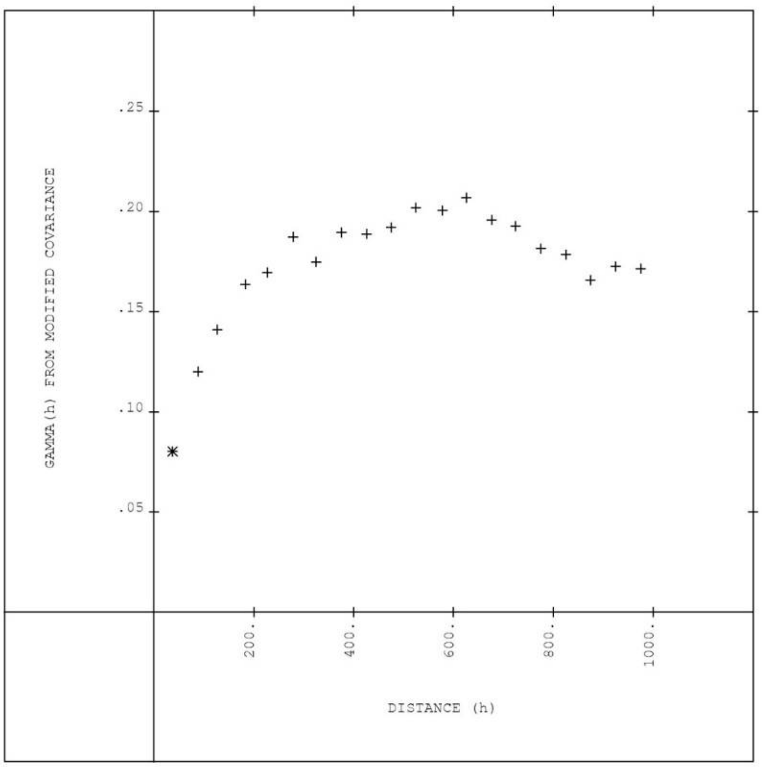
40 Degree Bearing Horizontal

Figure 14-2: Copper Indicator Variogram 0.40% Discriminator



Gamma(h) from Modified Covariance

310 Degree Bearing Horizontal



40 Degree Bearing Horizontal

Figure 14-3: Moly Indicator Variogram 0.012% Discriminator

14.1.5 Block Grade Estimation

The block grades were estimated for copper, molybdenum, gold, and silver into the quartz monzonite, breccia, and coarse crystalline porphyry units. No grade assignment was made within the andesite and the boundary between the andesite and the other rock types was treated as a hard boundary. The quartz monzonite, breccia, and coarse crystalline porphyry boundaries were treated as soft boundaries.

Grade boundaries were used in the estimation of copper, molybdenum and gold. The grade boundaries were based on an indicator kriging procedure with discriminators of 0.40% total copper, 0.012% moly and 0.005 oz/ton gold. Silver was assigned by ordinary linear kriging.

The indicator grade boundaries were assigned within the quartz monzonite, breccia, and coarse crystalline porphyry units using a one stage indicator kriging procedure. The indicator procedures are summarized on Table 14-3.

Once the indicator fraction (probability) was assigned to the blocks, the blocks were coded on a 50% probability basis. Blocks with greater than a 0.5 fraction were coded as "inside the grade zone = 1" and those less than 0.5 were coded as "outside the grade zone = 0". The composites were then back assigned the codes from the blocks that contained the composite. Consequently, both the composites and the blocks were coded as inside or outside of the grade boundary.

The grade boundaries were respected as hard boundaries during the grade estimation for copper, moly, and gold. Table 14-4 summarizes the grade estimation parameters. Ordinary linear kriging was used to assign grades to copper, moly, and gold inside and outside of the respective indicator grade boundaries.

A search limit was applied to the high grade component on all of the grade estimates. Horizontal indicator variograms were completed over a range of increasing grade discriminators. When a discriminator was identified where the variogram became all sill, that value was search limited with 75 ft for copper and moly and 50 ft for gold and silver.

Table 14-3: Indicator Kriging Parameters – Block Grade Estimation

Metal	Discriminator Grade	Domain	Orientations, Bearing			Range and Search in Feet			Nugget	Total Sill C+Co
			Primary	Secondary	Tertiary	Primary	Secondary	Vertical		
Copper	0.040 %	1,2 CW+CE	307	37	90	450	200	100	0.01	0.99
Moly	0.012 %	3,4 NE+NW	307	37	90	450	300	100	0.01	0.99
		5,6 SE+SW	307	37	90	450	300	100	0.01	0.99
		7, Hunter	0	90	90	400	200	100	0.01	0.99
		Domains were not hard boundaries								
Gold	0.005 oz/ton	All Domains	37	127	90	400	300	100	0.01	0.99

Maximum = 10, Minimum = 2, Maximum per Hole = 3

Table 14-4: Grade Kriging Parameters – Block Grade Estimation

Metal	Indicator Position	Domain	Orientations, Bearing			Range and Search in Feet			Nugget	Total Sill C+Co	High Grade Search Limit	
			Primary	Secondary	Vertical	Primary	Secondary	Vertical			Grade	Distance Ft
Copper	Inside and Outside	1,2 CW+CE	307	37	90	450	200	100	0.01	0.99	1.20% Cu	75
		3,4 NE+NW	307	37	90	450	300	100	0.01	0.99	1.20% Cu	75
		5,6 SE+SW	307	37	90	450	300	100	0.01	0.99	1.20% Cu	75
		7, Hunter	0	90	90	400	200	100	0.01	0.99	1.20% Cu	75
		0.40% Indicator was a hard boundary										
Moly	Inside and Outside	1,2 CW+CE	307	37	90	450	200	100	0.01	0.99	0.070% Mo	75
		3,4 NE+NW	307	37	90	450	300	100	0.01	0.99	0.070% Mo	75
		5,6 SE+SW	307	37	90	450	300	100	0.01	0.99	0.070% Mo	75
		7, Hunter	0	90	90	400	200	100	0.01	0.99	0.070% Mo	75
		0.012 % Indicator was a hard boundary										
Gold	Inside and Outside	All Domains	37	127	90	400	300	100	0.01	0.99	0.015 oz/t	50
Silver	Inside and Outside	All Domains	37	127	90	400	300	100	0.01	0.99	0.25 oz/t	50

Maximum = 10, Minimum = 2, Maximum per Hole = 3
Grade Estimation Respected Nearest Block Indicator Codes for Copper, Moly, and Gold

14.1.6 Density Assignment

Rock density information was collected by THEMAC during the 2010 drill programs. One hundred whole core samples were sent to Skyline during the spring of 2010 for bulk density determination. Samples were weighed in air then submerged in water and weighed. They were then dried, and process repeated so that the amount of water absorbed could be determined.

IMC sorted the data by the logged rock type and calculated the average density of the rock units that were tested. Most of samples were quartz monzonite and breccia. There were 17 out of 100 without a rock type code assigned. However, their density was similar to the results for the quartz monzonite.

Based on these test results, the following dry densities were assigned to the model.

Breccia	2.652 Specific Gravity	12.08 cu ft/ton
Quartz Monzonite	2.618 Specific Gravity	12.24 cu ft/ton

All other rock units were assigned the same density dry as the Quartz Monzonite.

14.1.7 Classification

Classification was assigned in conformance with NI43-101 and the standards and guidelines from the CIM. The data verification work has determined that the historic drill data can be used along with the new holes completed by THEMAC to estimate mineral resources and mineral reserves. However, due to the lack of geologic information in many of the historic drill holes, IMC has limited the determination of measured to require the presence of THEMAC drilling completed in 2010 thru 2012.

The procedure applied by IMC was a two-step process. At first, all drilling information was used to estimate block grades and an initial determination of measured, indicated, and inferred was established based on the Kriged Standard Deviation (KSD = Square root of kriged variance) and the number of composites used to estimate the block.

A second stage required that at least three of THEMAC drill holes be used in the grade estimation process for the block to be considered measured. This assured that measured material was surrounded by recent 2010-2012 drilling.

The classification is based on the estimation of copper grade and is summarized as follows:

Procedure	Classification and Code
If Copper or Moly was estimated	Inferred = 3
If Copper KSD ≤ 1.00 and Number of composites ≥ 4	Indicated = 2
If Copper KSD ≤ 0.60 and Number of composites = 10 And Number of THEMAC composites ≥ 7	Measured = 1

14.2 MINERAL RESOURCE

The mineral resource was based on the application of the floating cone algorithm to the block model to establish the component of the deposit that has "reasonable prospects of economic extraction". The mineral resources are therefore contained within a computer generated open pit geometry. Details of the floating cone input parameters are presented in Section 15 regarding Mineral Reserves.

The floating cone software that was applied is IMC developed software. IMC software has been validated numerous times against all other major commercial software packages.

There were two key changes that were applied to the determination of mineral resources that differ from the table presented for mineral reserves.

1) Economic benefit was applied to the inferred material within the resource cone. No economic benefit was applied to inferred when determining the mineral reserve, mine plan, or project economics.
2) No effort was made to establish a pit with maximum return on investment; consequently the mineral resource cone was the direct result of the following metal prices: $3.00/lb copper, $8.00/lb Moly, $1350/oz Gold, $20.00/oz Silver.

All of the estimated costs, recoveries, and slope angles that were applied to resource determination are otherwise identical to those presented in Section 15 regarding the mineral reserve floating cones. No constraints were applied to the resource regarding tailing or waste storage capacities.

Table 14-5 summarizes the total mineral resources that include the mineral reserve.

The qualified person for the estimation of the mineral resource was John Marek of Independent Mining Consultants, Inc. Metal price changes could materially change the estimated mineral resources in either a positive or negative way.

At this time, there are no unique situations relative to environmental or socio-economic conditions that would put the Copper Flat mineral resource at a higher level of risk than any other North American development resource.

The cutoff grades are presented in terms of Net Smelter Return (NSR) which reflects the combined benefit of producing copper, moly, gold, and silver.

NSR =	(\$3.00-0.3295) x 0.9180 x 0.9336 x 20 +	Copper Contribution
	(\$8.00-1.562) x 0.6070 x 0.9578 x 20 +	Moly Contribution
	(\$1350-6.00) x 0.7080 x 0.6992 +	Gold Contribution
	(\$20.00-0.50) x 0.8200 x 0.7564	Silver Contribution

The cutoff grade reflects the estimated cost to process the ore plus site G&A cost which total $6.11/ton.

Table 14-5: Mineral Resources (7 October 2013)

Classification	Cutoff Grade NSR/Ton	Tonnage and Grade					Contained Metal			
		Ktons	Copper %	Moly %	Gold Oz/ton	Silver Oz/ton	Copper Lbs x 1000	Moly Lbs x 1000	Gold ozs x1000	Silver ozs x 1000
Measured	$6.11	126,655	0.28	0.009	0.003	0.06	709,268	22,798	380	7,599
Indicated	$6.11	178,571	0.19	0.005	0.002	0.04	678,570	17,857	357	7,143
Meas + Ind		305,226	0.23	0.007	0.002	0.05	1,387,838	40,655	737	14,742
Inferred	$6.11	27,646	0.20	0.004	0.001	0.02	110,584	2,212	28	553

Notes:

Mineral Resources stated above include the mineral reserve
Mineral Resources are contained within a floating cone pit geometry at prices listed in text
Ktons means 1000 short tons. Short tons = 2000 lbs
Copper and Molybdenum grades are percent of dry weight
Gold and Silver are reported in Troy ounces / short ton

Metal Prices:

$3.00/lb Copper, $8.00/lb Mo, $1350 /oz Gold, $20.00/oz Silver

15 MINERAL RESERVE ESTIMATES

The mineral reserve was developed from the block model and is the total of all proven and probable category ore that is planned for processing. The mine plan that is presented in Section 16 details the development of that mine plan. The mineral reserve was established by tabulating the contained tonnage of measured and indicated material (proven and probable) within the designed final pit geometry at the planned cutoff grades. The final pit design and the internal phase (pushback) designs were guided by the results of the floating cone algorithm.

15.1 FLOATING CONES

The floating cone computer algorithm is a tool for guidance to mine design. The algorithm applies approximate costs and recoveries along with approximate pit slope angles to establish theoretical economic breakeven pit wall locations. All of the floating cone and mine plan discussions in this section and the subsequent sections address measured and indicated (proven and probable) ore only. Inferred is treated as waste from this point forward in the project evaluation.

The floating cone software that was applied for mine planning guidance was developed internally by IMC. Over a number of years, the IMC floating cone software has been validated against many of the commercial open pit software packages.

Economic input applied to the cone algorithm is necessarily preliminary as it is one of the first steps in the development of the mine plan. However, the cone geometries should be considered as approximate as they do not assure access or working room. The important result of the cones is the relative changes in geometry between cones of increasing metal prices. Lower metal prices result in smaller pits which provide guidance to the design of the initial pushbacks. The change in pit geometry as metal prices are increased indicates the best directions for the succeeding phase expansions to the ultimate pit.

Table 15-1 summarizes the input data to the floating cone. Process recoveries and estimated process costs were provided by M3 project team. Slope angles were provided by the geotechnical contractor Mine Design Engineering (MDEng). MDEng provided interramp slope angles for design guidance. IMC reduced those angles by 2 degrees to reflect the inclusion of haul roads in the final pit design. Mine operating costs were developed by IMC based on the results of the earlier pre-feasibility study.

Multiple floating cones were completed at a range of metal prices. Copper prices ranged from $1.00/lb up to $3.75/lb were applied within the cone runs. The base case ratios between copper prices and the other metal prices that are shown on Table 15-1 were maintained at all other price runs.

Once the multiple cones were completed, they were all tabulated at the base case metal prices of $3.00/lb Copper, $8.00/lb Moly, $1350/oz Gold, and $20.00/oz silver.

The Copper Flat pit design has a constraint because the tailings facility will hold about 125 million tons within the current permit parameters. The mine could potentially produce more than

125 million tonnes, but the costs to increase tailing storage capacity are not offset by the potential benefit of additional low grade ore late in the mine life.

Substantial additional planning and scheduling effort was completed by IMC to establish the best overall final pit design that would produce the best 125 million tons on a time value of money basis. As a result, the $2.25 cone was selected for design purposes.

In addition, the $2.25 cone does not encroach on the drainage structures that have been established on the east and south sides of the pit.

Table 15-1 illustrates the $2.25 floating cone that was used as the guide for final pit design.

15.2 FINAL PIT DESIGN

The final pit design is the last of three pushbacks that are planned for the production of the Copper Flat deposit. Access roads and working room for the equipment have been planned into the phase designs. The interramp slope angles that were recommended by MDEng have been used for the final pit design.

The following criteria were applied to the final pit and phase designs:

Mine Planning Parameters:

Haul Road Width	90 feet
Haul Road Grade	10%
Interramp Slope Angles	
Northeast	41°
Southeast	39°
Breccia	36°
West	44°
Operating width between pushbacks	300 feet nominal

The final pit design inclusive of haul roads is illustrated on Figure 15-2. Additional mine plan drawings will be provided in Section 16 with the discussion of the mine plan and operation.

Section 14 reported that the block model is based on 50 by 50ft blocks with a 25 ft bench height. The planned equipment at Copper Flat will be a good match for the 25ft bench height. Block model grades were utilized to develop the mine plan without the incorporation of mining dilution or selective mining corrections. IMC experience with porphyry deposits of this type indicates that additional corrections are not prudent or warranted.

The application of the indicator kriging process as outlined in Section 14 reduces the “grade smearing” that is classically incorporated into models based on ordinary kriging, further reducing the need for selective mining correction factors.

Table 15-1: Floating Cone Input

Mining Cost				
Mine Opex Cost			$1.560	/ton material
Sustaining Capital	**Not Applied*		$0.000	/ton material
Total, No Haul Imcrement			$1.560	/ton material
Haul Incrment per bench below		5425	$0.044	/bench of depth
Processing Cost				
	Total per ton ore		$6.11	/ton ore
Process Recovery				
	Copper		91.8%	
	Moly		60.7%	
	Gold		70.8%	
	Silver		82.0%	
Smelting and Refining Terms				
Assume 27% con grade, $80+$35/ton + 0.08/lb				
	Cost / Lb Cu		$0.3295	/lb copper
	Smelter Recovery		96.5%	1% deduct at 27%
	Moly Roast + Trans		$1.562	/lb Moly
	Roast Recovery		99.0%	
	Gold Refining		$6.00	/oz Gold
	Payable Gold		72.27%	
	Silver Refining		$0.50	/oz Silver
	Payable Silver		78.18%	
	Royalty		3.25%	
Metal Prices for Base Case				
	Copper	$	3.00	/lb
	Moly	$	8.00	/lb
	Gold	$	1,350.00	/troy oz
	Silver	$	20.00	/troy oz
Slope angles, MD_Eng Interramps Less 2 Degrees for Roads				
	Side of the Pit in Degrees			Degrees
	0 to 90 Northeast			41
	90 to Brec Southeast			39
	Breccia			36
	Brec to 360 West			44
Recommended overall angles given above are interramp minus approximately 2 degrees				

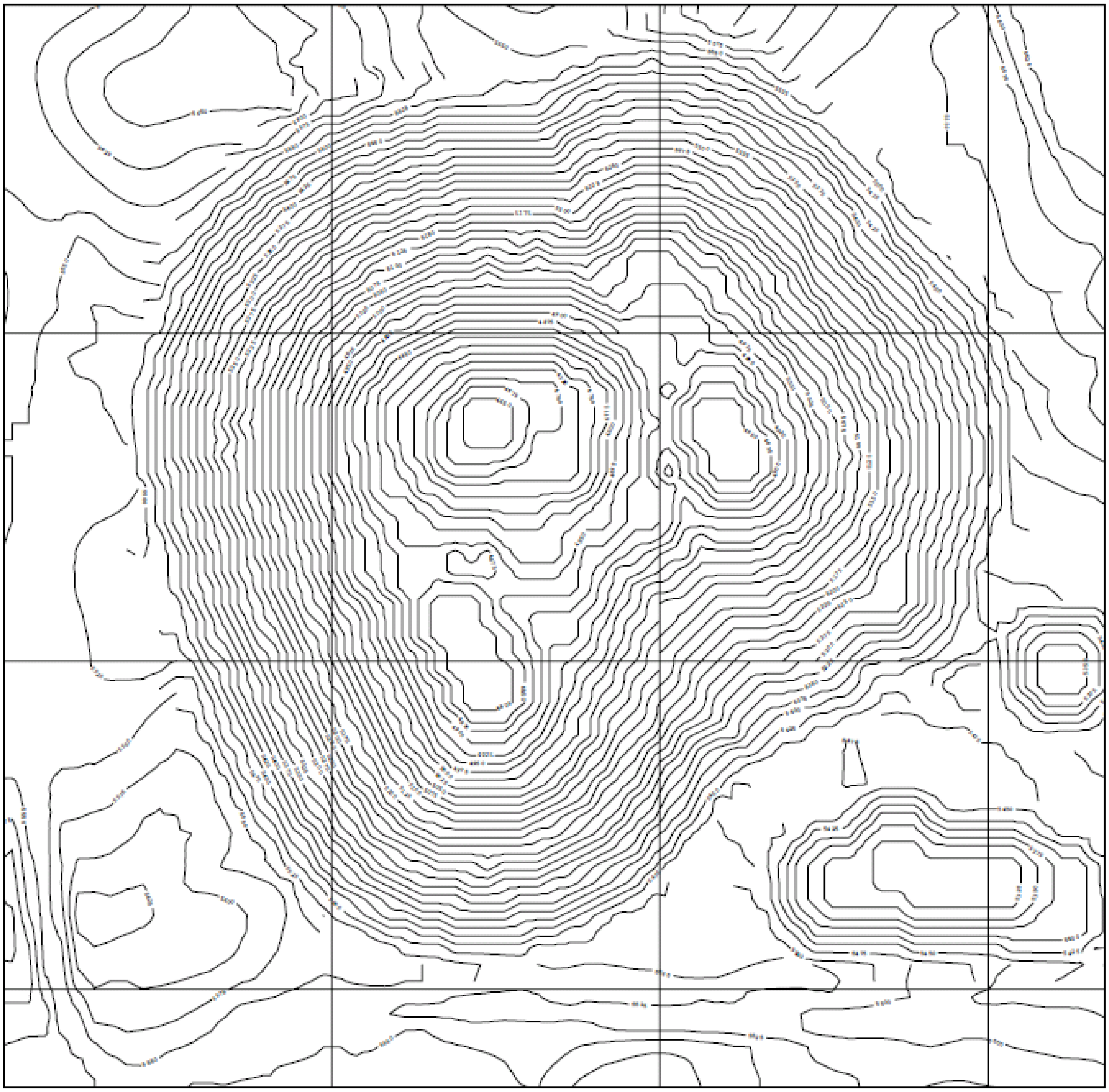


Figure 15-1: Floating Cone Guidance for Final Pit ($2.25/lb Copper Cone)

Figure 15-2: Final Pit Design for Mine Plan and Mineral Reserve

15.3 MINERAL RESERVE

The mineral reserve was developed by tabulating the contained measured and indicated (proven and probable) material inside of the designed pit at an NSR cutoff grade of $6.11/ton. The mine plan and schedule that is presented in Section 16 indicates that the operating cutoff is slightly higher during the first five years in an effort to improve front end head grade and maximize project return on investment. The NSR for application of cutoff grade includes a benefit from copper, molybdenum, gold and silver.

The NSR for application to mineral reserve and mine planning is:

NSR =	($3.00-0.3295) x 0.9180 x 0.9336 x 20 +	Copper Contribution
	($8.00-1.562) x 0.6070 x 0.9578 x 20 +	Moly Contribution
	($1350-6.00) x 0.7080 x 0.6992 +	Gold Contribution
	($20.00-0.50) x 0.8200 x 0.7564	Silver Contribution

Low grade material that is above the internal cutoff of $6.11/ton NSR and less than mill feed cutoff in the early years will be stored in two, low grade stockpiles that are located to the northeast of the pit and northeast of the crusher adjacent to the waste storage area. The low grade material is not currently included within the mineral reserve. By default it is included within the mineral resources.

The mineral reserve is summarized on Table 15-2. The mineral resource in addition to the mineral reserve is also included for clarity on Table 15-2. The total ore planned for processing in Section 16 matches the total proven and probable reserves on Table 15-2.

The qualified person for the estimation of the mineral reserve was John Marek of Independent Mining Consultants, Inc. Metal price changes could materially change the estimated mineral reserves in either a positive or negative way.

At this time, there are no unique situations relative to environmental or socio-economic conditions that would put the Copper Flat mineral resource at a higher level of risk than any other North American development reserve.

Table 15-2: Mineral Reserves (7 October 2013)

Classification	Cutoff Grade NSR/Ton	Mineral Reserves Ktons	Copper %	Moly %	Gold Oz/ton	Silver Oz/ton	Contained Metal Copper Lbs x 1000	Moly Lbs x 1000	Gold ozs x1000	Silver ozs x 1000	Recovered, Saleable Metal Copper Lbs x 1000	Moly Lbs x 1000	Gold ozs x1000	Silver ozs x 1000
	Variable By Year													
Proven	$12.75 to $6.11	78,857	0.32	0.010	0.003	0.07	504,685	15,771	237	5,520	432,538	9,169	117	3,424
Probable	$12.75 to $6.11	34,227	0.25	0.007	0.003	0.04	171,135	4,792	103	1,369	146,670	2,786	51	849
Total Prov + Prob		113,084	0.30	0.009	0.003	0.06	675,820	20,563	340	6,889	579,208	11,955	168	4,273

Mineral Resources in Addition to Mineral Reserves

Classification	Cutoff Grade NSR/Ton	Tonnage and Grade Ktons	Copper %	Moly %	Gold Oz/ton	Silver Oz/ton	Contained Metal Copper Lbs x 1000	Moly Lbs x 1000	Gold ozs x1000	Silver ozs x 1000
Measured	$6.11	47,798	0.21	0.007	0.003	0.04	204,583	7,027	143	2,079
Indicated	$6.11	144,344	0.18	0.005	0.002	0.04	507,435	13,065	254	5,774
Meas + Ind		192,142	0.19	0.005	0.002	0.04	712,018	20,092	397	7,853
Inferred	$6.11	27,646	0.20	0.004	0.001	0.02	110,584	2,212	28	553

Notes:

Mineral reserves equal the total ore planned for processing from the mine plan
Mineral Resources stated above do not include the mineral reserve
Mineral Resources are contained within a floating cone pit geometry at prices listed below.
Ktons means 1000 short tons. Short tons = 2000 lbs
Copper and Molybdenum grades are percent of dry weight
Gold and Silver are reported in Troy ounces / short ton

Metal Prices:
Mineral Reserve $3.00 Copper, $8.00 Moly $1350 Gold, $20.00 Silver, No Economic Credit to Inferred
Mineral Resource $3.00 Copper, $8.00 Moly $1350 Gold, $20.00 Silver

16 MINING METHODS

The Copper Flat project is planned for production using conventional hard rock open pit mining methods. Ore production to the mill is planned at 29,600 tpd (10,800 ktons/yr) for the first 6 years followed by 27,125 tpd (9,900 ktons/yr) for the remaining mine life. The mine production schedule was developed with the goal of filling the mill at required ore rate and maximizing the project return on investment. The total material rate is tied to equipment productivity and amounts to 17,500 ktons/yr or 47,945 tpd for the first 5 years. The mine is scheduled to operate 365 days/yr with two, 12 hour shifts/day.

Bench heights are planned at 25 ft high. Drilling will be completed with three rotary blast hole rigs with 45,000 lb pull down capacity and 6.5 in diameter blast holes. The blasted rock will be loaded into 100 ton haul trucks using two 19 cu yd front end loaders.

The mine plan was developed with a phase approach. The phase designs, mine schedule, and mine equipment requirements are summarized in this section.

16.1 PHASE DESIGN

A floating cone algorithm was used as a guide to the design of the phases or pushbacks. Multiple floating cones were developed using the costs, slope angles and recoveries outlined in Section 15. Metal prices were changed in order to establish a series of multiple nested cone geometries. The results of this work indicated the starting point, final pit and the extraction sequence that maximized the NPV throughout the mine life.

Three phases were designed for the Copper Flat project with approximately 300 ft of operating width on each bench within a phase. Phase 1 was sized to contain roughly 1.5 years of ore.

The design parameters for the phases were similar to those for the final pit as discussed in Section 15.

Mine Planning Parameters:

Haul Road Width			90 feet
Haul Road Grade			10% Maximum
Interramp Slope Angles			
	0° to 90°	Northeast	41 degrees
	90° to Brec	Southeast	39 degrees
	Breccia		36 degrees
	Brec to 360°	West	44 degrees
Operating width between pushbacks			300 feet nominal

The phases were tabulated from the block model and those three tabulations were used as input to the development of the mine production schedule. Figure 16-1 illustrates the relative position of the phases on the 5425 elevation.

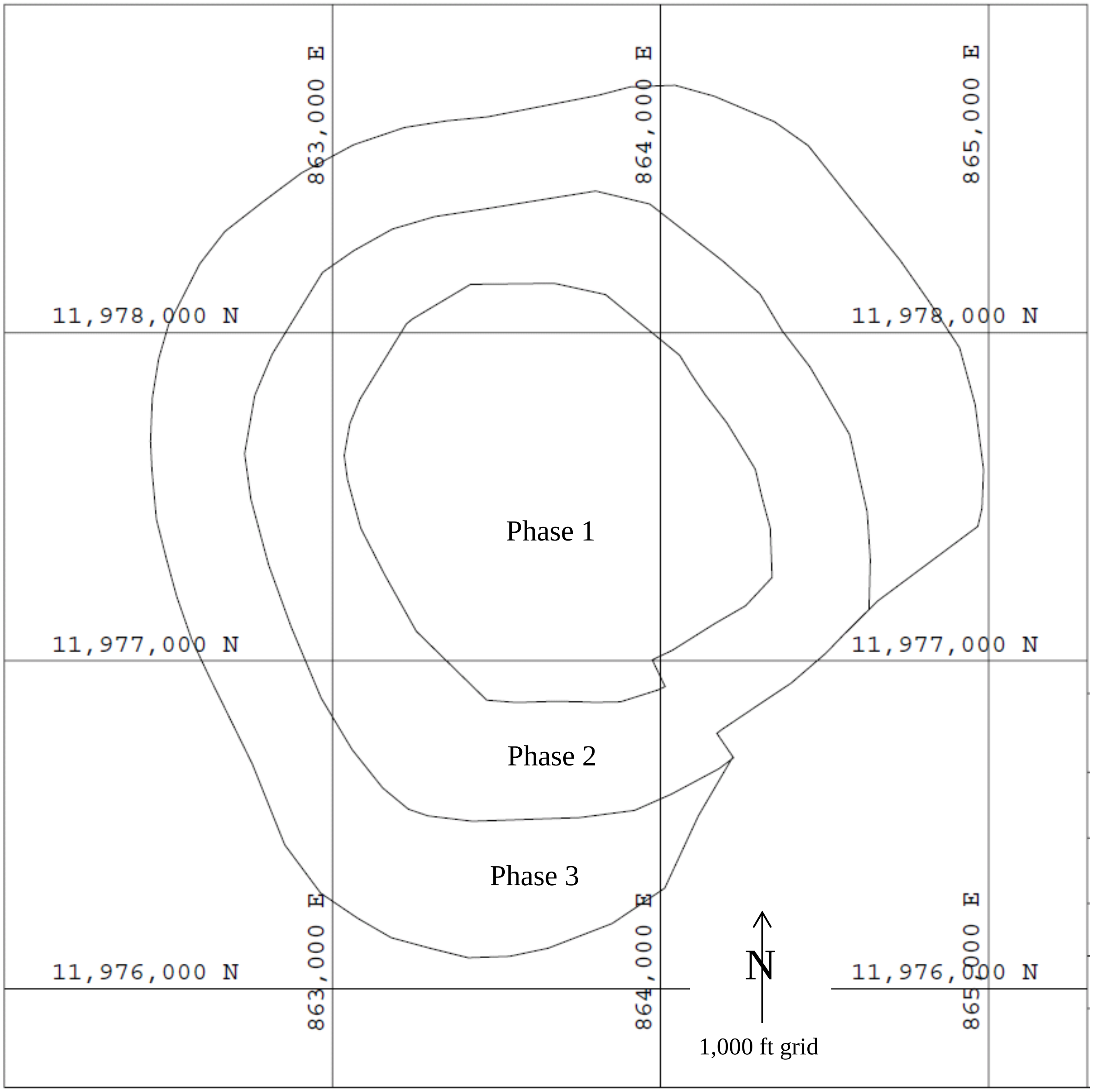


Figure 16-1: Relative Location of Phase Designs (5425 Bench)

16.2 MINE PRODUCTION SCHEDULE

The mine production schedule was developed with the goal of filling the mill at the required production rates and maximizing the project return on investment. Multiple mine production schedules were developed that analyzed alternative cutoff grade strategies versus mine total material movement. Total material rates were tied to the size and number of loading units so that the final selected schedule would provide efficient use of the capital equipment employed.

The multiple schedules were evaluated on a net present value basis at the project design prices that were used to establish the mineral reserve (Section 15). The best overall production schedule on an economic and practical basis was selected and is summarized on Table 16-1.

Preproduction stripping is minimal because the ore outcrops and the historic mining that has already occurred. Much of the preproduction waste stripping was completed when the mine was in operation in the 1980's under the ownership of Quintana Minerals. Preproduction is estimated to require 3 months at 1 shift per day of operation. The initial road pioneering and some pit rehab can occur prior to the preproduction period. Ore that is incurred during preproduction (360 ktons) is planned to be stockpiled near the crusher (or in the pit) and delivered to the mill during Year 1.

Low grade material that is above a cutoff of $7.50/ton NSR and less than mill feed cutoff in the early years will be stored in two, waste storage facilities that are located to the northeast of the pit and northeast of the crusher. That material is not currently planned for processing and is consequently not included in the mineral reserves. The bottom of Table 16-1 illustrates the ore planned for processing inclusive of stockpile re-handling.

The cutoff grade for the mine schedule is an NSR (net smelter return) calculation that includes the credit of copper, moly, gold and silver. The Cutoff NSR calculation is summarized below.

The Cutoff NSR for the mine plan and mineral reserve is:

Cutoff NSR =	($3.00-0.3295) x 0.9180 x 0.9336 x 20 +	Copper Contribution
	($8.00-1.562) x 0.6070 x 0.9578 x 20 +	Moly Contribution
	($1350-6.00) x 0.7080 x 0.6992 +	Gold Contribution
	($20.00-0.50) x 0.8200 x 0.7564	Silver Contribution

The total proven and probable ore that is planned for processing on Table 16-1 is the mineral reserve as summarized in Section 15. Inferred mineralization is treated as waste within the mine plan and mineral reserve statement.

Table 16-1: Mine Production Schedule

Mine Plan Schedule											
Year	Cutoff NSR/ton $/ton	Direct Mill Feed Ore						Waste			Total Material Ktons
		Ore Ktons	NSR $/ton	Copper %	Moly %	Gold oz/ton	Silver Oz/ton	WSF 1 Ktons	WSF 2 Ktons	WSF 3 Ktons	
Preprod	$12.00	360	22.824	0.43	0.007	0.003	0.06	32	30	48	470
Yr1 Q1	$12.75	1,540	20.681	0.38	0.008	0.003	0.07	719	678	1,438	4,375
Yr1 Q2	$12.75	2,000	22.960	0.41	0.012	0.004	0.08	541	279	1,555	4,375
Yr1 Q3	$12.75	2,700	23.354	0.41	0.012	0.004	0.08	440	199	1,036	4,375
Yr1 Q4	$12.75	2,700	23.533	0.42	0.013	0.004	0.08	373	190	1,112	4,375
Yr2	$11.25	10,800	23.050	0.40	0.011	0.004	0.09	1,055	2,333	3,312	17,500
Yr3	$10.00	10,800	16.338	0.29	0.007	0.003	0.06		2,544	4,156	17,500
Yr4	$10.00	10,800	20.475	0.36	0.010	0.003	0.07		1,756	4,944	17,500
Yr5	$9.25	10,800	18.193	0.32	0.011	0.003	0.07		628	6,072	17,500
Yr6	$6.11	10,025	11.761	0.21	0.005	0.002	0.05			5,924	15,949
Yr7	$6.11	9,900	11.986	0.21	0.005	0.002	0.05			2,491	12,391
Yr8	$6.11	9,900	13.752	0.24	0.007	0.002	0.05			718	10,618
Yr9	$6.11	9,900	16.008	0.28	0.008	0.002	0.06			71	9,971
Yr10	$6.11	9,900	16.208	0.29	0.010	0.002	0.06			3	9,903
Yr11	$6.11	9,900	15.940	0.27	0.012	0.003	0.06			1	9,901
Yr12	$6.11	1,059	12.722	0.21	0.010	0.002	0.05			4	1,063
Totals		113,084	16.965	0.30	0.009	0.003	0.06	3,160	8,637	32,885	157,766

Mineral Reserve is the direct feed ore planned for processing.
Stockpiles are not included in the statement of mineral reserves.

16.3 WASTE AND LOW GRADE STORAGE

The annual mine schedule drawings at the end of the section illustrate the location and size development of the waste storage facilities.

The waste storage facilities are built to at 3 to 1 slopes (18.4 degrees) in order to facilitate reclamation at the end of the mine life. Dump lifts are 75 ft high and are dumped at angle of repose (35.54 degrees) with 120 ft setbacks left between lifts to maintain the 3 to 1 overall angle for future reclamation.

The three waste storage facilities have been segregated by cutoff grades. Waste Storage Facility 1, WSF 1, contains the highest grade material. Waste Storage Facility 2, WSF 2, contains the next highest grade material. Waste Storage Facility 3, WSF 3, contains all the remaining material. WSF 1 & 2 are planned so that they could be remined for a future processing opportunity or reclaimed in their current configuration.

Waste Storage Facility 1 is located to the northeast of the mine. The location of WSF 1 was selected to be a reasonable haul during the mine life for the storage of the material as well as a short haul distance to the crusher if becomes economical to remine it. WSF 1 is will store 3,160 ktons over the mine life.

Waste Storage Facility 2 is located northeast of the crusher and west of WSF 3. WSF 2 will be it will be placed above WSF 3 starting at the 5500 elevation. The location of WSF 1 was selected to be a reasonable haul during the mine life for the storage of the material as well as a short haul distance to the crusher if becomes economical to remine it. WSF 1 is will store 8,637 ktons over the mine life.

Waste Storage Facility 3 is located 3,000 to 4,000 ft east of the pit exit. The storage of waste material over the mine life is 32,885 ktons.

There is no provision for re-contouring of the waste dumps within the mine operating costs. Mine reclamation costs are not included within the mining costs because they were address separately by THEMAC and their contractors.

16.4 MINE EQUIPMENT REQUIREMENTS

Mine equipment is standard off-the-shelf units. Two front end wheel loaders were selected to match production requirements based on the financial analysis of the mine schedule. The mobility of the front end loaders is a benefit to mine operations. A trade off study was performed between a front end wheel loader and a hydraulic shovel. The front end loader was selected because it had overall lower capital and operating cost and contributed to improved project economics.

Truck fleet requirements were developed from haul time simulation over profiles measured for each material type, by phase, for each year of the mine plan.

Table 16-2 summarizes the major mine equipment units that will be on site throughout the mine life. Additional minor units are included in the capital cost table in Section 21 that will be required to maintain and sustain mine operations.

Table 16-2: Mine Major Equipment Fleet On Hand

Mine Major Equipment Fleet On Hand (Units owned based on fleet build up and replacement)																
Equipment Type	Preprod	Yr1Q1	Yr1Q2	Yr1Q3	Yr1Q4	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9	Yr10	Yr11	Yr12
CAT MD6290 Blast Hole Drill (45,000 lbs)	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Cat 993K Loader (19 Cu Yd)	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Cat 777G Haul Truck (100 Tons)	2	8	8	8	8	9	10	10	10	10	10	10	10	10	10	10
Cat D9T Track Dozer (410 hp)	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Cat 834H Wheel Dozer (354 hp)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Cat 14M Motor Grader (14 ft)	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1
Cat 773G Water Truck (10,000 Gal)	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Sandvik DX-800 Rock Drill	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cat 329D Excavator (2 Cu Yd)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL	10	22	23	23	23	24	25	25	25	25	24	24	24	24	23	23

16.5 MANPOWER REQUIREMENTS

Mine hourly manpower requirements were established to operate and maintain the mine mobile equipment. Blasting crews and laborers are also provided for in the manpower list. Table 16-3 and Table 16-4 illustrate the hourly and salaried manpower for the planned mine life.

Staff labor (Supervisory, Engineering, and Geology) are set at 22 persons for all years except preproduction and the final year when a smaller staff can be utilized.

Table 16-3: Mine Hourly Labor Requirements

Mine Hourly Labor Requirements																	
JOB TITLE	Annual Cost	Preprod	Yr1 Q1	Yr1 Q2	Yr1 Q3	Yr1 Q4	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9	Yr10	Yr11	Yr12
MINE OPERATIONS:																	
Drill Operator	86,206	2	10	10	10	10	10	10	10	10	9	8	7	6	6	5	4
Loader Operator	86,206	2	8	8	8	8	8	8	8	8	8	8	6	4	4	4	4
Haul Truck Driver	78,340	2	23	26	24	26	27	30	33	32	29	23	21	22	25	28	29
Track Dozer Operator	82,502	1	6	6	6	6	6	6	6	6	6	6	6	6	6	4	4
RTD Operator (Wheel Dozer)	79,485	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Grader Operator	79,485	1	6	6	6	6	6	6	6	6	4	4	4	4	4	4	3
Water Truck Operator	72,669	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Utility Equip Operator (Service Crew)	79,485	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Blasting Crew	86,369	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Laborer	66,867	2	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Operations Total		17	75	78	76	78	79	82	85	84	78	71	66	64	67	67	66
MINE MAINTENANCE:																	
Mechanics I	86,206	2	13	13	13	13	14	14	14	14	13	12	11	10	11	12	11
Mechanics II	79,485	1	5	6	6	6	6	6	6	6	6	5	5	4	5	5	5
Welder	82,862	1	5	5	5	5	5	5	5	5	5	5	4	4	4	5	4
Fuel & Lube Crew	79,485	4	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Tire Crew	79,485	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Laborer Mnt	66,867	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Maintenance Total		11	39	40	40	40	41	41	41	41	40	38	36	34	36	38	36
VS&A at 10.0%		3	11	12	12	12	12	12	13	13	12	11	10	10	10	11	10
TOTAL LABOR REQUIREMENT		31	125	130	128	130	132	135	139	138	130	120	112	108	113	116	112
Maint/Operations Ratio		0.65	0.52	0.51	0.53	0.51	0.52	0.50	0.48	0.49	0.51	0.54	0.55	0.53	0.54	0.57	0.55

Notes:
1. Utility Crew operates 988 Loader, 773F Trucks, Rock Drill, Excavators, the extra Water Truck, etc.
2. There will be one water truck operating at all times. The second water truck will be shared with utility crew.
3. VSA Basis: 10%
4. Annual cost includes benefits and anticipated overtime

Table 16-4: Salaried Staff Labor Requirements

Salaried Staff Labor Requirements																	
JOB TITLE	Annual Cost ($US)	Preprod	Yr1 Q1	Yr1 Q2	Yr1 Q3	Yr1 Q4	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9	Yr10	Yr11	Yr12
Mine Manager	201,550	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MINE OPERATIONS:																	
General Foreman	139,000	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
FL Supervisors	115,648	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Drill & Blasting Supervisor	115,648	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mine Clerk	51,952	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mine Trainer	104,250	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Mine Operations Total		5	8	8	8	8	8	8	8	8	8	8	8	8	8	7	7
MINE MAINTENANCE:																	
General Foreman Mnt	139,000	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
FL Supervisors Mnt	115,648	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maintenance Planners	97,300	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Maintenance Clerk	51,741	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mine Maintenance Total		4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
MINE ENGINEERING:																	
Chief Engineer	152,900	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Engineers	125,100	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1
Sr. Surveyor	71,883	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Surveyor	71,883	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mine Engineering Total		4	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4
MINE GEOLOGY:																	
Mine Geologist	111,200	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Sampler	57,490	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mine Geology Total		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
TOTAL PERSONNEL		17	22	22	22	22	22	22	22	22	22	22	22	22	22	20	20

Annual Cost includes Fringe Benefits

16.6 MINE AND WASTE STORAGE PLANS

Figure 16-2 through Figure 16-13 illustrate the mine plans along with the low grade stockpiles and waste storage plans.

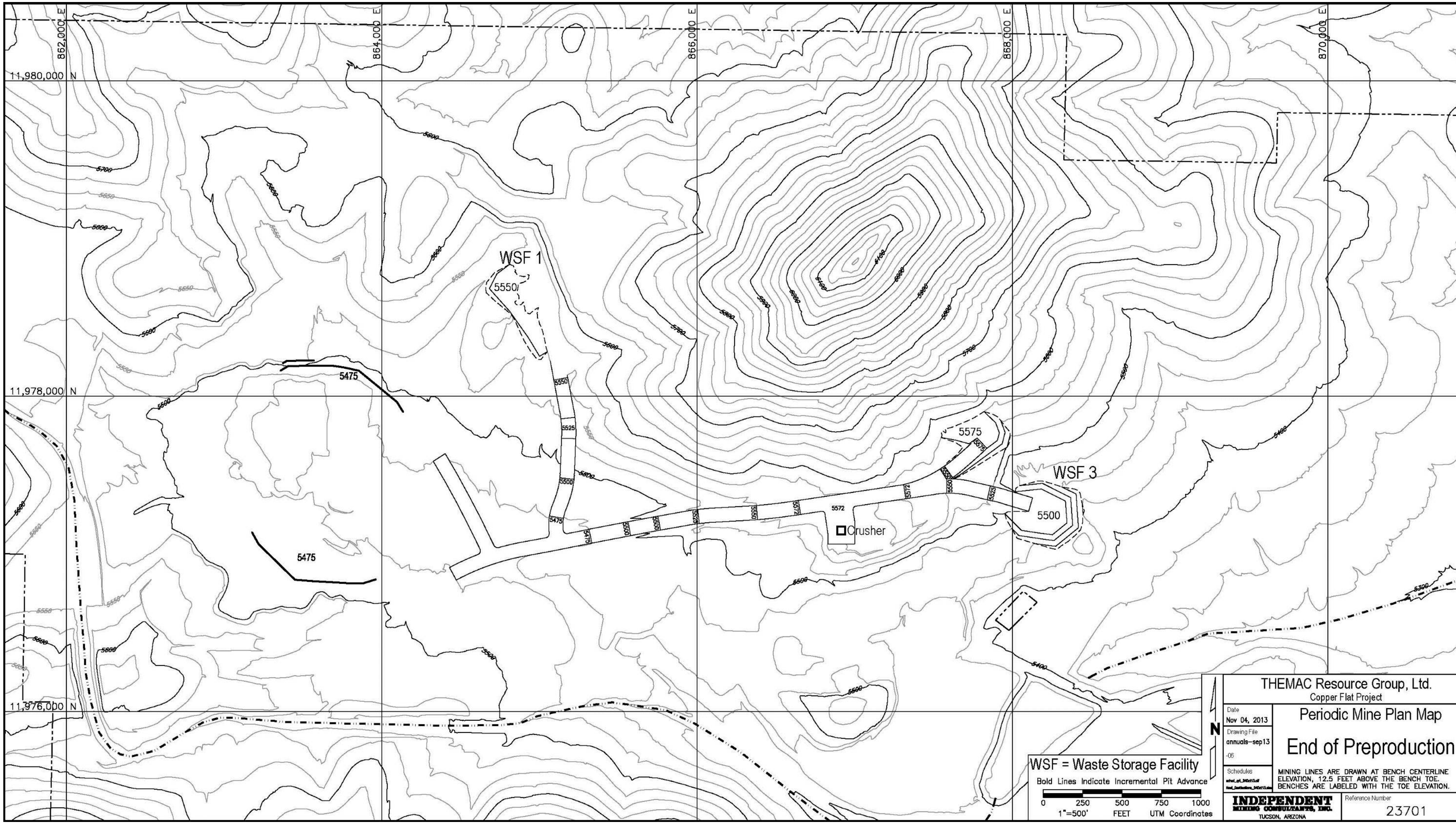


Figure 16-2: Periodic Mine Plan Map - End of Preproduction

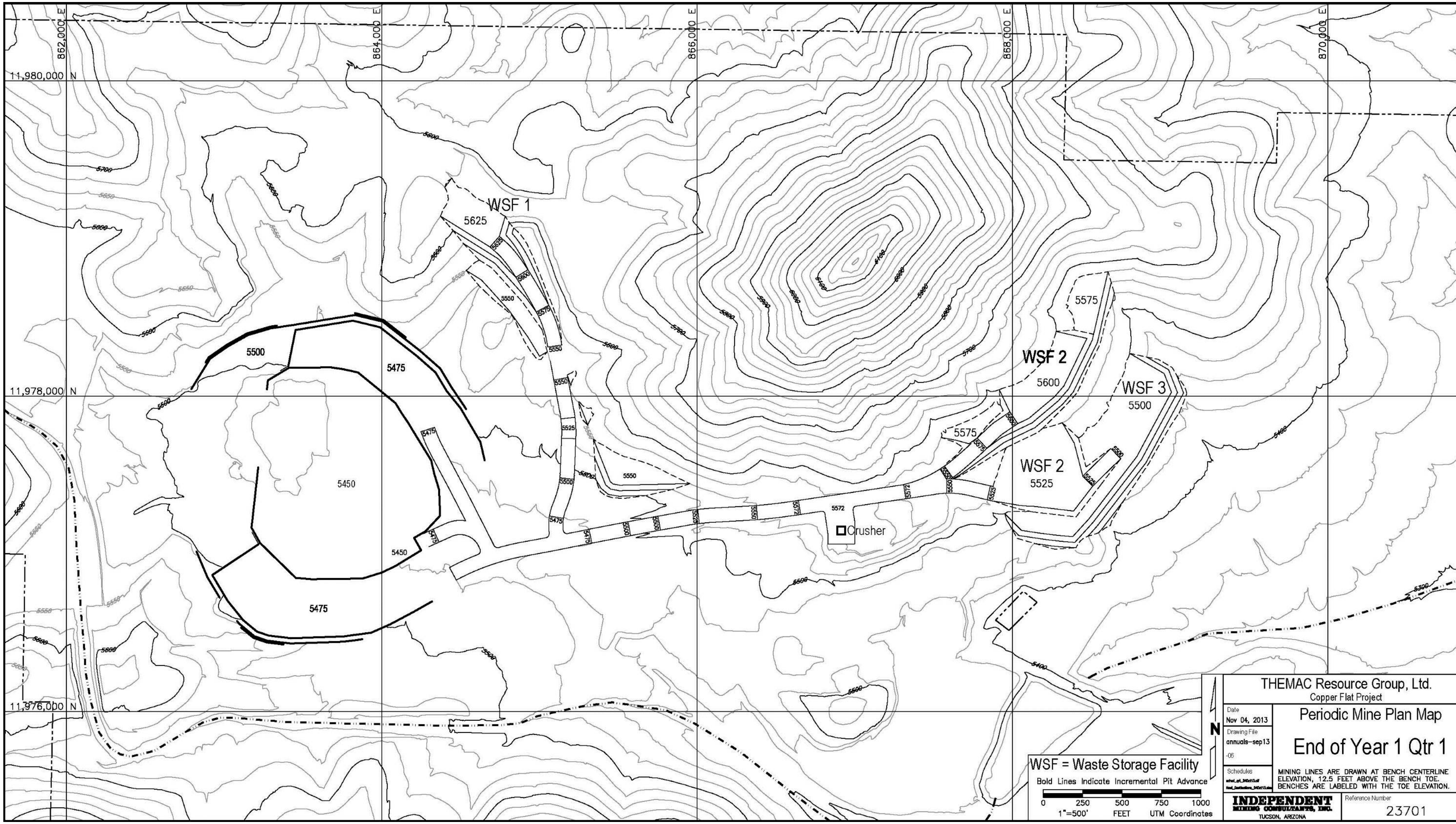


Figure 16-3: Periodic Mine Plan Map- End of Year 1 Q1

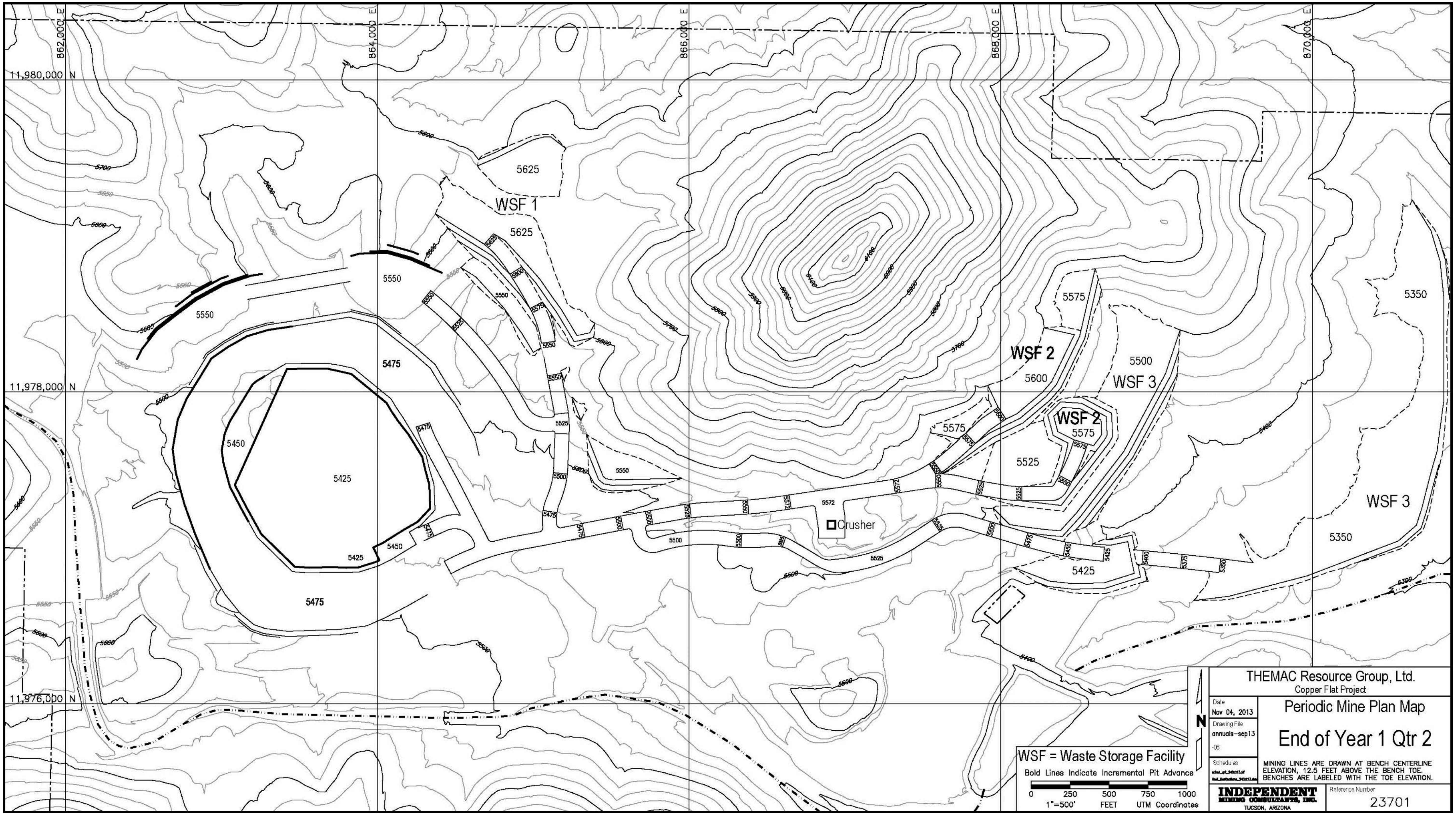


Figure 16-4: Periodic Mine Plan Map – End of Year 1 Q2

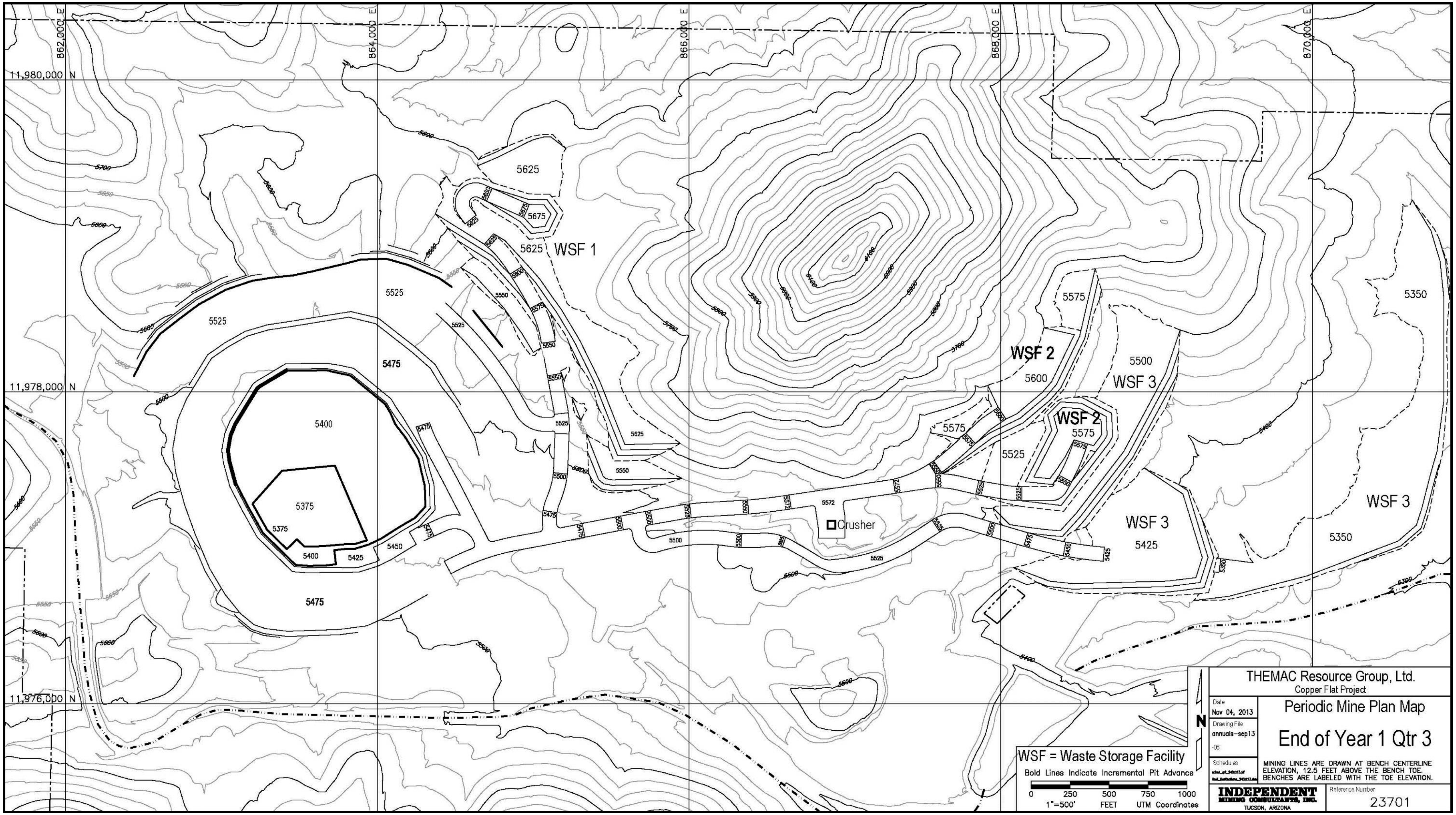


Figure 16-5: Periodic Mine Plan Map - End of Year 1 Q3

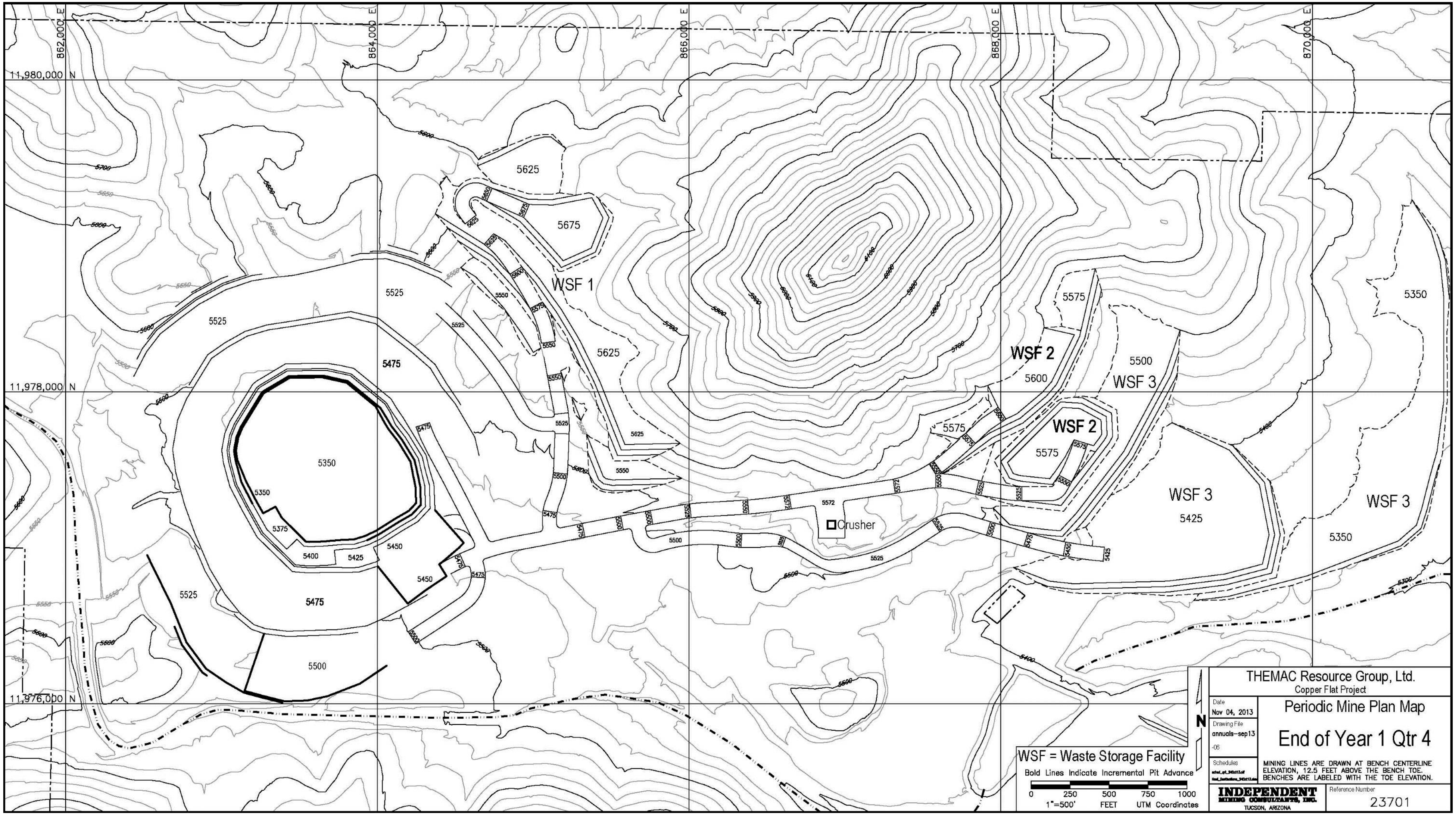


Figure 16-6: Periodic Mine Plan Map - End of Year 1 Q4

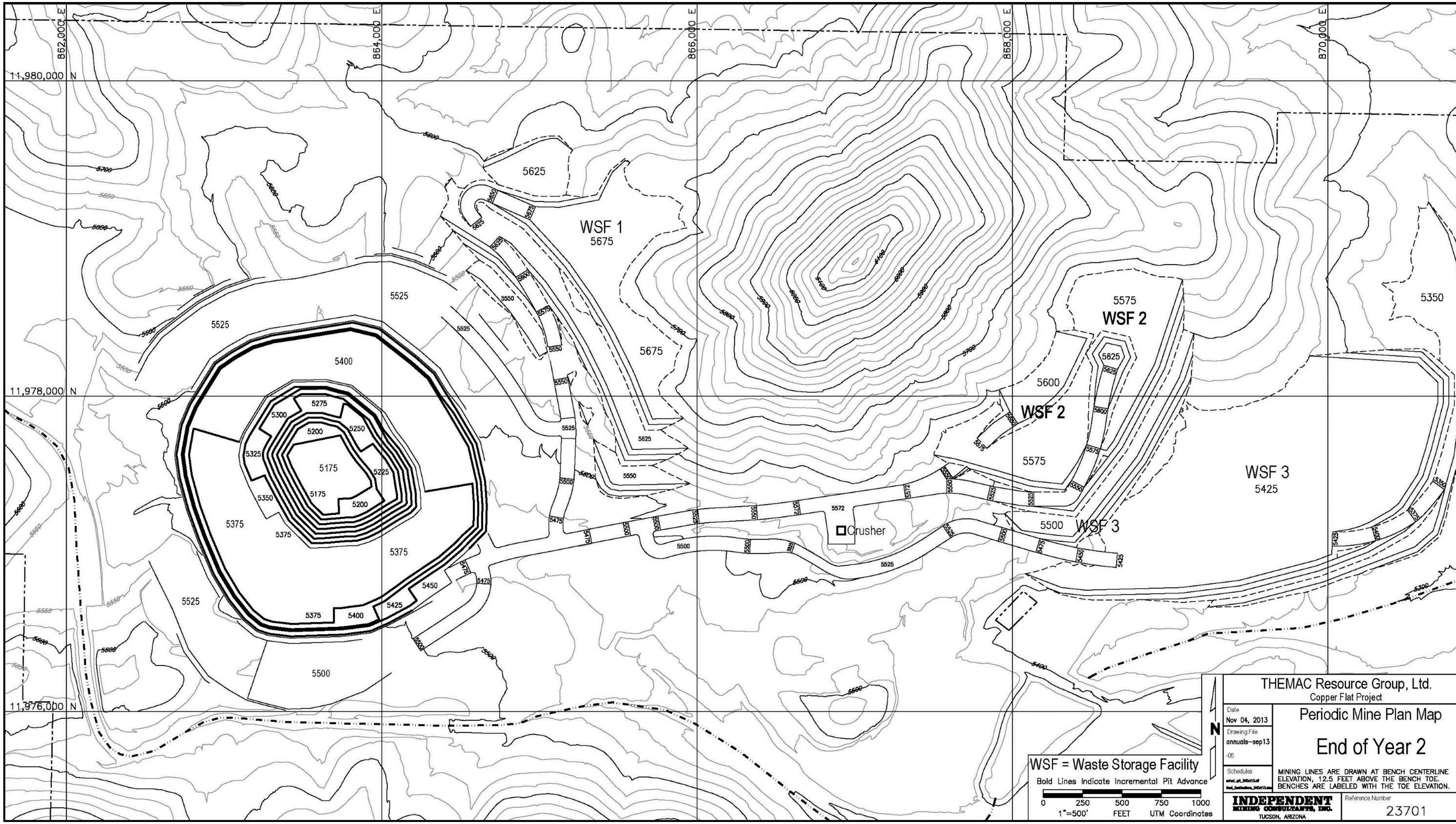


Figure 16-7: Periodic Mine Plan Map - End of Year 2

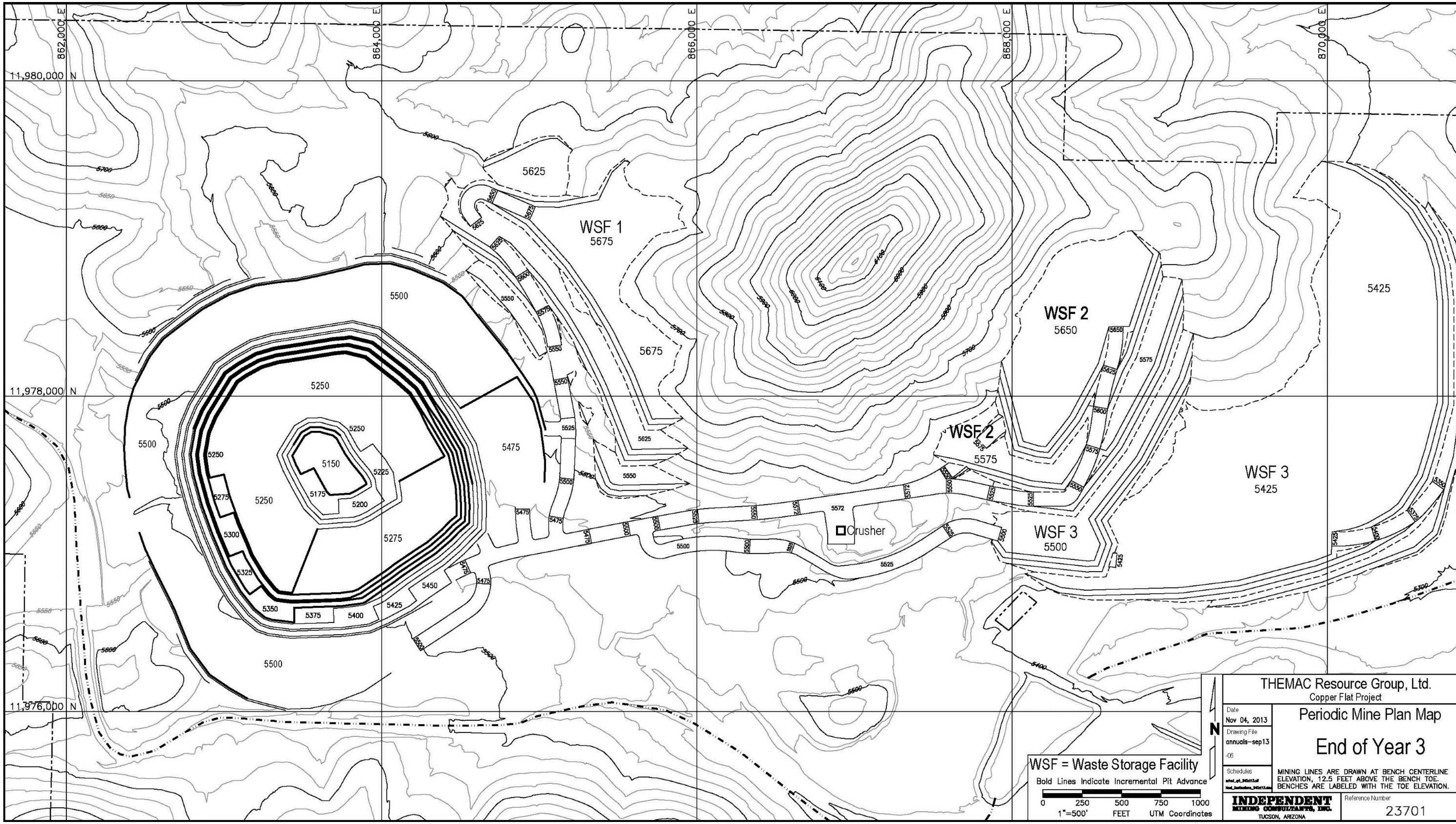


Figure 16-8: Periodic Mine Plan Map – End of Year 3

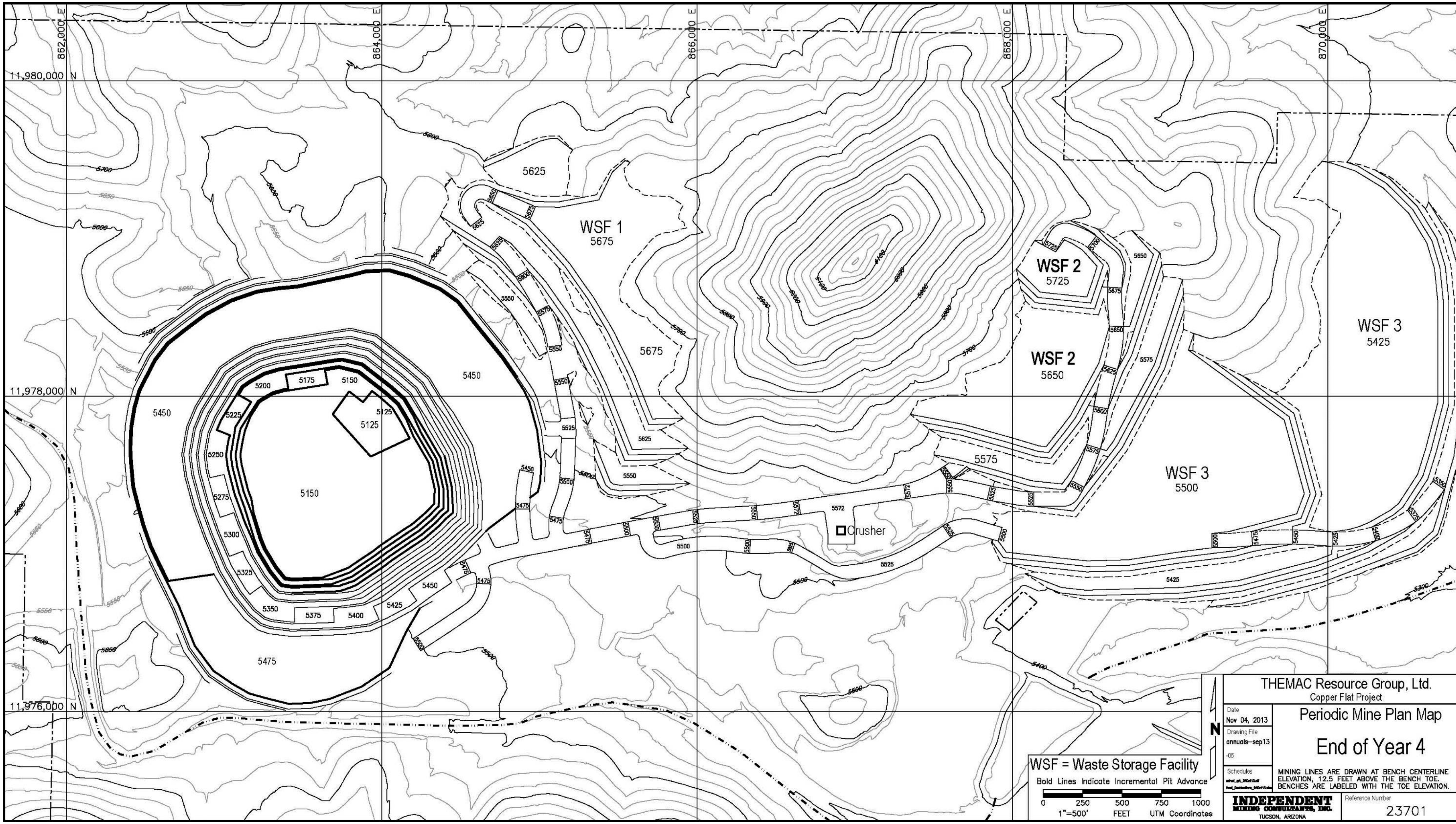


Figure 16-9: Periodic Mine Plan Map - End of Year 4

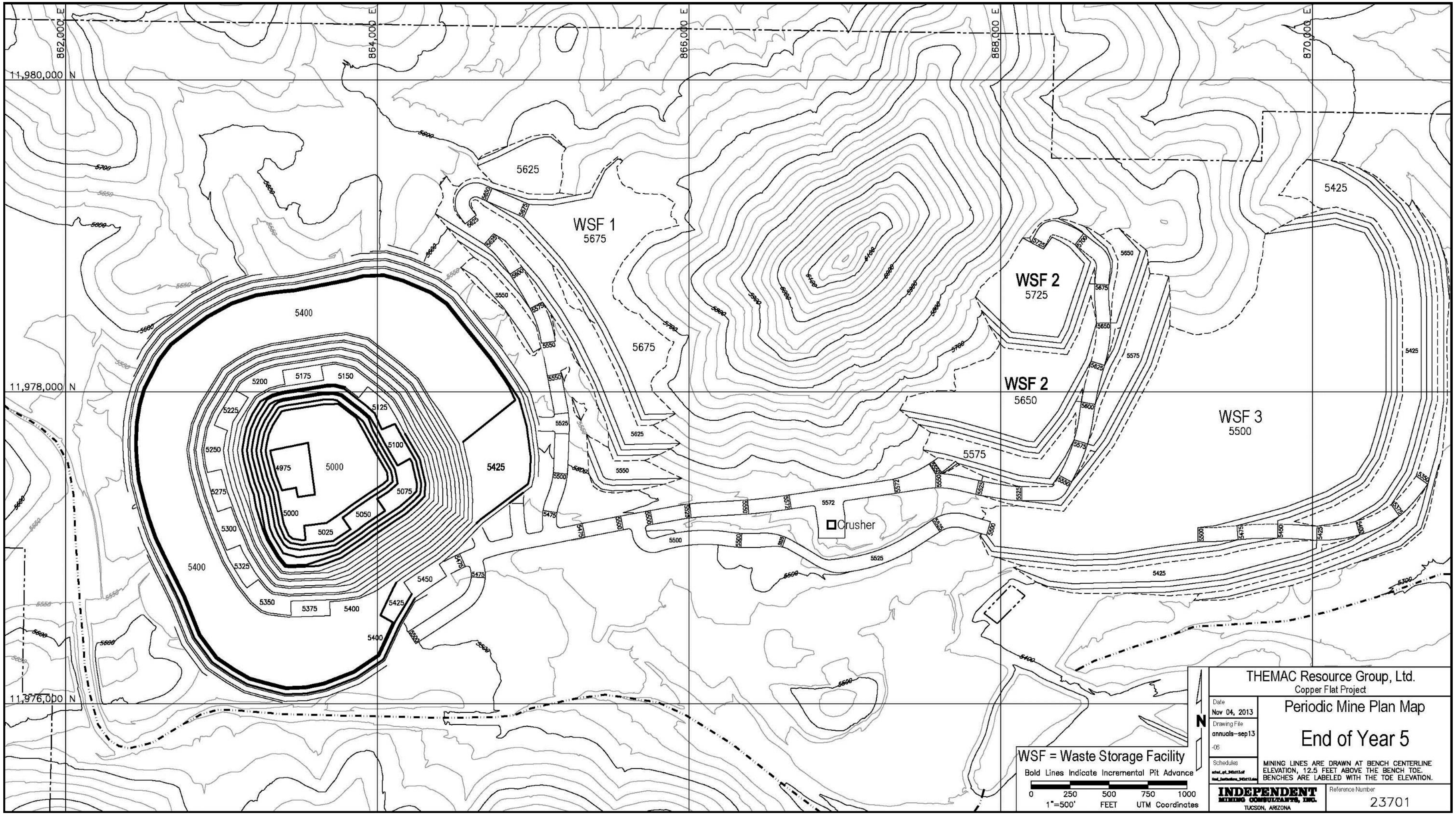


Figure 16-10: Periodic Mine Plan Map - End of Year 5

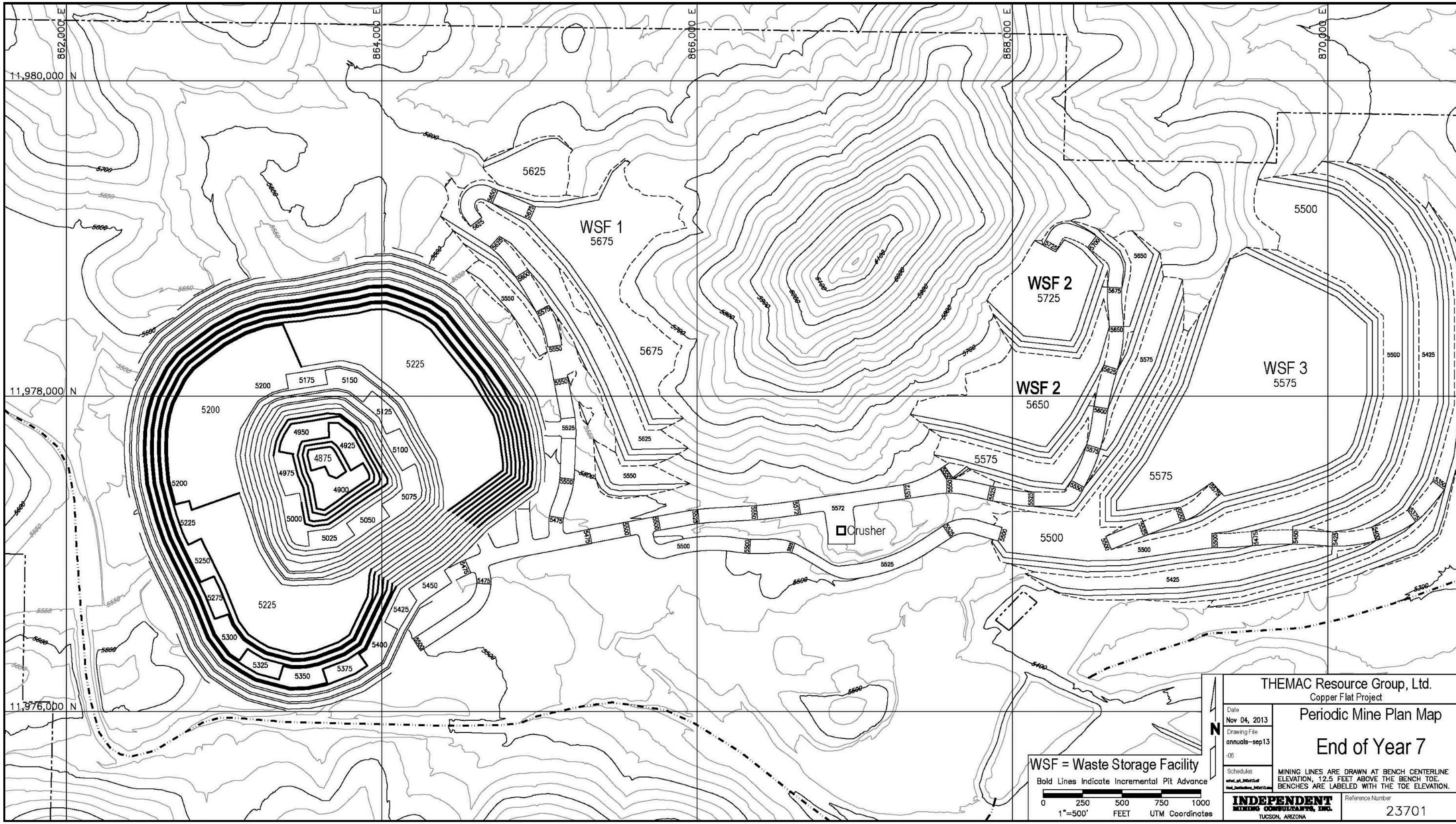


Figure 16-11: Periodic Mine Plan Map – End of Year 7

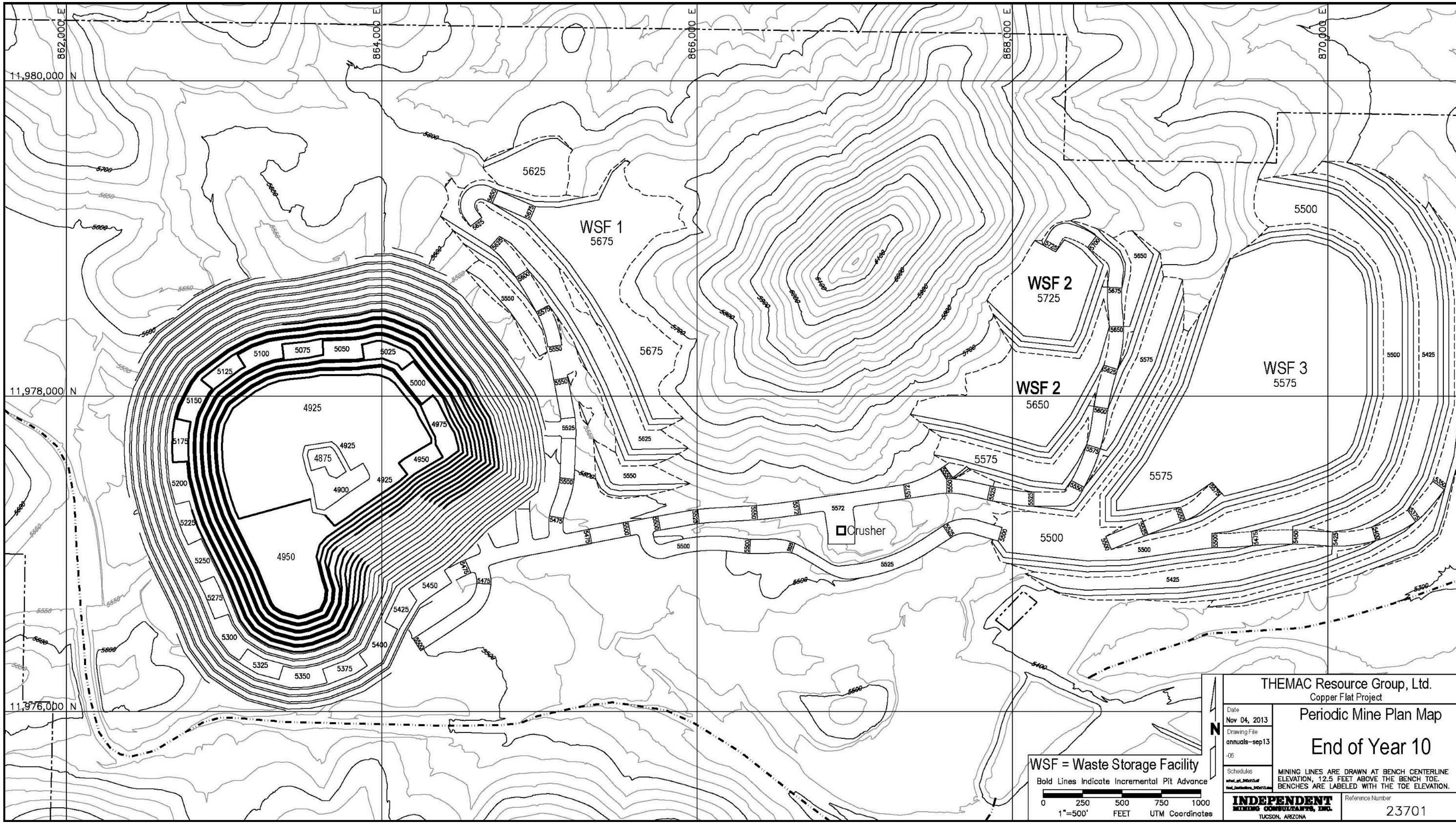


Figure 16-12: Periodic Mine Plan Map – End of Year 10

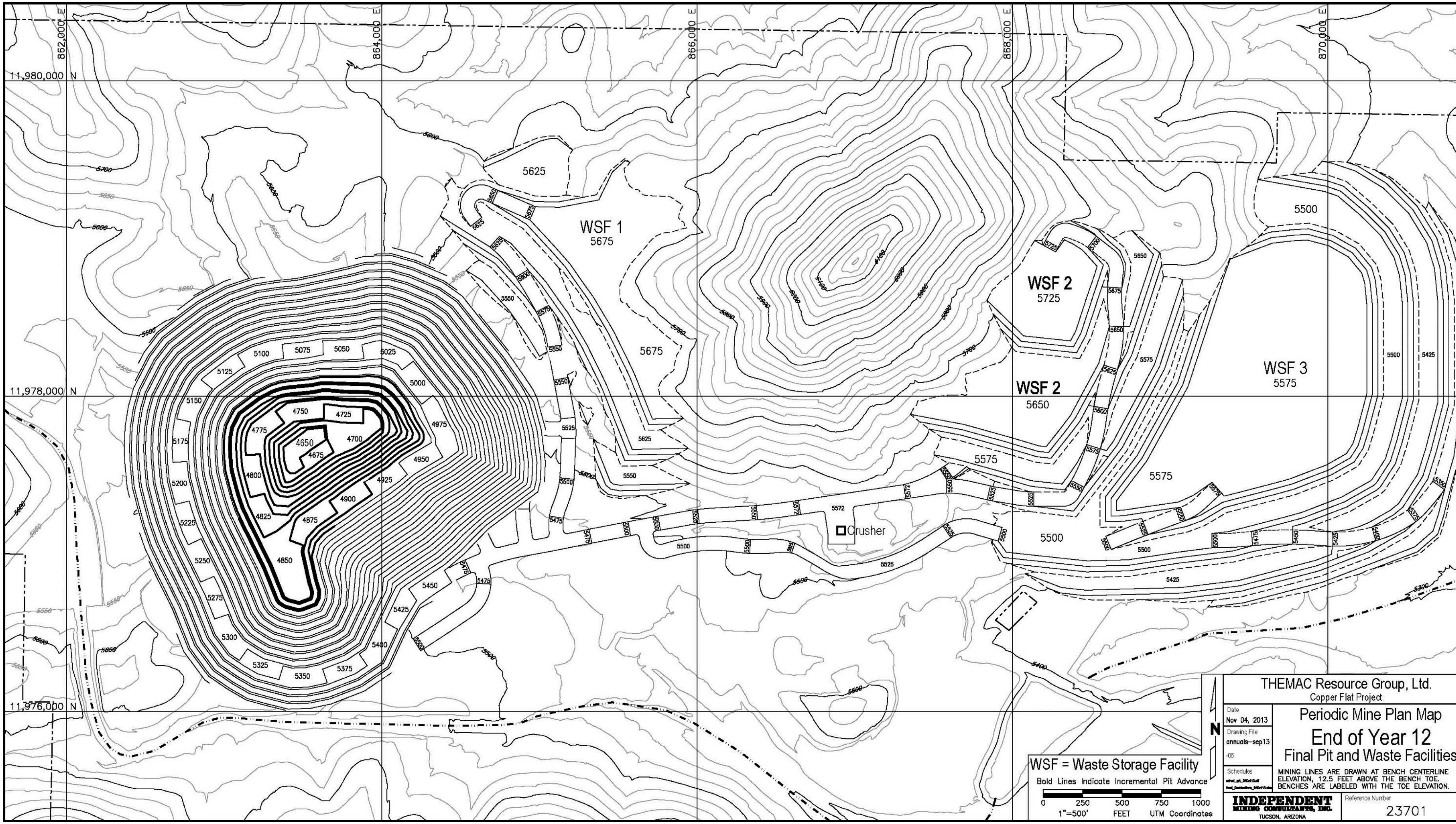


Figure 16-13: Periodic Mine Plan Map – End of Year 12

17 RECOVERY METHODS

The Copper Flat Project will produce copper and molybdenum flotation concentrates. The design basis for the conventional sulfide flotation mill is a throughput of 30,000 dry short tons per day or 10,800,000 dry short tons per year for approximately 12 years with reductions in throughput in Years 6 through 12 projected due to the mineralization becoming more difficult to grind.

17.1 PROCESS FACILITY DESCRIPTION

The process selected for recovering the copper and molybdenum minerals is considered "conventional." The sulfide ore is crushed and ground to a fine size and processed through mineral flotation circuits. The following items summarize the process operations required to extract copper and molybdenum from the Copper Flat sulfide ore.

- Size reduction of the ore by a primary gyratory crusher to reduce the ore size from run-of-mine (ROM) to minus 175 mm.
- Stockpiling primary crushed ore and then reclaiming by feeders and conveyor belt.
- Grinding ore in a semi-autogenous (SAG) mill primary grinding circuit and a ball mill secondary circuit prior to processing in a flotation circuit. The ball mill will operate in closed circuit with hydrocyclones to deliver an ore size of 80 percent passing 140 µ to the flotation circuit.
- Gravity separation will be conducted on a bleed from the hydrocyclone underflow slurry to remove gravity recoverable gold ahead of flotation.
- The flotation plant will consist of copper and molybdenum flotation circuits. The copper and molybdenum minerals are concentrated in a bulk copper/moly concentrate. The moly mineral is separated from the copper minerals in a moly flotation circuit. The bulk (copper-moly) flotation circuit consists of rougher flotation, concentrate regrind, first cleaner /first cleaner-scavenger flotation, and second cleaner flotation. The moly flotation circuit will consist of moly separation (rougher) flotation, moly first cleaner flotation, concentrate regrind, moly second cleaner flotation and moly third cleaner flotation.
- Final copper concentrate is thickened, filtered, and loaded in trucks for shipment. Final molybdenite concentrate is thickened, filtered, dried, and packaged into containers for shipment.
- Flotation tailing is classified with hydrocyclones to produce sands to build a centerline dam and reclaim water for process recycle in a tailing disposal facility at the mill site.
- Water from tailing and concentrate dewatering is recycled for reuse in the process. Plant water stream types include reclaimed process water and fresh water.
- Storing, preparing, and distributing reagents used in the process. Reagents include lime, potassium amyl xanthate (PAX), Aero 238 collector, fuel oil, methyl isobutyl carbinol (MIBC), Flomin D-910, sodium hydrosulfide, flocculant, antiscalant and nitrogen.

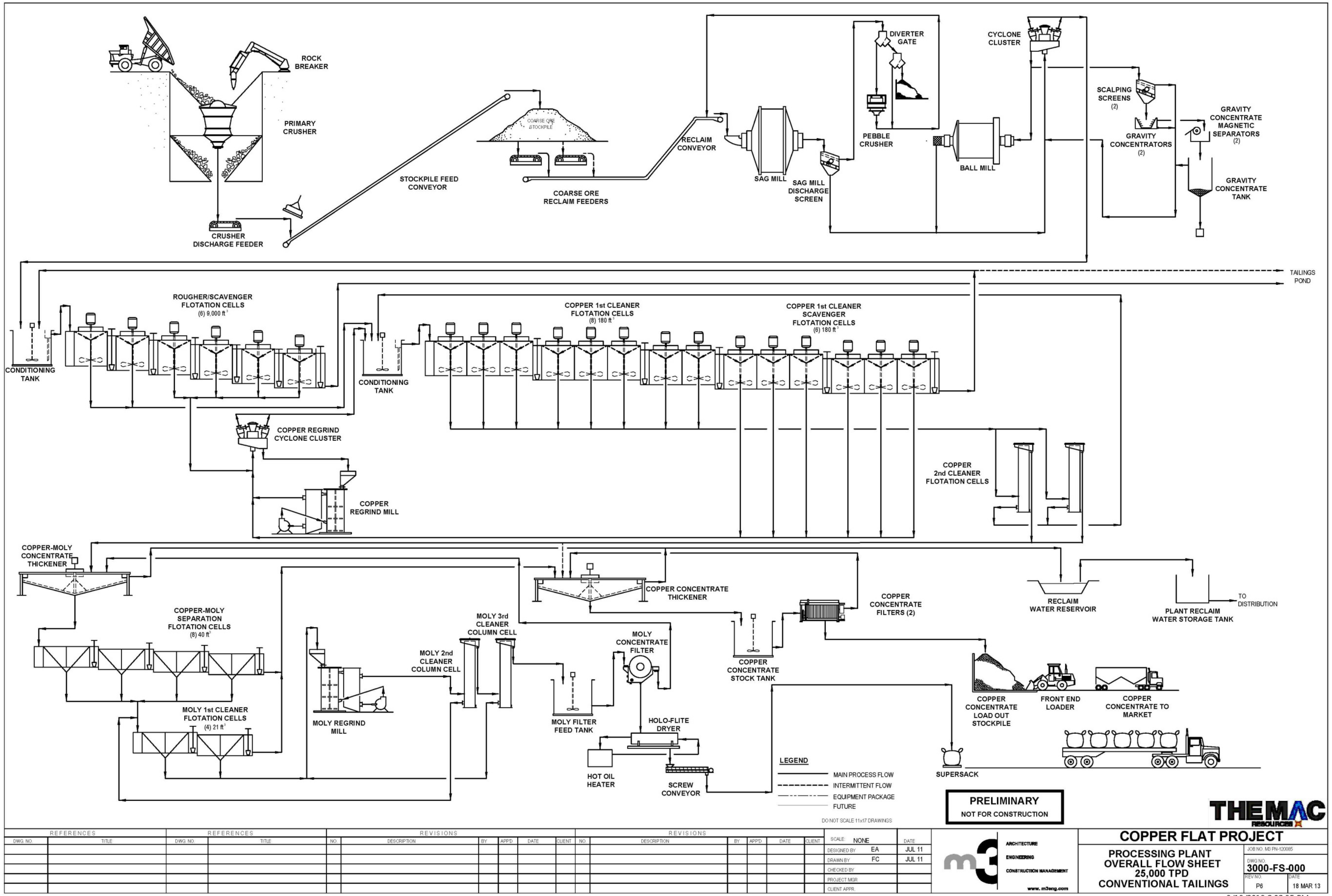


Figure 17-1: Conceptual Process Flowsheet

17.2 CRUSHING

Run of Mine (ROM) ore will be trucked from the mine to the primary crusher where it will be dumped directly into the crusher dump pocket that feeds a gyratory crusher.

A hydraulically operated, pedestal-mounted, rock breaker will be installed at the dump pocket for use on oversized material.

Primary crushed ore will be withdrawn from the crusher discharge pocket by a variable speed, crusher discharge apron feeder. The crusher discharge feeder will feed the coarse ore conveyor that will discharge to coarse ore stockpile. The crushing production rate will be monitored by a belt scale mounted on the conveyor. Tramp iron will be removed using a self-cleaning magnet that will be located at the transfer point between the crusher discharge feeder and the stockpile feed conveyor. A metal detector and belt scale will be installed at the proximal end of the stockpile feed conveyor.

Dust control in the primary crushing area will be by dry dust collector and water spray systems.

An air compressor and instrument air dryer will be installed for operation and maintenance.

17.3 COARSE ORE STOCKPILE

Primary crushed ore will be discharged on the ground to a coarse ore stockpile. An existing reclaim tunnel is beneath the stockpile location. Approximately 17 percent of the capacity of the ore stockpile will be "live." During primary crusher down time, ore will be moved from the "dead" storage area to the "live" storage area by front-end loader or bulldozer.

Ore will be withdrawn from coarse ore reclaim stockpile by variable speed apron feeders. The feeders will discharge to a conveyor belt that feeds the SAG mill in the grinding circuit.

Fugitive dust will be controlled with water sprays at the discharge of the stockpile feed conveyor. Dust control in the coarse ore stockpile area will be by dry dust collector systems installed as part of the crushing area.

17.4 GRINDING

Ore will be ground to final product size in a SAG mill and ball mill grinding circuit. The SAG mill will operate in closed circuit with SAG mill discharge screen and pebble crusher. The SAG mill discharge screen undersize will flow by gravity to the primary cyclone feed sump and the screen oversize will be transported by conveyors to the pebble crusher. Pebble crushing will be conducted in a short-head cone crusher. The SAG mill discharge screen oversize can bypass the pebble crusher via diverter gate (3015-DG-001) ahead of the pebble crusher. The bypassed screen oversize will feed a second diverter gate (3015-DG-002) which will either feed the pebble crusher conveyor that transports crushed pebble to the SAG mill or dump pebbles to the pebble stockpile. Tramp iron, and broken media will be removed using a self-cleaning belt magnet that will be installed over the SAG mill oversize conveyor ahead of the pebble crusher.

Secondary grinding will be performed in a ball mill which will operate in closed circuit with a cluster of hydrocyclones. The ball mill will discharge into a cyclone feed sump. The contents of the sump will be transferred using variable speed horizontal centrifugal slurry pump to a hydrocyclone cluster.

Most of the hydrocyclone underflow slurry will report to the ball mill, but a portion of the underflow will be taken through a Knelson-type gravity concentrator circuit to collect gravity recoverable gold. The gravity separation circuit will consist of two Knelson-type concentrators each of which will have an upstream scalping screen to remove oversize material. The gravity concentrates will pass through magnetic separators for removal of tramp iron and broken grinding media. The tailings from the gravity concentrators will be pumped back to the cyclone feed sump.

Hydrocyclone overflow (final grinding circuit product) will flow by gravity to the rougher flotation conditioning tank ahead of the rougher flotation cells. The overflow slurry–will be sampled and analyzed for metallurgical control prior to flotation.

Grinding balls will be added to SAG mill and ball mill using ball loading systems.

Lime slurry will be added to the SAG mill and ball mill feed to adjust the pH of the slurry. If needed, lime slurry may also be added to the primary grinding sumps. In addition, fuel oil will be added to the SAG mill feed to aid in molybdenite collection.

Overhead cranes will be installed for maintenance of the grinding mills and cyclone feed pumps, and hydrocyclone.

17.5 FLOTATION

Primary grinding hydrocyclone overflow will flow by gravity to the bulk flotation circuit. The bulk flotation circuit will consist of a conditioning tank, one row of rougher flotation cells, a rougher concentrate vertical regrind mill, one row of first cleaner/cleaner-scavenger flotation cells and two second cleaner column flotation cells.

The rougher flotation row will consist of six tank type rougher flotation cells with a drop between each cell. Flotation reagents will be added to the hydrocyclone overflow in the rougher flotation conditioning tank where the slurry will be agitated to allow the reagents to react with the ore particles before feeding to the rougher flotation cells. The concentrate from the first two rougher flotation cells will be sampled and transported by gravity directly to the copper cleaner feed pump box. The flotation concentrate from the last four rougher flotation cells will also be sampled and transported by gravity to rougher concentrate regrind sump. Tailing from the rougher flotation cell will be sampled and transported to the tailings treatment facility. Rougher flotation tailings will be sampled for metallurgical control. Concentrate from the last four rougher flotation cells, combined with first cleaner-scavenger concentrate and regrind cyclone underflow, will be pumped from the copper regrind cyclone feed pump box to copper regrind cyclone cluster. Copper regrind cyclone underflow will flow by gravity to the copper regrind mill. The copper regrind mill will operate in closed circuit with hydrocyclone.

Regrind cyclone overflow (final regrind circuit product) will flow by gravity to an agitated conditioning tank. Second cleaner tailing and flotation reagents will also be added into this tank. Conditioning tank discharge will flow by gravity to the first cleaner/cleaner-scavenger flotation cells. The first cleaner flotation will consist of eight tank type flotation cells. Concentrate from the first cleaner flotation cells will be pumped to the concentrate distribution box. Tailing from the first cleaner flotation cells will flow by gravity to the first cleaner-scavenger cells. The first cleaner-scavenger flotation circuit will consist of six tank type rougher flotation cells. Concentrate from the cleaner-scavenger cells will be returned to the bulk concentrate regrind circuit sump using a froth pump. Tailing from the cleaner-scavenger cells will be pumped back to the rougher flotation circuit. Cleaner-scavenger tailing may be sent to the final tailing sump.

Two discharge ports in the concentrate distribution box will direct the slurry to the feed inlets for the second cleaner column cells operated in parallel. Second cleaner tailing slurry will be pumped from the two columns to the first cleaner conditioning tank from where it will be pumped to the first cleaner flotation cells. The second (column) cleaner concentrate slurry will be pumped to the copper-moly concentrate thickener.

Two blowers (one operating and one standby) will supply air to bulk second cleaner column cells and as required to the bulk mechanical rougher, first cleaner/cleaner-scavenger and second cleaner bulk flotation tank cells.

An air compressor with air receiver and an instrument air dryer will be installed for operation and maintenance.

A bridge crane will be installed for maintenance of the flotation and regrind equipment.

Flotation reagents will be added at several points in the bulk flotation circuit.

17.6 MOLYBDENITE FLOTATION

Bulk second cleaner concentrate will be transported to the copper-moly concentrate thickener. Thickener overflow will be pumped by a horizontal centrifugal pump from an overflow sump to the plant reclaim water storage tank. Copper-moly thickener underflow will be pumped by a variable speed horizontal centrifugal slurry pump to the molybdenite flotation circuit.

The molybdenum flotation circuit will consist of one row of copper-moly separation (rougher) flotation cells, one row of molybdenite first cleaner flotation cells, a moly regrind circuit, one molybdenite second cleaner flotation cell, and one molybdenite third cleaner flotation cell.

The copper-moly separation (rougher) flotation row will consist of eight mechanical rougher flotation cells. Concentrate from the copper-moly separation (rougher) cells will be pumped by froth pump to the molybdenite first cleaner flotation cells. Tailing from the copper-moly separation cells will flow by gravity to the copper concentrate thickener. Tails and concentrate from the copper-moly separation flotation cells will be sampled.

The molybdenite first cleaner flotation row will consist of four mechanical cells. Concentrate from the molybdenite first cleaner cells will be pumped by froth pump to the feed sump of the molybdenite concentrate regrind circuit. Tailing from the molybdenite first cleaner flotation cells will flow by gravity to the feed launder of the copper concentrate thickener. Concentrate from the moly first cleaner cells will be sampled.

Molybdenite concentrate regrinding will be performed in a vertical mill. Molybdenite first cleaner flotation concentrate will feed the vertical mill which will discharge into moly regrind discharge pump box and pumped to the moly second cleaner column cell.

Slurry will be pumped by the second moly cleaner feed pump to the molybdenite second cleaner flotation column cell. Tailing from the molybdenite second cleaner column cell will be pumped to the moly first cleaner flotation cells.

Molybdenite second cleaner concentrate will be pumped to the moly third cleaner column cell. Concentrate from the molybdenite third cleaner column cell will be pumped to the agitated moly filter feed tank that feeds the moly filtering and drying circuit. Tailing from the molybdenite third cleaner column cell will be pumped to the molybdenite regrind cyclone feed sump.

Two blowers (one operating and one standby) will supply air to the second and third moly cleaner column cells.

Flotation reagents will be added at several points in the molybdenite flotation circuit.

Molybdenite circuit process streams will be sampled for metallurgical control. Sample points include: concentrate from the copper-moly separation (rougher) flotation row; concentrate from molybdenite first cleaner flotation row; and concentrate from molybdenite third cleaner column cell.

17.7 CONCENTRATE DEWATERING

17.7.1 Copper Concentrate Dewatering

Final copper concentrate will be a combination of tailings from copper-moly separation flotation and moly first cleaner flotation cells. Each tailing stream will be sampled before being transported to the copper concentrate thickener feed box from where the combined tailings will be fed to the copper concentrate thickener. Thickener overflow will be pumped from the overflow pump box by a horizontal centrifugal pump to the copper-moly concentrate thickener feed box. Thickener underflow will be pumped by variable speed horizontal centrifugal slurry pump to the copper concentrate stock tank from which it will be pumped to the copper concentrate filters.

Horizontal centrifugal pumps will transport copper concentrate slurry from agitated concentrate stock tank to two automatic plate-and-frame pressure filters. The filters will discharge batches of filter cake to a copper concentrate stockpile at the east end of the mill building. Filtrate and filter wash water will be returned to the feed box of the copper-moly concentrate thickener. A front-end loader will fill highway haulage trucks with copper concentrate on a built-in truck scale. A wheel wash system for the concentrate haulage trucks will ensure that concentrate will not be carried out of the load out area.

17.7.2 Molybdenite Concentration

Molybdenite concentrate from the molybdenite third cleaner column cell will flow by gravity to the moly filter feed tank. Concentrate from the agitated tank will be pumped to a disc filter for dewatering.

Filter cake will discharge to a conveyor that feeds a Holoflite-type hot oil dryer. The dryer will discharge via a screw conveyor to the molybdenite concentrate storage bins. Filtrate will be pumped to the copper-moly thickener.

17.8 TAILING DEWATERING

Tailing from the bulk rougher flotation row will be flow by gravity to a tailings separation facility where hydrocyclones will be used to separate the coarser particles (sands) to build a centerline dam, as described in greater detail in Section 20.2. Underflow sands will be pumped to the crest of the tailings storage facility (TSF). Cyclone overflow fines will be pumped to the TSF and spigotted to the interior of the impoundment. Further settling of the fines produces a supernatant water pond at the back (upstream) of the impoundment that will be reclaimed and pumped to the Reclaim Reservoir. Drainage from the tailings materials will be captured by a synthetic liner and conveyed via a overliner drainage system to a seepage collection pond. The overliner drain will have perforated piping to collect the drainage and convey it to collector piping that discharges to the collection pond. Collected seepage water will be pumped to the Reclaim Reservoir.

17.9 REAGENT STORAGE AND MIXING

Reagents requiring handling, mixing, and distribution system include:

- Potassium Amyl Xanthate (PAX, collector)
- Methyl Isobutyl Carbinol (MIBC, frother)
- Sodium Hydrosulfide (NaHS), copper mineral depressant)
- Flocculant
- Pebble Lime (CaO, pH modifier)
- Fuel oil (molybdenite collector)
- Butyl dithiophosphate
- Antiscalant

Reagent consumption rates for the full scale plant operation have been estimated from the test results. The estimated reagent consumption rates for sulfide ore processing are shown in Table 17-1.

Table 17-1: Estimated Reagent Consumption Rates for Sulfide Ore

Item	Rate lbs/ton ore
Copper Circuit	
Collector, Potassium Amyl Xanthate	0.030
Collector, Butyl Dithiophosphate	0.010
Frother, Methyl Isobutyl Carbinol (MIBC)	0.12
Collector, #2 Diesel Fuel	0.1
Lime (90% CaO)	2.4
Flocculant (for Concentrate Dewatering)	0.01
Molybdenite Circuit	
Sodium Hydrosulfide	0.25
#2 Diesel Fuel	0.007
Flomin 910	0.02
Methyl Isobutyl Carbinol (MIBC)	0.007

17.10 WATER SYSTEMS

The water system for the Copper Flat project plant site will consist of two grades of water. The following sections describe the two grades of water that will be used at the plant site.

Fresh Water – Area 4012

Fresh water for the Copper Flat Project will be supplied from offsite wells. Water from the wells will be pumped to fresh water tanks No.1 and No.2 before pumping to the Reclaim Reservoir Fresh Water tank. Fresh water flows by gravity to the reclaim water reservoir as make up water for use in the concentrator and will also be pumped from the Reclaim Reservoir Fresh Water tank to the Plant Fresh/Fire Water Storage Tank. Fresh water from the Plant Fresh/Fire Water Storage Tank will be distributed to:

- Fire water loop
- Chlorinator system and potable water tank for use in offices, laboratory, housing, eye wash stations, and rest rooms
- Gland seal water tank and pumped by horizontal centrifugal pumps to be used as seal water for mechanical equipment
- Mine water trucks to be used in road dust control
- Process use points (e.g. crusher dust suppression, column flotation, reagent mixing, moly plant)

Reclaim Water – Area 4013

Process water will be reclaimed from several locations and collected in the Reclaim Reservoir. Overflow from the copper-moly thickener will flow by gravity to the Reclaim Reservoir. Water reclaimed tailings cyclone overflow thickener, supernatant tailings impoundment water pond from the tailing pond, and water from the Seepage Collection Pond will be pumped to the reclaim water reservoir. Make-up water from the Reclaim Reservoir Fresh Water Tank will also be added at the reclaim water reservoir. Water from Reclaim Water Reservoir will be pumped to the Reclaim Water Storage Tank and distributed by gravity to the concentrator usage points.

18 PROJECT INFRASTRUCTURE

The Project receives significant benefit from existing infrastructure that remains from the Quintana Minerals operation. Components of the existing infrastructure that will be placed back into service for the new operation are:

- Concrete foundations and structures required for the primary crusher, concentrator, mine substation, truck shop, assay lab and administration building;
- Conveyor tunnels for the crusher discharge belt and the coarse ore stockpile reclaim system;
- Four fresh water wells, two of which are equipment with pumps at this time, and eight miles of 20” steel pipeline to convey fresh water from the well field to the mill site;
- Twelve miles of 115 kV power line and structures connecting the mine substation to the utility power grid;
- Several mine roads, including a 2.5 mile gravel access road connecting the mine site to State Highway 152 and more than 2 miles of mine haul roads and service roads connecting the pit to the crusher, the mine shop and material stockpile areas.
- Other earthworks including mill site and mine shop grading, storm water culverts, and a water diversion structure and channel to divert a major watershed around the pit; and
- Nearly 2 million tons of pre-preproduction stripping to expose the ore body.

The value provided to the new operation by the existing infrastructure has been estimated and is summarized in Section 21 of this report.

The following sections describe upgrades to existing infrastructure or new infrastructure that is required for the new operation. Costs to complete the described work are included in the capital cost estimate for the project.

18.1 ROADS

State Highway 152 will be upgraded to add turning lanes at the mine access road for commercial truck traffic, and to add a 2.5 inch asphalt overlay to the existing road surface between the mine access road and Interstate Highway 25 (2 traffic lanes for 10.5 miles).

A ½ mile section of the existing gravel access road will be relocated around the location of the new tailings facility.

18.2 POWER

A new power substation and switch will be constructed at the 345 kV power line at or near the point where it crosses the existing 115 kV power line to the mine. The new substation will transform power to 115 kV for transmission to the mine and will include necessary equipment to balance loads on the 345 kV line.

The existing 115 kV high power transmission line terminates approximately 1,000 feet from the mine substation. The line will be extended to the substation and maintenance performed on the existing power line and structures.

A new 24.9 kV power line will be constructed from the mine substation to the fresh water well field 8 miles to the east to power to the wells.

A new 1,800 kVA, 4.16 kV diesel powered generator will be installed at the mine substation to maintain the operation of thickener pumps and rakes, area ventilation, heat tracing, and limited lighting in the concentrator, mine shop and warehouse buildings during power outages.

18.3 WATER

New pumps will be installed in two of the four fresh water wells (two wells are currently equipment with pumps) and all four wells will be connected to the water conveyance pipeline. Each well will be capable of supplying a nominal 1,500 gallons of fresh water per minute. Operation of the pumps will be remotely monitored and controlled form the mill control room at the mine.

Three pump booster stations will be added to the water conveyance system to bring water from the well field to a new 300,000 gallon fresh water storage tank located on Animas Peak above the mill site.

18.4 RAIL

The Company will lease land and construct a concentrate storage shed to receive and store concentrates at the rail siding located at Rincon, New Mexico, which is 45 road miles from the project site. The shed will be fully enclosed for security and to control dust emissions from stored concentrate. Rail cars will be loaded by conveyor. Plans for the concentrate storage facility include a wheel loader, loadout hopper and conveyor, and a winch system for positioning rail cars under the loading conveyor.

Concentrate will be shipped by rail to the seaport at Guaymas, Mexico. Rail line to the port is existing and active. Facilities at the port will be owned and operated by a third party.

18.5 MATERIAL STOCKPILES

After crushing, coarse ore is stockpiled ahead of the grinding circuit. Coarse ore is reclaimed from the stockpile by apron feeders installed in the existing concrete reclaim tunnel. Total storage capacity of the coarse ore stockpile is approximately 75,000 short tons, or 2-1/2 days of mill throughput at the planned processing rate. Live capacity of the stockpile is approximately 15,000 short tons, or 12 hours of mill throughput. When necessary, ore will be feed to the mill from the "dead" storage area by front-end loader or bulldozer.

The majority of non-economic material will be permanently stored in three unlined waste rock disposal facilities (WRDFs) located east of the pit. The selected areas fully meets mine needs within the mine permit boundary. The non-economic stockpile is designed to facilitate re-grading to required slopes at mine closure. Additional details regarding the WRDFs are discussed in Section 20.3.1.

18.6 TAILINGS STORAGE FACILITY

A new tailings storage facility (TSF) will be constructed at the location of the existing Quintana Minerals facility that was constructed and briefly operated in 1981 and 1982. Ultimately, the new TSF will store tailings from processing the 113 million ton reserve. The new facility will extend approximately 1,000 feet east of the existing Quintana Minerals starter dam (the tailings expansion area). Details regarding design, construction and operation of the TSF are provided in Section 20.2.

18.7 SANITARY WASTEWATER TREATMENT

A packaged water treatment plant will be installed at the mine to accommodate liquid sanitary wastes generated from the mine office, shower, and rest room facilities. For the feasibility study, the packaged water treatment plant was sized for a load based on mine headcount for a 24 hour day plus excess. To accommodate this loading, a 10,000 gallon per day plant is assumed based on 200 people per day at a usage rate of 50 gallons per day per person. The plant would generate effluent treated to secondary treatment levels. The plant discharge will be to the lined tailings storage facility and recycled back to mill with the tailings process water. The location of the plant will be on a pre-existing concrete slab in the Mine plant area.

18.8 CENTRAL INFRASTRUCTURE CONTROL AND COMMUNICATIONS SYSTEMS

The concentrator at the Copper Flat property will incorporate modern, dependable and proven instrumentation and control systems. Mine communication systems will include a voice over IP telephone system, a computer system with networking, internet access and email capabilities, and a two-way multi-frequency radio system assigned to key functional groups as required (mine, processing, security, etc.).

18.8.1 Concentrator Monitoring and Control Center

The concentrator control room will serve as the center for communications, fire systems monitoring and emergencies in general. Mine security will also have redundant emergency communications. The control room will be manned on a twenty-four hour a day basis. A base station radio will be assigned to the control room as well as an outside telephone and computer based communications. The control room operator will have the ability to communicate on all other site group frequencies.

Real time observation of strategic points within the operation will be accomplished by a TV camera system with monitors in the control room. A programmable logic controller (PLC) system will be used for stop- starts of the plant equipment. The control room will serve as the center of all control and recording of key process variables, outputs, functions and plant stoppages.

Process control and monitoring systems that provide real-time data to the operators will include, but are not limited to the following:

- Primary crusher- Crusher power draw, weigh scale on stockpile feed conveyor, appropriate metal detector and tramp iron magnets, crusher discharge hopper level indicators, etc.
- Coarse ore stockpile will have a height measuring device and the reclaim conveyor will have vendor supplied variable speed controls for each feeder.
- Each reagent system will have the ability to be batched to the necessary strength and stored until used in the plant. The delivery systems will have the ability to be measured and controlled from the plant control room.
- Grinding area- SAG Mill feed conveyor weight scale, water control to the SAG Mill that is in ratio to the tonnage rate, lime control to the SAG Mill, reagent control to the SAG Mill, pebble crusher power draw and crushed pebble conveyor weigh scale and tramp steel magnet will be included . Cyclone feed sump levels and auto water addition to the sump, pulp densities for the cyclone feed pump discharge as well as cyclone pressure is needed. The Ball Mill circuit will be monitored for mill power draw and automatic water addition at the feed end. Both grinding mills will have the vendor supplied controls, interlocks and monitors to protect the equipment.
- The copper Flotation circuit shall contain an on stream X ray analyzer. A Particle Size Meter will also be included to measure grinding sizes for the primary cyclone overflow and the regrind cyclone overflows. Flotation sumps will have level indicators and automatic valves for water and/or reagents where applicable. Thickeners will have torque indicators with adjustable height rakes and automatic valves on the thickener underflow pumps.
- The moly plant will have a reagent delivery system that has the ability to measure and regulate reagent flows. Moly plant sumps will have level indicators and their discharge pumps will have pressure indicators. The pumps will be tied to the level indicators in their respective sumps to prevent starting in an empty sump condition.
- The copper filtering plant thickener will have a torque indicator and adjustable lift rakes. Thickener underflow and recycle systems will have automatic valves and a flow and density meter.
- Tailings and reclaim water system will have vertical pumps and will have remote start and stop control capability from the mill control room. Each pump will receive a control signal from the reclaim water storage tank. The reclaim water storage tank will have a level indicator and an automatic control on the anti-scalent addition line.

Process control and monitoring systems that monitor, measure, weigh and collect samples for assay will include, but are not limited to the following:

- A weigh scale on the coarse ore stockpile conveyor to facilitate reconciliation around mine delivered tonnage versus tons crushed

- A weigh scale on the coarse ore reclaim conveyor for the metallurgical balance
- Automatic sample cutters will be utilized to ensure samples are taken on a regular basis and the shift composite samples will serve as a basis for the plant metallurgical balance
- Appropriate flow meters, scales and control valves will be installed where it is deemed necessary
- Before leaving the site copper concentrate will be weighed and sampled for moisture and copper content as well as gold and silver content. A truck scale to weigh copper concentrate and truck wheel wash for environmental compliance are included in the feasibility study plans
- Molybdenum will be weighted and sampled for grade and moistures before being shipped offsite

18.8.2 Safety Systems

Safety systems will include, but are not limited to the following:

- The use of startup warnings such as horns and sirens will be used throughout the property;
- Interlock systems will be installed and maintained;
- A Sodium Hydrosulfide (NaHS) monitoring and alarm system will be installed in the concentrator;
- Fire detection and suppression systems will be installed and monitored from the mill control room and from mine security

19 MARKET STUDIES AND CONTRACTS

Since Copper Flat project is presently under development, sales contracts for metal concentrates projected in this Feasibility Study would be premature. When the project goes into production, markets studies on the long term pricing of the metals would be reviewed and smelter agreements for the treatment and refining of copper and molybdenum concentrates (including recovery of gold and silver) would be put into place.

For the purpose of this Feasibility Study, general information concerning the markets for copper, molybdenum, gold, and silver has been assembled and is analyzed below.

19.1 MARKET STUDIES

No Market Studies were undertaken or purchased in conjunction to the preparation of this Technical Report. The annual (or total) volume of mine metal production from concentrates (after smelter deductions) will not impact world supply, demand or prices.

As such, Copper Flat will sell into a world market for these metals and will be accepting the market price for the metals, and Copper Flat will be subject to changes in the global supply, demand and prices for these metals. Details on the current supply and demand for these metals are available free and at cost from numerous of sources, including government entities, banks, investment houses, mineral related consulting firms and academic institutions. Because of the global nature of these commodities and the availability of reports on these metals, market summaries for the supply and demand for copper, molybdenum, gold and silver have not been included in this Feasibility Study.

Copper Flat is not currently in production and has no sales at this time. When in operation, Copper Flat will mine and process ores that contain copper, molybdenum, gold and silver. These metals will be concentrated and sold in the form of copper concentrates and molybdenum concentrates from the flotation circuits, and gravity gold concentrates from the Knelson concentrators (see Sections 17.4, 17.5 and 17.6).

While no metals will be produced directly from the operations, the salable products will contain the following payable metals (see Section 13.2.3):

- Copper concentrates – copper, with recoverable gold and silver.
- Molybdenum concentrates – molybdenum.
- Gravity concentrates – gold.

Estimated life of mine metal production from concentrates (after smelter deductions) is presented in Table 19-1.

Table 19-1: Metal Production

Copper (klbs)	605,586
Molybdenum (klbs)	15,560
Gold (kozs)	214
Silver (kozs)	5,355

The total volume of mine metal production from concentrates (after smelter deductions) will not impact world supply, demand or prices. As such, Copper Flat will sell into a world market for these metals and will be accepting the market price for the metals. Because of this, Copper Flat will also be subject to changes in the global supply, demand and prices for these metals. Details on the current supply and demand for these metals are available free and at cost from numerous of sources, including government entities, banks, investment houses, and mineral related consulting firms.

19.1.1 Metals Prices

No Metals Price Studies or Metals Price Forecasts were undertaken or purchased in conjunction to the preparation of this Technical Report.

Metals price forecasting is a complex science that is practiced principally by government entities, banks, investment houses, and mineral related consulting firms. As such, the forecasts usually produced tend to be generic in their analysis. Forecasting prices is highly speculative, and significant caution tends to be used in the analysis; significant projected changes, especially by governmental entities, could lead to catastrophic effects. Thus, there is a need to balance caution and reality when predicting future prices.

Professional metals price forecasting tends to fall into three groupings, short term (3 months up to +1 year) that are typically undertaken by investment houses and banks; medium term (from +1 year up to 3 years) that are typically undertaken by commodity consulting firms and governmental entities; and long term (from +3 years generally to 5 years, with longer forecasts on 5 or 10 year intervals) that are typically undertaken by commodity consulting firms and governmental entities.

For purposes of this Technical Report, Copper Flat is using the following metals prices for forecasting revenue and economic modeling:

Table 19-2: Base Metals Prices

Copper	$3.00/pound
Molybdenum	$9.50/pound
Gold	$1,350.00/ounce
Silver	$22.00/ounce

Based on the volume of metal to be produced over the mine life, after smelter deductions, and the base case prices, the percentage each metal will contribute to the total revenue of the project is as follows:

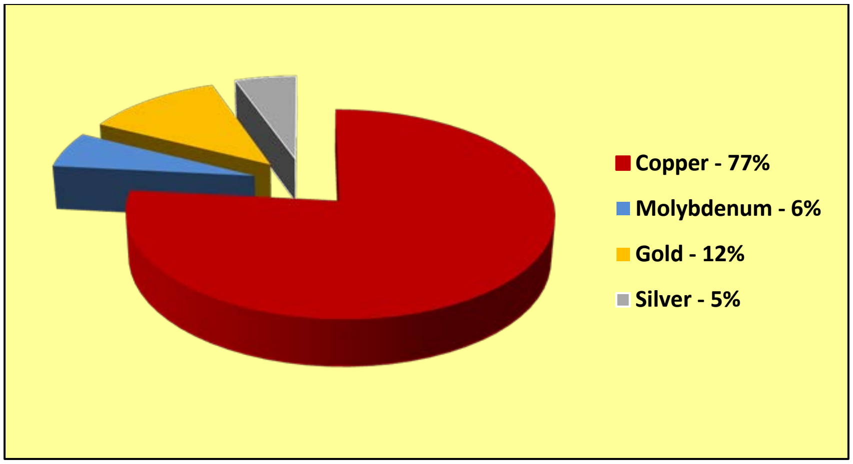


Figure 19-1: Revenue Contribution by Commodity, Life of Mine

The base case metal prices reflect the final sales price of a refined and commercial metal product. The prices were chosen in conjunction with the determining the appropriate Mineral Resource Estimates (Section 14) and the Mineral Reserve Estimates (Section 15). Independent Mining Consultants, Inc. developed the mineral resource and mineral reserve from a computer based block model that was based on the drill hole data base and geologic interpretation assembled for the Copper Flat Deposit.

No effort was made by Independent Mining Consultants, Inc. to establish a pit with maximum return on investment; consequently the mineral resource cone was the direct result of the following metal prices: $3.00/lb Copper, $8.00/lb Moly, $1350/oz Gold, $20.00/oz Silver. Metal price changes could materially change the estimated mineral resources and mineral reserves in either a positive or negative way.

As support for the base case metal prices, M3 selected six recent copper, molybdenum (where applicable), gold and silver Feasibility Studies prepared by their firm (August 2012 – January 2013), and averaged the metals prices used in those studies. The metals prices used in those studies were a combination of three year trailing prices, long term forecast prices, and a 60/40 weighted average of the 36 month historic price and the 24 month futures price. The futures prices were those quoted by the CME Group (Chicago Mercantile Exchange) and the LME (London Metals Exchange). Both exchanges provide forward pricing for 24 months for copper, gold and silver, and the LME 15 month molybdenum futures.

The resulting averages of these prices were calculated by M3 using their six project average:

Table 19-3: M3 Six Project Average – Feasibility Study Prices

Copper	$3.18/pound
Molybdenum	$14.28/pound
Gold	$1,382.80/ounce
Silver	$24.98/ounce

M3 also ran two current 60/40 price models (through July 2013 and through August 2013) using the 60/40 weighted average of the 36 month historic price and the 24 month futures price for each of the metals (15 months forward pricing for molybdenum). The resulting prices were calculated at the following:

Table 19-4: M3 60/40 Weighted Average Price Forecasts

Through July 2013		Through August 2013	
Copper	$3.52/pound	Copper	$3.55/pound
Molybdenum	$12.05/pound	Molybdenum	$11.84/pound
Gold	$1,458.78/ounce	Gold	$1,489.30/ounce
Silver	$26.43/ounce	Silver	$27.59/ounce

As a comparison to the market, as of October 1, 2013, the current sales price for the metals were:

Table 19-5: Spot Metals Price, October 1, 2013

Copper	$3.27/pound (Kitco bid – asked)
Molybdenum	$9.75/pound, as moly metal in moly trioxide
Gold	$1,333.75/ounce (Kitco bid – asked)
Silver	$22.02/ounce (Kitco bid – asked)

While current prices are important, they are not necessarily indicative of longer term prices.

The following figures provide long term price projections for copper, molybdenum, gold and silver. The information on these figures is from M3, The International Monetary Fund, The Economist Intelligence Unit, The World Bank, and Macquarie Bank. While the price forecasts are subject to change in relation to global supply and demand of these metals, the forecasts are indicative to the current view of future long term pricing trends, at least through 2020 (2018 for molybdenum).

19.1.2 Copper Price Forecast

The following figure provides long term price projections for copper as forecast by M3, The International Monitory Fund, The Economist Intelligence Unit, The World Bank, and Macquarie Bank, and the average of these forecasts, against the price used for copper by New Mexico Copper Corporation for the Copper Flat Project. Note, the price forecasts extends to 2020, which is the furthest date of the independent forecast from The World Bank.

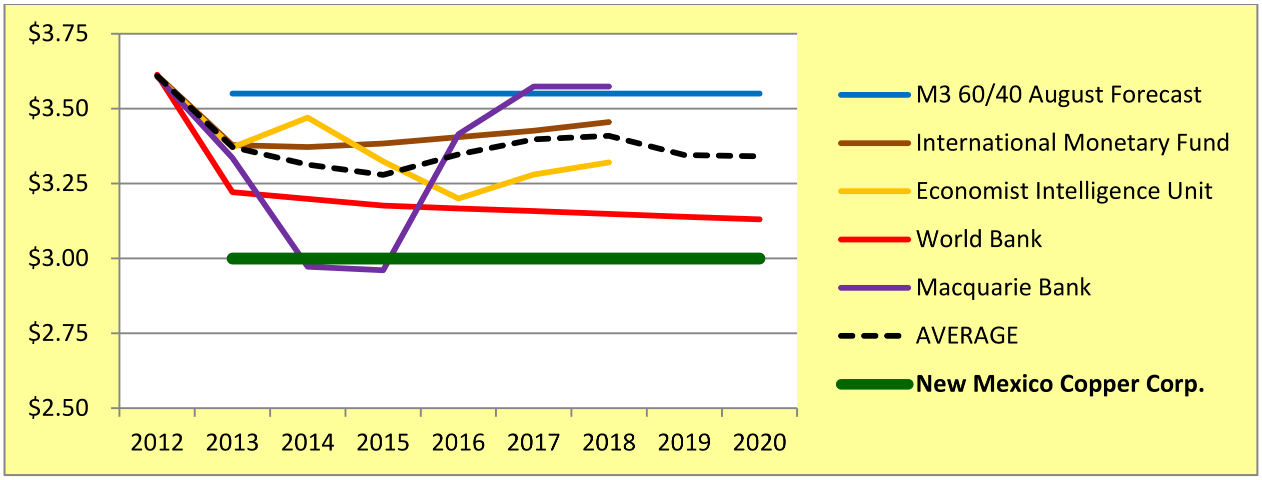


Figure 19-2: Copper Price Forecasts 2012-2020, in U.S. Dollars per Pound

The copper price used for the Copper Flat project is below the majority of the current projections and the average of the projects, and as such should be considered a reasonable long term price based on the current market information.

19.1.3 Molybdenum Price Forecast

The following figure provides long term price projections for molybdenum as forecast by M3 and Macquarie Bank, and the average of these forecasts, against the price used for molybdenum by New Mexico Copper Corporation for the Copper Flat Project. Note that molybdenum is a commodity that is not commonly studied in terms of forecasting prices; i.e. there tends to be limited sources. Also note, the price forecasts extends to 2018, which is the furthest date of the independent forecast from Macquarie Bank.

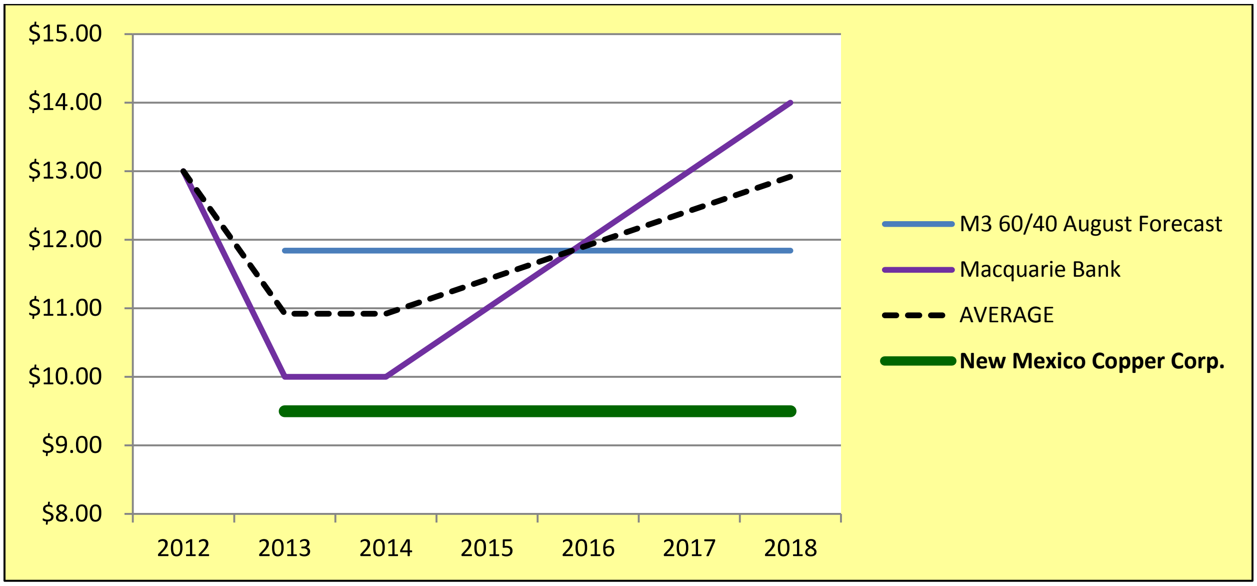


Figure 19-3: Molybdenum Price Forecasts 2012-2018, in U.S. Dollars per Pound

The price forecast for M3 and THEMAC begins in 2013. While the comparison is limited to the Macquarie Bank forecasted molybdenum price, the molybdenum price used for the Copper Flat project is below that projection and is considered reasonable as a long term projection.

19.1.4 Gold Price Forecast

The following figure provides long term price projections for gold as forecast by M3, The Economist Intelligence Unit, The World Bank, and Macquarie Bank, and the average of these forecasts, against the price used for gold by New Mexico Copper Corporation for the Copper Flat Project. Note, the price forecasts extends to 2020, which is the furthest date of the independent forecast from The World Bank.

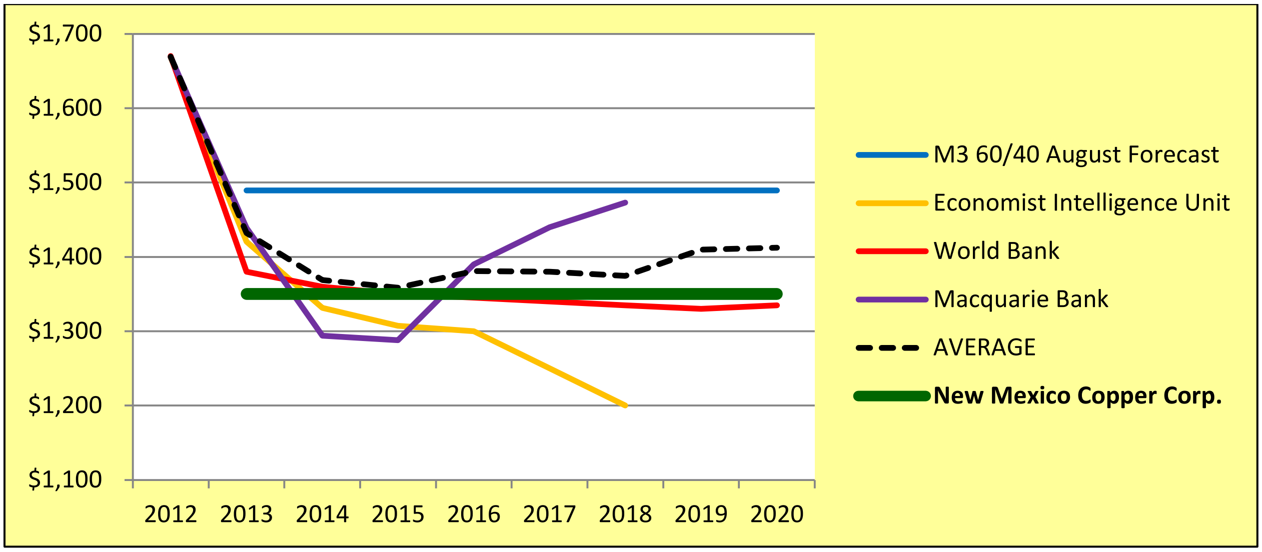


Figure 19-4: Gold Price Forecast 2012-2020, in U.S. Dollars per Troy Ounce

The price forecast for M3 and THEMAC begins in 2013. Gold prices are difficult to forecast with any degree of certainty. The $1,350 per troy ounce price used for the Copper Flat project should be considered a reasonable long term price based on the current market information.

19.1.5 Silver Price Forecast

The following figure provide long term price projections for silver as forecast by M3, The Economist Intelligence Unit, The World Bank, and Macquarie Bank, and the average of these forecasts, against the price used for silver by New Mexico Copper Corporation for the Copper Flat Project. Note, the price forecasts extends to 2020, which is the furthest date of the independent forecast from The World Bank.

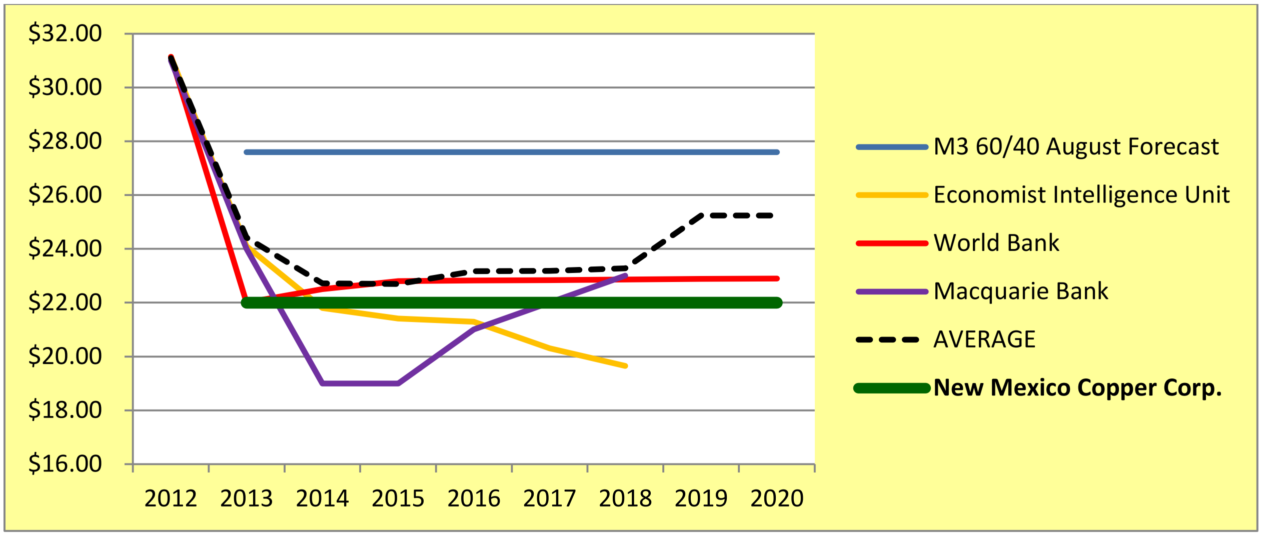


Figure 19-5: Silver Price Forecast 2012-2020, in U.S. Dollars per Troy Ounce

The price forecast for M3 and THEMAC begins in 2013. Silver prices, like gold prices, are difficult to forecast with any degree of certainty. The $22.00 per troy ounce price used for the Copper Flat project should be considered a reasonable long term price based on the current market information.

19.2 SALES AND SMELTER STUDIES

Copper Flat is not currently in production and has no operational sales contracts in place at this time. Should the project go into production, smelter agreements for the treatment and refining of copper and molybdenum concentrates (including recovery of gold and silver) will be put into place. For the purpose of this Feasibility Study, smelter terms and costs have been estimated. Assumed smelter terms are provided in Section 22.3.1.

The copper concentrates are assumed to be shipped to a smelter in Asia and the terms are negotiable at the time of the agreement. Molybdenum concentrates are assumed to be saleable in the domestic U.S. market. The free gold would be concentrated and shipped to a gold smelter/refinery for final processing.

The basis for the assumed smelter terms were generated by Marc Ingelbinck, former Vice President, Marketing & Trading, Concentrates at BHP Billiton, supported by Brook Hunt/Wood Mackenzie studies, and reviewed by M3.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

Environmental and socioeconomic baseline studies were completed as part of the previous attempt to reopen the Copper Flat Mine in the late 1990s. Data from these past studies were incorporated as appropriate or otherwise updated in newly completed and on-going studies that have been undertaken in accordance with state and federal standards of data acquisition, quality assurance and reporting.

20.1 ENVIRONMENTAL STUDIES AND POTENTIAL IMPACTS

THEMAC is working on localized environmental concerns at the Property.

A Stage 1 Abatement Plan is being implemented with NMED approval and direction to characterize conditions at the site in areas of known or potential impact, each associated with previous mining operations by Quintana Minerals:

1. The pit lake,
2. Legacy waste rock piles, and
3. The tailings storage facility.

Sampling events in 2013 have provided data regarding the current conditions in each of these locations. A detailed discussion of characterization work and planned mitigation is included in Section 4.5.

Mining is part of the mitigation strategy for all of these environmental issues. The pit will be dewatered during operations and the water sourced from the pit will be used as process water for the mill. Additional strategies including regulatory approaches and engineering controls are currently being studied to avoid or mitigate environmental concerns with post closure pit water quality.

Control of runoff at the mine site during construction and operation will address concerns about potential impact to groundwater from legacy waste rock piles. At the end of mine life, reclamation activities will cover waste rock disposal areas and the mill site area as required by state agencies in a manner known to inhibit infiltration of precipitation and prevent these areas from impacting surface run-off and groundwater with elevated sulfate and TDS. Reclamation activities will be designed and executed to prevent groundwater impact in the future.

The construction of a lined tailings storage facility will eliminate the source of localized groundwater impact of elevated concentrations of sulfate and TDS by the existing tailings as these tailings will be used as liner bedding material and isolated from future exposure to the environment.

Permitting initiatives for the project include:

- Facilitation of monthly meetings with cooperating agencies to discuss progress of the Copper Flat mine project and the status of the various studies and permit applications in process.
- THEMAC prepared a Stage 1 Abatement Plan for the NMED, which NMED approved in a letter dated February 7, 2012. In accordance with this approved plan, groundwater levels and samples have been collected from 20-22 wells across the site as well as at the pit lake, depending on access and availability. Sample events took place in January, April, July and October 2013. In addition, three locations were selected for opportunistic sampling of surface water, if present. Rains at the site caused some intermittent surface water flow in Grayback Arroyo and surface water samples were collected at the site in July, September, and October.
- A Sampling and Analysis Plan (SAP) (September 2010) was prepared for review by the New Mexico Mining and Minerals Division (MMD). The SAP describes data to be collected including proposed sampling methodology and frequency, data sources, and sampling locations, to document existing resource conditions both within and outside the permit boundary in support of the required Baseline Data Report (discussed below).
- A Baseline Data Report (BDR) was completed and submitted to the cooperating federal and state regulatory agencies for review in June 2012. Responses to agency comments were submitted in July 2013. The BDR summarizes 12 months or more of data collection at the site and in the region including: vegetation, wildlife, topsoil, geology, surface water, groundwater, cultural properties, air quality, and meteorological data.

Additional studies that are being completed and will be submitted to meet State and federal (NEPA Environmental Impact Statement) requirements include:

- Geochemical characterization of the site's potential for acid rock drainage and predictive geochemical modeling for the tailings storage facility and waste rock disposal facility. This report was issued to reviewing agencies in June 2013.
- Geochemical characterization of the pit lake and modeled predications of future pit lake quality. This report was issued to reviewing agencies in September 2013.
- Analysis of an aquifer pumping test conducted in 2012 using two of the mine site production wells with observation equipment in the other two production wells and in significant locations in the vicinity of the production well field and along Las Animas Creek.
- These additional groundwater and surface water data were used to develop a numerical hydrologic/hydrogeological model of the site and surrounding area to provide a quantitative framework in which to evaluate the effects of project development. A report regarding this groundwater model, as well as the executable model files was distributed to reviewing agencies in August 2013.

20.1.1 Hydrogeology

The regional and mine site groundwater conditions have been established through an existing network of strategically located groundwater monitoring wells. Groundwater samples from selected monitoring wells have been and continue to be analyzed for water quality.

20.1.1.1 Overview

The site is located in the Lower Rio Grande Underground Water Basin (LRGB), which extends from Elephant Butte Dam to the Texas border near El Paso. The LRGB was declared by the NM State Engineer in September 1980 and administration of the LRGB by the State Engineer commenced in September of 1982. Groundwater in the LRGB generally flows from the highlands on either side of the basin through bedrock and valley alluvium to the center of the basin and to the Rio Grande.

Three major hydrogeologic zones define the site area and its immediate surroundings (Figure 20-1, after Shomaker [2012]). The plan view of the cross-section presented in Figure 20-1 is shown in Figure 20-2.

1. The Animas Uplift, in which the ore body is located
2. The graben located east of the Black Range and west of the Animas Uplift
3. The Palomas Basin, a sediment-filled basin east of the Animas Uplift in which the mine supply wells are located

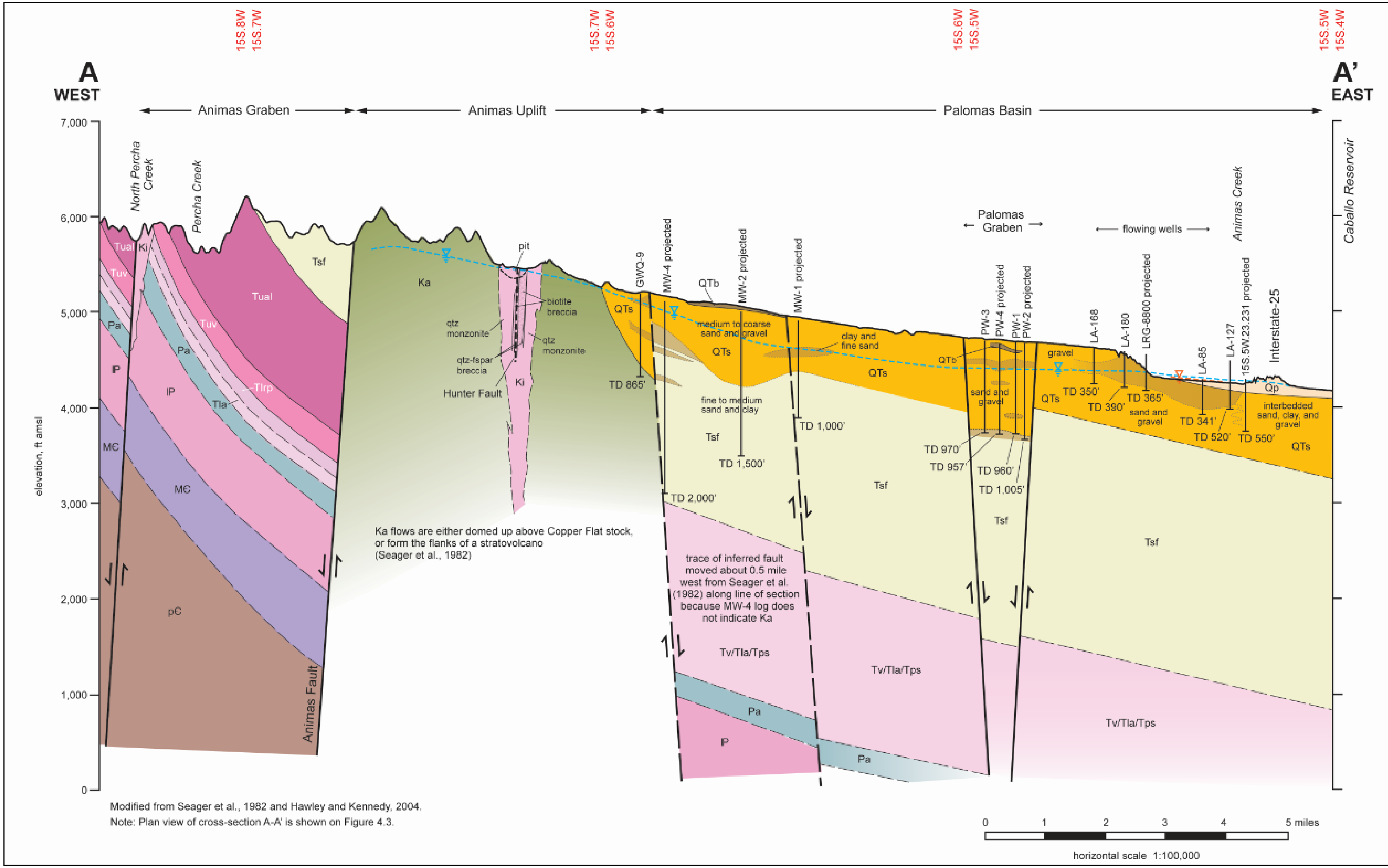


Figure 20-1: Hydrogeologic Zones, West-to-East Cross-Section

The Animas Uplift contains the Copper Flat open pit, excavated in 1982 by Quintana Minerals, which THEMAC proposes to expand. The main part of the other Project facilities, including existing waste rock and tailings storage facilities would be located on the Animas Uplift. The graben between Black Range and the Animas Uplift drains to the Warm Springs valley west and south of the Copper Flat Mine property. The Palomas (geologic) Basin lies within the LRGB east of the Copper Flat Mine property. The Project water-supply wells are located within the basin on a mesa south of Las Animas Creek and approximately 8 miles east of the Copper Flat Mine. Parts of the waste rock and tailings storage facilities would also be located overlying the western margin of the Palomas Basin.

20.1.1.2 Geology

The geologic description is adapted from Shomaker (1993), who cites Harley (1934), Hedlund (1975), Dunn (1982), and Seager et al (1982). The geologic map of the study area is shown as Figure 20-2 (from Shomaker 2012). The three major geologic subdivisions of the Animas Uplift, the graben east of the Black Range, and the Palomas Basin are described briefly below.

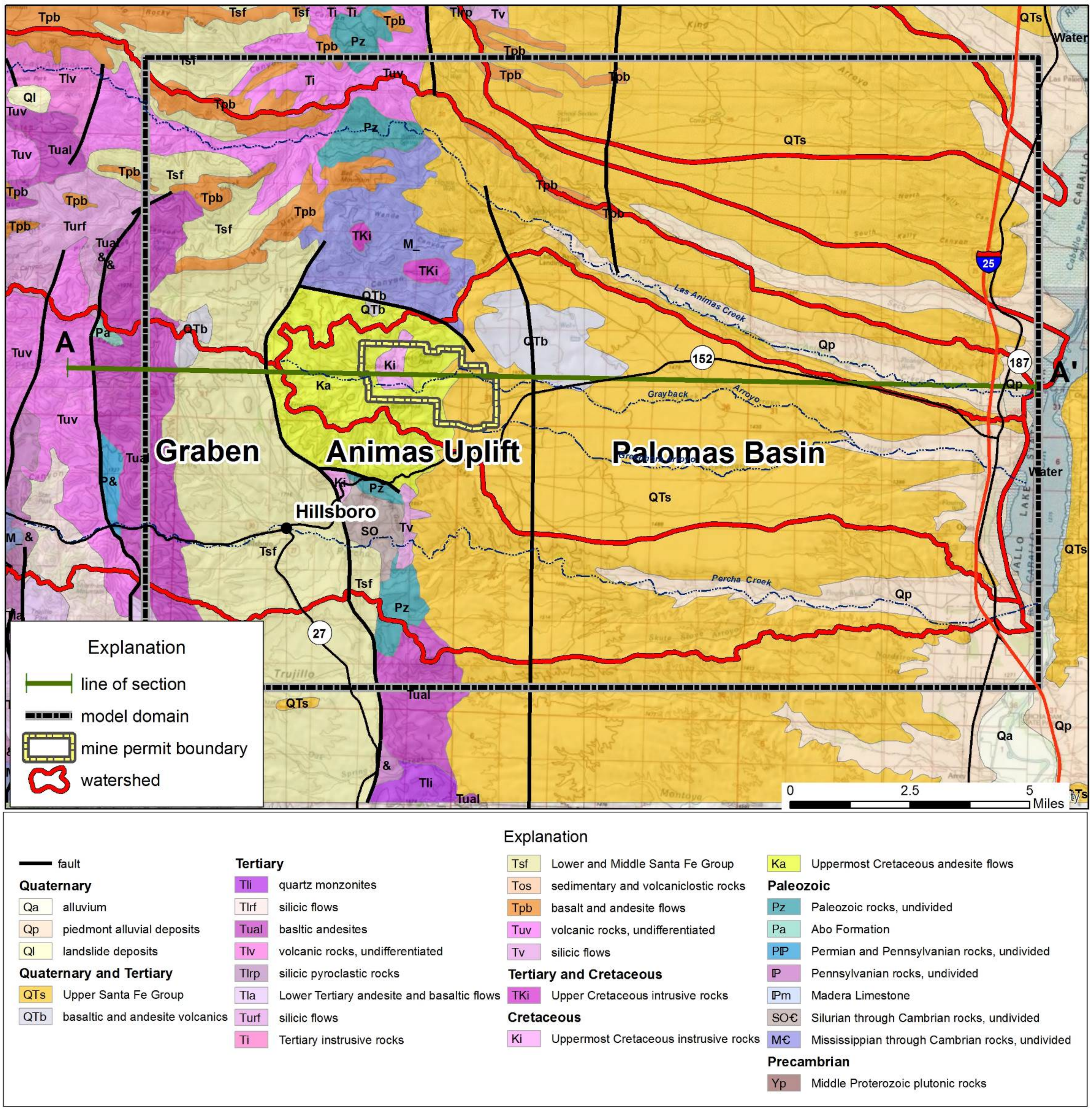


Figure 20-2: Geologic Map of Study Area

Animas Uplift

The Animas Uplift is an upthrown block bounded by north-south trending faults, ranging from less than 2 to about 4 miles wide. The Copper Flat ore body is located within a nearly circular remnant of a Cretaceous andesite volcano about 4 miles in diameter that is part of the Animas Uplift. The hills surrounding Copper Flat consist of Cretaceous andesite flows, breccias, and volcaniclastic rocks that were erupted from the volcano (McLemore, 2001; Raugust and McLemore, 2004).

West of the Animas Uplift, between it and the Black Range, lies a half-graben in which Tertiary alluvial fan deposits, sandstones and mudstones of the Santa Fe Group overlie Tertiary volcanic rocks and Paleozoic sedimentary rocks.

Palomas Basin

The Palomas Basin is a sediment-filled structural trough, part of the Rio Grande rift system. The principal water-bearing sediments of the Palomas Basin are (1) alluvial-fan deposits, and fluvial sands and gravels of the Santa Fe Group, and (2) alluvium in the inner valleys of the Rio Grande and principal tributaries.

Groundwater

There are three hydrogeologic units within the Copper Flat Mine site area:

1) Alluvium along Greyback Arroyo
2) Santa Fe Group Sediments
3) Andesite and monzonitic porphyry rocks of the Animas Uplift

The principal water-bearing sediments of the Palomas Basin are (1) alluvial-fan deposits, and fluvial sands and gravels of the Santa Fe Group, and (2) saturated alluvium in the principal drainages. Alluvium is found east of the Copper Flat Mine in Greyback arroyo, and primarily consists of sand and gravel. Thickness of the alluvium ranges between 5 and 50 ft. Alluvium may be locally and seasonally saturated north of the Tailings Impoundment, and down gradient of the Waste Rock Facilities.

The sediments of the Santa Fe Group are stratified, contain a wide variety of grain sizes, and in general dip to the east. This distribution of fine-grained sand and clay and of coarser sand and gravel is reflected in the logs of wells in the Tailings Facility area. The Santa Fe Group Sediments are over 300 ft thick beneath the Tailings Facility.

The hills surrounding Copper Flat, referred to as the Hillsboro Hills, consist of Cretaceous andesite flows, breccias, and volcaniclastic rocks that were erupted from an andesite volcano (McLemore, 2001; Raugust and McLemore, 2004). The andesite is a near circular body approximately 4 miles in diameter and over 3,000 ft in depth (Dunn, 1982). The Copper Flat quartz monzonite porphyry intruded the vent of the volcano, and then dikes and mineralized veins intruded the monzonite porphyry, radiating outwards from the porphyry into fault and fracture zones in the andesite. The porphyry copper deposit is a low-grade deposit that is concentrated within a breccia pipe in the Copper Flat Quartz Monzonite stock and contains copper sulfide and very minor oxide minerals. The permeability of the andesite is extremely low, whereas the permeability of the monzonite rocks averages 0.1 ft/day due to localized secondary porosity from fracturing.

The direction of groundwater flow is from west to east, except in the vicinity of the Copper Flat pit lake where a hydrologic sink exists due to evaporative losses. Depth to water varies significantly due to topography. Monitoring wells surrounding the pit lake and waste rock piles in the immediate vicinity of the pit typically have a depth to water of 40 to 80 ft. Depth to water beneath the tailings facility ranges between 5 and 50 ft. There is a north to south trending fault approximately 800 ft east of the Tailings Facility causing abrupt changes in depth to water, and which may act as a barrier to groundwater flow.

20.1.2 Environmental Management and Monitoring (Environmental Management Plans)

Development and operation of the mine and associated access roads could potentially affect a range of terrestrial habitat types and wildlife species. In addition, if uncontrolled, emissions form mining operations could affect the quality of air at the mine site and surrounding locations. However, the air quality permit granted by the NM Air Quality Bureau in June 2013 imposes strict requirements, monitoring, and reporting of emission controls and fugitive dust prevention measures, minimizing the potential of adverse air quality impacts.

THEMAC is developing preliminary mitigation strategies as part of the New Mexico mine operations and reclamation plan required for a new mine permit in New Mexico and as part of the EIS process. At a minimum, the management plans will likely include:

- Access road management plan, including traffic management and safety on access roads and construction site, and maintenance
- Air emissions and fugitive dust management plan
- ARD prediction and prevention management plan
- Cultural resources data recovery and mitigation plan
- Domestic and industrial waste management plan
- Erosion control and sediment control plan
- Materials handling and management plan
- Noise management plan
- Soil management plan
- Spill contingency and emergency response plan
- Stormwater Pollution Prevention Plan (SWPPP)
- Vegetation management plan

- Waste rock and tailings management plan
- Water management plan
- Wildlife management plan

Detailed mitigation strategies that satisfy regulatory requirements are being developed during the advancing engineering and permitting (state and federal) phases and processes.

20.1.3 Summary of Relevant Environmental Issues

The proposed Copper Flat Mine project has identified several key environmental issues, including the pit lake, acid rock drainage, and historic tailing facility groundwater plume, discussed below.

20.1.3.1 Pit Lake

Following closure of the Copper Flat project, a pit lake will form. While additional studies and predictive modeling of the possible future pit lake are currently being prepared by THEMAC, previous studies conducted during the previous permitting effort provided the following conclusions about the Copper Flat pit.

- The mineralization at Copper Flat is classified as being copper porphyry. However, unlike most copper porphyry deposits, sulfide content is very low, calcite is a common accessory mineral, and no supergene enrichment zone or substantial gossan cap are present.
- Historic laboratory test results indicate the rate of net acid generation is slow, and at least initially, net alkalinity exceeds net acid generation. Available buffering capacity may be provided through mineral-water reactions and groundwater recharge. Additional sampling, analyses and evaluations are being added to the historic tests, and will be included in pit lake studies being advanced by Shomaker and Associates and SRK Consulting.
- Groundwater upgradient (west) of the pit and east of the pit in the Copper Flat area has a neutral pH and excess alkalinity. Groundwater quality in wells upgradient and east of the pit is generally good and only exceeds groundwater standards for flouride.
- Groundwater quality monitoring piezometers within the pit area, completed north and south of the pit in mineralized ore-bearing quartz monzonite, shows water quality with elevated concentrations of TDS, sulfate, fluoride, aluminum, cadmium, cobalt, copper, manganese, and in one well, selenium and zinc. The pH is neutral in these locations in deep piezometers but low (3.3-4.53) in the shallow piezometers.
- As the pit is a hydraulic sink, local groundwater is flowing toward the pit lake.
- Poorer quality groundwater (low pH, high levels of TDS, sulfate, and other monitored constituents) observed in shallow monitoring piezometers, one north and another south of the pit lake may be an artifact of well development or localized fracturing within the ore

body. The water chemistry in these locations will be evaluated in more detail. Both of these piezometers will be removed by proposed mining when the pit is expanded.

- Pit lake chemistry has varied with time and is currently neutral to mildly alkaline pH with increasing sulfate and TDS concentrations. Change in water chemistry over time indicates that it is reaching gypsum saturation.
- The pit will be dewatered during mine operation; however groundwater around the pit will be monitored through the life of operations.

In their report, *Predictive Geochemical Modeling of Pit Lake Water Quality at the Copper Flat Project, New Mexico* (SRK, September 2013) SRK indicates that at the end of mine life, the pit lake will refill with water and, eventually the water in the pit will exceed wildlife surface water standards for selenium (0.05 mg/L) and mercury (0.00077 mg/L). Mercury concentrations are predicted to be marginally above the recently promulgated wildlife standard. However, this exceedence may not represent a true ecological risk to the wildlife area within the Copper Flat area. The proposed post mining land use (PMLU) in the pit area is wildlife habitat; therefore, THEMAC will pursue long term mitigation strategies based on the predictive model results through regulatory processes, engineering controls, or both (see Section 20.6.3.1).

20.1.3.2 Acid Rock Drainage

The future waste rock will be composed primarily of weakly mineralized quartz monzonite, and minor amounts of andesite rocks. Historic analyses and evaluations of the acid base accounting (ABA) and net acid generation (NAG) tests indicate a net acid generating potential. However, field observations conducted in 1994 indicated that little oxidation and acid generation had occurred at the site, despite exposure of waste rock and pit walls, since mining operations were suspended in 1982. Observed conditions are likely influenced by the arid conditions of the site. Mineralogical observations also suggest that the sulfides occur in a crystalline form that is less susceptible to oxidation.

THEMAC and SRK Consulting evaluated the historical geochemistry information and additional geochemical studies to augment and advance the knowledge and understanding of the ARD situations at Copper Flat. THEMAC oversaw new analyses with significant additional sampling and laboratory work to augment and update these historic interpretations. These samples represent a distribution of weathered surface samples and fresh drill core data collected from the 2010 and 2011 THEMAC exploration drilling programs.

In *Geochemical Characterization Report for the Copper Flat Project, New Mexico* (SRK, June 2013), SRK concludes that ARD will not negatively impact the environment at future proposed waste rock disposal facility (WSF-2 and WSF-3) provided that they are designed, constructed, operated, and reclaimed in accordance with the current THEMAC mine plans. This report was submitted to reviewing agencies in June 2013. WSF-1 was not included in this evaluation; however, it is located within the open pit surface drainage area and only requires that surface water contact with the stockpiled material be minimized.

The potential for acid rock drainage will be monitored throughout the life of mine operations. Through the State and federal permitting processes that are on-going at Copper Flat, all the data will be utilized and analyzed to guide operational management of the waste rock disposal facility (WRDF) tailings storage facility (TSF) to ensure long-term physical and geochemical stability during operations and post closure.

20.1.3.3 Historic Tailings Seepage

Historic and Baseline Data Collection groundwater monitoring downgradient of the tailings facility indicated the presence of elevated concentrations of some constituents (TDS and sulfate), and it is believed that water from the existing, unlined impoundment has seeped into a localized area of the aquifer to the east of the existing tailings storage facility (TSF).

Per an NMED approved Stage 1 Abatement Plan, quarterly groundwater sampling and analyse have been conducted in 2013 to characterize this impact to the east of the TSF. The first three quarters of groundwater sampling downgradient of the TSF found no exceedance of the groundwater standard for sulfate (the groundwater standard for sulfate is 600 mg/L). Three wells show concentrations of TDS over the standard (1,000 mg/L) however these concentrations have been decreasing over time.

In October 2013 an additional monitoring well was drilled to the east of the tailings storage facility. Because field analysis indicted this well is not within groundwater impacted by elevated levels of sulfate or TDS, a second monitoring well further east was not required. This new well was included in the last quarter of sampling at Copper Flat. Further discussion of this impact and next steps to address it is provided in Section 4.5. The tailings facility and the area downgradient of it will be monitored for possible groundwater impact throughout the life of mine operations.

20.2 TAILING DISPOSAL AND WASTE MANAGEMENT

This report section provides a summary description of the feasibility level tailings disposal facility design. A detailed design report (Golder, 2013) provides descriptions of the proposed facilities and supporting information used in feasibility design, engineering analysis, and cost estimation. The report is divided into two volumes. Volume 1 presents the geotechnical site exploration data and design of the TSF. Volume 2 presents the design of the tailings distribution and water reclaim systems, including the cyclone plant and associates pipelines, pumps and control systems.

A partial set of TSF design drawings is included in this technical report. The complete drawing set, including all details and sections called-out on the partial drawing set, is included in the detailed feasibility level TSF design report (Golder, 2013).

A new tailings storage facility (TSF) will be constructed at Copper Flat in the location of the former (old) Quintana Resources facility that was constructed and briefly operated in 1981 and 1982. Existing site conditions and proposed facility locations are shown on Figure 20-3. The starter dam, splitter dike, and approximately 1.2 million tons of tailings from the Quintana operation remain on the site. Structural fill materials in the old dam and tailings will be excavated and incorporated in the new facility. The old decant system, pipeline footings, and reclaim pipelines will require demolition.

The old tailings disposal facility was designed to contain approximately 60 million tons of tailings. Recent exploration efforts have increased the ore reserve at Copper Flat to approximately 113 million tons. The new TSF will occupy the site of the old facility, and will extend approximately 1,000 feet to the east of the old starter dam (the tailings expansion area). While the old Quintana TSF was an unlined facility, the new TSF will be underlain by a geomembrane liner and tailings drainage collection system.

High rates of tailings rise within the impoundment during the initial years of operation have led to adoption of a centerline construction scheme using cyclone tailings sand (cyclone underflow) for tailings dam construction. This approach allows construction of a stable, drained tailings dam while reducing the quantity of fill material required for dam construction. The tailings distribution system for the new TSF will include a fixed cyclone plant. Cyclone underflow, which consists of the coarse (sand) fraction of the process tailings, will be routed to the crest of the dam and discharged on the dam crest and out-slope. Tailings slimes (cyclone overflow) will be discharged into the interior of the tailings impoundment. Periodically, when the cyclone plant is not in operation, whole tailings may be discharged into the interior of the TSF.

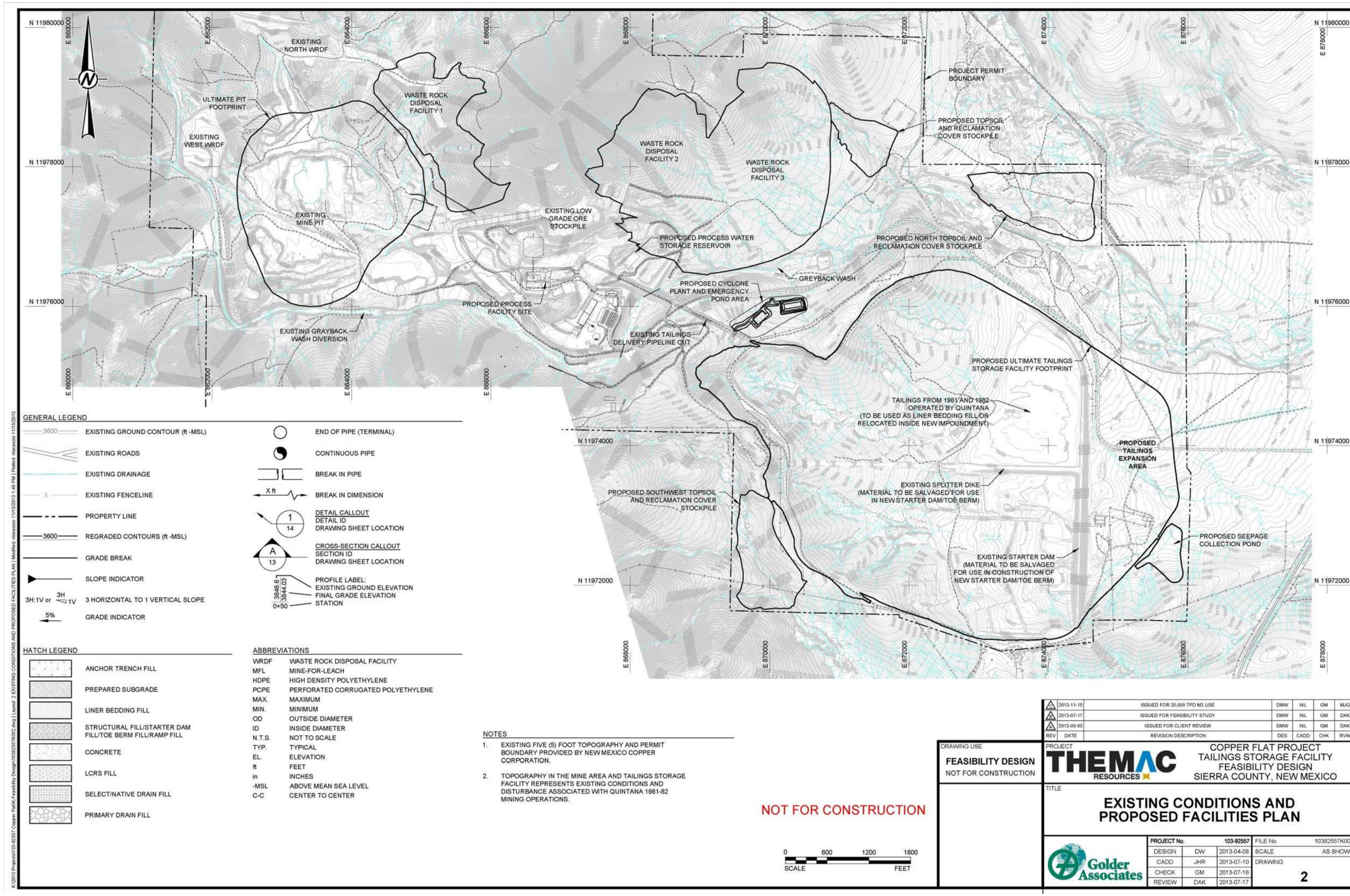


Figure 20-3: Existing Conditions and Proposed Facilities Plan

20.2.1 Site Description

20.2.1.1 Topography

The TSF site consists of a broad, shallow basin located at the head of a natural drainage that discharges to Greyback Wash. Elevation ranges from 5,170 to 5,435 feet amsl within the proposed TSF footprint. Topography is gently sloping over most of the site with the steepest slopes located around the west and southwest periphery of the facility.

Because the site is located in the head of a basin, requirements for diversion of water from upstream catchment areas will be limited.

20.2.1.2 Foundation Conditions

Silts, sands, and gravels that occur in the proposed TSF have been identified as piedmont alluvium and the older deposits of the Santa Fe Group (SHB, 1980) on which the piedmont alluvium was deposited. The Santa Fe Group is reported to consist of interfingered alluvial fan (gravel) and clay facies. Basalt flows are reported to occur in channels and arroyos cut into the piedmont and Santa Fe sediments. Basalt outcrops have been identified in an arroyo in the center of the TSF and locally around the site.

Groundwater is typically encountered at depths greater than 50 feet below the ground surface (ft-bgs) in the vicinity of the TSF. A small zone of perched water has been identified in the vicinity of the old Quintana dam; however, recent drill holes completed in the perched water area to a depth of 50 ft-bgs did not intercept water. Groundwater and local perched water are not anticipated to impact the design and operation of the TSF.

20.2.1.3 Construction Borrow Material

Potential borrow material sites outside the footprint of the proposed TSF are limited at Copper Flat. Therefore, construction materials will be borrowed from inside the TSF footprint. Materials derived from areas that will be buried early in the development of the TSF will require stockpiling for future use. In particular, topdressing, reclamation cover materials, and liner bedding fill material will require stockpiling. Proposed stockpile locations for topdressing, reclamation cover material and liner bedding fill are shown on Figure 20-3.

20.2.2 Design Studies

Design studies completed in support of the feasibility level design of the TSF include the following:

- Site exploration and geotechnical testing
- Tailings characterization
- Foundation settlement potential evaluation, and
- Consolidation modeling and storage capacity estimation

20.2.2.1 Site Exploration

Golder conducted a site exploration study between December 2012 and January 2013 to expand the coverage of the former SHB site investigation to include the new dam alignment and footprint area. The field study consisted of 31 test pit excavations and 28 drill holes completed in the TSF footprint and waste rock disposal facilities area. The site exploration plan is illustrated on Figure 20-4. Figure 20-5 illustrates cross sections through the foundation of the proposed tailings dam.

Drill hole logs indicate that the foundation in the tailings area consists primarily of alluvial deposits that including silt, sand and gravel underlain by clay. In the northwestern waste rock area, borings indicated the presence of gravely silts and sands overlying conglomerate consisting primarily of andesite clasts. The conglomerate is underlain by unweathered andesite.

Drilling logs and geologic cross-sections indicate a high degree of variability in near surface materials both vertically and laterally, within the impoundment area and beneath the proposed dam. Silty/clayey horizons alternating with gravelly sand layers could potentially represent either the interfingering of the Santa Fe Group facies, or the more recent effects of local erosion and deposition.

In general, the interior of the impoundment is underlain by silty, clayey and gravelly sand, and cemented gravelly sand with a near surface layer of silty, wind-blown material. Eastward, toward the future dam site, interbedded clays and silts occur at depths typically greater than 20 feet; however, the composition of the foundation remains highly variable with interfingered, silty, sandy and clayey gravel units.

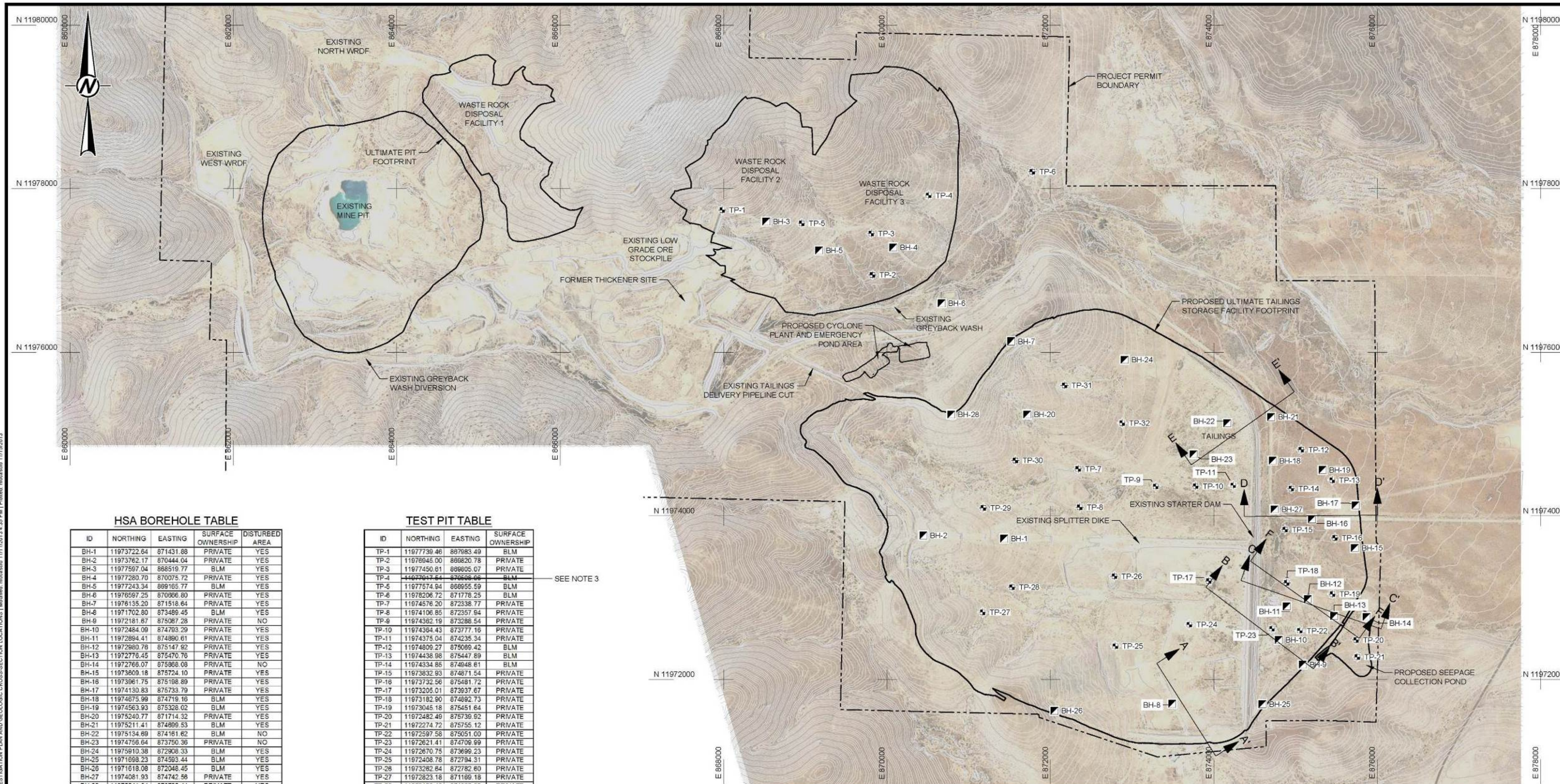
20.2.2.2 Geotechnical Testing

A detailed description of the geotechnical testing program is contained in *Feasibility Study Copper Flat Project, Sierra County, New Mexico, Volume 1-Tailings Storage Facility* (Golder, 2013).

Within the interior, central, and western portions of the impoundment area, site soils consist predominantly of clayey sand with gravel (SC), well-graded silty sand with gravel (SW-SM) with lesser clayey and well-graded silty gravel (GC, GW-GM). Silty and clayey soils (CL-ML) locally occur.

The north cell of the old Quintana TSF contains tailings from mining conducted in the early 1980’s. Old tailings samples were classified as silty sand (SM) and low plasticity silt (ML). Moisture content in the old tailings samples ranged from 6.0 to 11.3 percent.

Soils encountered in the footprint of the proposed dam are highly variable. Clayey sand and gravel (SC,GC) generally occur at shallow depth with interbedded high and low plasticity clays (CH,CL) and silts (ML,MH) occurring at depths below 20 ft-bgs. Clay intercepts indicate that the clay occurs in discontinuous lenses or in eastward dipping strata.



HSA BOREHOLE TABLE

ID	NORTHING	EASTING	SURFACE OWNERSHIP	DISTURBED AREA
BH-1	11973722.64	871431.88	PRIVATE	YES
BH-2	11973762.17	870444.04	PRIVATE	YES
BH-3	11977597.04	868519.77	BLM	YES
BH-4	11977280.70	870075.72	PRIVATE	YES
BH-5	11977243.34	869165.77	BLM	YES
BH-6	11976597.25	870666.80	PRIVATE	YES
BH-7	11976135.20	871518.64	PRIVATE	YES
BH-8	11971702.80	873489.45	BLM	YES
BH-9	11972181.67	875087.28	PRIVATE	NO
BH-10	11972484.09	874793.29	PRIVATE	YES
BH-11	11972894.41	874890.61	PRIVATE	YES
BH-12	11972980.76	875147.92	PRIVATE	YES
BH-13	11972776.45	875470.76	PRIVATE	YES
BH-14	11972766.07	875868.08	PRIVATE	NO
BH-15	11973609.18	875724.10	PRIVATE	YES
BH-16	11973961.75	875198.89	PRIVATE	YES
BH-17	11974130.83	875733.79	PRIVATE	YES
BH-18	11974675.99	874719.16	BLM	YES
BH-19	11974563.93	875328.02	BLM	YES
BH-20	11975240.77	871714.32	PRIVATE	YES
BH-21	11975211.41	874699.53	BLM	YES
BH-22	11975134.69	874161.62	BLM	NO
BH-23	11974756.64	873750.36	PRIVATE	NO
BH-24	11975910.38	872908.33	BLM	YES
BH-25	11971698.23	874593.44	BLM	YES
BH-26	11971618.08	872048.45	BLM	YES
BH-27	11974081.93	874742.56	PRIVATE	YES
BH-28	11975241.04	870785.44	PRIVATE	YES

TEST PIT TABLE

ID	NORTHING	EASTING	SURFACE OWNERSHIP
TP-1	11977739.46	867983.49	BLM
TP-2	11976945.00	869820.78	PRIVATE
TP-3	11977450.61	869805.07	PRIVATE
TP-4	~~11977017.54~~	~~870508.06~~	~~BLM~~
TP-5	11977574.94	868955.59	BLM
TP-6	11978206.72	871778.25	BLM
TP-7	11974576.20	872338.77	PRIVATE
TP-8	11974106.85	872357.94	PRIVATE
TP-9	11974362.19	873288.54	PRIVATE
TP-10	11974364.43	873777.16	PRIVATE
TP-11	11974375.04	874235.34	PRIVATE
TP-12	11974809.27	875069.42	BLM
TP-13	11974438.98	875447.89	BLM
TP-14	11974334.85	874948.61	BLM
TP-15	11973832.93	874871.54	PRIVATE
TP-16	11973732.56	875481.72	PRIVATE
TP-17	11973205.01	873937.67	PRIVATE
TP-18	11973182.90	874892.73	PRIVATE
TP-19	11973045.18	875451.64	PRIVATE
TP-20	11972482.49	875739.92	PRIVATE
TP-21	11972274.72	875755.12	PRIVATE
TP-22	11972597.58	875051.00	PRIVATE
TP-23	11972621.41	874709.99	PRIVATE
TP-24	11972670.75	873699.23	PRIVATE
TP-25	11972408.78	872794.31	PRIVATE
TP-26	11973262.64	872782.60	PRIVATE
TP-27	11972823.18	871169.18	PRIVATE
TP-28	11973129.48	871528.89	PRIVATE
TP-29	11974098.42	871178.07	PRIVATE
TP-30	11974680.06	871571.56	PRIVATE
TP-31	11975597.72	872172.62	BLM
TP-32	11975136.61	872876.80	BLM

SEE NOTE 3

LEGEND

- PERMIT BOUNDARY
- BH-1 HOLLOW STEM AUGER (HSA) BOREHOLE
- TP-29 TEST PIT

NOTES

1. WRDF - WASTE ROCK DISPOSAL FACILITY.
2. TP-4 INACCESSIBLE.

REFERENCES

1. EXISTING FIVE (5) FOOT TOPOGRAPHY AND PERMIT BOUNDARY PROVIDED BY NEW MEXICO COPPER CORPORATION.
2. TOPOGRAPHY IN THE MINE AREA AND TAILINGS STORAGE FACILITY REPRESENTS EXISTING CONDITIONS AND DISTURBANCE ASSOCIATED WITH QUINTANA 1981-82 MINING OPERATIONS.
3. TEST PIT NOT EXCAVATED DUE TO LACK OF ACCESS.

NOT FOR CONSTRUCTION

SCALE 0 600 1200 1800 FEET

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
C	2013-11-15	ISSUED FOR 30,000 TPD M3 USE	DMW	NIL	GM	MJG
B	2013-07-17	ISSUED FOR FEASIBILITY STUDY	DMW	NIL	GM	DAK
A	2013-05-03	ISSUED FOR CLIENT REVIEW	DMW	NIL	GM	DAK

DRAWING USE: FEASIBILITY DESIGN NOT FOR CONSTRUCTION

PROJECT: THEMAC RESOURCES — COPPER FLAT PROJECT TAILINGS STORAGE FACILITY FEASIBILITY DESIGN SIERRA COUNTY, NEW MEXICO

TITLE: SITE INVESTIGATION PLAN AND GEOLOGIC CROSS SECTION LOCATIONS

Golder Associates

PROJECT No.		103-92557	FILE No.	10392557K003
DESIGN	DW	2013-04-08	SCALE	AS SHOWN
CADD	JHR	2013-07-10	DRAWING	3
CHECK	GM	2013-07-16		
REVIEW	DAK	2013-07-17		

Figure 20-4: Site Exploration Plan and Geologic Cross Sections Locations

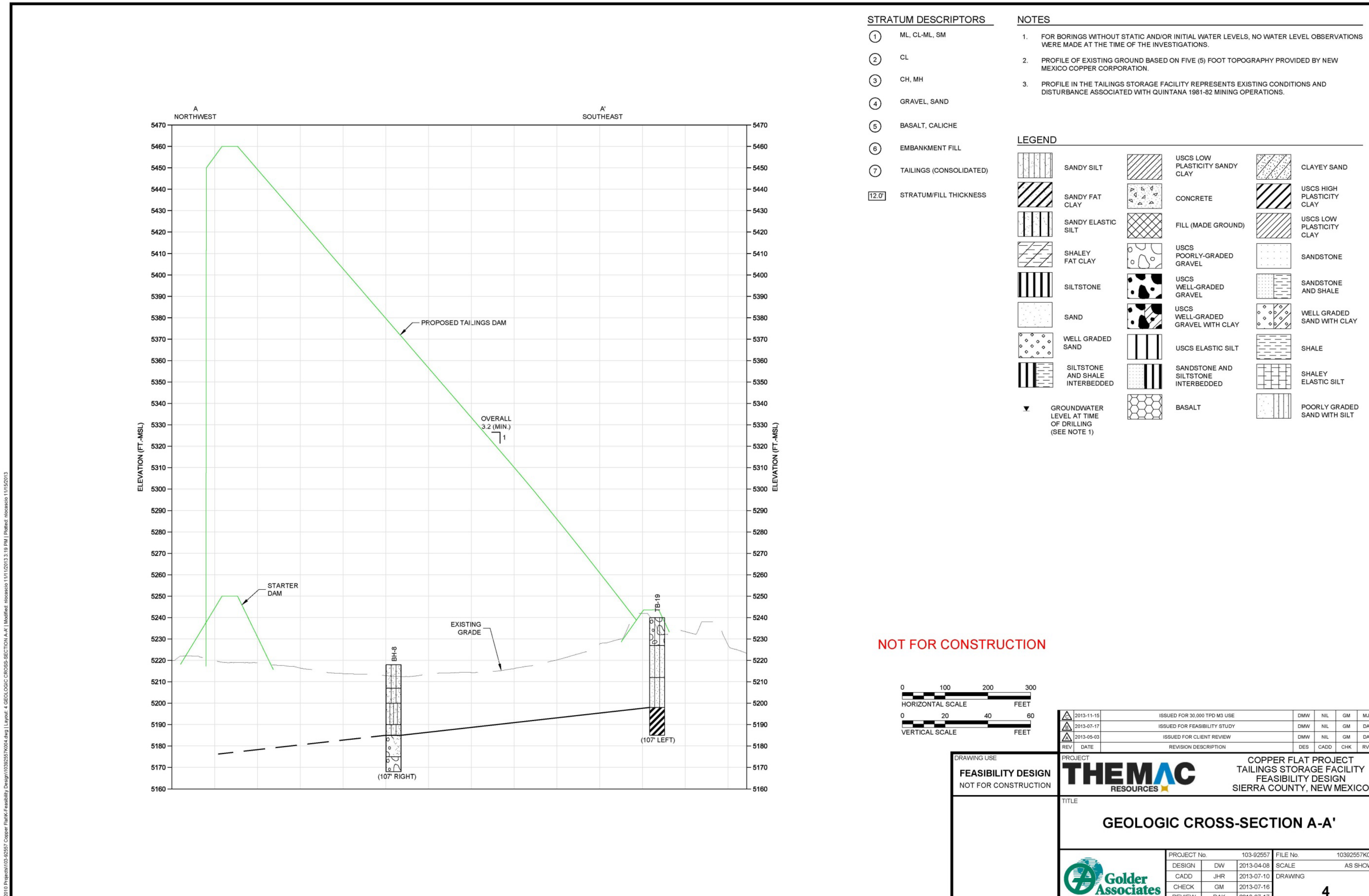


Figure 20-5: Geologic Cross-Section A-A'

20.2.2.3 Tailings Characterization

Tailings properties used in feasibility level design are based on testing of a tailings sample produced by the Mineral Advisory Group (MAG) in Tucson, Arizona. Approximately 255 kg of Copper Flat flotation tailings solids (whole tailings) were provided by MAG in five sealed 55-gallon steel drums. Drums were delivered to the FL Smidth laboratory in Tucson, Arizona in July 2012 and the tailings were passed through a gMAX15U-20 cyclone on August 4, 2012. The test indicated a sand recovery of 41 percent with a minus 75 micron fraction under 16 percent. On the basis of the cyclone test, FL Smidth, using proprietary procedures, predicted 45 to 45.5 percent recovery and a minus 200 fraction of 18.2 to 18.3 percent for cyclone plant performance over the range of proposed design processing rates.

Cyclone underflow and overflow produced during the test and whole tailings (tailings not passed through the cyclone) were shipped to Golder's geotechnical laboratory in Lakewood, Colorado for testing. Gradation analyses were completed on the cyclone underflow, cyclone overflow and whole tailings. The cyclone overflow and whole tailings were subjected to flume testing to simulate discharge into the impoundment.

Flume testing involved the discharge of tailings slurry at the field anticipated solids content into a 12-inch flume at low velocity. The tailings flow down and settle in the flume. Samples were collected at various flume locations to evaluate changes in gradation and solids content. Gradation and slurry consolidation tests were conducted on samples from the head and tail sections of the flume to evaluate the characteristics of tailings found on the beach and in the interior of the impoundment (slimes).

Tailings characterization study results are presented in detail by Golder (Golder, 2013). Test data were used to evaluate consolidation characteristics and evaluate storage capacity requirements.

20.2.2.4 Settlement Potential

Selected foundation samples were remolded to field density and moisture content and subjected to conventional one-dimensional consolidation testing to support estimation of settlement potential in the proposed dam foundation. Samples were selected to evaluate silty and clayey horizons where changes in loading conditions could result in additional consolidation.

Settlement prediction conservatively based on the laboratory consolidation testing of the fine fraction of remolded foundation samples indicates that the maximum settlement beneath the embankment will be approximately 2.1 feet in the area of the maximum dam (and tailings beach) foundation loads. Settlement decreases at a relatively uniform rate as the weight of post-construction loading decreases towards the outer toe of the embankment.

SPT testing conducted during drilling showed the foundation strata to be generally very dense to hard. On the basis of SPT test results, actual post-construction consolidation settlement of less than 1 foot is anticipated.

Dam construction will be more or less continuous during the life of the facility. The effects of foundation settlement include the potential for the loss of dry freeboard for stormwater storage. The potential loss of freeboard can be mitigated by elevating the dam crest with managed/targeted placement of cyclone underflow sand.

The potential for differential settlement that could impact the integrity of the TSF geomembrane liner was evaluated. The analyses indicate settlement will vary uniformly across areas subject to changing foundation loads and concerns related to liner foundation settlement were not identified.

The impoundment underdrain will pass beneath the dam in a steel pipe placed in a ditch backfilled with concrete. The settlement will not adversely impact the impoundment underdrain outlet pipe. There is adequate grade and elevation change along the outlet pipe alignment to accommodate predicted settlement.

A basalt outcrop identified by SHB (SHB, 1980) may lie beneath or in the vicinity of the impoundment underdrain pipe inlet near the upstream toe of the dam. The outcrop occurred in an area that was disturbed during Quintana dam construction activities, and was not observed during the recent site exploration. If the inlet to the underdrain pipe bears on basalt, local differential settlement could occur along the pipe alignment, which could induce stress on the outlet pipe. If, during construction, a basalt outcrop is identified at the location of the inlet, an alignment change may be warranted to avoid having the outlet pipe bear on basalt.

20.2.2.5 Tailings Consolidation Analyses

Estimation of tailings consolidation rates was performed using the computer program FSConsol (Golder 2013). FSConsol performs a one-dimensional, large-strain consolidation analysis using finite strain consolidation theory.

Material parameters were determined by fitting constitutive relationships to laboratory data. Data are based on slurry consolidation testing of whole tailings and cyclone overflow samples derived from the head and tail sections of a test flume discussed above.

The tailings impoundment was modeled by running analyses on single tailings columns or volumes filled with materials representing either the beach or slimes components of the tailings discharge. In each model run, the modeled tailings component is assumed to represent 100 percent of the inflow to the TSF.

Modeled tailings components include the following:

- Cyclone overflow beach; and
- Cyclone overflow slimes.

Because near constant operation of the cyclone plant will be required to generate sufficient sand for dam construction, whole tailings discharge into the impoundment will be limited and the characteristics of the whole tailings will have little influence on post depositional tailings behavior.

If 100 percent of the inflow into the TSF impoundment is represented by the tail section flume samples (i.e., the finest fraction of the tailings), the predicted final density of the slimes fraction over the modeled profile will average approximately 31.7 pcf. With 100 percent of the inflow representative of tailings overflow beach materials, the modeling predicts a final average tailings density of approximately 74.6 pcf.

20.2.2.6 Estimation of Post-Deposition Density

Tailings density will vary with depth and location in the TSF interior. The highest density will be associated with desiccated tailings on the drier sections of the beach. Intermediate density is reflected by the FSConsol model of the cyclone underflow deposited on the beach. The consolidation modeling indicates the lowest density of 31.7 pcf is predicted for tailings representative of the slimes.

A solids mass balance was performed to assist in estimating relative proportions of tailings representative of beach and slimes components. Based on the sand and slimes (minus 75 micron) fractions of the cyclone overflow and the head and tailings section test flume samples, approximately 60 percent of the sand and slimes contained in the cyclone overflow reported to the flume head section, suggesting a 60:40 split between materials representative of the beach and slimes, respectively.

TSF capacity has been estimated by assuming a 60:40 split by mass between beach and slimes material. Volumetrically, the slimes will represent approximately 60 percent of the material placed in the TSF. The estimated average dry density of the tailings at the end of the mining operation is 48 pcf The calculated TSF storage capacity is approximately 96.9 million cy. Without consideration of managed deposition effects that can be anticipated to increase post deposition density, the required storage capacity is 93.4 million cy, assuming the cyclone pant is fully utilized.

Operational processes such as cycling discharge locations and minimizing the size of the free water pond will have the effect of increasing post deposition density. Realization of a higher than estimated post-deposition density as a result of operational factors may allow a lower final dam crest elevation, a reduction in sand required for embankment construction and lower utilization of the cyclone plant.

20.2.3 Design Criteria

Table 20-1 summarizes key design criteria assumed in feasibility level design of the new TSF.

Table 20-1: Design Criteria

Regional Design Factors	
Precipitation/Evaporation	Based on NOAA weather data for Hillsboro and Caballo Dam, New Mexico
Design Storm Events	100 percent of the 72-hour general storm probable maximum precipitation (PMP), 26 inches
Stability FOS	Minimum 1.5 for static conditions and 1.1 for seismic loading conditions
Seismicity PGA	USGS MDE, 2475-year return period, 0.13 times gravitational acceleration (0.13g)
TSF Design Factors	
Storage Capacity	112 million tons (net to tailings, NMCC)
Production Schedule	1,333 to 1,222 tpd (net to tailings NMCC)
Operating Life	11.1 years (NMCC)
Tailings Specific Gravity	2.64 (Golder test)
Tailings Solids Content (wt%)	29.1 percent solids by weight (whole tailings to cyclone plant), (M3)
Tailings post-deposition dry density	31.7 to 74.6 pounds per cubic foot (pcf) dry weight assumed for post-deposition cyclone overflow and beach and slimes. 92% of standard ASTM 698 maximum dry density (0.95*97 pcf= 92.2 pcf) for cyclone underflow sand. Sand compacted on dam crest. Self-weight compaction on the dam outslope.
Embankment Construction	Phase 1 earthen starter dam to elevation 5,250 feet with extensions to 5,280 feet. Post Phase 1 peripheral earthen dam extension constructed to 10 feet above grade. Centerline-raise construction using cyclone underflow sand. Cyclone underflow on dam crest compacted to minimum of 90 percent of American Society for Testing and Materials (ASTM) D698, relative density > 60 percent
Liner System	From bottom to top: Prepared foundation, 12-inch liner bedding fill, 80-mil HDPE geomembrane, overliner drainage collection layer with internal drainage pipe network beneath the tailings embankment and continuous beneath impoundment
Earthworks Slopes (assumed)	Soil cut slopes = 1.5H:1V (1.5 horizontal to 1 vertical) Rock cut slopes = 1H:1V Fill slopes = 2H:1V Lined slopes = 3H:1V to 2.5H:1V max Embankment out-slope = 3.2H:1V max, 4H:1V min Starter Dam, 2.5H:1V inner, 2H:1V outer
Drainage/Seepage Collection Pond	Double-lined pond with LCRS to contain dam and impoundment under drainage and surface water runoff. Pond to be constructed as an OSE non-jurisdictional facility.
Seepage Collection Pond Reclaim	Submersible turbine pumps with 3,267-tph (tons per hour) capacity
Collection Pond Capacity	Normal inventory, 24 hours reserve capacity for underdrain seepage for reclaim pump system upset, 100-year, 24-hour event (3.73 inches) stormwater storage capacity for runoff contributing areas
Tailings Management	Tailings routed through fifteen 15-inch cyclones at 88 tph feed rate per cyclone. 45.5 percent solids recovery (underflow, Krebs), minus 200 fraction in underflow less than 20 percent (Golder). Cyclone overflow discharged to tailings impoundment interior. Whole tailings discharged to TSF interior when cyclones not in operation.
Supernatant Reclaim	Floating barge with 3,267 tph capacity
TSF Water Storage and Stormwater Diversion Design Factors	

Dam Safety Hazard Ranking	Significant, due to environment risks associated with a release of tailings (OSE)
TSF Pond Design Freeboard	As required to accommodate wave run-up and provide minimum freeboard for design storm
TSF Pond Required Stormwater Storage	Contain flows from 1.0 times the 72-hour PMP storm event plus normal inventory of supernatant water
Hydrology Runoff Curve Numbers	100 - Impounded tailings and lined areas 50 - Tailings embankment sand shell 92 - Native ground surfaces
Stormwater Diversion	Divert runoff from undeveloped areas inside ultimate footprint where feasible. Divert exterior area runoff where feasible.
Underdrain System	Continuous underdrain layer beneath dam and TSF interior. Collected water will be returned to the process via seepage collection pond reclaim pump system
TSF Water Pond Surface Area	20 percent of tailings impoundment interior or a maximum of 40 acres assumed for feasibility level water balance calculations
TSF Water Pond Surface Evaporation	75 percent of average pan evaporation
Tailings Surface Evaporation	50 percent of average pan evaporation over wetted surface area

Notes:
FOS = factor of safety
MDE= maximum design earthquake
PGA = peak ground acceleration
HDPE = High density polyethylene

20.2.4 Permitting Authorities

The new TSF design will be required to comply with the design and dam safety guidelines and regulations of the OSE Dam Safety Bureau. The NMED Groundwater Division will be the permitting authority for the State of New Mexico discharge permit program. NMED has provided guidance on anticipated design requirements for the impoundment liner system, which have been incorporated in the feasibility level design.

20.2.5 Earthworks and Liner Construction

20.2.5.1 Topdressing and Reclamation Cover Removal

The majority of the materials that will be required to support revegetation and reclamation efforts will be obtained from within the footprint of the new TSF. Based on requirements at operating mine sites in New Mexico, it is anticipated that up to 3 feet of reclamation cover will be required for TSF closure. The grading plan incorporates borrowing and stockpiling of sufficient topdressing and cover material to establish a three foot thick reclamation cover over the tailings dam and impoundment.

20.2.5.2 Site Grading

The TSF grading plan is illustrated on Figure 20-6. The topography represented on the grading plan illustrates the TSF area following removal of borrow materials for reclamation cover, structural fill and drain construction.

Site grading will include removal of the old starter dam and splitter dike for use as structural fill in the new starter dam and toe berm. Additional borrowed structural fill and drainage material will be required to complete construction of the new TSF. These materials will be borrowed from within the TSF footprint. Borrow areas developed during phased construction will extend across construction phase limits but will lie within the ultimate TSF footprint.

It is assumed that existing tailings will be excavated and used in construction of the bedding fill layer for the TSF geomembrane liner. Use of the existing tailings as liner bedding fill will effectively cap the old tailings and mitigate long term impacts to ground water by controlling seepage through the old tailings and leaching of soluble constituents. The proposed handling of the old tailings has been discussed with NMED and has received tentative approval.

20.2.5.3 Starter Dam and Toe Berm

Phase 1 grading and starter dam construction are illustrated on Figure 20-7. The ultimate configuration of the tailings dam is shown on Figure 20-8. Dam sections are shown on Figure 20-9.

A temporary toe berm will be constructed around the periphery of the TSF. The purpose of the toe berm is to direct dam underdrainage and dam surface water runoff to the seepage collection pond. The toe berm will be relocated during each construction phase, and the dam underdrain will be extended to the new toe berm. Where the tailings dam will butt against inward sloping natural ground on the southwest and west periphery, a toe berm will not be required. In these locations, the TSF liner system will be anchored in a trench excavated in natural ground.

The Phase 1 starter dam will be constructed to an elevation between 5,250 and 5,280 feet amsl with 2.5H:1V inner slope and a 2H:1V outer slope. The upstream face of the starter dam will be lined with 80 mil HDPE geomembrane. The starter dam will be constructed over the impoundment liner, and underdrain collection systems. In Phases 2 through 5 starter dam extensions will be constructed to a height of 10 feet over the liner surface.

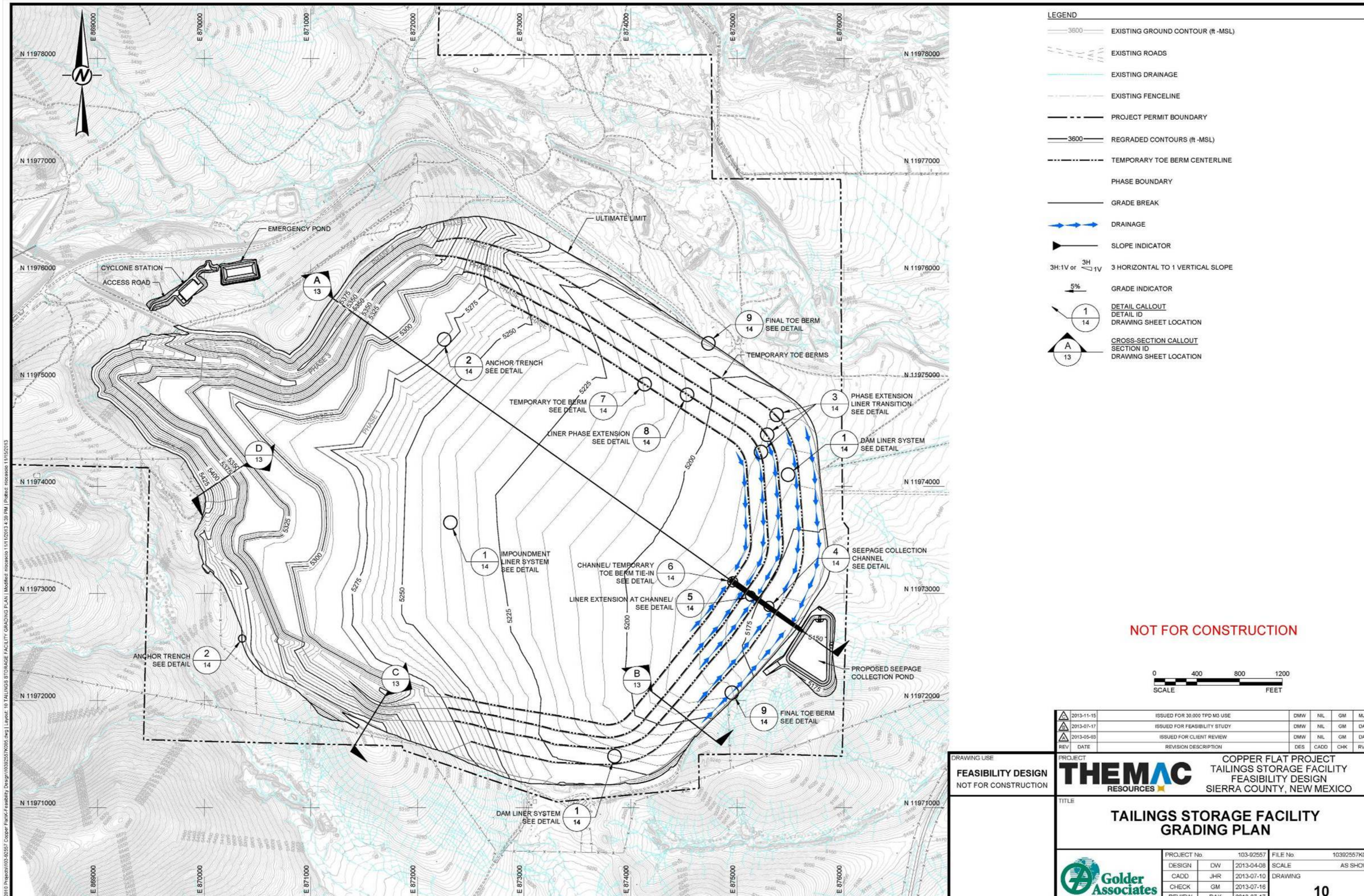


Figure 20-6: Tailings Storage Facility Grading Plan

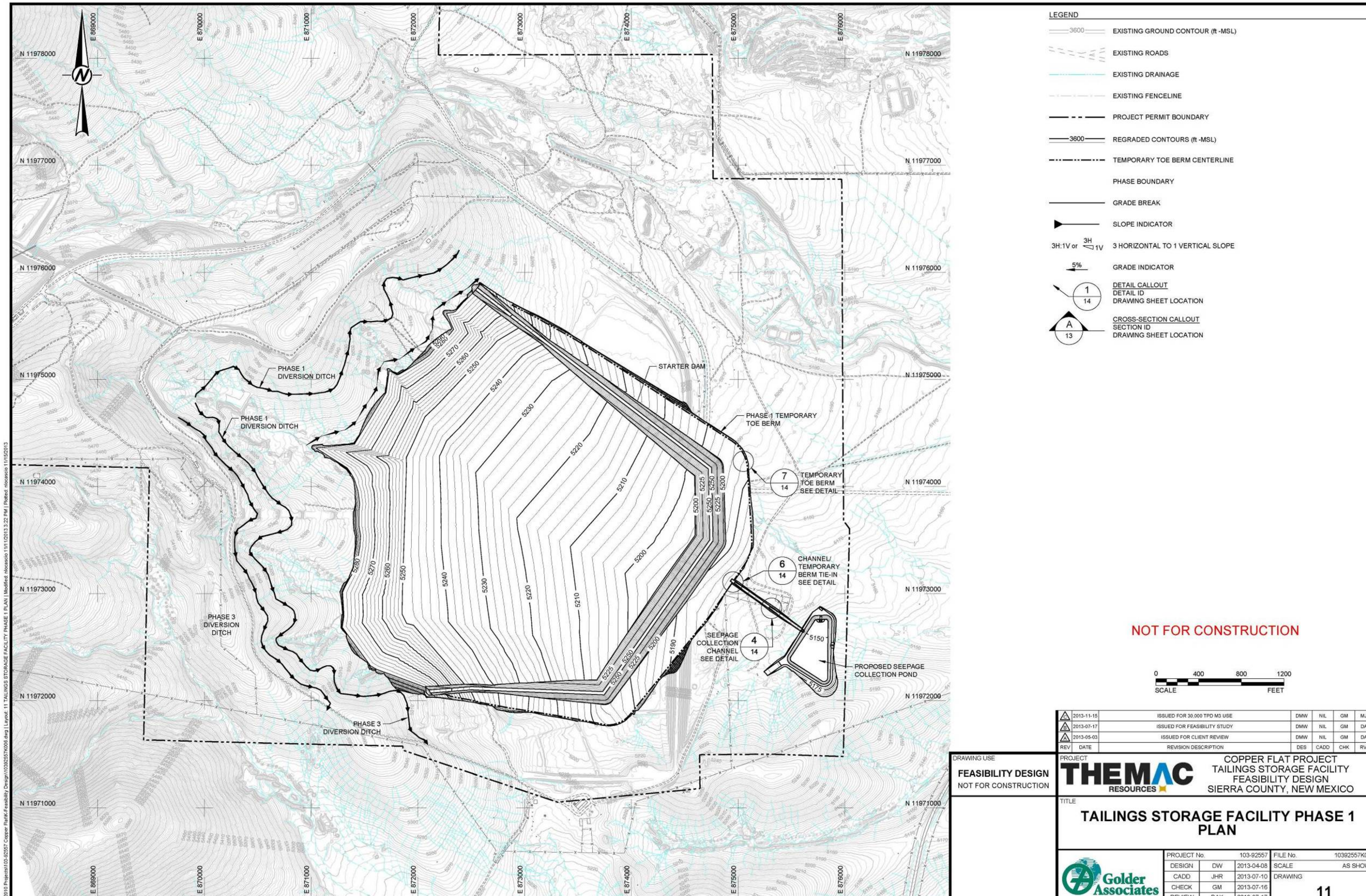


Figure 20-7: Tailings Storage Facility Grading Plan Phase 1

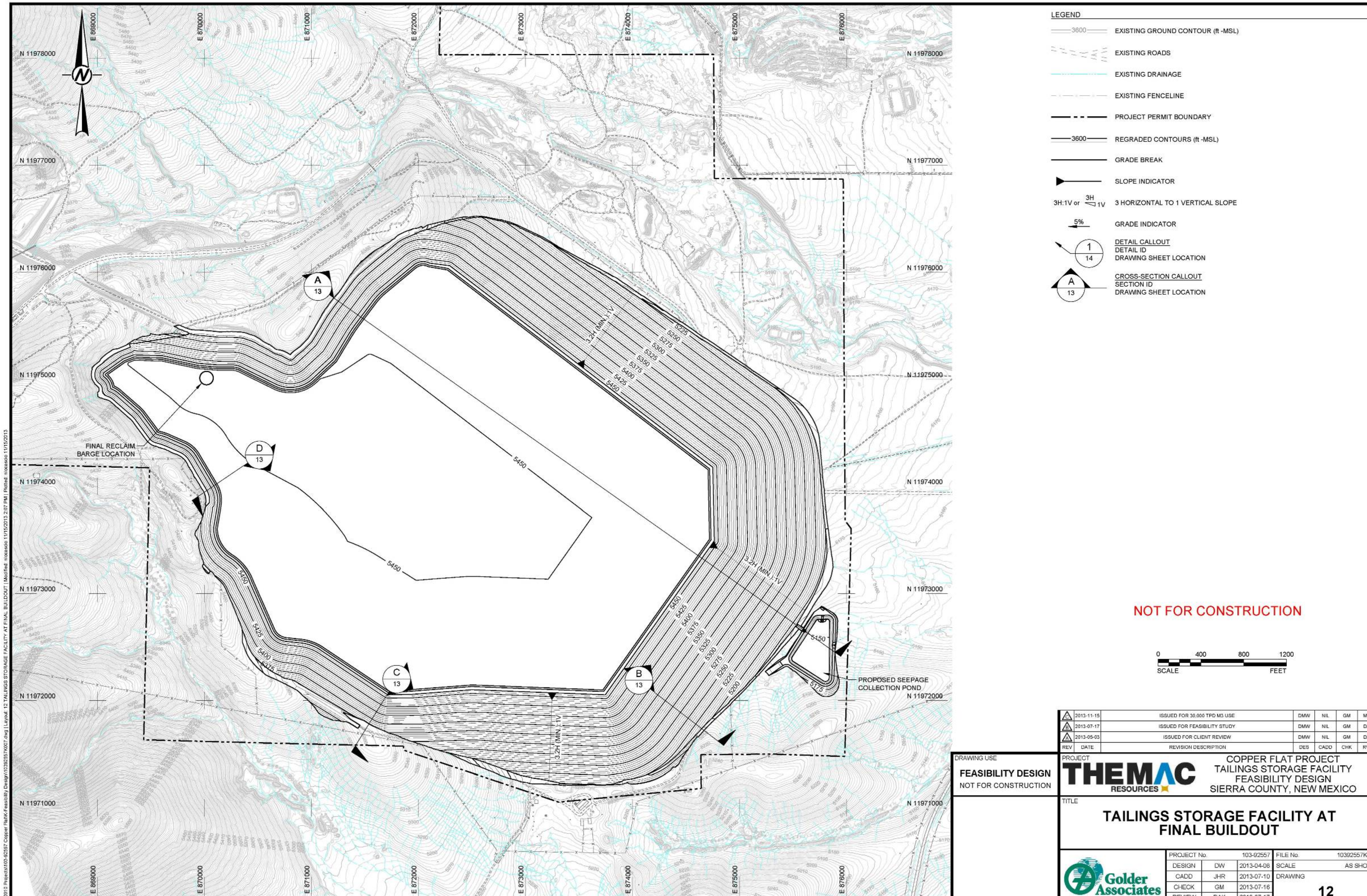


Figure 20-8: Tailings Storage Facility at Final Buildout

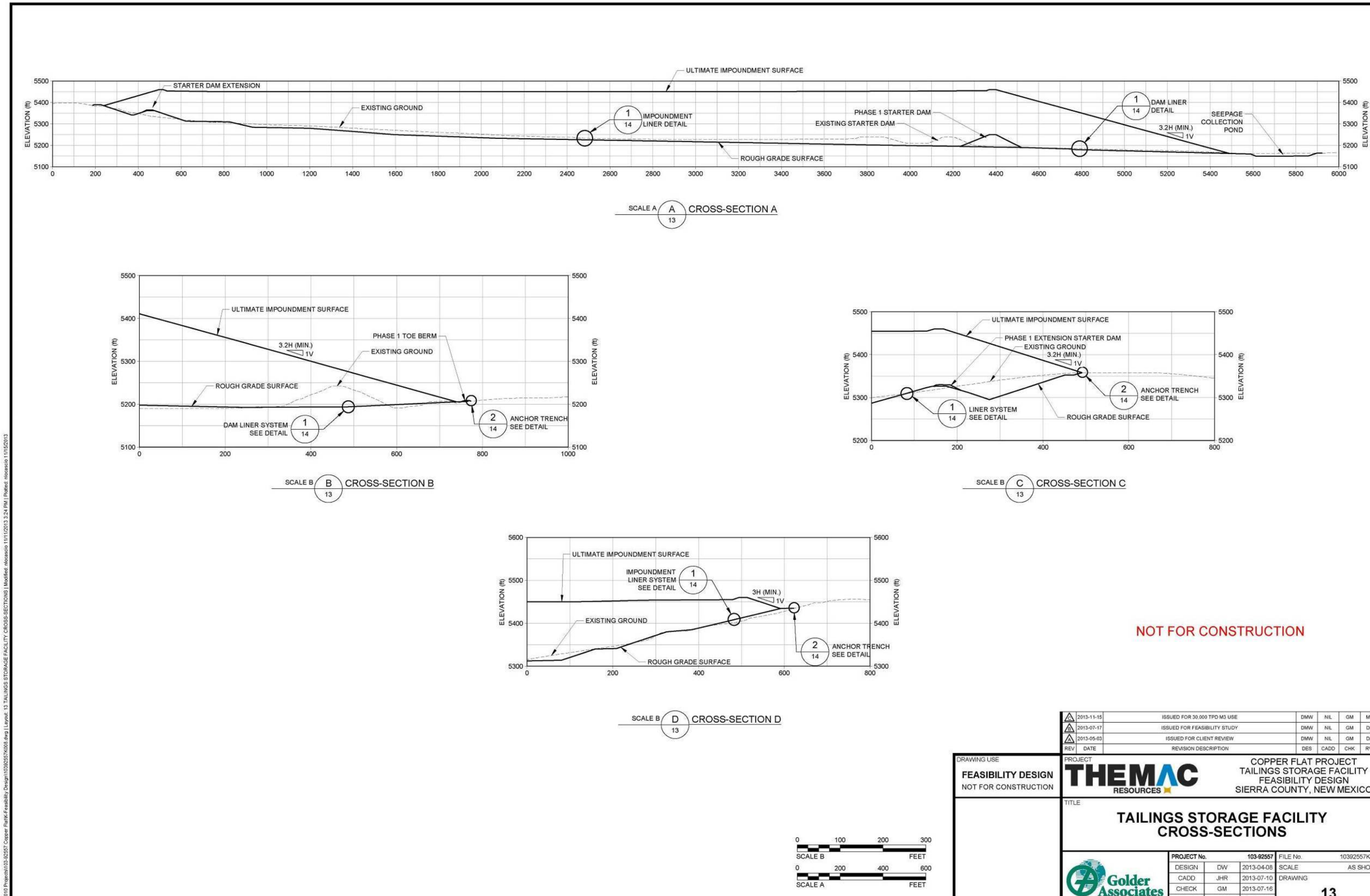


Figure 20-9: Tailings Storage Facility Cross-Sections

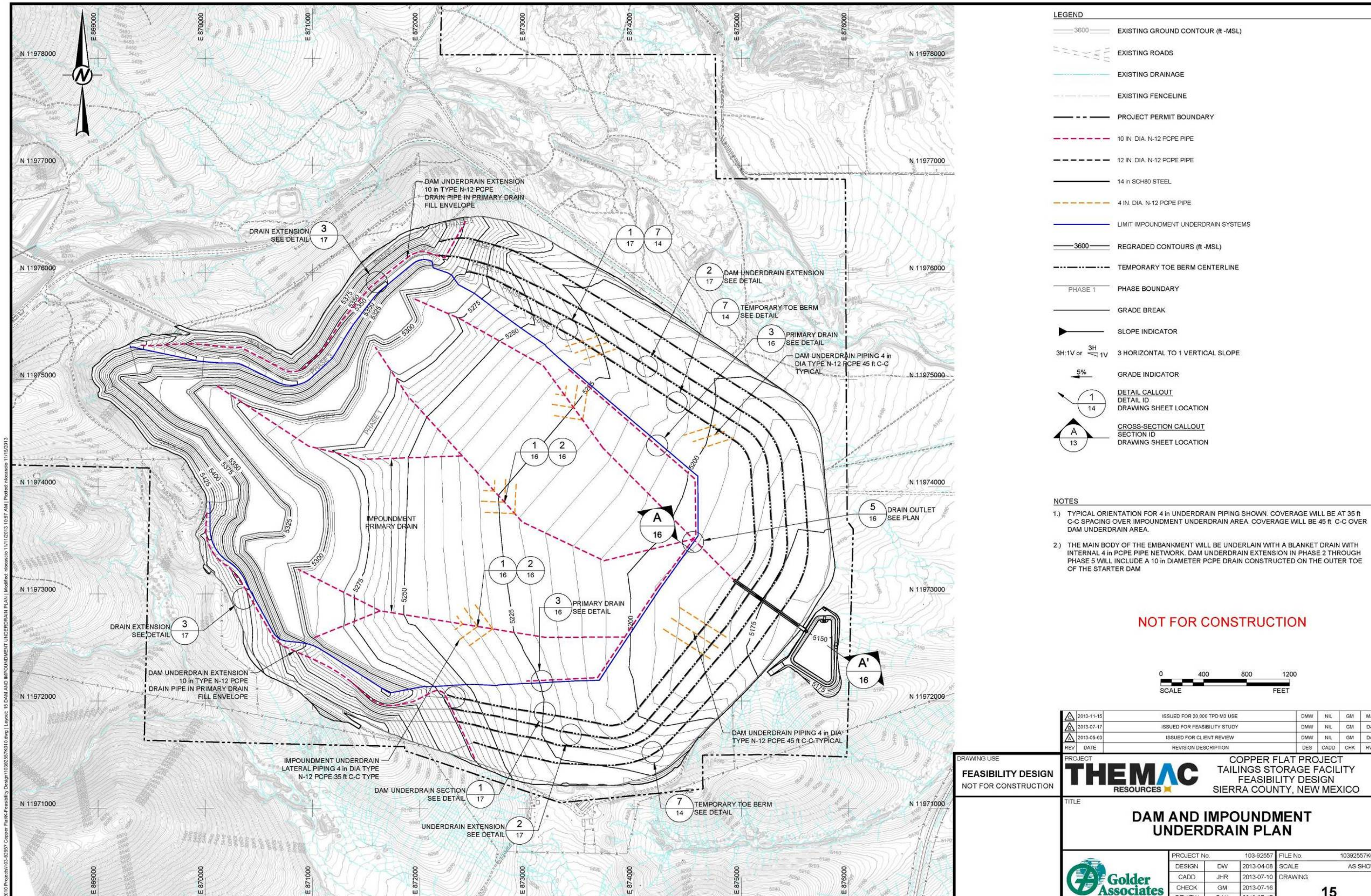


Figure 20-10: Dam and Impoundment Underdrain Plan

20.2.5.4 TSF Liner System

The design includes a composite liner system with a continuous overliner drainage layer (underdrain). The liner will consist of an 80-mil high density polyethylene (HPDE) placed on a 12 inch thick liner bedding fill layer. In Phase 1, the liner bedding fill will consist of a minimum of 12 inches of tailings recovered from the north cell of the old dam. Post Phase 1, liner bedding fill will consist of a 12-inch layer of selectively borrowed native material, or crushed and screened native material.

20.2.5.5 Tailings Drainage

The tailings underdrain system is shown on Figure 20-10. Drainage from future tailings will be collected in two separate underdrain systems and routed to the seepage collection pond. Drainage from the impoundment interior will be collected in a continuous underdrain constructed over the geomembrane liner. A separate blanket drain will underlie the tailings dam (dam underdrain).

The impoundment underdrain will consist of an 18-inch thick layer of select native drain fill material with an internal drain pipe network of 4-inch diameter drainage laterals spaced 35 feet apart. The lateral drain pipe will be Type N-12, perforated corrugated polyethylene pipe (PCPE). The lateral drainage network will route drainage to 10-inch diameter type N-12 PCPE primary drainage pipes. The primary drain pipes will be placed within an envelope of primary drain fill produced by crushing and screening of local gravelly soils.

The impoundment underdrain flow will be routed through a 14-inch diameter schedule 80 steel pipe where the system passes beneath the tailings dam to the discharge at the seepage collection pond. During initial operations, the impoundment underdrain may be exposed to standing water prior to its burial with tailings slimes. To control the water level in the seepage collection pond, impoundment underdrain outlet to the seepage collection pond will be fitted with a shutoff valve so that the drain flow can be slowed or stopped as needed to maintain stormwater storage capacity in the seepage collection pond.

The dam underdrain will consist of an 18-inch thick layer of primary drain fill placed on the geomembrane liner with an internal drain pipe network of 4-inch diameter Type N-12 PCPE pipes to route dam drainage to the toe of the dam and the seepage collection pond. The dam underdrain pipes will be placed at a spacing of 45 feet. In the later construction phases, 10-inch diameter Type N-12 PCPE drainage pipes will be installed. No valves or shut-off will be included in the dam underdrain.

20.2.5.6 Seepage Collection Pond

The location of the seepage collection pond plan is shown on Figure 20-11. The seepage collection pond will be a lined with 60-mil lower and 80-mil upper HDPE geomembranes. An HDPE drain net will be placed between the liners to serve as the seepage collection pond leakage collection and recovery system (LCRS) and minimize hydraulic head on the lower pond liner. The pond will be fitted with a sump filled with drain material and LCRS pump to recover leakage through the upper geomembrane.

The seepage collection pond will contain seepage from the impoundment underdrain and the dam underdrain, as well as runoff from the downstream face of the tailings dam. The pond is sized to contain 24 hours of seepage flow at the maximum estimated drainage and seepage rates, as well as runoff incident on the downstream dam face from the 100-year, 24-hour storm event of 3.94 inches (Golder, 2013). The required capacity is approximately 6.3 million gallons. As shown, the capacity of the seepage collection pond is approximately 9.8 million gallons with 2 feet of dry freeboard and dead storage. The pond can be used to store up to 3.5 million gallons of fresh make-up water during start-up, if needed, while maintaining capacity for stormwater storage and TSF drainage.

20.2.6 Tailings Transport and Distribution

20.2.6.1 System Components

The tailings distribution system consists of a cyclone plant, a cyclone underflow distribution system, a cyclone overflow distribution system, an emergency pond, and a pump equipment pad. The purpose of the emergency pond is to allow drainage of sumps and pipelines during upset conditions. It provides emergency storage for up to 1.0 hours of the full whole tailings discharge from the flotation plant plus additional capacity for twice the volume of solids and water contained in all pipes and sumps that drain to the cyclone station. The design of the cyclone plant and tailings distribution system is presented by Golder (Golder, 2013).

The general plan of the cyclone plant and emergency pond area is shown on Figure 20-12. The tailings delivery and distribution system is shown in plan on Figure 20-13. Figure 20-14 is the process flow diagram for the tailings distribution and water reclaim systems (Golder, 2013). The water reclaim system piping plan is presented in Figure 20-15.

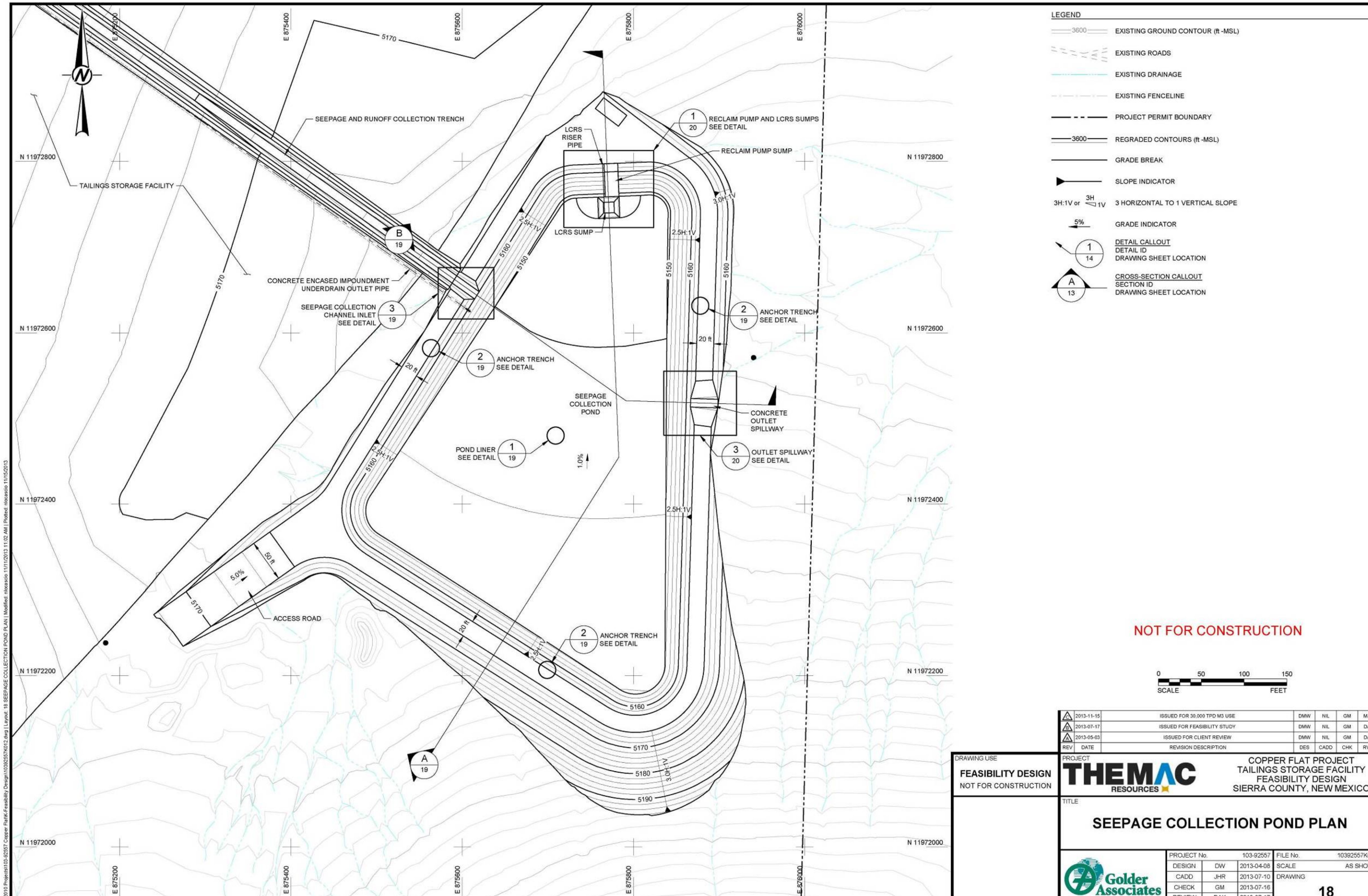


Figure 20-11: Seepage Collection Pond Plan

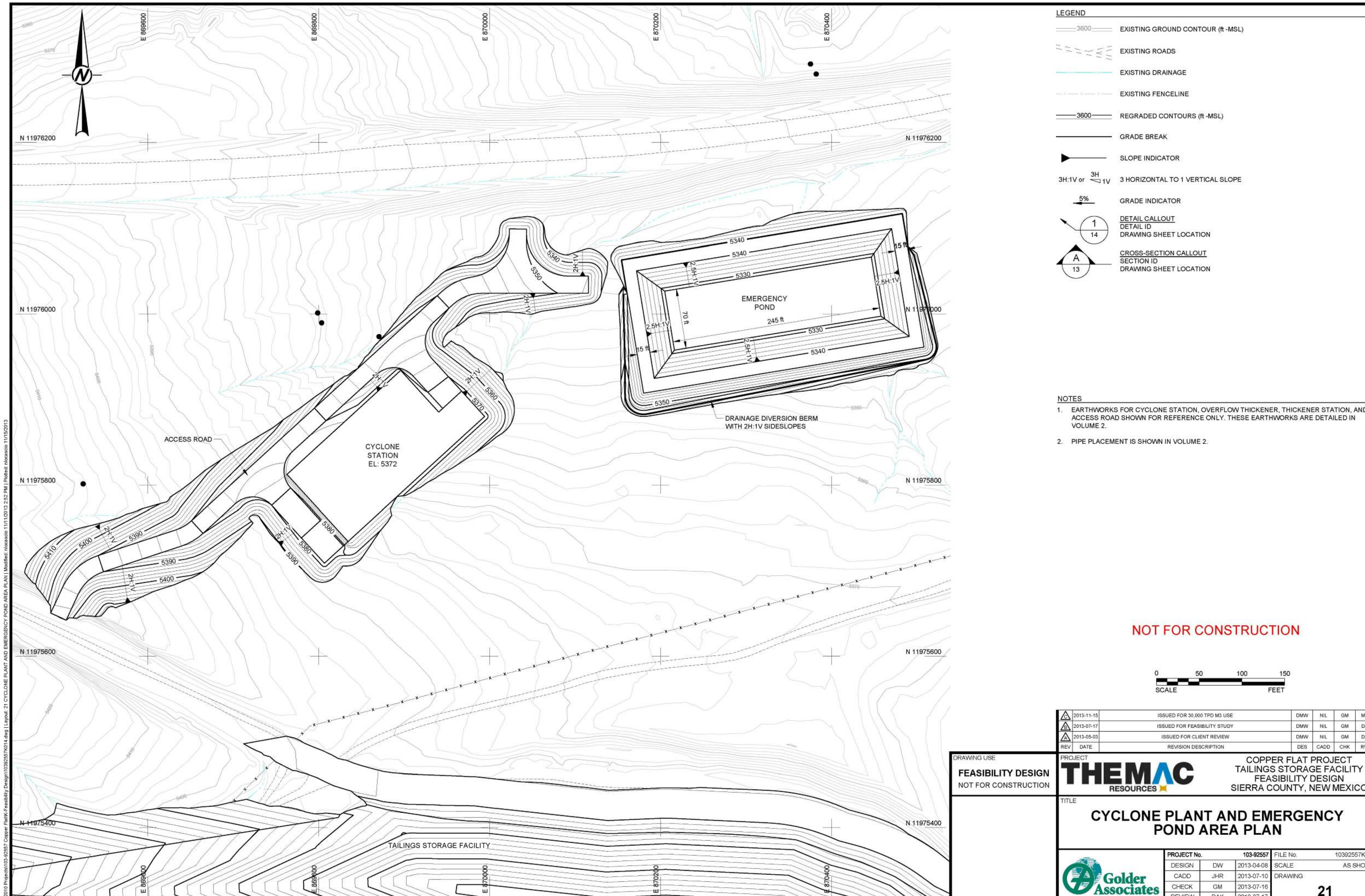


Figure 20-12: Cyclone Plant and Emergency Pond Area Plan

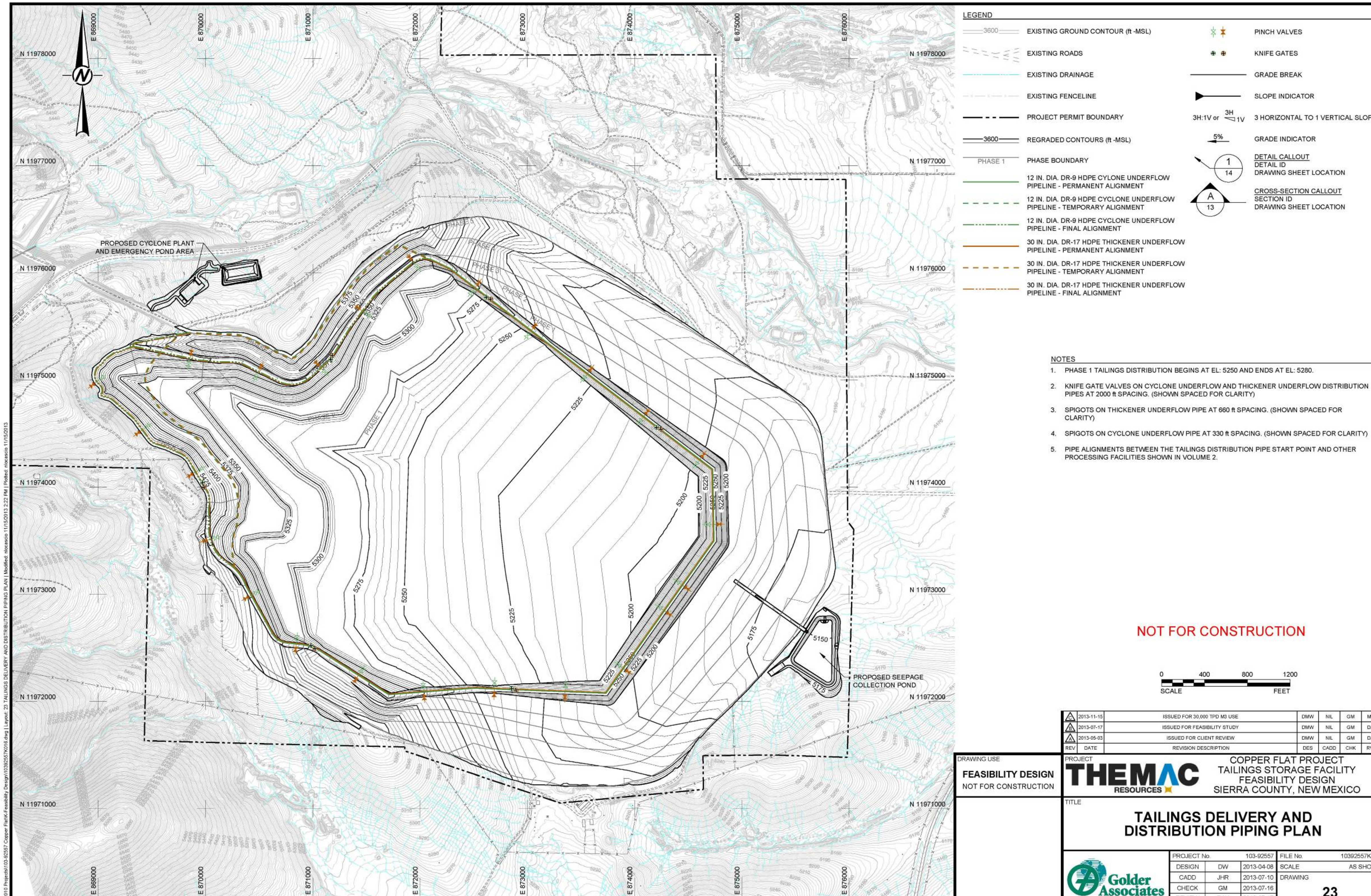
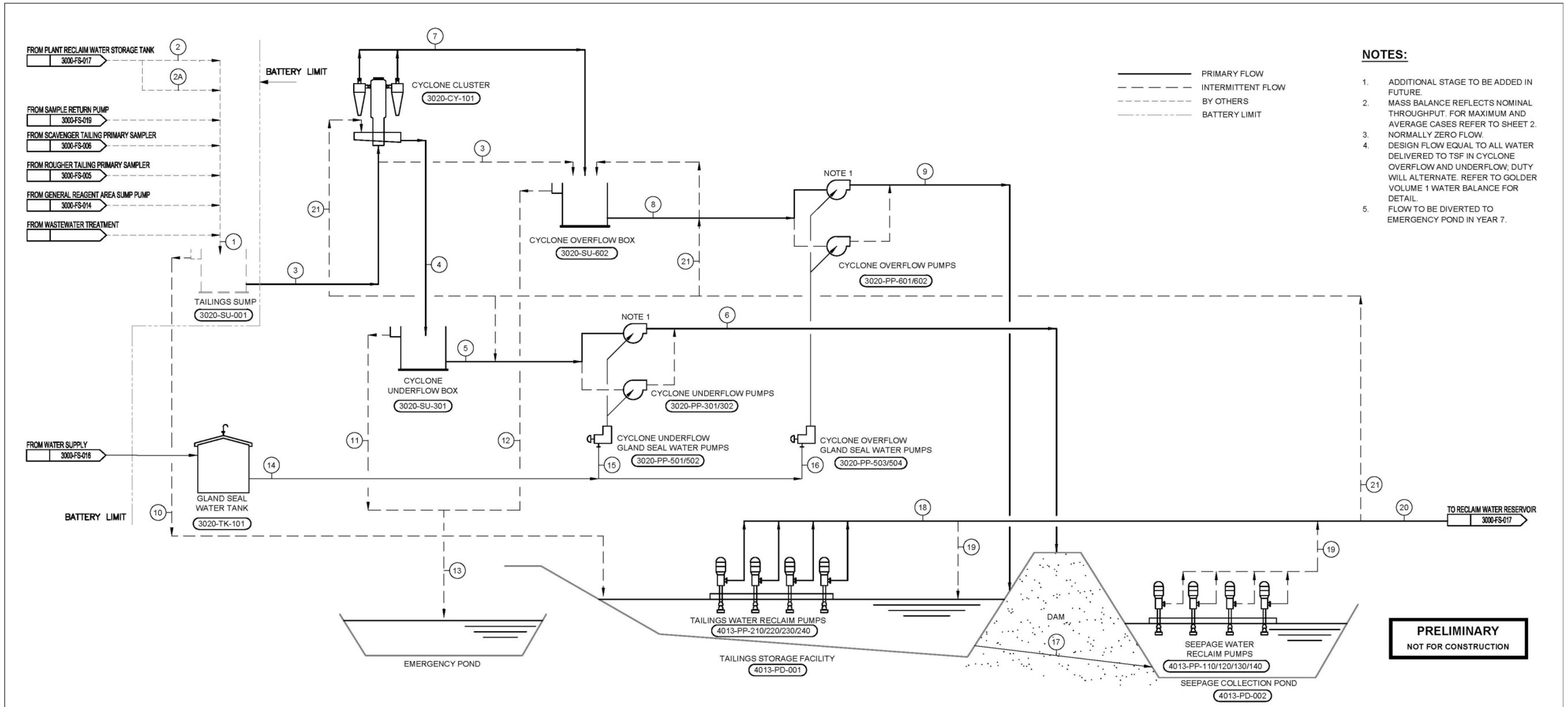


Figure 20-13: Tailings Delivery and Distribution Piping Plan



Note 2	Tailings Sump Feed	Tailings Sump Flush Water Note 3	Dilution Water Note 3	Tailings Sump Outlet/ Cyclone Inlet	Cyclone Underflow	Cyclone Underflow Box Discharge	Cyclone Underflow Pump Discharge	Cyclone Overflow	Cyclone Overflow Box Discharge	Cyclone Overflow Pump Discharge	Tailings Sump Overflow Note 3, 5
Stream	1	2	2A	3	4	5	6	7	8	9	10
TPD (solids)	32000			32000	14550	14550	14550	17450	17450	17450	32000
Solids (t/h)	1333			1333	606	606	606	727	727	727	1333
Solution (t/h)	3249	3755	0	3249	260	260	264	2989	2989	3001	3249
Slurry (t/h)	4582			4582	866	866	870	3716	3716	3728	4582
Solids (%) Cw	29.1%			29.1%	70.0%	70.0%	69.7%	19.6%	19.6%	19.5%	29.1%
Solids (gpm)	2018			2018	918	918	918	1101	1101	1101	2018
Solution (gpm)	12981	14999	0	12981	1038	1038	1054	11943	11943	11993	12981
Slurry (gpm)	14999			14999	1956	1956	1972	13044	13044	13094	14999
Solids (%) Cv	13.5%			13.5%	46.9%	46.9%	46.5%	8.4%	8.4%	8.4%	13.5%
Solids SG	2.64			2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64
Solution SG	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Slurry SG	1.22			1.22	1.77	1.77	1.76	1.14	1.14	1.14	1.22

Note 2	Cyclone Underflow Box Overflow Note 3	Cyclone Overflow Box Overflow Note 3	Cyclone Area Emergency Discharge Note 3	Gland Seal Water Supply Header	Cyclone Underflow Pump Gland Seal Water	Cyclone Overflow Pump Gland Seal Water	TSF Under-flow	TSF Reclaim Water Note 4	Seepage Pond Reclaim Water Note 4	Reclaim Water to Plant	Cyclone Area Flush Water from TSF Note 3
Stream	11	12	13	14	15	16	17	18	19	20	21
TPD (solids)	14550	32000	32000								
Solids (t/h)	606	1333	1333								
Solution (t/h)	260	3249	3249	17	4	13	3267	3267	3267	3267	490
Slurry (t/h)	866	4582	4582								
Solids (%) Cw	70.0%	29.1%	29.1%								
Solids (gpm)	918	2018	2018								
Solution (gpm)	1038	12981	12981	66	16	50	13047	13047	13047	13047	1956
Slurry (gpm)	1956	14999	14999								
Solids (%) Cv	46.9%	13.5%	13.5%								
Solids SG	2.64	2.64	2.64								
Solution SG	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Slurry SG	1.77	1.77	1.22								

Figure 20-14: General Process Flow Diagram Tailings

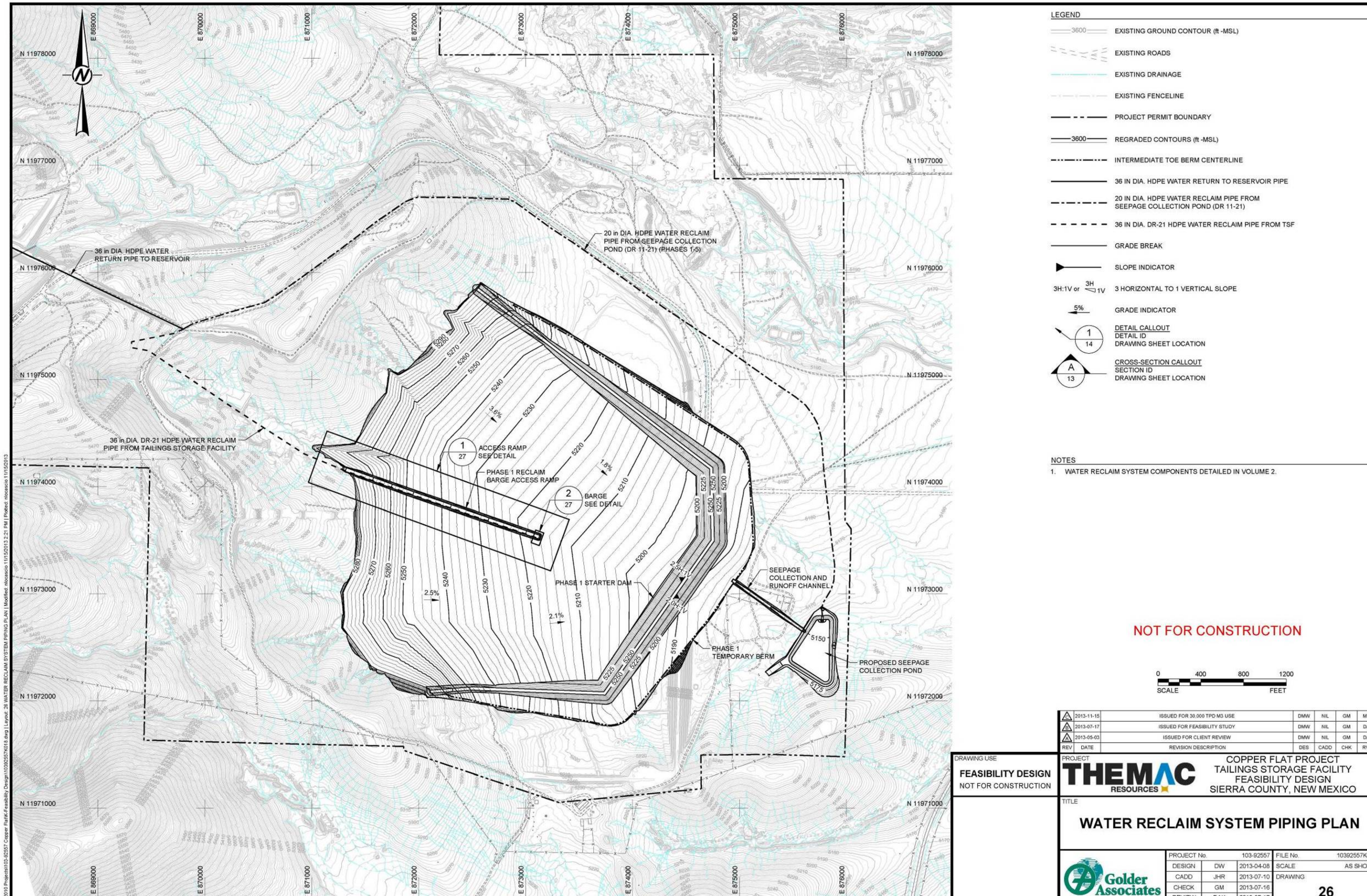


Figure 20-15: Water Reclaim System Piping Plan

20.2.6.2 Operating Description

Tailings will be obtained from a sump located at the flotation plant and transported by gravity flow to the cyclone plant. The maximum feed to the cyclone plant will be 1,333 tons per hour (tph) of tailings solids in 29.1 weight percent slurry at a total flow rate of 13,276 gpm. Cyclone underflow will be delivered to the TSF and used for dam construction. The cyclone overflow will be routed to the interior of the TSF in a separate piping system. The cyclone plant will recover up to 45.6 percent of the tailings stream and produce an underflow slurry (sand) with a solids content of 70 weight percent. Delivery of the cyclone underflow sand will require pumping through the life of the facility. The cyclone overflow will have a solids content of approximately 19.5 to 19.6 percent by weight and slurry water will be delivery rate of approximately 11,940 gpm.

Two cyclone underflow pipelines will be used to deliver sand to the dam. The one leg will run around the north side of the TSF, and one leg will be routed around the south side of the TSF. Each leg is sized to transport 100 percent of the cyclone underflow. This allows for continuous availability of sand delivery to the dam.

Cyclone underflow sand will be discharged through 4-inch spigots placed every 333 feet. Each spigot will include one 4-inch manual pinch valve. The underflow pipelines will also have in-line knife-gate isolation valves every 2,000 feet to allow for isolation and relocation of the pipe as the dam rises. The knife-gate isolation valves will be quick-disconnect with hydraulic actuators powered by a mobile hydraulic power unit mounted on a pick-up truck.

Two cyclone overflow delivery pipelines, one leg to the north side and one leg to the south side of the TSF, will transport the cyclone overflow to the TSF interior (impoundment interior). The cyclone overflow will be discharged via spigots placed every 667 feet. Each spigot will include a manual pinch valve. Each cyclone overflow pipe is sized to carry 100 percent of the cyclone overflow to permit pipeline relocation without interrupting operation as the TSF elevation rises. One leg will remain active while the other is serviced or relocated.

The cyclone overflow pipelines will also have knife-gate isolation valves placed every 2,000 feet to allow for isolation and relocation of the pipe as the impoundment rises. The knife-gate isolation valves will be quick-disconnect with hydraulic actuators powered by a mobile hydraulic power unit mounted on a pickup truck.

When the cyclone plant is not in operation, whole tailings will be discharged to the impoundment interior through the cyclone overflow distribution system. Due to the requirements for sand to construct the dam, near constant operation of the cyclone plant will be required. As such, the mill and processing facilities should not be operated unless the cyclone plant is in operation, and cyclone plant maintenance should be undertaken when the mill and processing facilities are down for maintenance. Filling rates and tailings post depositional behavior should be observed during operations. If actual consolidations rates exceed predicted rates, it may be possible to reduce utilization of the cyclone plant and allow periodic deposition of whole tailings into the TSF.

20.2.6.3 Dam Construction

Based on cyclone testing and operational simulations, a maximum of approximately 50 million tons of tailings sand can be produced over the life of the mine. Assuming an underflow post placement dry density of 89.24 pcf (equivalent to 92 percent of the ASTM D698 maximum dry density of 97 pcf) up to 42.3 million cy of sand will be produced. Approximately 39.6 million cy of underflow will be required to construct the sand embankment to an elevation of 5,460 feet. Producing sufficient sand for dam construction will require near constant operated of the cyclone plant.

During operations, 10 feet of freeboard will be maintained from the top of the tailings beach to the crest of the dam. When sand is not required on the crest of the dam, it should be placed on the dam out-slope. Failure to utilize all available sand for dam construction could result in loss of storage capacity in the later years of operation.

Sand line spigots will be used to deposit the cyclone underflow on the dam crest or in paddocks (bermed areas), or on the outer slope of the sand dam. It is anticipated that sand placed on the dam crest will be spread and compacted. Sand placed on the embankment out-slope and in paddocks will be subject to self-weight compaction. All underflow sand is anticipated to require dozer spreading and grading.

20.2.7 Process Water Reclaim

The process water reclaim system is illustrated Figure 20-15. The TSF reclaim system will consist of submersible turbine pumps placed in the seepage collection pond in a reinforced concrete sump. The sump floor will be recessed below the pond floor to reduce dead storage. The submersible turbine pumps will be capable of completely draining the seepage collection pond.

Barge mounted pumps placed in the supernatant pool inside the TSF. The barge will be accessed from a ramp constructed with borrowed fill or waste rock. The barge will migrate westward and upward parallel to the access ramp as the tailings surface rises.

Reclaimed water will be returned to the process water reservoir. Reclaim pump capacity will be 13,500 gpm from the TSF barge and 4000 gpm from the seepage reclaim pond. The TSF barge reclaim rate is approximately equivalent to the maximum rate at which process water will be delivered to the cyclone plant when the mill is in operation. In the event of a significant storm event where excess stormwater is in storage, delivery of water from external sources can be suspended and stormwater contained in the TSF and seepage collection pond can be returned to the process facilities and consumed as bound water in the tailings or lost to evaporation.

20.2.8 Water Balance

Figure 20-16 summarizes the results of a water balance analysis of the proposed TSF for average rainfall conditions. The water balance model incorporates water input from slurry water inflow, direct precipitation on the impoundment surface and runon from undiverted areas located around the periphery of the facility. Onsite pan evaporation data were used to estimate evaporative losses. Because the in-site evaporation pan was not operated between December and March, evaporation data for winter months were estimated from Hillsboro, New Mexico evapotranspiration (ET_0) estimates. Missing winter evaporation data are based on the ratio of site to Hillsboro, New Mexico evaporation for months when data are available from both sites. NOAA data from Hillsboro and Caballo, New Mexico were used to estimate monthly precipitation.

Water balance model losses include entrainment of water with the tailings solids, evaporation from the exposed tailings beach, evaporation from the supernatant pool, and evaporation of water from the cyclone underflow paced on the surface of the dam. Entrainment represents the most significant water loss and is estimated on the basis of the final, post deposition dry density for cyclone underflow and overflow

On average, approximately 12,000 to 13,000 gpm of water will be delivered to the TSF with the cyclone overflow and underflow. As shown in Figure 20-16, estimated average process water recovery rate is 9,215 gpm. The estimated average make-up water requirement will be approximately 3,169 over the life of the project.

As noted above, the water balance examines reclaim rates for average rainfall conditions. If the site experiences periods where precipitation rates vary from average conditions, reclaim rates and make-up water requirements can also be expected to vary. The water reclaim system is capable of recovering water at a rate adequate to meet make-up water requirements and temporarily reduce demand on external water sources. The water balance does not consider additions from the open pit or waste rock disposal facility stormwater ponds.

K:\2010 Projects\103-92557 Copper Flat\K-Feasibility Design\10392557K101.dwg | Layout: 8 WATER BALANCE ANALYSIS RESULTS | Modified: nlocascio 11/11/2013 4:05 PM | Plotted: nlocascio 11/15/2013

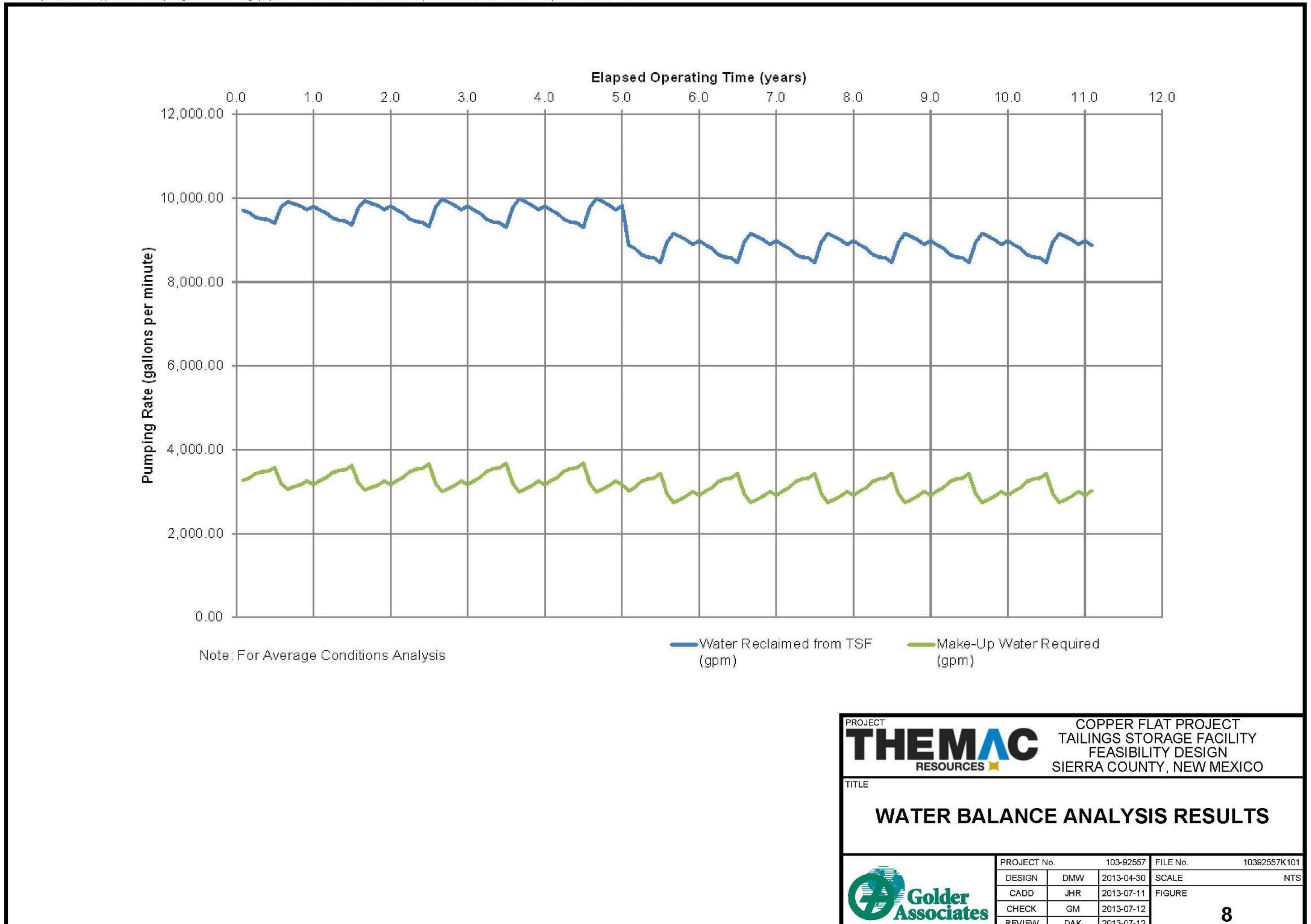


Figure 20-16: Water Balance Analysis Results

20.3 WASTE MANAGEMENT

20.3.1 Waste Rock Disposal

Three waste rock disposal facilities (WRDFs) were designed by Independent Mining Consultants (IMC). The locations of these facilities, labeled as WSF-1, WSF-2, and WSF-3, are shown on the Figures 16-2 through 16-13 for various time periods through the planned production to illustrate the evolution of these facilities.

Three runoff and sediment collection ponds will be constructed to contain runoff from the waste rock disposal facilities. Stormwater impoundments will be lined and designed for containment of the runoff volume associated with a 100-year, 24-hour storm event. Stormwater collected in the runoff and sediment collection ponds is pumped to the mill as process water or will have evaporated. At closure, the runoff and sedimentation ponds will be reclaimed. The WRDFs will be covered, graded and vegetated such that surface water runoff from the reclaimed facility will be non-impacted surface water.

Based on the IMC layout, a schedule of capital and reclamation costs for the WRDF site work has been estimated and incorporated in the economic analysis. Capital costs cover topdressing and reclamation cover salvage and stockpiling and construction of conveyance and diversion ditches, runoff and sediment collection pond construction. Reclamation costs address reclamation cover placement and seeding.

Runoff and sediment collection ponds are assumed to be lined with a single 60-mil HDPE geomembrane liner placed over a layer of fine grained liner bedding fill 6 to 12 inches thick. Reclamation is assumed to require the placement of a 3-foot thick cover of topdressing and native fill material borrowed from local sources.

20.3.2 Hazardous Materials and Petroleum Products

The term “hazardous materials” is defined in 49 CFR§172.101; hazardous substances are defined in 40 CFR 302.4 and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) Title III: however, wastes generated under the process of mining at Copper Flat are classified as special non-hazardous wastes under the federal Bevill Exemption (40 CRR 261.4(b)(7)). NMAC Title 20 regulations detail the design criteria for secondary containment and leak detection on new above ground storage tanks (ASTs) and pipelines.

Hazardous materials will be transported to the Copper Flat Mine by DOT regulated transporters and stored on site in DOT approved containers. Spill containment structures will be provided for storage containers. Hazardous materials that do not meet the criteria of the Bevill exemption will be managed in accordance with regulations identified in 40 CFR § 262 Standards Applicable to Generators of Hazardous Waste.

Hazardous materials and substances that may be transported, stored, and used at the Copper Flat Mine in quantities less than the Threshold Planning Quantity (TPQ) designated by SARA Title

III for emergency planning will include blasting components, petroleum products, and small quantities of solvents for laboratory use.

Blasting components, including ammonium nitrate and diesel fuel, will be stored onsite in bins and tanks (see above), respectively. THEMAC currently anticipates utilizing two explosives magazines (one for boosters and one for blasting caps), each no larger than 8 ft × 8 ft, with 1,000-pound capacities. In addition, THEMAC will utilize one, 75-ton capacity, 3,000 ft^3 silo for storage of ammonium nitrate. All explosive materials will be stored away from the plant site in compliance with MSHA, New Mexico State Mine Inspector's regulations, and U.S. Department of Homeland Security requirements. Management of hazardous materials at the Copper Flat Project will comply with all applicable federal, state, and local requirements as appropriate, including the inventorying and reporting requirements of Title III of CERCLA, also known as the Emergency Planning and Community Right to Know Act.

All petroleum products, kerosene, and reagents used in the mill will be stored in above ground tanks within a secondary containment area capable of holding 110 percent of the volume of the largest vessel in the area. Fuel and oil for diesel and gas powered equipment will be stored in above-ground, in sealed tanks with secondary containment. Surface piping leads from each tank to the fuel dispensing area. The refueling hoses will be equipped with overflow prevention devices and secondary containment.

Hazardous wastes other than those from the laboratory will also be managed in the short term storage facility prior to their shipment to an offsite licensed disposal facility. These materials may include waste paints and thinners. Spent solvents and used oils will be returned to recycling facilities. Waste oil and lubricants will be collected and hauled offsite by a buyer/contractor for recycling. Solvents will be collected by a subcontractor and recycled offsite.

Small amounts of liquid laboratory wastes will be generated from the on-site assay laboratory. These wastes will be stored in approved containers like other wastes and periodically recycled back into the mill process stream.

An ongoing inventory of all materials used at the mine site and mill will be provided on a monthly basis to the appropriate federal, state, and local regulatory agencies. The local fire department will be kept informed about materials stored onsite and appropriate emergency response. THEMAC does not intend to dispose of any hazardous materials or petroleum products on-site.

20.3.3 Spill Contingency

THEMAC has developed a preliminary spill contingency plan (SCP) will be developed to prevent and minimize the impacts of a reagent or fuel spill. This plan describes the reporting and response that will take place in the event of a spill, release, or other upset condition, as well as procedures for cleanup and disposal. The plan will be posted and distributed to key site personnel and will be used as a guide in the training of employees. Also, the plan will address mitigation of potential spills associated with project facilities as well as activities of onsite contractors. The use, transportation, and storage of reagents and fuels will be covered in the plan. The emergency reporting procedures will be posted in key locations throughout the project area. Containment structures designed to prevent the migration of a spill are included in the design of the facilities.

20.3.4 Liquid Waste Treatment

A packaged water treatment plant will be installed at the mine to accommodate liquid sanitary wastes generated from the mine office, shower, and rest room facilities. For the feasibility study, the packaged water treatment plant was sized for a load based on mine headcount for a 24 hour day plus excess. To accommodate this loading, a 10,000 gallon per day plant is assumed based on 200 people per day at a usage rate of 50 gallons per day per person. The plant would generate effluent treated to secondary treatment levels. The plant discharge will be to the lined tailings storage facility and recycled back to mill with the tailings process water.

20.3.5 Solid Waste Disposal

Nonhazardous solid wastes that will be generated include waste paper, wood, scrap metal and other domestic trash. A recycling program will be implemented in preference to landfilling nonhazardous solid wastes. The amount of recycling will be subject to the availability of offsite programs to receive recycled material. Nonhazardous solid wastes that cannot be recycled will be disposed of in a permitted on-site Class III sanitary landfill on private land, which will be permitted by the State of New Mexico or by other methods approved by the State and Sierra County. Scrap metal would be sold to a dealer and transported offsite.

20.4 PERMIT STATUS AND BONDING

The Copper Flat Project permitting requirements and current status of the permitting process is described in Section 4.6 of this study. All mining and environmental permits from the 1982 Quintana Mine have expired or have been closed due to lack of activity, with the exception of the NMED Groundwater Discharge Permit, which is inactive and must be renewed through the same process required of a new permit applicant. THEMAC is in the process of obtaining new permits.

The MMD, NMED, and BLM have requirements for both exploration and mine reclamation bonds. THEMAC currently has an exploration reclamation bond held jointly between the MMD and the BLM, which will be released upon completion of THEMAC's exploration activities and completion and approval of all required reclamation activities.

The NMED responsibilities are to steward any short- and long-term water issues, should they occur. Since the project involves public lands, the BLM will also require a reclamation bond. In New Mexico, it is typical to have a mining reclamation bond held jointly by the MMD, the NMED, and the BLM for the convenience of the mine operator.

20.5 SOCIOECONOMICS AND COMMUNITY

The Arrowhead Center at New Mexico State University was contracted in September 2011 to complete a socioeconomic study of the Copper Flat Mine project in Sierra County. The final report, *The Socioeconomic Impacts of THEMAC Resources Group Ltd. Copper Flat Mine*

Project in Sierra County, New Mexico (Popp, Peach & Delgado, 2012) was provided to the BLM for incorporation into the EIS, and to the cooperating state agencies. This report evaluated a mine plan based on the Prefeasibility Study and thus contains numerous details that differ from the mine plan detailed in this report, including a different number of employees, a different throughput rate, and a different TSF capacity.

The report conclusions are presented in 2012 dollars and indicated that the mine would create over 181 jobs in Sierra County and an additional 1,170 jobs within the state. The reported noted that the number of jobs projected to be generated in the county was larger than the average number of unemployed.

The report indicates the mine operation will generate significant monies to the state of New Mexico and Sierra County by payment of severance taxes, processor's tax, property taxes, gross receipts taxes, compensating taxes, personal income tax and corporate tax.

20.6 MINE CLOSURE AND RECLAMATION

The Copper Flat Project reclamation is designed to achieve a self-sustaining ecosystem appropriate for the climate, environment and land uses of the area. The reclamation plan has been developed to meet the site specific characteristics of the mining operation and is designed to meet all applicable federal and state environmental requirements following closure under the assumption the perpetual care will not be required.

Reclamation of disturbed areas caused by the project will be in compliance with federal and State regulations. Under the Federal Land Policy Management Act (FLPMA), the BLM is responsible for preventing undue or unnecessary degradation of federal BLM lands which may result from operations authorized by the mining regulations (43 CFR 3809).

The Mining Act Reclamation Program (MARP) was created under the New Mexico Mining Act of 1993 to regulate hardrock mining activities for all minerals, and requires the preparation of a reclamation plan for submittal and approval by MMD and NMED. THEMAC has submitted the Copper Flat Permit Application Package (PAP), which includes the Mine Operation and Reclamation Plan (MORP) and BDR. The PAP was submitted on July 18, 2012 and deemed administratively complete on August 22, 2012. The PAP is currently undergoing technical review by State regulatory agencies and their comments and concerns will be addressed once received. Closure of the tailing facility must comply with requirements of the NMOSE.

As proposed, the current project will be developed, operated and closed with the objective of leaving the property in a condition that will mitigate potential environmental impacts and restore the land to an agreed-to post mining land use. The reclamation plan will be developed with State and federal agency input and coordination. Closure and reclamation activities will be carried out concurrent with mine operations wherever possible, and final closure and reclamation measures will be implemented at the time of mine closure.

20.6.1 Reclamation Objectives

The objectives of the Copper Flat reclamation program will be as follows.

- To minimize erosion damage through careful control of surface water runoff, involving the use of contouring, water bars and riprap where needed.
- To protect the quality of surface and ground water resources by minimizing pollutant formation, and on-site containment of any unavoidable toxicity problems.
- To establish surface soil conditions most conducive to regeneration of a stable plant community through stripping, stockpiling, and reapplication of soil material where feasible.
- To revegetate disturbed areas with a diverse mixture of plant species, including native and introduced species, in order to establish long-term native plant communities compatible with planned future uses.
- To stabilize plant communities with the use of accepted conservation practices.
- To maintain public safety by stabilizing, removing, or fencing land forms which could constitute a public hazard.
- To meet or exceed state and federal reclamation regulations.

Surface facilities, equipment and buildings related to the mining project will be removed. Foundations on federal lands will be broken up and removed to nearby land controlled by THEMAC. Foundations on lands controlled by THEMAC will be broken and left in place. All broken foundation material will be covered, and the site facilities restored to self-sustaining plant communities similar to those that are currently present on-site and on adjacent undisturbed lands. The topography, slopes and aspects of the disturbed and reclaimed areas will be developed to blend in with the present, existing physiographic forms of the Copper Flat area, as feasible.

In support of the EIS and other environmental assessment efforts, THEMAC and SRK Consulting evaluated the historical geochemistry information and additional geochemical studies to augment and advance the knowledge and understanding of the ARD situations at Copper Flat. THEMAC oversaw new analyses with significant additional sampling and laboratory work to augment and update these historic interpretations. These samples represent a distribution of weathered surface samples and fresh drill core data collected from the 2010 and 2011 THEMAC exploration drilling programs.

In *Geochemical Characterization Report for the Copper Flat Project, New Mexico* (SRK, June 2013), SRK concludes that ARD will not negatively impact the environment at future proposed waste rock disposal facility provided that it is designed, constructed, operated, and reclaimed in accordance with the current THEMAC mine plans. This report was submitted to reviewing agencies in June 2013. Geochemical analyses are described in more detail in Section 20.1.3.2.

Proper waste management has been proven effective in alleviating the potential for ARD. The waste rock disposal facility and tailings storage facility will be reclaimed by regrading, surface compaction, and applying 36 inches of native material cover including growth media. These measures are designed to inhibit infiltration and reduce the quantity of water required to produce drainage.

Copper Flat Project reclamation will include approximately 1,000 acres of land disturbed by previous mining activities (THEMAC, 2013). This reclamation will have a long term beneficial impact on area air quality, wildlife, surface water quality and groundwater quality.

20.6.2 Reclamation Process

During mine operations, sediment control will be achieved by the use of best management practices (BMPs), including regrading, seeding and mulching, silt fences, straw bale dams, diversion ditches with energy dissipaters, and rock check dams at appropriate locations during construction and operation. Diversion structures, including existing structures, will divert stormwater flows away from disturbed areas. All sediment control structures will be monitored and maintained on a regular basis. All runoff from the plant site and other areas of the mine will be directed into a sediment pond located on the east side of the site adjacent to the reclaim water pond. Following reclamation this pond will no longer be necessary for sediment control. When no longer required, the sediment control pond will be reclaimed according to the approved reclamation plan.

Most areas will be regraded during reclamation to restore the original drainage. Diversions for surface water runoff around the waste rock disposal facility will remain in place. Drainage channels will be lined with rip rap as needed to protect them from erosion.

The watershed area to the west of the pit is drained by Grayback Arroyo, an ephemeral stream which is typically dry except during the rainy season. During development of the Quintana mine operation, this drainage was intercepted and diverted around the southern periphery of the pit and returned to its original channel east of the pit area by cutting a channel through the ridges and placing diversion dams in the tributary arroyos. The diversion was left in place upon closure of the previous operation and will be left in place at the end of mine life.

Mineral exploration and development drill holes and monitoring and production wells are subject to state regulations; all will be abandoned in accordance with applicable rules and regulations (NMAC 19.27.4 et seq.). Boreholes will be sealed to prevent cross contamination between aquifers and required shallow seals will be placed to prevent contamination by surface access.

Monitoring wells located throughout the mine site including those around the tailings storage facility will be maintained until THEMAC is released from this requirement by the NMED, MMD, and BLM. These wells will then be plugged and abandoned according to applicable requirements.

Reclamation cover materials are planned to be salvaged from disturbed areas with the project, eliminating the need to disturb additional land for borrow sources. Suitable soil materials are available for reclamation from the previously mined and disturbed areas and will be recovered and stockpiled during the construction phase of the project. All suitable soils and other suitable cover materials including unconsolidated subgrade materials, colluvium and overburden will be salvaged to meet the volumetric requirements for final cover. The stockpiled cover materials will be applied during reclamation and covered with growth media to facilitate revegetation.

The surface will be roughened by ripping or disking prior to placement of the cover material to enhance contact with the subsoil. The cover material will be spread and graded with care to prevent compaction. As appropriate, THEMAC will evaluate the need for soil amendments for redistributed soil materials based on testing of soil samples and plant nutrient requirements. If soil amendments are required, disking to prepare the seedbed will take place after applying the amendments. Ripping and other seedbed preparation procedures would be conducted when surface and subsurface soil moisture conditions are dry to avoid compaction. Any natural soil amendments used will be certified free of invasive and noxious weeds.

Seeding will take place as soon as practicable after placement of the cover material. Seeding should take place when summer moisture is available to encourage the establishment of warm season grasses. Consequently, soil placement and seeding are planned to occur prior to the monsoon season of July, August, and September. In the event that seeding occurs substantially later than soil placement, compacted soil areas may require ripping or scarification. If determined necessary, compacted soils will be ripped or scarified to a depth of 8 to 12 inches prior to seeding. Field experience and changes in local precipitation patterns may alter the seeding schedule to other times of the year.

Mulch will be applied at the time of planting at a rate of two tons per acre. Certified weed free mulch will be applied or hydro-mulched in areas that require hydro-seeding. If hay mulch is used, it will be mechanically crimped or secured with a chemical tackifier to prevent erosion. Weed control will be implemented only if necessary. Methods of weed control will be determined upon recommendation from the BLM and/or MMD.

THEMAC does not expect to impact riparian or wetland areas during mine operations or reclamation. Riparian and water-loving plant species (willows, cottonwood, cattails, sedges, etc.) may be introduced in drainage channels and in shallow areas near the shoreline of the open pit water body.

Vegetation in reclaimed areas at the time of financial assurance release is expected to represent a maturing grass-shrub community. The seed mix will be selected to contain native plant species (grasses, forbs, and shrubs) in a proportion approximating adjacent desert grassland community areas. Over time, the revegetation should approach a density and diversity similar to that of undisturbed areas adjacent to the disturbed land through the processes of natural plant community succession.

The seed mixtures to be used will be determined by seed availability, compatibility with the vegetation of the surrounding areas, the soil and climatic conditions of the area, approved post mining land uses, and by recommendations from the BLM and MMD. The reclamation success of the previously disturbed areas will be used as a guide in choosing the mixture. The final seed mix will be approved following review of the revegetation test program results and may be modified with approval of the BLM and MMD.

Because contemporaneous reclamation reduces erosion, provides early impact mitigation, limits costs and reduces final reclamation work, THEMAC is committed to maximizing this type of reclamation at the Copper Flat Project. Some of the Project facilities will be constructed in their final configuration. Others, such as individual lifts of the waste rock disposal facility and possibly some roads will be decommissioned prior to final mine closure. Areas such as these will be reclaimed concurrently with the active mining operation where feasible.

At the end of mine life, surface facilities, equipment, and buildings related to the mining project will be removed, foundations covered or removed, and the plant site returned to natural conditions. The topographic slopes and other features of the disturbed areas will be reclaimed in a manner designed to blend in with natural topography of the Copper Flat area as much as possible.

20.6.3 Reclamation Units

For the purposes of reclamation planning, the Copper Flat project has been broken down into the following key reclamation units:

- Mine pit
- Plant site facilities
- Waste rock disposal facility and low grade ore stockpile
- Tailings storage facility
- Infrastructure and ancillary facilities

20.6.3.1 Mine Pit

Reclamation of the pit during operations will be limited to erosion control. At closure stable pit walls will be left in place, and unstable pit walls will be stabilized. Reclamation cover material will be placed on the benches above the projected water level and seeded. Pit roads and safety benches will be ripped and water bars will be employed to control surface water erosion. Where practical, disturbed areas around and adjacent to the pit will be covered with topdressing material and revegetated.

The pit area and highwalls will be appropriately barricaded or fenced and posted according to MSHA and New Mexico Mine Inspectors Office regulations. Access will be limited by a locked gate and the access road blocked with a physical barricade.

In the event that long-term pit water quality does not meet NMED surface water quality standards for regulated constituents, THEMAC is currently working with its environmental consultants to develop operation management strategies to limit environmental impacts.

Until the owner completes future studies and continued evaluations to verify the predicted post closure pit lake water quality and potential remedies though regulatory processes, engineering design or both, SRK Consulting (SRK) has estimated the potential pit reclamation costs based on the assumptions described in Section 20.6.5 of this report.

20.6.3.2 Plant Site

At closure, all surface facilities, equipment and buildings will be removed from the area. For buildings located on public land administered by the BLM, the concrete foundations will be broken, excavated, and disposed in a suitable location on private land. The concrete building slabs, footings and foundations for facilities located on private land controlled by THEMAC will be broken, covered with waste rock material and available growth media, regraded, and revegetated. All fuel tanks and reagent storage facilities will be removed from the site according to applicable federal and state laws. The general surface area will be graded and contoured for drainage control, and covered with a minimum of 6 inches of stockpiled growth media to conform to the surrounding topography to the extent practicable and revegetated.

The tailings seepage and stormwater collection ponds will be backfilled and regraded to minimize ponding prior to placement of topdressing and revegetation. The land bridge which conveys the tailings pipeline will also be left in place because this feature may be a contributing factor to the development of the riparian zone. The slopes of the land bridge will be stabilized and the top revegetated during reclamation.

20.6.3.3 Waste Rock Disposal Facilities

Currently anticipated reclamation criteria for the WRDFs include:

- An overall slope of approximately 3H:1V;
- Maximum inter-bench slope lengths of 200 feet measured downslope;
- Minimum 1 percent grade on top surfaces and on benches;
- A minimum of 36 inches of reclamation cover (topdressing and native materials) or approved equivalent.

The waste rock disposal facility will be constructed in a bottom to top manner. The bottom to top construction method facilitates reclamation by reducing the earthwork required at reclamation to produce stable slopes with controlled surface water drainage. Bottom to top construction also enables facility out-slopes to be progressively reclaimed as the lower lifts of waste rock disposal facility are completed.

End dumping of waste rock in 75 foot lifts with bench set-backs of approximately 120 feet will facilitate maintaining the maximum inter-bench slope length, and reduce regrading quantities. Following regrading, bench widths will be approximately 40 feet.

Progressive or concurrent reclamation of waste dumps is not presently incorporated into the feasibility study design. If possible, any reclamation of waste dumps that can be accomplished during operations can reduce reclamation and closure costs. Concurrent reclamation of waste dumps should be considered as an opportunity to improve the economics of the project.

The reclamation design criteria applied to the WRDFs and the TSF (described below) were developed based on previous experience with New Mexico regulators; however, minor adjustments may be required during detailed design based on recently approved Copper Rule regulations (September 10, 2013) administered by the NMED. The approved Copper Rule regulations go into effect on December 1, 2013 and are discussed in more detail in Section 4.7. With respect to the closure criteria applied to reclamation of the WRDF, the only obvious adjustment based on the approved Copper Rule is that the 3H:1V overall slopes on the reclaimed WRDF will be changed to 3H:1V interbench slopes. This adjustment will be done in detailed design. No adjustments will be required for the TSF reclamation described below because of the recently approved regulation. More detail on the Copper Rule is provided in Section 4.7 of this report.

20.6.3.4 Tailings Storage Facility

Currently anticipated reclamation requirements for the TSF include the following:

- An interbench slope of 3H:1V.
- Maximum inter-bench slope lengths of 200 feet.
- A minimum TSF surface grade of ½ percent.
- A minimum of 36 inches of reclamation cover (topdressing and native material), or approved equivalent, placed over the embankment and TSF interior.

The proposed centerline method of tailings embankment construction precludes progressive reclamation of the TSF. Post-mining reclamation costs cover tailings embankment outslope regrading, construction of stormwater conveyance structures and reclamation cover placement.

20.6.3.5 Infrastructure and Ancillary Facilities

In general, all surface pipelines, poles, and commercial signage will be removed. Ancillary facilities including roads, powerlines, water supply wells and pipeline, and sanitary waste facilities are discussed below.

20.6.3.5.1 Roads

A portion of the access road is a prescribed right-of-way to Sierra County and provides access through the mine site to private and public property adjacent to the west boundary of the project. From the point where the mine access road leaves the county road north of the tailings storage facility, the road will be narrowed to a standard two-lane road with a running surface approximately 30 feet wide. One culvert will be left in place where the road crosses Grayback Arroyo.

Prior to final closure, the State and BLM will determine which roads will be left intact. At this time, at a minimum, the road to the water tanks, haul roads, and waste disposal access roads are expected to be reclaimed.

Road reclamation includes recontouring to approximate original topography, if constructed on side hills, or contoured and ripped if constructed in flat areas. Water bars will be constructed to reduce erosion. Recontoured areas will be covered with at least 6 inches of topdressing material and revegetated.

20.6.3.5.2 Electrical Power

Power for the project will be furnished by existing overhead power lines. The overhead lines will be removed from the plant site and disconnected from the 115kV line owned by others by removing the wires of the last span of the line. Pumping stations and electrical substations on the site will be removed if no other post-closure land use is identified and approved. The disturbance associated with removal will be reclaimed by regrading and seeding. If renewable energy facilities are deployed at specific buildings, these will be removed and associated disturbances regraded and revegetated.

20.6.3.5.3 Water Supply

Water will be supplied to the mine from four production wells located about eight miles east of the plant site. A 20-inch welded steel pipeline transports the water to the mine and is buried at a minimum depth of two feet from the well field to the point of entry to the Project area.

The majority of the buried pipeline is owned by the BLM and will remain in place. Approximately 1 mile of the pipeline is on New Mexico State Trust Land and will also remain in place. The production wells will remain in a condition suitable for other uses. Roads, power lines, and facility infrastructure for the production wells will be installed during mine construction and will be removed after mine closure.

20.6.3.5.4 Sanitary and Solid Waste Disposal

At closure, the packaged wastewater treatment facility will be disassembled and removed. All solid wastes remaining on the site other than waste rock and tailings will be removed off-site for proper disposal. If a private Class III sanitary landfill is permitted for on-site disposal of nonhazardous solid waste, the landfill will be closed according to NMED requirements.

20.6.4 Post-Closure Monitoring

Monitoring will be ongoing throughout the life of the operation, during closure and for a post-closure period. The BLM and state agencies will set post-closure monitoring requirements at mine closure.

The tailings dam is regulated by the NMOSE Dam Safety Bureau for safety of operations. This agency is also responsible for oversight of the dam's decommissioning. The NMED will monitor water quality downstream of the dam per the conditions of the groundwater discharge permit.

20.6.5 Closure Costs

SRK Consulting (U.S.), Inc. (SRK) was contracted in 2010 to provide a post mining reclamation and closure cost estimate for the Copper Flat Preliminary Economic Assessment. In 2012, SRK provided an updated reclamation and closure cost estimate as part of the Copper Flat

Prefeasibility Study. In both cases, their approach was to use the Nevada Standardized Reclamation Cost Estimator (SRCE) software that was developed in a cooperative effort between the Nevada Division of Environmental Protection, Bureau of Mining Regulation and Reclamation (NDEP), the U.S. Department of Interior, Bureau of Land Management (BLM) and the Nevada Mining Association (NVMA). This approach facilitates accuracy, completeness and consistency in the calculation of costs for mine site reclamation.

For the update, changes to some facility inputs were supplied by both THEMAC as well as Golder Associates Inc. (Golder). The bulk of the data from the 2012 SRCE model (Version 1.4.1) was utilized.

Based on the updated FS closure cost model, the un-inflated and un-discounted direct closure costs (excluding the contingency costs) for the Copper Flat Project range from $30.3 million (including all physical reclamation activities and TSF water management) to $42.5 million (including pit water management). With indirect costs for engineering and permitting, project and construction management, procurement and insurances, the estimated total reclamation and closure cost is anticipated to be up to $44.1 million (SRK, 2013c). An explanation of unit rates and assumptions used to develop these closure costs are detailed in the following sections.

20.6.5.1 Unit Rates

The equipment fleet is assumed to have no ownership costs at the end of operations. For items not available within the mining fleet (such as articulated trucks), rental rates are assumed and mobilization is included.

Labor and equipment rates assume THEMAC rates. Labor rates include 10.5% scheduled overtime, 21% benefits, and 18% payroll taxes.

Labor rates required for final closure of the tailings storage facility are assumed to be comparable to THEMAC rates.

20.6.5.2 Closure Activity Assumptions

Assumptions used in developing the closure cost model related to the proposed Copper Flat facilities include the following:

- Waste rock disposal facilities: The WRDF configurations have been updated in accordance with new data, and will be covered with 36 inches of growth medium. The mine waste dumps will be constructed to facilitate final grading for reclamation. Actual waste rock reclamation activities will occur at the end of mining.
- Tailings storage facility: The TSF configuration parameters have been updated in accordance with the new data provided to SRK. The TSF will be covered with a 36-inch thick cover. SRK has assumed that half of the TSF area will be reclaimed at the end of mine life and the other half will be used during the active draindown management period (i.e., recirculation and forced evaporation). At the end of active solution management when this area is no longer needed, the remaining half will be reclaimed.

- Solution Management: The cycloned tailings embankment is currently estimated by Golder to drain at a maximum rate of 400 gallons per minute (gpm), while the impounded tailings are estimated to drain at a rate of up to 80 gpm (SRK, 2013c). The TSF is assumed to require management of collected drain water (draindown) until such time that the draindown flows can be managed passively in a closed pond system. This time period includes drainage for approximately six months after deposition ceases from the cycloned embankment, and 10 years for the impounded tailings draindown water. This timeframe requires the implementation of mechanically enhanced or "forced" evaporation of the impoundment draindown. Following active management, the passive management phase is assumed to last an additional 10 years for a total of 20 years of draindown water management, for which annual inspections are included. The current closure cost estimate includes construction of evapo-transpiration (ET) cells for both active and passive management of TSF draindown.

- SRK has assumed 2 gpm/acre flow capacity for optimum function of the ET cells based on previous experience in arid climates, and ET Cell guidelines in the State of Nevada. Given the seepage pond downstream of the tailings dam is approximately five acres, SRK has assumed that the seepage pond would be converted into an ET cell, and that 10 acres of additional ET cell(s) would therefore be required to manage the TSF draindown. SRK has assumed the construction of two ET cells, each covering five acres. The costs for these cells include backfilling with gravel, overliner layer, and rock cover, screening of the material, installation of geotextile and double liner and relining of the seepage pond, and installation of manholes, piping, and dosing tanks.

- Buildings: Plant/buildings designs have been updated according to new drawings provided to SRK. Ultimately, all buildings will be demolished. Removal of plant equipment is assumed to be done by a contractor who will take the equipment for scrap value, or the equipment will be transferred to another site. SRK assumes 30 inches of cover material (sourced from the waste rock) will be applied to the footprints of the buildings and graded for surface drainage control. Six inches of growth media stockpile will be applied to the general yard area of the plant.

- Exploration: Provision for closure of exploration drill holes has been assumed through to the end of mine life, consistent with the PEA and PFS closure cost estimates.

- Linear disturbances: The power line removal and telephone corridor reclamation has been retained from the PEA and PFS closure cost estimates. Reclamation of haul roads and general roads has been updated according to the newer drawings provided to SRK. SRK assumed six inches of growth media would be placed on reclaimed roads.

- Pit: Berms will be constructed around the perimeter of the pit. Growth media will be placed on the benches above the projected pit lake level and seeded.

- Pit lake water treatment: A pit lake will form after operations have ceased based on the current pit configuration. Geochemical characterization predictive modeling was developed for the Copper Flat project and reported in September 2013 (SRK, 2013b). Based on this modeling effort, waters in the future pit lake at Copper Flat are predicted to be moderately alkaline (pH ~8), primarily due to the buffering capacity of the inflowing groundwater. During the early stages of pit infilling (i.e., during the first six months post-closure), removal/flushing of soluble salts from the pit walls is likely to result in a flush in sulfate, cadmium, molybdenum, selenium, sodium, chloride, and sulfate concentrations in the early pit lake. The effects of this initial flush will be dissipated by inflowing groundwater and precipitation and pit lake chemistry will then evolve over time, with several parameters increasing in concentration as a result of evapoconcentration effects. This is similar to the trends observed in the existing pit lake, where elemental concentrations have increased since the start of pit infilling.

- The model simulations demonstrate that all of the modeled chemical parameters are expected to be below New Mexico livestock standards (NMAC 20.6.4.900) in the 100 year post-closure pit lake with the possible exception of selenium. In addition, mercury concentrations are anticipated to increase over time, but remain below the livestock standard (0.01 mg/L). Mercury concentrations are predicted to be marginally above the recently promulgated wildlife standard of 0.00077 mg/L by year 25. However, this exceedence may not represent a true ecological risk to area wildlife within the Copper Flat area. The proposed post-mining land use (PMLU) for the mine pit is wildlife habitat (not necessarily aquatic habitat); therefore, NMCC will pursue long-term mitigations strategies through regulatory processes or engineering controls or both.
- The regulatory preference for passive closure solutions to anticipated long-term pit lake chemistry (from numerical modeling), limits the potential utilization of active "in-perpetuity" closure management options demonstrated to be feasible under similar conditions in semi-arid climates. Therefore, strategies that define the potential liability must be considered, including the potential remediation cost for a finite time period (for instance 30 years after all closure construction is completed) that includes currently feasible actions towards arriving at a regulatory acceptable solution.
- For the purposes of the current FS closure cost estimate, SRK has assumed that water treatment may be required within the 30-year timeframe for post-closure, pit-lake management, including pre-treatment in a gypsum-precipitation plant, followed by reverse osmosis polishing, to allow closure cost calculation at this stage of the project. Estimated costs for pit water treatment have been included as a "contingency" cost to account for closure liabilities that will exist until regulatory approval of the pit lake water at closure can be obtained and/or mitigation strategies are developed and closure alternatives can be identified.
- The 30-year timeframe for post-closure pit lake management is selected to represent a realistic time frame for demonstration that acceptable pit-lake water quality (i.e., that satisfies NMED post-closure chemistry requirements) can be passively achieved (i.e., after cessation of treatment). This will be achieved by evaluating periods of treatment followed by periods of non-treatment of the water column. If acceptable pit lake water quality remains reliant on active treatment after the 30-year timeframe, continued active treatment will remain a technically valid mitigation option which would include additional longer-term costs not included herein. The 30-year timeframe is considered adequate to create regulatory trust in the effectiveness and continued operation of the active system.

- Annual sludge amounts from the assumed treatment option have been estimated based on the sulfate contribution of groundwater flow and precipitation runoff in Year 1 in the ongoing pit lake water quality study and the amount of lime required. The sludge would be disposed of in double-lined cells, for which construction costs have been included in the current model. The sizing of those ponds is based on the total volume of sludge, including water content over the longer term.
- Miscellaneous items/disturbance: The closure costs for the landfill, waste disposal, well abandonment, power lines, monitoring requirements, and construction management have remained consistent with the PEA and PFS closure cost estimates. The ponds, diversion ditches, fences, and surface pipes have been updated for dimensions. Miscellaneous yard disturbance and the reclamation of the footprints or areas of the growth media stockpiles have been included for revegetation.

21 CAPITAL AND OPERATING COSTS

21.1 PROCESS OPERATING COST ESTIMATE

This section addresses process plant operating and maintenance costs and general and administrative (G&A) costs. The process plant operating costs are summarized by cost element of labor, electric power, reagents, maintenance parts and supplies and services.

Table 21-1: Process Operating Cost Summary

	Annual Production	
Milled Tons	10,800,000	
	Annual Cost	Unit Cost per Ton
Labor	$8,276,322	$0.77
Reagents	$4,697,190	$0.43
Steel Consumption	$9,182,160	$0.85
Electrical Power	$17,674,106	$1.64
Maintenance Parts & Services	$3,904,859	$0.36
Supplies & Services	$3,442,590	$0.32
Tailings Operations	$4,204,066	$0.39
Total	$51,381,294	$4.76

21.1.1 Process Labor and Fringes

The process plant operating and maintenance labor costs were derived from a staffing plan and are based on labor rates from an industry survey for this region and modified where necessary. The annual salaries include overtime and benefits for both salaried and hourly employees. The benefits rate used is 39 percent; an increase from the previous rate of 35 percent to reflect increases in medical benefit costs. A summary table is shown below.

Table 21-2: Process Labor Summary

	Personnel	Annual Cost
Operation	52	$4,801,974
Maintenance	38	$3,474,348
Total	90	$8,276,322

21.1.2 Reagents

Consumption rates were determined from the metallurgical test data or industry practice. Budget quotations were received for reagents supplied from local sources where available, with an allowance for freight to site or from historical data from other projects.

A summary of process reagent consumption and cost is shown below.

Table 21-3: Process Plant Reagents – Typical Year of Operation

Reagents	lb/ton ore	lbs/year	$/lb	Annual Cost	$/ton ore
Lime	2.40	25,920,000	$0.11	$2,851,200	$0.26
Sodium Hydrosulfide (NaHS)	0.025	270,000	$0.42	$113,400	$0.01
Flocculant	0.001	14,040	$2.45	$34,398	$0.00
Antiscalant	0.005	54,000	$1.36	$73,440	$0.01
AERO 238	0.005	54,000	$2.41	$130,140	$0.01
Moly Collector (Flomin 910)	0.020	216,000	$0.66	$142,560	$0.01
PAX	0.030	324,000	$1.09	$353,160	$0.03
MIBC	0.070	756,000	$1.50	$1,134,000	$0.11
#2 Diesel	0.026	280,800	$0.49	$137,592	$0.01

21.1.3 Maintenance Wear Parts and Consumables

Wear parts consumption (liners) and grinding media were estimated on a pound/ton basis. The consumption rate and unit costs were used to calculate the annual costs and cost per unit of production. These consumption rates and costs are shown below.

Table 21-4: Grinding Media and Wear Items

Mill Ore Tons (annual production)		10,800,000			
Grinding Media	**lb/ton ore**	**lbs/year**	**$/lb**	**Annual Cost**	**$/ton ore**
Primary Crusher Liners	0.03	324,000	$3.50	$1,134,000	$0.11
SAG Mill Liners	0.05	540,000	$1.51	$815,400	$0.08
Ball Mill Liners	0.06	648,000	$1.36	$881,280	$0.08
SAG Mill - Grinding Balls	0.40	4,320,000	$0.61	$2,635,200	$0.24
Ball Mill - Grinding Balls	0.60	6,480,000	$0.56	$3,628,800	$0.34
Regrind Mill - Grinding Balls	0.01	108,000	$0.81	$87,480	$0.01
Total Liners & Grinding Media Cost				$9,182,160	$0.85

An allowance was made to cover the cost of maintenance for the facilities and all items not specifically identified. It is estimated to be $3.9 million annually based on the annual tonnage.

21.1.4 Electrical Power

Electrical power costs were based on current pricing from Sierra Electric at a rate of $0.075 per kWh. The electric power consumption was based on the equipment list connected loads, discounted for operating time and anticipated operating load level. This results with an estimated power cost of $18.0 million annually.

21.1.5 Process Supplies and Services

An allowance was estimated for items such as lubricants, diesel fuel, safety items, small vehicle cost, liquid nitrogen facility, flocculant system and tools. The allowances were estimated from historical information or from other operations and projects. The unit cost per ton is estimated to be $0.34 for a typical year of operations and is estimated to be $3.4 million.

21.1.6 General and Administration Costs

G&A costs include labor and fringes for the administrative employees, accounting department, purchasing, human resources, community relations, safety and environmental departments. Also included are office supplies, communications, legal fees, community relations and outside services. These costs are summarized in the table below.

A staff of 25 employees for the departments mentioned above and labor rates that are based on an industry survey for this region and modified where necessary are used in calculating the labor cost. The same benefit rate of 39 percent was applied for salaried and hourly employees. All other G&A costs are annual allowances.

Table 21-5: General Administration Summary

Ore Tons Processed	10,800,000	
Cost Item	**Annual Cost**	**$/ton ore**
Labor & Fringes	$2,464,598	$0.23
Corporate Overhead	$920,000	$0.085
Reclamation Bond Expense ($0.60 per $1,000 bond)	$24,000	$0.002
Accounting (excluding labor)	$24,000	$0.002
Safety (excluding labor)	$24,000	$0.002
Human Resources (excluding labor)	$24,000	$0.002
Security (excluding labor)	$24,000	$0.002
Janitorial Services (contract)	$60,000	$0.006
Community Relations (excluding labor)	$60,000	$0.006
Office Operating Supplies and Postage	$60,000	$0.006
Maintenance Supplies	$633,605	$0.059
Maintenance Labor, Fringes, and Allocations	$158,401	$0.015
Power	$27,692	$0.003
Propane	$12,000	$0.001
Phone/Communications	$72,000	$0.007
Licenses, Fees, and Vehicle Taxes	$32,000	$0.003
Claims Assessment	$20,000	$0.002
Legal	$120,000	$0.011
Insurances	$738,400	$0.068
Subs, Dues, PR, and Donations	$24,000	$0.002
Travel, Lodging, and Meals	$120,000	$0.011
Training	$60,000	$0.006
Total General & Administrative Cost	**$ 5,702,697**	**$0.53**

21.1.7 Mine Operating Costs

Mine operating costs were developed based on first principals for the mine plan and equipment list presented earlier in Section 16. The unit costs for labor were provided by THEMAC. Fuel costs were set at $3.26 USD per gallon.

Table 21-6 summarizes the mine operating costs by the unit operations. Preproduction is established to be 6 months in duration operating 1 shift/day. The cost per ton in all periods is based on the total tonnage moved within the mine plan.

Table 21-7 summarizes the total mine operating cost per time period along with the total mine capital cost. This table should provide a clear indication of the mine operating costs by year of operation.

The mine operating costs include:

1) Drilling, blasting, loading, and hauling of material from the mine to the crusher, low grade stockpile or waste storage facilities. Maintenance of the waste storage areas and stockpiles is included in the mining costs. Maintenance of mine mobile equipment is included in the operating costs.
2) Mine supervision, mine engineering, geology and ore control are included in the G&A category.
3) Operating labor and maintenance labor for the mine mobile equipment are included.
4) Mine access road construction and maintenance is included. If mine haul trucks drive on the road, its cost and maintenance is included in the mine operating costs.
5) The small stockpile (360 ktons) that is generated during preproduction stripping is re-handed to the plant in Year 1.
6) A general mine allowance is included that is intended to cover mine pumping costs and general operating supplies that cannot be assigned to one of the unit operations.
7) A general maintenance allowance is included that is intended to cover the general operating supplies of the maintenance group.
8) An increased maintenance allowance is included during the final years of production due to the age of the mine equipment.

The mine operating costs DO NOT include:

1) Crushing, conveying or processing
2) Site reclamation or recontouring costs.

The mine is planned to work 2 shifts per day for 365 days per year. Five days (10 shifts) of loss time are assumed due to weather delays.

Table 21-6: Summary of Mine Operating Costs

Summary of Mine Operating Costs - Total Dollars ($US x 1000)													
Mining Year	Total Material (kt)	Drilled/ Blasted (kt)	Drilling	Blasting	Loading	Hauling	Auxiliary	General Mine	General Maint.	G&A	TOTAL	Cost/ Tonne of Total Mat'l	Cost/ Ore Tonne (Proc'd)
Preprod	470	470	92	106	109	165	392	55	164	501	1,583	3.369	
Yr1 Q1	4,375	4,375	668	623	780	1,778	1,392	414	531	820	7,007	1.602	3.688
Yr1 Q2	4,375	4,375	669	623	781	1,997	1,340	408	533	828	7,178	1.641	3.589
Yr1 Q3	4,375	4,375	670	623	782	1,863	1,369	394	532	824	7,057	1.613	2.614
Yr1 Q4	4,375	4,375	668	623	780	2,001	1,368	396	533	828	7,196	1.645	2.665
Yr2	17,500	17,500	2,679	2,494	3,126	8,386	5,451	1,589	2,139	3,328	29,190	1.668	2.703
Yr3	17,500	17,500	2,670	2,494	3,119	9,190	5,415	1,614	2,138	3,351	29,990	1.714	2.777
Yr4	17,500	17,500	2,664	2,494	3,114	10,001	5,250	1,616	2,139	3,375	30,652	1.752	2.838
Yr5	17,500	17,500	2,661	2,494	3,112	9,808	5,414	1,620	2,139	3,367	30,614	1.749	2.835
Yr6	15,949	15,949	2,438	2,288	2,915	8,964	4,518	1,527	2,067	3,310	28,028	1.757	2.796
Yr7	12,391	12,391	1,996	1,816	2,432	7,231	4,467	1,271	1,904	3,238	24,354	1.965	2.460
Yr8	10,618	10,618	1,719	1,581	2,007	6,575	4,458	1,142	1,815	3,180	22,478	2.117	2.270
Yr9	9,971	9,971	1,557	1,495	1,737	6,661	4,118	1,095	1,773	3,145	21,581	2.164	2.180
Yr10	9,903	9,903	1,555	1,486	1,732	7,664	4,115	1,090	2,310	3,185	23,137	2.336	2.337
Yr11	9,901	9,901	1,472	1,486	1,734	8,723	3,988	1,090	2,325	2,971	23,789	2.403	2.403
Yr12	1,063	1,063	153	163	191	1,087	500	128	272	368	2,862	2.692	2.702
TOTAL	157,766	157,766	24,331	22,889	28,450	92,092	53,554	15,448	23,313	36,620	296,696	1.881	2.624
PERCENT			8.2%	7.7%	9.6%	31.0%	18.1%	5.2%	7.9%	12.3%	100.0%		

Table 21-7: Summary of Mine Capital and Operating Costs

SUMMARY OF MINE CAPITAL AND OPERATING COSTS ($US x 1000)						
	Mine Equipment			(1)		
Year	Initial Capital Cost	Sustaining Capital Cost	Mine Preprod. Development	Total Mine Capital	Operating Cost	TOTAL COST
Preprod	13,705		1,583	15,289		15,289
Yr1 Q1		12,037		12,037	7,007	19,043
Yr1 Q2		833		833	7,178	8,011
Yr1 Q3		0		0	7,057	7,057
Yr1 Q4		0		0	7,196	7,196
Yr2		1,079		1,079	29,190	30,269
Yr3		1,079		1,079	29,990	31,069
Yr4		310		310	30,652	30,962
Yr5		1		1	30,614	30,615
Yr6		4,675		4,675	28,028	32,703
Yr7		4,443		4,443	24,354	28,797
Yr8		408		408	22,478	22,885
Yr9		0		0	21,581	21,581
Yr10		0		0	23,137	23,137
Yr11		0		0	23,789	23,789
Yr12		0		0	2,862	2,862
TOTAL	13,705	24,864	1,583	40,153	295,113	335,266

21.2 CAPITAL COST ESTIMATE

21.2.1 Mine Capital Cost

Mine capital cost for mobile equipment was developed from the mine equipment list presented in Section 16. Unit costs for all the major equipment and most of the minor equipment were based on estimates provided in the memo titled “Used Mining Equipment Memo Updated 17Oct2013”, prepared by Ed. Fidler. Mr. Fidler has been referenced within Section 3 under reliance on other experts. Unit costs for the minor equipment, which unable to be quoted were based on IMC file data. Most of that information was current during 2012. Older quotes for minor units were inflated as required.

Mine capital costs do include:

1) All mine mobile equipment required to drill, blast, load, and haul the material from the pit to the appropriate destinations.
2) Auxiliary equipment to maintain the mine and material storage areas in good working order as well as construct the mine haul roads and maintain them.
3) Equipment to maintain the mine fleet such as tire handlers and forklifts.
4) Light vehicles for mine operations and staff personnel.
5) An allowance is included for initial shop tools.
6) An allowance is included for initial spare parts inventory.
7) Mine engineering equipment (computers, survey equipment etc.) is included.
8) Mine communication network & system.
9) Equipment replacements are included as required based on the useful life of the equipment.

Mine capital costs DO NOT include:

1) Mine office buildings, or shop facilities. They are included elsewhere in the project capital list.
2) Mobile equipment that is not required by the mine. (i.e. no mobile units for the plant).
3) Infrastructure or process plant related costs.

The equipment is shown as purchase in the year it is required for operation.

Table 21-8 presents the detailed purchase schedule for the mine equipment.

Table 21-9 summarizes the mine capital costs by year along with the mine operating costs.

Table 21-9 shows preproduction stripping as part of the mine capital cost. That cost is broken out separately to illustrate that it is not a cost to purchase mine equipment.

Table 21-8: Mine Equipment Capital Costs

Mine Equipment Capital Costs	Unit Cost	Life	Preprod		Yr1 Q1		Yr1 Q2		Yr1 Q3		Yr1 Q4		Yr2		Yr3		Yr4		Yr5		Yr6		Yr7		Yr8		Project
	($1000)	Years	No.	($1000)	No.	($1000)	No.	($1000)	No.	($1000)	No.	($1000)	No.	($1000)	No.	($1000)	No.	($1000)	No.	($1000)	No.	($1000)	No.	($1000)	No.	($1000)	Total
MINE MAJOR EQUIPMENT:																											
CAT MD6290 Blast Hole Drill (45,000 lbs)	775	60,000	1	775	2	1,550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,325
Cat 993K Loader (19 Cu Yd)	1,750	42,000	1	1,750	1	1,750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3,500	0	0	0	0	7,000
Cat 777G Haul Truck (100 Tons)	950	71,000	2	1,900	6	5,700	0	0	0	0	0	0	1	950	1	950	0	0	0	0	0	0	0	0	0	0	9,500
Haul Truck Rebuild	500																								0	0	0
Cat D9T Track Dozer (410 hp)	700	42,000	1	700	2	1,400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,100
Cat 834H Wheel Dozer (354 hp)	525	35,000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	525	0	0	0	0	525
Cat 14M Motor Grader (14 ft)	250	37,000	1	250	1	250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	250	0	0	750
Cat 773G Water Truck (10,000 Gal)	750	48,000	1	750	0	0	1	750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,500
Sandvik DX-800 Rock Drill	250	46,000	1	250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	250
Cat 329D Excavator (2 Cu Yd)	200	40,000	1	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200
Subtotal Major Equipment				6,575		10,650		750		0		0		950		950		0		0		4,025		250		0	24,150
MINE SUPPORT EQUIPMENT:		Years																									
Blasthole Stemmer (skid steer)	47	7	1	47		0		0		0		0		0		0		0		0		0	1	47		0	94
Blasters Flatbed Truck (2 T)	50	7	1	50		0		0		0		0		0		0		0		0		0	1	50		0	100
ANFO/Slurry Truck (21,400 Lb)	510	7	1	510		0		0		0		0		0		0		0		0		0	1	510		0	1,020
Fuel/Lube Truck 5,000 gal	891	7	2	1,782		0		0		0		0		0		0		0		0		0	2	1,782		0	3,564
Spare Loader Bucket	192	18	1	192		0		0		0		0		0		0		0		0		0		0		0	192
Flatbed Truck (8 - 10 ton)	67	7	1	67		0		0		0		0		0		0		0		0		0	1	67		0	134
Crane Truck (8 - 10 ton)	140	7	1	140		0		0		0		0		0		0		0		0		0	1	140		0	280
Cat 988 with Tire Handler	954	7	1	954		0		0		0		0		0		0		0		0		0	1	954		0	1,908
Mechanics Truck	185	7	1	185		0		0		0		0		0		0		0		0		0	1	185		0	370
Welding Truck	182	7	1	182		0		0		0		0		0		0		0		0		0	1	182		0	364
Tractor & Lowboy (highway)	228	18	1	228		0		0		0		0		0		0		0		0		0		0		0	228
Shop Forklift (Hyster H100XM)	51	18	1	51		0		0		0		0		0		0		0		0		0		0		0	51
RT Forklift (Sellick S160-4)	98	9	1	98		0		0		0		0		0		0		0		0		0		0	1	98	195
Man Van	35	4	2	70		0		0		0		0		0		0	2	70		0		0		0	2	70	210
Pickup Truck (4x4)	24	4	10	240		0		0		0		0		0		0	10	240		0		0		0	10	240	720
Light Plants	12	18	6	72		0		0		0		0		0		0		0		0		0	6	72		0	144
Mine Radios (Handheld & Fixed Units)	1	7	86	86	12	12	1	1		0		0	1	1	1	1		0	1	1	86	86	13	13		0	201
Mine Communications Network	274	18	1	274		0		0		0		0		0		0		0		0		0		0		0	274
Water Pipe - Dewatering	75	18	1	75		0		0		0		0		0		0		0		0		0		0		0	75
Mine Pumps (Diesel Trailer Mounted)	191	7	1	191		0		0		0		0		0		0		0		0		0	1	191		0	382
Mine Planning Software	241	18	1	241		0		0		0		0		0		0		0		0		0		0		0	241
Tire Press	253	18	1	253		0		0		0		0		0		0		0		0		0		0		0	253
Shop Jacks	42	18	1	42		0		0		0		0		0		0		0		0		0		0		0	42
Ammonium Nitrate Storage	114	18	1	114		0		0		0		0		0		0		0		0		0		0		0	114
	0			0		0		0		0		0		0		0		0		0		0		0		0	0
Subtotal Mine Support Equipment				6,144		12		1		0		0		1		1		310		1		86		4,193		408	11,156
Engineering/Geology Equipment	150	18	1	150		0	0	0	0	0	0	0	0	0		0		0	0	0	0	0	0	0	0	0	150
Shop Tools (3% of Major Equipment)		3.0%		314		516		31		0		0		48		48		0		0		212		0		0	1,168
Initial Spare Parts (5% of Major Equipment)		5.0%		523		859		51		0		0		80		80		0		0		353		0		0	1,946
Contingency (0%)																											0
TOTAL EQUIPMENT/FACILITIES CAPITAL				13,705		12,037		833		0		0		1,079		1,079		310		1		4,675		4,443		408	38,569

Table 21-9: Summary of Capital and Operating Costs ($USx1000)

SUMMARY OF MINE CAPITAL AND OPERATING COSTS ($US x 1000)						
	Mine Equipment					
Year	Initial Capital Cost	Sustaining Capital Cost	Mine Preprod. Development	(1) Total Mine Capital	Operating Cost	TOTAL COST
Preprod	13,705		1,583	15,289		15,289
Yr1 Q1		12,037		12,037	7,007	19,043
Yr1 Q2		833		833	7,178	8,011
Yr1 Q3		0		0	7,057	7,057
Yr1 Q4		0		0	7,196	7,196
Yr2		1,079		1,079	29,190	30,269
Yr3		1,079		1,079	29,990	31,069
Yr4		310		310	30,652	30,962
Yr5		1		1	30,614	30,615
Yr6		4,675		4,675	28,028	32,703
Yr7		4,443		4,443	24,354	28,797
Yr8		408		408	22,478	22,885
Yr9		0		0	21,581	21,581
Yr10		0		0	23,137	23,137
Yr11		0		0	23,789	23,789
Yr12		0		0	2,862	2,862
TOTAL	13,705	24,864	1,583	40,153	295,113	335,266

21.2.2 Plant Capital Costs

Capital costs for the processing plant were estimated using budgetary equipment quotes, material take-offs for concrete, steel, and earthwork, estimates from vendors and consultants, and estimates based on experience with similar projects of this type. Some of the costs and quantity estimates used by M3 were supplied by other consultants.

- Golder Associates (Golder) provided quantities and costs associated with construction and operation of the tailings storage facility and associated ponds.
- Costs for installation of substation to obtain power for the mining operation were provided by Sierra Electric, the local electrical cooperative that controls the service area in which the mine is located.

The capital cost estimates includes both initial capital and sustaining capital for the project. Initial capital is defined as all capital costs through to the end of construction or the end of Year 1 of production. Capital costs predicted for later years are carried as sustaining capital in the financial model. All costs are in 1st quarter 2013 US dollars.

The accuracy of this estimate for those items identified in the scope-of-work is estimated to be within the range of ±15 percent. Outside consultants provided estimates for the primary power supply, water supply to the mine site, and TSF. These consultants reported that their estimates are compatible with the overall estimate accuracy of ±15 percent.

Based on the level of engineering completed and definition of scope, M3 estimated the contingency at 15 percent of the direct and indirect costs (Contracted Cost).

21.2.2.1 Direct Costs

Site work quantities were estimated by Golder for the tailings liner preparation and construction, seepage collection pond, tailings distribution system, and waste rock disposal run-off ponds. Tailings dam mobile equipment was estimated separately and is included in Owner's costs.

Structural steel and concrete quantities for the plant buildings were estimated using material take-offs based on preliminary designs. Concrete quantities were reduced as a consequence of the assumption that existing concrete in the primary crusher structure, coarse ore reclaim tunnel, concentrator, truck shop, and administration building were reusable. Inspection of uncovered portions of these structures indicated they were in excellent condition, supporting that assumption. Concrete work was also estimated to remove, modify, or add to the existing structures to accommodate the preliminary designs.

Concrete costs were estimated based upon an informal survey of current and recent projects in New Mexico.

Steel costs were based upon a recent large steel purchase for a mine plant of similar scale. Competitive bids were collected from the US, Canada, and Mexico. M3 considers the resulting bid prices to be representative of world structural steel prices during the first quarter of 2013.

Architectural costs are based on M3 records of similar-sized projects for the major buildings. Pre-engineered building quotes were obtained for some of the smaller buildings for comparison.

Vendor quotes supplied cost data for major mine equipment. Small support equipment cost was estimated by an allowance of 5 percent.

M3 prepared a comprehensive Equipment List based on the flowsheets developed for the project. Major process plant equipment such as crushers, mills, flotation cells, filters, tanks, agitators, pumps, conveyors, and major electrical components were priced from vendor budgetary quotations. Other equipment prices were based on M3's historical records including budgetary and equipment purchase pricing from recent, similar projects. Some historic records were scaled to correct for size or capacity difference. Installation costs are based on allowances for materials and M3's judgment and experience for labor. Over 85 percent, of total plant mechanical equipment cost came directly from 2013 vendor budgetary quotes for this or other projects.

Piping quantities were based on material takeoffs using the feasibility study design. Long-run piping in the process area and water supply, fire suppression, and potable water systems was estimated on a footage basis. Piping for the tailing disposal system is included in Golder's capital cost estimates.

Instrumentation costs were estimated using piping and instrumentation diagrams for the project.

Quality Assurance Testing is estimated at 2 percent of total direct costs for civil, concrete, piping, steel, and electrical costs.

Surveying is estimated at 1 percent of total direct costs for civil, concrete, and steel costs.

Freight allowance includes the following components.

- Freight is included at 7 percent of total materials and plant equipment costs.
- Duties, Customs, and In-transit warehousing are included at 1 percent of total materials and plant equipment costs.

21.2.2.2 Indirect Costs

Indirect costs include such things as indirect field costs, camp and busing costs for remote sites, mobilization costs, contractor fees, and freight costs. There are no indirect field or camp and busing costs estimated for this project. Contractor fees are included in the direct costs. Indirect costs estimated for this project include mobilization and freight.

Mobilization is calculated as 0.5 percent of Total Direct Costs without mine and mobile equipment, but including Quality Assurance Testing and Surveying.

Engineering, Procurement, and Construction Management (EPCM) services and fees are estimated as follows.

- Management and accounting is 0.75 percent of total direct field costs without prestripping and mine equipment.
- Engineering is 6 percent of total direct field costs without prestripping and mine equipment.
- Project services are 1 percent of total direct field costs without prestripping and mine equipment.
- Project control is 0.75 percent of total direct field costs without prestripping and mine equipment.
- Construction management is 6.5 percent of total direct field costs without prestripping and mine equipment.

- EPCM fee is 1 percent of total direct field costs without prestripping and mine equipment.
- EPCM construction trailers are 0.2 percent of total direct field costs without prestripping and mine equipment.
- Temporary facilities and support are 0.5 percent of total direct field costs without prestripping and mine equipment.
- Construction power is 0.1 percent of direct costs.

Other indirect allowances in the estimate based on plant equipment costs include supervision of specialty construction (1 percent), precommissioning (0.3 percent), commissioning (0.3 percent), and capital spares (2 percent). Commissioning spare parts are estimated at 0.5 percent of equipment purchase costs.

The following taxes have been considered for this estimate:

- Sales tax is not included in the cost of equipment.
- New Mexico Gross Receipts Tax is a blended rate that includes deductions of Industrial Revenue Bonds and out-of-state purchases that yields a rate of 4.30 percent.
- Payroll taxes are included in the labor rates

Working capital is not included in the capital cost but is accounted for in the financial model (Section 22).

Sustaining Capital is not included in the initial Capital Cost Estimate but has been estimated on the same basis as the initial capital. The major components of sustaining capital are additions to the mine equipment fleet in later years, and tailings management facility expansions including additional earthwork and liner placement. Estimated costs are applied in future years in the financial model (Section 22). Sustaining costs are included in the financial model.

21.2.3 Tailings Capital and Operating Cost

Table 21-10 includes a summary of feasibility-level capital and operating costs for the TSF. Contingency costs are 15 percent for pumping, piping, and cyclone components, and 15 percent for activities that include earthwork and could be influenced by subsurface conditions. Contingency costs are identified on Table 21-10; however, they are not included in the capital and operating cost totals, or in the net present value (NPV) calculations. Engineering, procurement and construction management (EPCM) costs are also not included. It is assumed that EPCM and contingency cost will be applied globally in the overall feasibility study cost estimate.

Table 21-10: Tailings Cost Estimate

Single Lined TSF at 30Ktpd Mining Rate, Continuous Underdrain
Cost Estimate and Economic Analysis Copper Flat TSF

Copper Flat Project Feasibility Study

Nominal Mining Rate	30,000 tpd
Net Tons to Tailings Year 1-5	1,333 tph
Net Tons to Tailings Year 6-11	1,222 tph
Total Reserves	113,000,000 tons
Mine Life	11.1 years

Item /Area	Contingency	Contingency Cost	Total (No Contingency)	Total (With Contingency)	-1	1	2	3	4	5	6	7	8	9	10	11	12
Capital Costs																	
TSF Earthworks and Liner Installation	15%	$10,645,050	$70,967,000	$81,612,050	$37,625,000	$7,301,000	$6,485,000	$7,301,000		$8,356,000		$3,899,000					
Impoundment Underdrain Outlet Works	15%	$52,800	$352,000	$404,800	$352,000												
Seepage Reclaim Pond (earthworks and liner)	15%	$142,800	$952,000	$1,094,800	$952,000												
TSF Equipment Allowance (dozer, compactor etc)	15%	$300,000	$2,000,000	$2,300,000	$2,000,000												
Emergency Pond, Cyclone plant site work	15%	$36,900	$246,000	$282,900	$246,000												
Projected CAPEX (additional pipes, pump upgrade, etc.)	15%	$200,812	$1,338,744	$1,539,556		$367,988	$83,860				$151,099	$735,797					
Cyclone Station	15%	$971,067	$6,473,777	$7,444,844	$6,473,777												
Seepage Pond (Reclaim works)	15%	$323,952	$2,159,681	$2,483,633	$2,159,681												
TSF Barge	15%	$536,448	$3,576,319	$4,112,767	$3,576,319												
Pipes	15%	$707,361	$4,715,739	$5,423,100	$4,715,739												
Total Capital		**$13,917,189**	**$92,781,260**	**$106,698,449**	**$58,100,516**	**$7,668,988**	**$6,568,860**	**$7,301,000**	**$0**	**$8,356,000**	**$151,099**	**$4,634,797**	**$0**	**$0**	**$0**	**$0**	**$0**
Operating Costs																	
Pipeline/cyclone plant operating cost (labor)	15%	$2,863,357	$19,089,047	$21,952,405		$1,719,734	$1,719,734	$1,719,734	$1,719,734	$1,719,734	$1,719,734	$1,719,734	$1,719,734	$1,719,734	$1,719,734	$1,719,734	$171,973
Spares	15%	$787,191	$5,247,941	$6,035,132		$693,357	$699,930	$576,750	$576,750	$576,750	$391,980	$416,980	$416,980	$416,980	$232,210	$232,210	$17,062
Power ($0.075/Kwh)	15%	$768,267	$5,121,777	$5,890,043		$437,999	$408,317	$388,738	$407,606	$434,958	$423,203	$425,530	$453,082	$501,398	$576,173	$604,338	$60,434
Underflow spread and compact ($0.28/ton)	15%	$2,160,966	$14,406,440	$16,567,406		$1,376,085	$1,376,085	$1,376,085	$1,376,085	$1,376,085	$1,233,773	$1,233,773	$1,233,773	$1,233,773	$1,233,773	$1,233,773	$123,377
Total Operating Costs		**$6,579,781**	**$43,865,205**	**$50,444,985**		**$4,227,175**	**$4,204,067**	**$4,061,307**	**$4,080,176**	**$4,107,528**	**$3,768,690**	**$3,796,016**	**$3,823,569**	**$3,871,884**	**$3,761,890**	**$3,790,055**	**$372,846**
Total Capex and Opex		**$20,496,970**	**$136,646,465**	**$157,143,434**	**$58,100,516**	**$11,896,163**	**$10,772,927**	**$11,362,307**	**$4,080,176**	**$12,463,528**	**$3,919,789**	**$8,430,813**	**$3,823,569**	**$3,871,884**	**$3,761,890**	**$3,790,055**	**$372,846**

NPV Analysis			(No Contingency)
NPV (@5%)			**$120,872,495**
NPV (@10%)			**$109,743,113**

Notes:
1) Taxes have been excluded from this cost estimate.
2) NPV presented without contingency

21.2.4 Current Value of Existing Infrastructure

The Copper Flat Project takes advantage of significant infrastructure improvements that are a legacy from the Quintana operation in the early 1980s. Existing infrastructure that will be reused during redevelopment includes the items listed below. The value of these improvements was evaluated to provide an estimate of the additional capital cost that would be required, had this work not been done by Quintana or not have been useable by NMCC for this project.

- 115 kV powerline from the Caballo Substation to the mine site.
- Production wellfield and 20-inch pipeline from the wellfield to the mine site.
- Diversion channel collecting stormwater from west and south of the pit and diverting unimpacted flows down Grayback Wash.
- Existing concrete foundations and structures including
  - Primary crusher structure
  - Coarse ore reclaim tunnel
  - Concentrator building foundation
  - Metallurgical laboratory foundation
  - Truck shop foundation
  - Administration building foundation
- Pre-stripping of waste material to prepare for open pit mining

Estimates for the listed improvements were prepared using standard methodologies. Quantity takeoffs for excavation, backfilling, drilling and blasting, earthmoving, and concrete were prepared and submitted to the estimator for costing. Records of pre-mining waste material moved were used to estimate the cost of pre-stripping. Existing topographic surfaces were compared with pre-mine topography to estimate excavation quantities. Engineering drawings for the plant were used to estimate quantities of steel and concrete necessary for the foundations and concrete structures. Plans for the water supply and electrical supply system were used to identify quantities for the electrical and water supply construction. The estimator used these quantities to estimate the present value of these improvements, as shown in Table 21-11. The total estimated present value is a conservative estimate of the additional capital cost that would be required for the project, if the Quintana operation had not been constructed. The estimate reflects 2013 costs.

Table 21-11: Current Value Cost of Reused Quintana Infrastructure

Item	Replacement Cost
Fresh water system – four wells and steel water line	$9,500,000
115 kVa power line to the mine site	$2,900,000
Grayback Wash diversion ditch	$23,100,000
Primary crusher structure and earthworks	$5,300,000
Coarse ore reclaim tunnel and earthworks	$3,800,000
Concentrator foundation	$4,800,000
Laboratory building foundation	$200,000
Truck shop foundation	$1,900,000
Former administration building foundation	$100,000
Pit pre-stripping	$2,300,000
Total Current Value of Reused Infrastructure	**$53,900,000**

22 ECONOMIC ANALYSIS

22.1 INTRODUCTION

The financial evaluation presents the determination of the Net Present Value (NPV), payback period (time in years to recapture the initial capital investment), and the Internal Rate of Return (IRR) for the project. Annual cash flow projections were estimated over the life of the mine based on the estimates of capital expenditures and production cost and sales revenue. The sales revenue is based on the production of a copper concentrate and a molybdenum concentrate. The estimates of capital expenditures and site production costs have been developed specifically for this project and have been presented in earlier sections of this report.

22.2 MINE PRODUCTION STATISTICS

Mine production is reported as ore and waste from the mining operation. The annual production figures were obtained from the mine plan as reported earlier in this report.

The life of mine ore quantities and ore grades are presented in the table below.

Table 22-1: Life of Mine Ore, Waste Quantities, and Ore Grade

	Tons	Copper	Molybdenum	Gold	Silver
	(kt)	%	%	(oz/ton)	(oz/ton)
Direct Mill Feed Ore	113,084	0.298	0.009	0.003	0.064
Total Ore Processed	**113,084**	**0.298**	**0.009**	**0.003**	**0.064**
Waste	44,682				

22.3 PLANT PRODUCTION STATISTICS

The design basis for the process plant is 10.8 million tons per year.

Average metallurgical recoveries projected for the operation are:

Product	LOM Average	Years 1 – 5	Years 6 - LOM
Copper	93.1 %	94.6%	91.2%
Molybdenum	78.0%	81.9%	73.4%
Gold	73.7%	73.7%	73.7%
Silver	82.7%	82.7%	82.7%

Estimated life of mine recoveries (before smelter deductions) from the process plant is presented in Table 22-2.

Table 22-2: Recovered Metal Production

Metal	Recovered Quantity
Copper (klbs)	628,015
Molybenum (klbs)	15,717
Gold (kozs)	227
Silver (kozs)	5,950

22.3.1 Smelter Terms

The copper concentrates are assumed to be shipped to a smelter in Asia with terms negotiated at the time of the agreement. Molybdenum concentrates are assumed to be saleable in the domestic US market. Development of contract terms used for smelting and refining is provided in Section 19 of this report. The smelter charges and payable metal used in the financial evaluation are presented in the table below.

Table 22-3: Smelter Treatment Factors

Copper Concentrates	
Payable Copper (%)	96.5
Payable Gold (%)	94.0
Gold Deduction (troy ounces per dry ton)	0
Payable Silver (%)	90.0
Silver Deduction (troy ounces per dry ton)	0
Treatment Charge	$88.00
Refining Charge – Cu (per pound)	$0.088
Refining Charge – Au (per troy ounce)	$6.00
Refining Charge – Ag (per troy ounce)	$0.50
Transportation Charges (per wt)	$158.00
Moisture (%)	8.0
Molybdenum Concentrate	
Payable Molybdenum (%)	99.0
Roasting Charges (per pound)	$1.50
Transportation Charges (per wet ton)	$57.00
Moisture (%)	8.0

The estimated payable metal (recovered quantity less smelter deductions) over the life of mine is:

Metal	Payable Quantity
Copper (klbs)	605,586
Molybdenum (klbs)	15,560
Gold (kozs)	214
Silver (kozs)	5,355

22.3.2 Capital Expenditure

22.3.2.1 Initial Capital

The financial indicators have been determined assuming 100 percent equity financing of the initial capital. Any acquisition cost or expenditures prior to start of the full project period have been treated as "sunk" cost and are not included in the analysis, except for carry forward depreciation needed for tax calculations. The initial capital carried in the financial model for new construction and pre-production mine development, and owner costs total $360.5 million as outlined in Table 22-4. This amount is assumed to be expended over a 3 year period; the majority will be expended in the two years before production with a small amount carried over into the first production year.

Table 22-4: Initial Capital

	$ in millions
Mining (includes preproduction)	$15.3
Process Plant	$310.2
Owner's Cost	$35.0
Total	**$360.5**

22.3.3 Sustaining Capital

A schedule of capital cost expenditures during the production period was estimated and included in the financial analysis under the category of sustaining capital. The total life of mine sustaining capital is estimated to be $62.5 million. This capital will be expended over an 8-year period starting in operating year 1.

22.3.4 Working Capital

A 60-day delay of receipt of revenue from sales is used for accounts receivables. A delay of payment for accounts payable of 30 days is also incorporated into the financial model. All the working capital is recaptured at the end of the mine life and the final value of these accounts is $0.

22.3.5 Residual and Salvage Value

The mine is currently scheduled to operate 11.1 years, a relatively short period relative to the operating life of the process equipment proposed for the operation. Used equipment markets have been reviewed and residual and salvage values totaling $30.3 million has been assumed for equipment and property at the end of the mine life.

22.3.6 Revenue

Annual revenue is determined by applying estimated metal prices to the annual payable metal estimated for each operating year. Sales prices have been applied to all life of mine production without escalation or hedging. The revenue is the gross value of payable metals sold before treatment charges and transportation charges. Metal sales prices used in the evaluation are as follows:

Copper	$3.00/pound
Molybdenum	$9.50/pound
Gold	$1,350.00/ounce
Silver	$22.00/ounce

22.4 CASH OPERATING COST

The average cash operating cost calculated over the full life-of-mine is estimated at $11.29 per ton of ore processed before credits applied for by-product revenue and excluding the cost of the capitalized pre-stripping. After crediting by-product revenue against costs, the average LOM cash operating cost is $1.15 per pound of copper recovered. Cash operating costs include mine operations, process plant operations, site general and administrative costs, smelting and refining charges and shipping charges. The table below shows estimated LOM cash operating costs by cost center per ton of ore processed and per lb of copper recovered.

Table 22-5: Life of Mine Net Direct Cash Cost (C1 Cost)

Cost Center	$/Ore Ton	$/lb Cu
Mine	$2.61	$0.47
Process Plant	$4.83	$0.87
General Administration	$0.56	$0.10
Smelting/Refining Treatment	$3.29	$0.59
Total Operating Cost Before By-Product Revenue	$11.29	$2.03
By-Product Revenue		($0.88)
Total Operating Cost After By Product Credits		$1.15

22.5 TOTAL PRODUCTION COST

The average total production cost over the full life-of-mine is estimated to be $12.34 per ton of ore processed excluding any credit for by-product revenue. After credit for by-product revenue, the average LOM total production cost is $1.34 per pound of copper recovered. Cash production costs are cash operating costs plus royalty, salvage value, reclamation and closure costs.

22.5.1 Royalty

Royalties for the mine include an Advance Royalty and a Net Smelter Return (NSR) Royalty. Payment of the Advance Royalty begins during the third month after all state and federal permits to operate the mine are received and is paid every three months thereafter. Payment is in the amount of $50,000.00 if the price of copper is less than $2.00 per pound or $112,500.00 if the price of copper is $2.00 per pound or higher. The NSR Royalty of 3.25 percent applies to the gross revenue of all mineral products from the mine. Advance Royalty payments continue until the aggregate amount of the Advance and NSR Royalties paid reach $10 million; however, Advance Royalty payments are credited back against the amount of NSR Royalty Payment otherwise due. The economic model includes calculations to estimate Advance and NSR Royalties as required by the agreement.

22.5.2 Reclamation and Closure

22.5.2.1 Estimated Reclamation Costs

A reclamation bond is required by the BLM and State of New Mexico to guarantee the completion of Project reclamation. Following regulatory review of the proposed plan of operations and reclamation techniques presented herein, New Mexico Copper Corporation (NMCC) will prepare, *at a time specified by the BLM* [43 CFR § 3809.401(d)], a *detailed estimate of the cost to fully reclaim the operations* as required by 43 CFR § 3809.552. In addition, NMCC will prepare a detailed reclamation plan to describe how the disturbed area will be reclaimed to meet the performance standards required by the New Mexico Administrative Code (NMAC) 19.10.6.603. This reclamation plan will be administered by the New Mexico Energy, Minerals and Natural Resources Department, Mining and Minerals Division (MMD) and the New Mexico Environment Department, Mining Environmental Compliance Section.

The estimated costs will be based on projected actual costs to reclaim the site assuming that all reclamation will occur following operations without the benefit of contemporaneous reclamation. Prior to commencement of operations, financial assurance in the amount of the estimated costs to reclaim the disturbance which would occur during the first five years of operations will be posted with the MMD.

SRK Consulting (U.S.), Inc. (SRK) was contracted in 2010 to provide a post mining reclamation and closure cost estimate for the Copper Flat Preliminary Economic Assessment. In 2012, SRK provided an updated reclamation and closure cost estimate as part of the Copper Flat Prefeasibility Study. In both cases, their approach was to use the Nevada Standardized Reclamation Cost Estimator (SRCE) software that was developed in a cooperative effort between the Nevada Division of Environmental Protection, Bureau of Mining Regulation and Reclamation (NDEP), the U.S. Department of Interior, Bureau of Land Management (BLM) and the Nevada Mining Association (NvMA). This approach facilitates accuracy, completeness and consistency in the calculation of costs for mine site reclamation.

For the update, changes to some facility inputs were supplied by both THEMAC as well as Golder Associates Inc. (Golder). The bulk of the data from the 2012 SRCE model (Version 1.4.1) was utilized. The updated estimate utilized current feasibility economic model labor rates and equipment rates (assumed depreciated) except where specific equipment were required, in which case rental rates were utilized and mobilization/demobilization costs were included.

Studies completed to date identified both the need for longer-term, post-closure water management for the tailings impoundment as well as the potential to develop pit lake chemistry that may not meet surface water limitations for wildlife. SRK has therefore incorporated costs for management of long-term tailings solution management into the cost estimate, including an active and passive phase of management. In addition, estimated costs for pit water treatment have been included to account for closure liabilities that will exist until regulatory approval of the pit lake water at closure can be obtained and/or mitigation strategies are developed and closure alternatives can be identified. To allow closure cost calculation at this stage of the project, 30 years of active pit water management to arrive at a regulatory acceptable solution has been assumed. The 30-year timeframe for post-closure pit lake management is selected to represent a realistic time frame for demonstration that acceptable pit-lake water quality (i.e., that satisfies NMED post-closure chemistry requirements), can be passively achieved (i.e., after cessation of treatment). This will be achieved by evaluating periods of treatment followed by periods of non-treatment of the water column.

The un-inflated and un-discounted direct closure costs (excluding the contingency costs) for the Copper Flat Project range from $30.3 million (including all physical reclamation activities and tailings solution management) to $42.5 million (including pit water management). With indirect costs for engineering and permitting, project and construction management, procurement and insurances, the estimated total reclamation and closure cost is anticipated to be as much as $44.1 million. This amount is assumed to be spent over a 4-year period, starting immediately following the end of the operating life.

22.5.3 Depreciation

Depreciation is calculated using the MACRS method starting with the first year of production. Depreciation is calculated for initial capital and sustaining capital used assuming a 7-year life. The last year of production is the catch up year if the assets are not fully depreciated at that time.

22.6 DEPLETION

The percentage depletion method was used in the evaluation. It is determined as a percentage of gross income from the property, not to exceed 50% of taxable income before the depletion deduction. A rate of 15% is used for copper, gold, and silver, and a rate of 22% is used for molybdenum.

22.7 TAXATION

22.7.1 Income Tax

Taxable income for income tax purposes is defined as metal revenues minus operating expenses, royalty, property and severance taxes, reclamation and closure expense, depreciation and depletion. Income tax rates for state and federal for 2013 are as follows:

- State rate 7.6%
- Federal rate 35.0%
- Combined effective tax rate 39.9%

The combined effective tax rate was calculated as follows (use decimal format to calculate): state rate (7.6%) + federal rate (35.0%*(1-state rate 5.0%)).

In first quarter of 2013 the New Mexico Legislature lowered the corporate income over a period of four years providing a decrease from 7.6% to 5.9% over the four year period. The economic model reflects these tax rates.

22.7.2 New Mexico Gross Receipts Tax

The State of New Mexico imposes a Gross Receipts Tax (GRT) on sales and services provided in the State. The tax rate varies by location; the prevailing GRT at the Project site is 6.3125%. Individuals and companies engaged in business activities within the state are required to pay the GRT on goods and services sold within the State of New Mexico. For goods and services purchased outside of the state, a compensating tax is levied at a rate of 5.125% in order to protect New Mexico businesses from unfair competition from out-of-state businesses not subject to GRT. Both GRT and compensating tax are paid by the selling business, and both are typically passed on to the purchasing party.

A buyer’s Gross Receipts Tax liability may be reduced through the use of Industrial Revenue Bonds for eligible expenditures. The Project may obtain an exemption from a portion of GRT and compensating taxes from the issuance of an industrial revenue bond (IRB) under the authority of the County Industrial Revenue Bond Act (Ch. 4, Art. 59, New Mexico Statues Annotated). An IRB is an economic development tool that assigns the county’s tax exemption status to the issuer. The county would be the legal purchaser and owner of the IRB property, then in turn lease the property back to the issuer. In this case, the Company would essentially acquire the tax status of the county, becoming exempt from compensating tax and GRT on purchases of eligible mining and processing equipment.

The Company engaged the law firm, Rodey, Dickason, Sloan, Akin, & Robb, P.A., and the accounting firm, CliftonLarsonAllen LLP, to outline legal requirements for use of an IRB on this project, to identify IRB-qualifying equipment proposed for the operation, and to analyze the proposed capital expenditure list in order to develop an appropriate GRT rate to apply to the economic model. Following this review, an effective GRT rate of 4.30% was applied to project capital as an overall average to include the use of IRB(s) and applicable GRT and compensating tax rates.

The Company is continuing efforts with the external consultants to finalize issuance of the IRB. This effort will also require participation and agreement of Sierra County officials. As GRT and compensating taxes are not direct tax revenues to Sierra County, the economic feasibility of issuance is likely. Further, as the Project will be subject to the Copper Ad Valorem Tax, Sierra County will be a direct beneficiary on the levied Copper Ad Valorem Tax.

22.7.3 Other Applicable Taxes

Applicable taxes and tax credits, such as the High Wage Jobs Tax Credit, were reviewed by Accounting and Consulting Group, LLP (ACG). ACG similarly performed an analysis on the potential tax benefit of tax credits and this work is reflected in the economic model.

Withholding Taxes

The employer-portion of withholding taxes is withheld from employees' paychecks for prepayment of the employee's individual income tax, and is a fiduciary tax liability of the employer.

The Project will offset withholding taxes with tax credits earned from the State of New Mexico's High Wage Jobs Tax Credit. The credit allows for 10% of wages meeting a certain criteria of wage and benefit level and proof of newly created jobs, with a maximum annual credit of $12K per newly created position. To qualify for the credit, the employee hired must be a New Mexico resident and occupy the position for 48 weeks out of a 52 week year. Once the position has been filled by an eligible employee, the credit is available for four years.

In order to qualify, the position must be created prior to June 30, 2020 and the wages and benefits must be at least $40,000 per annum for jobs performed in a municipality or unincorporated area of a county with a population less than 40,000. Current planning and forecasting shows the Company will meet requirements to qualify for the credit and this tax benefit is included in the economic model. As the tax benefit extends over a four year period, the annual tax savings range from $2.1M to $2.3M per year dependent the on employment cycle.

Resource Excise Tax (RES):

The State of New Mexico requires payment of an excise tax at the following rates on the taxable value of the natural resources:

- All natural resources except potash, molybdenum and copper: 0.75%
- Potash: 0.5%
- Molybdenum: 0.125%
- Copper: 0.25%

Exempt from the resource excise tax is the taxable value of any natural resource that is processed in New Mexico and on whose taxable value the processors tax is paid.

Processors Tax:

For the privilege of processing natural resources, there is imposed on any processor of natural resources in New Mexico as excise tax at the following rates on the taxable value of the natural resources:

- All natural resources except timber, potash, molybdenum and copper – three-fourths of one percent
- Timber – three-eighths of one percent
- Potash – one-eighth of one percent
- Molybdenum – one-eighth of one percent

- Copper – one-fourth of one percent

Severance Tax (SEV):

New Mexico imposes a SEV on the privilege of severing natural resources. Copper is levied at one-half of one perfect of the taxable value of the natural resource; gold and silver at one-fifth of one percent; and, molybdenum at one-eighth of one percent.

Ad Valorem Taxes:

Once in production the Company will be subject to the Copper Ad Valorem Tax. In lieu of real estate and tangible personal property taxes, once a copper property is in production, the State of New Mexico will levy a tax calculated as follows:

- The value of any mine and all real property and personal property held or used for the mining of ore from the mine:
  - Any part of which is mined for processing in a concentrator shall be thirty percent of the value of salable copper and other minerals contained in concentrate produced from the ore produced from the mine; or
  - Which is mined solely for solvent extraction or electrowinning shall be twenty percent of the value of salable copper and other minerals produced through solvent extraction or electrowinning from the ore produced from the mine;
- The value of a concentrator and all real property and personal property held or used in connection with the concentrator shall be twenty-five percent of the value of salable copper and other minerals contained in concentrate produced in the concentrator;
- The value of a precipitation plant and all real property and personal property held or used in connection with the precipitation plant shall be twenty-five percent of the value of salable copper and other minerals contained in precipitate produced in the precipitation plant;
- The value of the solvent extraction or electrowinning plant and all real property and personal property held or used in connection with the solvent extraction or electrowinning plant shall be one hundred thirty-five percent of the value of salable copper and other minerals produced through the solvent extraction or electrowinning process, less four times the value of property determined for the same tax year under Subparagraph (b) of Paragraph (1) of this subsection; and,
- The value of a smelter and all real property and personal property held or used in connection with the smelter shall be twenty-one percent of the value of salable copper and other minerals produced in the smelter

22.8 PROJECT FINANCING

The project is evaluated on an unleveraged and un-inflated basis.

22.9 NET INCOME AFTER TAX

Net income after tax amounts to $408.7 million over the full life-of-mine.

22.10 NET PRESENT VALUE AND INTERNAL RATE OF RETURN

The economic analysis is presented on an after-tax basis and indicates that the project has an after-tax Internal Rate of Return (IRR) of 20.0 percent with a payback period of 3.6 years. Table 22-6 compares the base case project financial indicators with the financial indicators when different variables are applied. The results show that metal prices have the most impact on the project while variance in the operating cost has the least impact on project economics.

Table 22-6: After-Tax Sensitivity Analysis

		NPV @ 0%	NPV @ 8%	IRR	Payback (yrs)
Base Case		$457,118	$186,944	20.0%	3.6
Metal Prices	20%	$787,573	$390,861	31.0%	2.7
	-20%	$114,851	($29,883)	5.8%	8.7
Capital Cost	20%	$401,599	$130,690	15.2%	4.2
	-20%	$510,775	$241,299	26.5%	3.1
Operating Cost	20%	$324,695	$104,824	15.1%	4.2
	-20%	$584,950	$264,129	24.2%	3.3

22.11 COPPER PRICE SENSITIVITY CASES

The Feasibility Study includes financial analysis on three scenarios with varying metal prices: 1) The base case uses a long term copper price of $3.00/lb; 2) A price upside case based on a $3.25/lb long term copper price (all other metal prices held constant); and 3) a price downside case based on a $2.75/lb long term copper price.

The financial return table below is after tax, unlevered and with no escalation in commodity prices.

Table 22-7: Financial Return by Copper Price

Case	NPV@0% (US$000)	NPV@8% (US$000)	IRR (%)	Payback (Years)
Base Case	$457,000	$187,000	20.0	3.6
Upside Price	$564,000	$253,000	23.8	3.3
Downside Price	$348,000	$118,000	15.8	4.1

Base Case: Copper $3.00/lb, Moly $9.50/lb, Gold $1,350/oz and Silver $22.00/oz
Upside Sensitivity: Copper $3.25/lb, Moly $9.50/lb, Gold $1,350/oz and Silver $22.00/oz
Downside Sensitivity: Copper $2.75/lb, Moly $9.50/lb, Gold $1,350/oz and Silver $22.00/oz

Table 22-8: Financial Model (Page 1 of 3)

Copper Flat - FS	Total	2013 -4	2014 -3	2015 -2	2016 -1	2017 1	2018 2	2019 3	2020 4	2021 5	2022 6	2023 7	2024 8	2025 9	2026 10	2027 11	2028 12	2029 13	2030 14	2031 15
Mining Operations																				
Direct Mill Feed Ore																				
Beginning Inventory (kt)	113,084	113,084	113,084	113,084	113,084	112,724	103,784	92,984	82,184	71,384	60,584	50,559	40,659	30,759	20,859	10,959	1,059	-	-	-
Mined (kt)	113,084	-	-	-	360	8,940	10,800	10,800	10,800	10,800	10,025	9,900	9,900	9,900	9,900	9,900	1,059	-	-	-
Ending Inventory (kt)	-	113,084	113,084	113,084	112,724	103,784	92,984	82,184	71,384	60,584	50,559	40,659	30,759	20,859	10,959	1,059	-	-	-	-
Copper Grade (%)	0.298%	0.000%	0.000%	0.000%	0.430%	0.410%	0.400%	0.290%	0.360%	0.320%	0.210%	0.210%	0.240%	0.280%	0.290%	0.270%	0.210%	0.000%	0.000%	0.000%
Moly Grade (%)	0.009%	0.000%	0.000%	0.000%	0.007%	0.012%	0.011%	0.007%	0.010%	0.011%	0.005%	0.005%	0.007%	0.008%	0.010%	0.012%	0.010%	0.000%	0.000%	0.000%
Gold Grade (oz/t)	0.003	-	-	-	0.003	0.004	0.004	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.002	-	-	-
Silver Grade (oz/t)	0.064	-	-	-	0.060	0.080	0.090	0.060	0.070	0.070	0.050	0.050	0.050	0.060	0.060	0.060	0.050	-	-	-
Contained Copper (klbs)	674,297	-	-	-	3,096	73,308	86,400	62,640	77,760	69,120	42,105	41,580	47,520	55,440	57,420	53,460	4,448	-	-	-
Contained Moly (klbs)	20,150	-	-	-	50	2,146	2,376	1,512	2,160	2,376	1,003	990	1,386	1,584	1,980	2,376	212	-	-	-
Contained Gold (oz/t)	308	-	-	-	1	36	43	32	32	32	20	20	20	20	20	30	2	-	-	-
Contained Silver (oz/t)	7,195	-	-	-	22	715	972	648	756	756	501	495	495	594	594	594	53	-	-	-
"High" Low Grade Stockpile Ore																				
Beginning Inventory (kt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mined (kt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ending Inventory (kt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper Grade (%)	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Moly Grade (%)	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Gold Grade (oz/t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver Grade (oz/t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contained Copper (klbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contained Moly (klbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contained Gold (oz/t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contained Silver (oz/t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
"Low" Low Grade Stockpile Ore																				
Beginning Inventory (kt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mined (kt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ending Inventory (kt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper Grade (%)	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Moly Grade (%)	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Gold Grade (oz/t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver Grade (oz/t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contained Copper (klbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contained Moly (klbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contained Gold (oz/t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contained Silver (oz/t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Ore																				
Beginning Inventory (kt)	113,084	113,084	113,084	113,084	113,084	112,724	103,784	92,984	82,184	71,384	60,584	50,559	40,659	30,759	20,859	10,959	1,059	-	-	-
Mined (kt)	113,084	-	-	-	360	8,940	10,800	10,800	10,800	10,800	10,025	9,900	9,900	9,900	9,900	9,900	1,059	-	-	-
Ending Inventory (kt)	-	113,084	113,084	113,084	112,724	103,784	92,984	82,184	71,384	60,584	50,559	40,659	30,759	20,859	10,959	1,059	-	-	-	-
Copper Grade (%)	0.298%	0.000%	0.000%	0.000%	0.430%	0.410%	0.400%	0.290%	0.360%	0.320%	0.210%	0.210%	0.240%	0.280%	0.290%	0.270%	0.210%	0.000%	0.000%	0.000%
Moly Grade (%)	0.009%	0.000%	0.000%	0.000%	0.007%	0.012%	0.011%	0.007%	0.010%	0.011%	0.005%	0.005%	0.007%	0.008%	0.010%	0.012%	0.010%	0.000%	0.000%	0.000%
Gold Grade (oz/t)	0.003	-	-	-	0.003	0.004	0.004	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.002	-	-	-
Silver Grade (oz/t)	0.064	-	-	-	0.060	0.080	0.090	0.060	0.070	0.070	0.050	0.050	0.050	0.060	0.060	0.060	0.050	-	-	-
Contained Copper (klbs)	674,297	-	-	-	3,096	73,308	86,400	62,640	77,760	69,120	42,105	41,580	47,520	55,440	57,420	53,460	4,448	-	-	-
Contained Moly (klbs)	20,150	-	-	-	50	2,146	2,376	1,512	2,160	2,376	1,003	990	1,386	1,584	1,980	2,376	212	-	-	-
Contained Gold (oz/t)	308	-	-	-	1	36	43	32	32	32	20	20	20	20	20	30	2	-	-	-
Contained Silver (oz/t)	7,195	-	-	-	22	715	972	648	756	756	501	495	495	594	594	594	53	-	-	-
Waste																				
Beginning Inventory(kt)	44,682	44,682	44,682	44,682	44,682	44,572	36,012	29,312	22,612	15,912	9,212	3,288	797	79	8	5	4	-	-	-
Mined (kt)	44,682	-	-	-	110	8,560	6,700	6,700	6,700	6,700	5,924	2,491	718	71	3	1	4	-	-	-
Ending Inventory (kt)	-	44,682	44,682	44,682	44,572	36,012	29,312	22,612	15,912	9,212	3,288	797	79	8	5	4	-	-	-	-
Total Material Mined (kt)	157,766	-	-	-	470	17,500	17,500	17,500	17,500	17,500	15,949	12,391	10,618	9,971	9,903	9,901	1,063	-	-	-
Stockpile Rehandle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Material Moved (kt)	157,766	-	-	-	470	17,500	17,500	17,500	17,500	17,500	15,949	12,391	10,618	9,971	9,903	9,901	1,063	-	-	-

Table 22-9: Financial Model (Page 2 of 3)

Copper Flat - FS		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
	Total	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Process Plant Operations																				
Concentrator																				
Beginning Ore Inventory (kt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mined Ore to Concentrator (kt)	113,084	-	-	-	-	9,300	10,800	10,800	10,800	10,800	10,025	9,900	9,900	9,900	9,900	9,900	1,059	-	-	-
Mined Ore - Processed (kt)	113,084	-	-	-	-	9,300	10,800	10,800	10,800	10,800	10,025	9,900	9,900	9,900	9,900	9,900	1,059	-	-	-
Ending Ore Inventory	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper Grade (%)	0.298%	0.000%	0.000%	0.000%	0.000%	0.411%	0.400%	0.290%	0.360%	0.320%	0.210%	0.210%	0.240%	0.280%	0.290%	0.270%	0.210%	0.000%	0.000%	0.000%
Moly Grade (%)	0.009%	0.000%	0.000%	0.000%	0.000%	0.012%	0.011%	0.007%	0.010%	0.011%	0.005%	0.005%	0.007%	0.008%	0.010%	0.012%	0.010%	0.000%	0.000%	0.000%
Gold Grade (oz/t)	0.003	-	-	-	-	0.004	0.004	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.002	-	-	-
Silver Grade (oz/t)	0.064	-	-	-	-	0.079	0.090	0.060	0.070	0.070	0.050	0.050	0.050	0.060	0.060	0.060	0.050	-	-	-
Contained Copper (klbs)	674,297	-	-	-	-	76,404	86,400	62,640	77,760	69,120	42,105	41,580	47,520	55,440	57,420	53,460	4,448	-	-	-
Contained Moly (klbs)	20,150	-	-	-	-	2,196	2,376	1,512	2,160	2,376	1,003	990	1,386	1,584	1,980	2,376	212	-	-	-
Contained Gold (oz/t)	308	-	-	-	-	37	43	32	32	32	20	20	20	20	20	30	2	-	-	-
Contained Silver (oz/t)	7,195	-	-	-	-	737	972	648	756	756	501	495	495	594	594	594	53	-	-	-
Recovery Copper (%)	93.14%	0.00%	0.00%	0.00%	94.60%	94.60%	94.60%	94.60%	94.60%	94.60%	92.14%	91.20%	91.20%	91.20%	91.20%	91.20%	91.20%	91.20%	91.20%	0.00%
Recovery Moly (%)	78.00%	0.00%	0.00%	0.00%	81.90%	81.90%	81.90%	81.90%	81.90%	81.90%	75.76%	73.40%	73.40%	73.40%	73.40%	73.40%	73.40%	73.40%	73.40%	0.00%
Recovery Gold (%)	73.70%	0.00%	0.00%	0.00%	73.70%	73.70%	73.70%	73.70%	73.70%	73.70%	73.70%	73.70%	73.70%	73.70%	73.70%	73.70%	73.70%	73.70%	73.70%	0.00%
Recovery Silver (%)	82.70%	0.00%	0.00%	0.00%	82.70%	82.70%	82.70%	82.70%	82.70%	82.70%	82.70%	82.70%	82.70%	82.70%	82.70%	82.70%	82.70%	82.70%	82.70%	0.00%
Copper Concentrate (kt)	1,121	-	-	-	-	129	146	106	131	117	69	68	77	90	94	87	7	-	-	-
Copper Concentrater Grade (%)	28.00%	0.00%	0.00%	0.00%	0.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	0.00%	0.00%	0.00%
Recovered Copper (klbs)	628,015	-	-	-	-	72,278	81,734	59,257	73,561	65,388	38,797	37,921	43,338	50,561	52,367	48,756	4,056	-	-	-
Recovered Gold (kozs)	227	-	-	-	-	27	32	24	24	24	15	15	15	15	15	22	2	-	-	-
Recovered Silver (kozs)	5,950	-	-	-	-	609	804	536	625	625	415	409	409	491	491	491	44	-	-	-
Moly Concentrate (kt)	14	-	-	-	-	2	2	1	2	2	1	1	1	1	1	2	0	-	-	-
Moly Concentrate Grade (%)	55.00%	0.00%	0.00%	0.00%	0.00%	55.00%	55.00%	55.00%	55.00%	55.00%	55.00%	55.00%	55.00%	55.00%	55.00%	55.00%	55.00%	0.00%	0.00%	0.00%
Recovered Moly (klbs)	15,717	-	-	-	-	1,799	1,946	1,238	1,769	1,946	760	727	1,017	1,163	1,453	1,744	155	-	-	-
Payable Metals																				
Payable Copper (klbs)	605,586	-	-	-	-	69,697	78,815	57,141	70,934	63,052	37,412	36,567	41,790	48,756	50,497	47,014	3,912	-	-	-
Payable Moly (klbs)	15,560	-	-	-	-	1,781	1,926	1,226	1,751	1,926	752	719	1,007	1,151	1,439	1,727	154	-	-	-
Payable Gold (kozs)	214	-	-	-	-	26	30	22	22	22	14	14	14	14	14	21	1	-	-	-
Payable Silver (kozs)	5,355	-	-	-	-	548	723	482	563	563	373	368	368	442	442	442	39	-	-	-
Income Statement ($000)																				
Metal Prices																				
Copper ($/lb)	$ 3.00	$ -	$ -	$ -	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ -	$ -	$ -
Moly ($/lb)	$ 9.50	$ -	$ -	$ -	$ 9.50	$ 9.50	$ 9.50	$ 9.50	$ 9.50	$ 9.50	$ 9.50	$ 9.50	$ 9.50	$ 9.50	$ 9.50	$ 9.50	$ 9.50	$ -	$ -	$ -
Gold ($/oz)	$ 1,350.00	$ -	$ -	$ -	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ -	$ -	$ -
Silver ($/oz)	$ 22.00	$ -	$ -	$ -	$ 22.00	$ 22.00	$ 22.00	$ 22.00	$ 22.00	$ 22.00	$ 22.00	$ 22.00	$ 22.00	$ 22.00	$ 22.00	$ 22.00	$ 22.00	$ -	$ -	$ -
Revenues																				
Copper Concentrate																				
Copper Revenue ($ 000)	$ 1,816,759	$ -	$ -	$ -	$ -	$ 209,090	$ 236,446	$ 171,423	$ 212,801	$ 189,157	$ 112,235	$ 109,700	$ 125,371	$ 146,267	$ 151,490	$ 141,043	$ 11,735	$ -	$ -	$ -
Moly Revenue ($ 000)	$ 147,815	-	-	-	-	16,915	18,302	11,646	16,638	18,302	7,143	6,834	9,568	10,935	13,668	16,402	1,462	-	-	-
Gold Revenue ($ 000)	$ 288,346	-	-	-	-	34,455	40,403	30,302	30,302	30,302	18,752	18,518	18,518	18,518	18,518	27,777	1,981	-	-	-
Silver Revenue ($ 000)	$ 117,815	-	-	-	-	12,065	15,916	10,611	12,379	12,379	8,208	8,105	8,105	9,727	9,727	9,727	867	-	-	-
Total Revenues	$ 2,370,735	$ -	$ -	$ -	$ -	$ 272,525	$ 311,067	$ 223,983	$ 272,121	$ 250,140	$ 146,338	$ 143,158	$ 161,563	$ 185,446	$ 193,403	$ 194,948	$ 16,045	$ -	$ -	$ -
Operating Cost																				
Mining	$ 295,113	$ -	$ -	$ -	$ -	$ 28,438	$ 29,190	$ 29,990	$ 30,652	$ 30,614	$ 28,028	$ 24,354	$ 22,478	$ 21,581	$ 23,137	$ 23,789	$ 2,862	$ -	$ -	$ -
Process Plant	$ 545,845	$ -	$ -	$ -	$ -	$ 47,022	$ 51,381	$ 51,239	$ 51,257	$ 51,285	$ 48,402	$ 48,019	$ 48,046	$ 48,094	$ 47,984	$ 48,013	$ 5,103	$ -	$ -	$ -
General Administration	$ 63,340	$ -	$ -	$ -	$ -	$ 5,703	$ 5,703	$ 5,703	$ 5,703	$ 5,703	$ 5,703	$ 5,703	$ 5,703	$ 5,703	$ 5,703	$ 5,703	$ 610	$ -	$ -	$ -
Treatment & Refining Charges																				
Copper Concentrate																				
Treatment Charges	$ 98,688	$ -	$ -	$ -	$ -	$ 11,358	$ 12,844	$ 9,312	$ 11,560	$ 10,275	$ 6,097	$ 5,959	$ 6,810	$ 7,945	$ 8,229	$ 7,662	$ 637	$ -	$ -	$ -
Copper Refining Charges	$ 53,292	$ -	$ -	$ -	$ -	$ 6,133	$ 6,936	$ 5,028	$ 6,242	$ 5,549	$ 3,292	$ 3,218	$ 3,678	$ 4,290	$ 4,444	$ 4,137	$ 344	$ -	$ -	$ -
Gold Refining Charges	$ 1,282	$ -	$ -	$ -	$ -	$ 153	$ 180	$ 135	$ 135	$ 135	$ 83	$ 82	$ 82	$ 82	$ 82	$ 123	$ 9	$ -	$ -	$ -
Silver Refining Charges	$ 2,678	$ -	$ -	$ -	$ -	$ 274	$ 362	$ 241	$ 281	$ 281	$ 187	$ 184	$ 184	$ 221	$ 221	$ 221	$ 20	$ -	$ -	$ -
Transportation	$ 191,365	$ -	$ -	$ -	$ -	$ 22,024	$ 24,906	$ 18,057	$ 22,415	$ 19,925	$ 11,822	$ 11,555	$ 13,206	$ 15,407	$ 15,957	$ 14,857	$ 1,236	$ -	$ -	$ -
Moly Concentrate																				
Roasting Charge	$ 23,575	$ -	$ -	$ -	$ -	$ 2,698	$ 2,919	$ 1,857	$ 2,654	$ 2,919	$ 1,139	$ 1,090	$ 1,526	$ 1,744	$ 2,180	$ 2,616	$ 233	$ -	$ -	$ -
Transportation	$ 880	$ -	$ -	$ -	$ -	$ 101	$ 109	$ 69	$ 99	$ 109	$ 43	$ 41	$ 57	$ 65	$ 81	$ 98	$ 9	$ -	$ -	$ -
Total Operating Cost	$ 1,276,056	-	-	-	-	123,904	134,529	121,631	130,997	126,794	104,795	100,205	101,769	105,133	108,019	107,217	11,063	-	-	-

Table 22-10: Financial Model (Page 3 of 3)

Copper Flat - FS	Total	2013 -4	2014 -3	2015 -2	2016 -1	2017 1	2018 2	2019 3	2020 4	2021 5	2022 6	2023 7	2024 8	2025 9	2026 10	2027 11	2028 12	2029 13	2030 14	2031 15
Ad Valorem Tax	$ 10,866				-	1,249	1,426	1,027	1,247	1,146	671	656	740	850	886	894	74	-	-	-
Severance Tax	$ 1,968				-	227	259	187	226	207	122	119	134	153	159	162	13	-	-	-
Resources Excise Tax	$ 7,773				-	893	1,036	750	873	816	492	482	525	591	608	654	53	-	-	-
High Wage Jobs Tax Credit	$ (8,430)				-	(2,107)	(2,107)	(2,107)	(2,107)	-	-	-	-	-	-	-	-	-	-	-
Royalty	$ 64,968	$ -	$ -	$ 113	$ 450	$ 6,906	$ 8,542	$ 6,152	$ 7,434	$ 6,856	$ 4,020	$ 3,934	$ 4,421	$ 5,060	$ 5,272	$ 5,370	$ 441	$ -	$ -	$ -
Corporate and ABQ Overhead	$ 28,047	$ 15,894	$ 1,676	$ 1,676	$ 1,676	$ 1,000	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 250	$ 250	$ 125
Salvage Value	$ (30,318)			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (16,655)	$ (13,663)	$ -	$ -	$ -
Reclamation & Closure	$ 44,523	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,000	$ 15,000	$ 10,000	$ 4,523
Total Production Cost	$ 1,395,454	$ 15,894	$ 1,676	$ 1,789	$ 2,126	$ 132,071	$ 144,184	$ 128,139	$ 139,170	$ 136,319	$ 110,599	$ 105,896	$ 108,090	$ 112,288	$ 115,444	$ 98,142	$ 13,480	$ 15,250	$ 10,250	$ 4,648
Operating Income	$ 975,281	$ (15,894)	$ (1,676)	$ (1,789)	$ (2,126)	$ 140,454	$ 166,883	$ 95,844	$ 132,951	$ 113,820	$ 35,739	$ 37,262	$ 53,473	$ 73,158	$ 77,959	$ 96,806	$ 2,565	$ (15,250)	$ (10,250)	$ (4,648)
Depreciation																				
Initial Capital	$ 391,357				$ -	$ 55,925	$ 95,843	$ 68,448	$ 48,881	$ 34,948	$ 34,909	$ 34,948	$ 17,455	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sustaining Capital	$ 62,527					$ -	$ 3,361	$ 6,853	$ 7,184	$ 6,372	$ 5,791	$ 6,618	$ 7,510	$ 6,676	$ 4,154	$ 2,783	$ 5,224	$ -	$ -	$ -
Total Depreciation	$ 453,884	$ -	$ -	$ -	$ -	$ 55,925	$ 99,204	$ 75,301	$ 56,065	$ 41,320	$ 40,700	$ 41,566	$ 24,965	$ 6,676	$ 4,154	$ 2,783	$ 5,224	$ -	$ -	$ -
Net Income after Depreciation	$ 521,398	$ (15,894)	$ (1,676)	$ (1,789)	$ (2,126)	$ 84,529	$ 67,678	$ 20,542	$ 76,886	$ 72,500	$ (4,961)	$ (4,305)	$ 28,508	$ 66,482	$ 73,806	$ 94,023	$ (2,659)	$ (15,250)	$ (10,250)	$ (4,648)
Income Taxes	$ 112,685	$ -	$ -	$ -	$ -	$ 8,185	$ 13,138	$ 3,985	$ 14,926	$ 14,074	$ -	$ -	$ 1,934	$ 14,715	$ 17,021	$ 24,708	$ -	$ -	$ -	$ -
Net Income after Taxes	$ 408,712	$ (15,894)	$ (1,676)	$ (1,789)	$ (2,126)	$ 76,344	$ 54,541	$ 16,557	$ 61,960	$ 58,426	$ (4,961)	$ (4,305)	$ 26,575	$ 51,767	$ 56,785	$ 69,315	$ (2,659)	$ (15,250)	$ (10,250)	$ (4,648)
Cash Flow																				
Operating Income	$ 975,281	$ (15,894)	$ (1,676)	$ (1,789)	$ (2,126)	$ 140,454	$ 166,883	$ 95,844	$ 132,951	$ 113,820	$ 35,739	$ 37,262	$ 53,473	$ 73,158	$ 77,959	$ 96,806	$ 2,565	$ (15,250)	$ (10,250)	$ (4,648)
Working Capital																				
Account Recievable (60 days)	$ -	$ -	$ -	$ -	$ -	$ (44,799)	$ (6,336)	$ 14,315	$ (7,913)	$ 3,613	$ 17,063	$ 523	$ (3,025)	$ (3,926)	$ (1,308)	$ (254)	$ 29,409	$ 2,637	$ -	$ -
Accounts Payable (30 days)	$ -	$ -	$ -	$ -	$ -	$ 10,184	$ 873	$ (1,060)	$ 770	$ (345)	$ (1,808)	$ (377)	$ 129	$ 276	$ 237	$ (66)	$ (7,903)	$ (909)	$ -	$ -
Inventory - Parts, Supplies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Working Capital	$ 0	$ -	$ -	$ -	$ -	$ (34,615)	$ (5,462)	$ 13,255	$ (7,143)	$ 3,268	$ 15,255	$ 146	$ (2,897)	$ (3,650)	$ (1,071)	$ (320)	$ 21,506	$ 1,728	$ -	$ -
Capital Expenditures																				
Initial Capital																				
Mine	$ 15,289	$ -	$ -	$ -	$ 10,007	$ 5,282	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Process Plant	$ 310,232	$ -	$ -	$ 46,535	$ 248,186	$ 15,512	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Owners Cost	$ 35,000	$ -	$ -	$ 3,500	$ 31,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sustaining Capital																				
Mine	$ 24,864	$ -	$ -	$ -	$ -	$ 12,870	$ 1,079	$ 1,079	$ 310	$ 1	$ 4,675	$ 4,443	$ 408	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Process Plant	$ 37,663	$ -	$ -	$ -	$ -	$ 10,651	$ 6,569	$ 7,301	$ -	$ 8,356	$ 151	$ 4,635	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Capital Expenditures	$ 423,048	$ -	$ -	$ 50,035	$ 289,693	$ 44,314	$ 7,648	$ 8,380	$ 310	$ 8,357	$ 4,826	$ 9,078	$ 408	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Cash Flow before Taxes	$ 552,234	$ (15,894)	$ (1,676)	$ (51,823)	$ (291,819)	$ 61,525	$ 153,773	$ 100,719	$ 125,498	$ 108,731	$ 46,168	$ 28,329	$ 50,169	$ 69,509	$ 76,888	$ 96,487	$ 24,070	$ (13,522)	$ (10,250)	$ (4,648)
Cummulative Cash Flow before Taxes		$ (15,894)	$ (17,570)	$ (69,393)	$ (361,212)	$ (299,687)	$ (145,914)	$ (45,195)	$ 80,302	$ 189,034	$ 235,202	$ 263,531	$ 313,700	$ 383,208	$ 460,097	$ 556,583	$ 580,653	$ 567,132	$ 556,882	$ 552,234
						1.0	1.0	1.0	0.4	-	-	-	-	-	-	-				
Income Taxes	$ 112,685	$ -	$ -	$ -	$ -	$ 8,185	$ 13,138	$ 3,985	$ 14,926	$ 14,074	$ -	$ -	$ 1,934	$ 14,715	$ 17,021	$ 24,708	$ -	$ -	$ -	$ -
Cash Flow after Taxes	$ 439,548	$ (15,894)	$ (1,676)	$ (51,823)	$ (291,819)	$ 53,341	$ 140,635	$ 96,734	$ 110,572	$ 94,657	$ 46,168	$ 28,329	$ 48,235	$ 54,794	$ 59,867	$ 71,778	$ 24,070	$ (13,522)	$ (10,250)	$ (4,648)
Cummulative Cash Flow after Taxes		$ (15,894)	$ (17,570)	$ (69,393)	$ (361,212)	$ (307,872)	$ (167,237)	$ (70,503)	$ 40,069	$ 134,726	$ 180,894	$ 209,223	$ 257,458	$ 312,252	$ 372,120	$ 443,898	$ 467,968	$ 454,446	$ 444,196	$ 439,548
						1.0	1.0	1.0	0.6	-	-	-	-	-	-	-				

Economic Indicators before Taxes		
NPV @ 0%	0%	$ 569,804
NPV @ 8%	8%	$ 251,242
IRR		23.3%
Payback	Years	3.4
Economic Indicators after Taxes		
NPV @ 0%	0%	$ 457,118
NPV @ 8%	8%	$ 186,944
IRR		20.0%
Payback	Years	3.6

23 ADJACENT PROPERTIES

Adjacent lands include federal, state and private property. Federal lands are administered by the BLM, and locally there are numerous placer and lode claims on the federal land held by individuals and clubs for recreational gold panning from surface mineral concentrations.

While other styles of mineralization occur near or immediately adjacent to the project, such as narrow, locally high grade Au-Ag veins having limited size potential and historic polymetallic replacement deposits, there are no other known porphyry copper deposits adjacent to or in close proximity to the Copper Flat project. The closest known occurrences of bulk copper mineralization are outside of Silver City, NM, and are approximately 33 miles (straight-line) away from the Copper Flat property.

24 OTHER RELEVANT DATA AND INFORMATION

24.1 PROJECT SCHEDULE

24.1.1 Environmental Studies and Permits

Permitting efforts for the Copper Flat Mine have been in process since 2010. Baseline Data has been collected within the mine permit boundary and in surrounding areas over a 12-18 month time frame, and includes studies of air quality, vegetation, wildlife, surface water, groundwater, cultural resources, geology and soils.

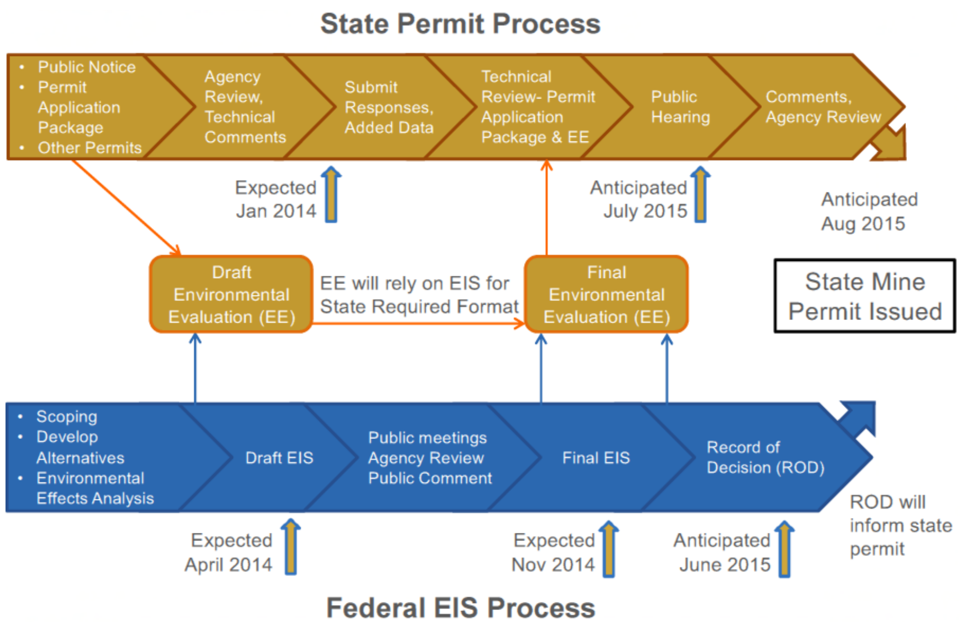
Work on the Environmental Impact Statement is progressing; scoping and public meetings were conducted in January 2012. Efforts are currently focused on finalizing a Draft Environmental Impact Statement which will then be publicized for public comment.

Various additional studies have been conducted and are being used to support state permit applications and the current federal evaluation process. A table listing specific studies is provided at the end of this section.

Permitting efforts at a state level are well underway and an air permit was granted by the New Mexico Environment Department Air Quality Bureau in June 2013.

Management continues to engage with the OSE to secure the appropriate consents and permits for project water rights. As the company progresses its arrangements in this regard, the appropriate disclosures will be made.

The Federal EIS Process and the State Permit Process are advancing in parallel as shown by the following diagram



24.1.2 Project Development

The development schedule forming the basis of the Feasibility Study assumes the following significant milestones:

Receive EIS Record of Decision:	June 2015
Receive State Mine Permit:	August 2015
Start Plant Basic Engineering:	August 2014
Begin Construction:	August 2015
Start Plant Operations:	December 2016
Achieve Design Production:	April 2017

A chart listing showing a general outline of the project schedule is provided at the end of this section.

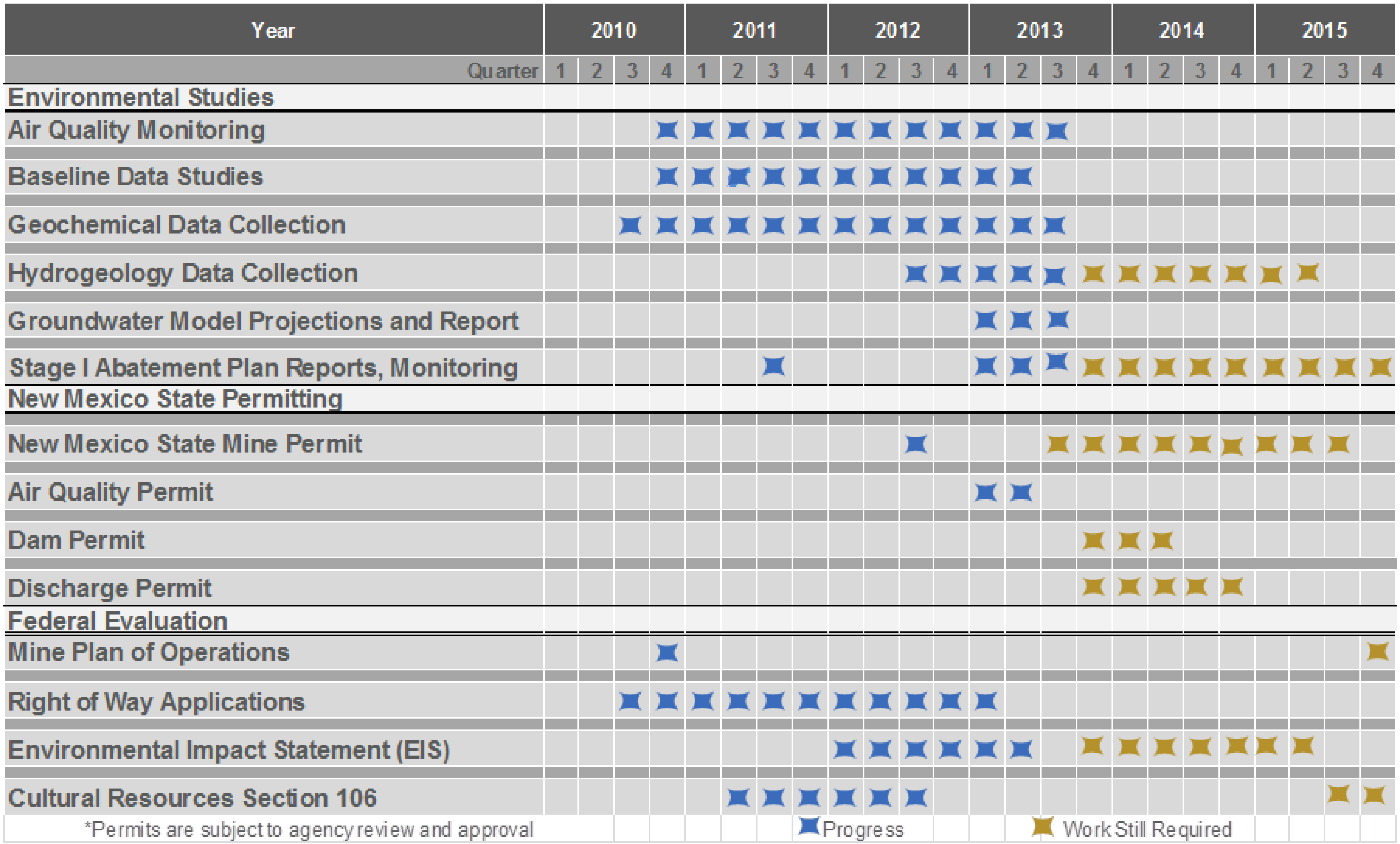
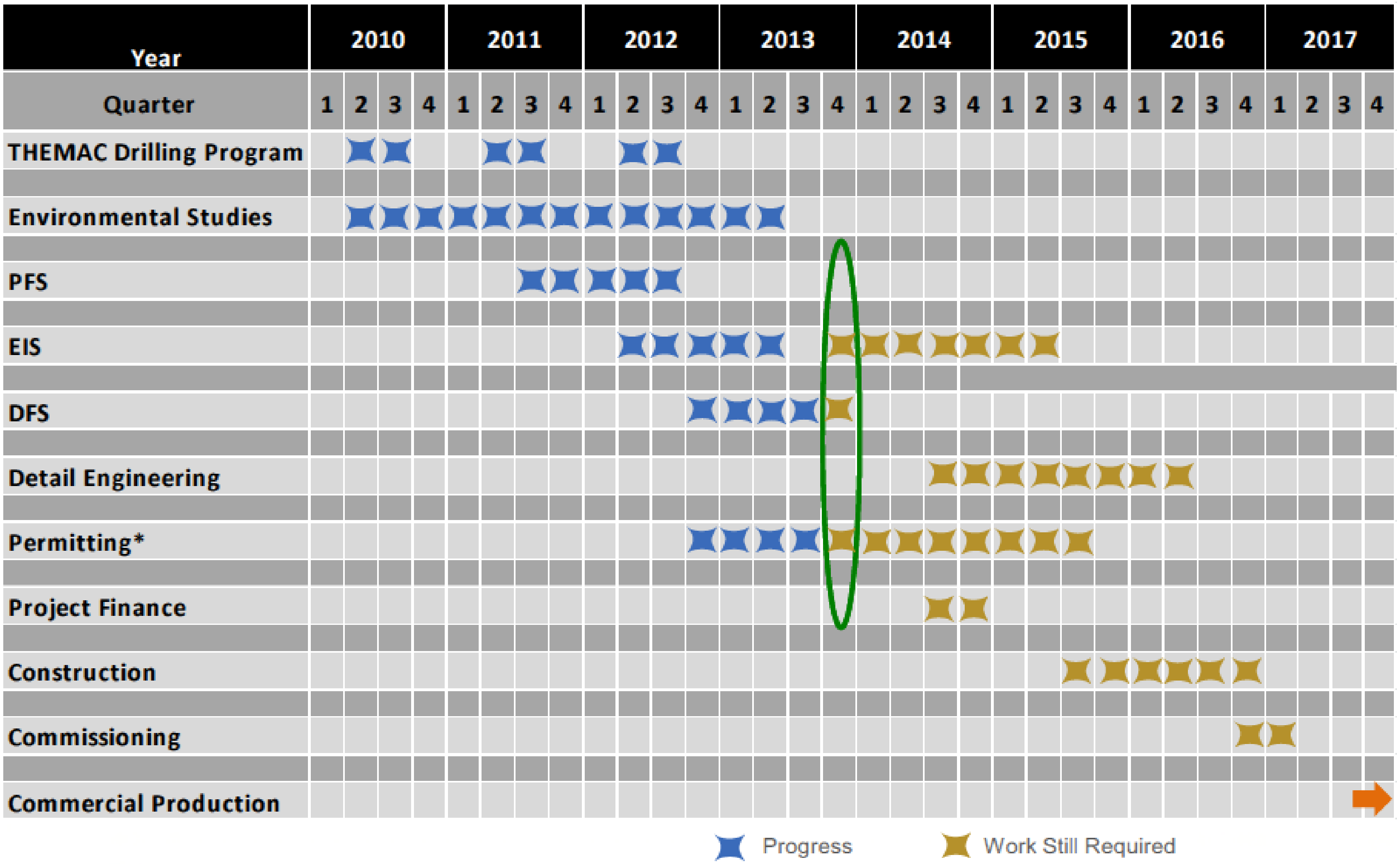


Figure 24-1: Copper Flat Environmental Studies and Permits



*Disclaimer: Permits are subject to agency review and approval

Figure 24-2: Copper Flat Project Development Schedule

25 INTERPRETATION AND CONCLUSIONS

A significant amount of development-level work has been recently completed as part of the overall development and evaluation of the Copper Flat Project. This includes metallurgical testing, environmental and economic assessment, evaluation of existing foundations and infrastructure, as well as the complete assessment of the project's reserves. In addition and as part of this study, project capital and operating cost estimates were developed and utilized in a thorough economic analysis. The economic analysis provided in this report demonstrates that the project is economically viable. The objectives for the NMCC management team should be focused on further development and evaluation of the project including moving forward on detailed engineering and a detailed estimate for cost control.

25.1 CONCLUSIONS

The reserve model and reserve classification developed for this report meets or exceeds CIM reporting standards. It is believed that the quality and quantity of the data used to develop the reserve model is sufficient and the methodology used to prepare the reserve model is correct. Consequently, it is believed that the reserve model will be a reasonable predictor of the copper and molybdenum grades and tonnages specified in the report's mine plan.

Comprehensive metallurgical testing conducted on the Copper Flat mineralization more than thirty years ago and the process used in the 1982 Quintana Minerals operation are still valid, as confirmed by recent metallurgical test results. The results of the CSMRI pilot plant tests, recent metallurgical testing, and operation of the Quintana concentrator for three and-a-half months in 1982 demonstrate the success of the process and that there are no adverse processing factors that require any extraordinary process engineering or deleterious elements in the Copper Flat ore. The ore is of medium hardness, amenable to copper/moly flotation, gives products that thicken and filter readily and will produce saleable copper and moly concentrates. The conceptual process flow sheet and processing design developed as part of this study is considered "Standard" practice in the mining industry. It is believed that the processing plant is capable of achieving an average of 10.8 million tons per year and that the process will yield metal recoveries as stated in the report.

The tailings storage facility design developed for this study utilizes best technological practices to ensure containment of the processed tailings. Additionally, the design capacity of the tailings storage facility is sufficient to contain the reserves stated in this report in an environmentally sound manner.

Access to electrical power and water necessary to sustain the operation as specified in this report is believed to be reasonable and achievable. Access has been secured to all of the land within the permit boundary, removing uncertainties concerning the ability to implement the plans in this report in terms of land access.

25.2 RISKS

The following risks are noted for the Project:

- Market risks associated with base metal and precious metal mining projects always exist. The economics of this project is used a base case of $3.00 copper price, $9.50 molybdenum price, $1,350 gold price and $22 silver price.
- Capital costs and construction estimates were based on current prevailing costs in the construction industry, which are presently moderately competitive. If the competitiveness of the construction industry were to change, the cost of the project could increase at the time of actual construction.
- Water allocation rights and water usage must be addressed for the Project to proceed to production. NMCC has secured 7,481 acre-ft/yr of declared water rights, which is sufficient to operate the mine. However, at this time, the New Mexico Office of the State Engineer has acknowledged vested rights that are less than what is needed operated the mine. NMCC has engaged in mediation with the NMOSE with the goal of resolving this issue. Attorneys at Law & Resource Planning Associates, legal counsel to NMCC, consider NMCC's claim to the declared water rights to be very strong. However, the outcome of the mediation cannot be guaranteed. Furthermore, even if successful, the overall process may cause unforeseen delays to project execution.
- A pit lake will form after operations have ceased based on the current pit configuration. Geochemical characterization predictive modeling was developed for the Copper Flat project. The model simulations demonstrate that all of the modeled chemical parameters are expected to be below New Mexico livestock standards (NMAC 20.6.4.900) in the 100 year post-closure pit lake with the possible exception of selenium. In addition, mercury concentrations are anticipated to increase over time, but remain below the livestock standard (0.01 mg/L). It is predicted that the future pit water will exceed wildlife surface water standards for selenium (0.05 mg/L) and mercury (0.00077 mg/L). Mercury concentrations are predicted to be marginally above the recently promulgated wildlife standard of 0.00077 mg/L by year 25. However, this exceedence may not represent a true ecological risk to area wildlife within the Copper Flat area. The proposed post-mining land use for the mine pit is wildlife habitat (not necessarily aquatic habitat); therefore, NMCC will pursue long-term mitigations strategies through regulatory processes or engineering controls or both.

25.2.1 Tailings Risks

The following risks with respect to the TSF are noted:

- In general, earthwork construction projects face inherent risk associated with unexpected subsurface conditions. Time and financial restraints allow only a small portion of the underlying foundation materials to be inspected and tested. Unexpected conditions could impact borrow material availability and construction costs.
- Alternatives for TSF construction are constrained by existing permit limits. The TSF site is both the construction area and the source of borrow materials. Multiple handling of some of the construction materials will be required, and a significant volume of material must be excavated and stockpiled during initial construction.

- Buried infrastructure from the old Quintana TSF may impact construction costs. The capital cost estimate for TSF earthworks includes an allowance of $1,000,000 for removal of the old decant towers and buried structures. Available information and the regulatory restrictions imposed on site access and subsurface investigation do not allow an assessment of the extent of buried structures that could require demolition and disposal during construction of the new facility, and their impact on construction costs.
- Unthickened cyclone overflow delivered at the proposed processing rate will exhibit less than optimum consolidation behavior under field conditions due to the fine grained nature of the tailings and a high rate of rise inside the TSF. As such, a large storage volume is required to meet disposal requirements and under existing property restrictions, the alternative available to provide storage capacity is to increase the height of the TSF. The design proposed herein will require near constant operation of the cyclone plant in order to provide sufficient cyclone underflow sand to construct the dam to the elevation needed to contain the tailings. Failure to maximize sand recovery through cyclone plant operation will result in the discharge of whole tailings into the TSF and as a consequence, sand and storage capacity will be lost. It may be feasible to use waste rock or borrowed fill material to supplement the cyclone underflow for dam construction, however, costs associated with fill placement are anticipated to exceed those of sand use and borrowed fill placement costs could adversely impact project economics.
- Tailings provided for use in geotechnical evaluation of tailings behavior, however well selected to be representative of future tailings, were derived from small samples relative to the mass of the ore reserve. Variations in the mined ore and the tailings delivered to the impoundment could potentially impact predicted TSF operation and performance.
- Given the current site constraints, mine processing plan and ore reserve, designing a TSF with the capacity to meet tailings storage requirements places a high demand on the availability of cyclone underflow sand for dam construction. It is estimated that cyclone plant utilization must exceed 97 percent in order to meet construction sand requirements. The required utilization rate is higher than the utilization rates typically used in the design of similar facilities, and milling and processing rates may be impacted if sand production a must be a priority. In order to maintain cyclone plant operation and produce the quantity of construction sand at the quality required for dam construction the operator will need to commit to continuous operation and rigorous operating procedures.

25.3 OPPORTUNITIES

The following opportunities are noted for the project:

- Upside market potential associated with base metal and precious metal pricing exists. The economics of this project is used a base case of $3.00 copper price, $9.50 molybdenum price, $1,350 gold price and $22 silver price.
- Other activities as discussed in the recommendations section of this report, once implemented, have the potential to improve project economics.

- The economic model forming the basis of the study assumes all mill processing equipment is purchased new. However, the standard mining and ore treatment methods considered create an opportunity to reduce project capital costs through the utilization of used, refurbished equipment or equipment that becomes available through canceled orders.
- The study assumes mining is self-performed and includes a capital cost for mining equipment. An opportunity to reduce upfront capital requirements exists through employment of a contract miner. Life-of-mine costs are typically increased with a contract miner; however, the resulting reduction in initial capital cost may improve the overall economics of the project.

25.3.1 Tailings Opportunities

The following opportunities with respect to the TSF are noted:

- Initial earthwork requirements could be substantially reduced if alternative sources for construction borrow and reclamation cover materials could be developed outside the TSF footprint.
- The operator should monitor tailings consolidation and post deposition density during operations. If tailings consolidation rates exceed predictions, it may be possible to decrease cyclone plant utilization, reduce the ultimate height of the TSF, and reduce sand demand.

While producing adequate sand may impact the operator’s maintenance and operating schedules, there are several tailings distribution system design features that will facilitate high cyclone plant utilization;

- The plant will contain 20 cyclones in a single cluster with 16 cyclones required to process the tailings inflow. There will be extra cyclones that can be brought on line if one fails. Normal maintenance of the cyclones can be undertaken while the plant is in operation.
- Cyclones have no moving parts and while subject to wear they are relatively maintenance free.
- It is assumed that the operator will monitor cyclone plant conditions and conduct maintenance of other cyclone plant components coincident with process facility maintenance shutdowns (the design process plant availability is 92.5 percent).
- If the cyclone plant cannot be operated for short periods of time, discharge from the flotation plant can be routed to an emergency pond for temporary storage. Tailings collected in the emergency pond can then be returned to the cyclone plant feed sump when the processing facilities are down for maintenance. Use of the emergency pond during periodic upset conditions will reduce the loss of construction sand.
- The cyclone underflow distribution system has two legs, one routed southward and one northward around the TSF. Each leg is capable of transporting the entire cyclone underflow and can be operated independently. Underflow discharge can be maintained in

one leg while the other is serviced or relocated. The availability of two underflow distribution pipes will facilitate continuous sand placement on the dam.

- Replacement of individual cyclones is a relatively easy process. The operator should have spares on site to cover this eventuality.

26 RECOMMENDATIONS

Because the economic analysis provided in this report demonstrates that the project is economically viable, the THEMAC management team should focus on further development and evaluation of the project including moving forward on detailed engineering. Costs for detailed engineering are included in the feasibility study cost estimate.

26.1 MINING AND MODELING

The following recommendations should be considered by NMCC regarding mining and modeling.

1) Geologic interpretation of rock type and structure should continue as detailed engineering advances. Improved definitions of rock and structure could improve grade estimation and prediction of process response.
2) Communication should be continued between the project geology team and the process design engineers. Updated understanding of geology could impact process design and testing in the future.
3) Geotechnical work in the pit may be considered as detailed engineering advances. Improved understanding of pit slope stability could have an impact on future pit designs.

26.2 METALLURGY

Metallurgical testing was conducted as part of the feasibility study, as presented in Section 13. The results of that work in conjunction with previous testing and review of production data from the previous operation of the mine are deemed to be sufficient to support development of the project. No additional metallurgical testing is recommended at this time.

26.3 TAILING STORAGE FACILITY

No additional testing work is recommended at this time continue to detailed engineering. Detailed engineering of the TSF should include the development of an operating plan that will facilitate meeting cyclone plant operation and sand production requirements.

26.4 ENVIRONMENTAL

The mine waste rock disposal facilities will be constructed to facilitate final grading for reclamation. During detailed operating plan development, consider and advance strategies to complete final grading, topsoil spreading and seeding concurrently with mining activities.

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APPENDIX A: FEASIBILITY STUDY CONTRIBUTORS AND PROFESSIONAL QUALIFICATIONS

CERTIFICATE of QUALIFIED PERSON

Conrad E. Huss

I, Conrad E. Huss, P.E., Ph.D., do hereby certify that:

1. I am Senior Vice President and Chairman of the Board of:

   M3 Engineering & Technology Corporation
   2051 W. Sunset Rd., Suite 101
   Tucson, Arizona 85704
   U.S.A.

2. I graduated with a Bachelor's of Science in Mathematics and a Bachelor's of Art in English from the University of Illinois in 1963. I graduated with a Master's of Science in Engineering Mechanics from the University of Arizona in 1968. In addition, I earned a Doctor of Philosophy in Engineering Mechanics from the University of Arizona in 1970.

3. I am a Professional Engineer in good standing in the State of Arizona in the areas of Civil (No. 9648) and Structural (No. 9733) engineering. I am also registered as a professional engineer in the States of California, Illinois, Maine, Minnesota, Missouri, Montana, New Mexico, Oklahoma, Texas, Utah, and Wyoming.

4. I have worked as an engineer for a total of forty-three years. My experience as an engineer includes over 36 years designing and managing mine development and expansion projects including material handling, reclamation, water treatment, base metal and precious metal process plants, industrial minerals, smelters, special structures, and audits.

5. 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.

6. I am the principal author for the preparation of the technical report titled "Copper Flat Project, Form 43-101F1 Technical Report, Feasibility Study, New Mexico, USA" (the "Technical Report") dated effective October 7, 2013 and prepared for THEMAC Resources Group Ltd.; and am responsible for Sections 1, 2, 3, 19, 24, 25, and 27. I have not visited the project site.

7. I have prior involvement with the property that is the subject of the Technical Report. I was a contributing author of a previous Technical Report on the subject property titled "Copper Flat Project, Form 43-101F1 Technical Report, Prefeasibility Study" (the "Technical Report") dated August 22, 2012.

8. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

9. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Signed and dated this 21st day of November, 2013.

Signature of Qualified Person

Conrad E. Huss, P.E., Ph.D.
Print Name of Qualified Person

CERTIFICATE of QUALIFIED PERSON

I, Jon Steven Raugust, C.P.G., do hereby certify that:

1. I am currently employed as Resource Development Manager by:

   THEMAC Resources, Copper Flat Mine
   2424 Louisiana Blvd, NE, Suite 301
   Albuquerque, New Mexico 87110
   USA

2. This Certificate applies to the report "Copper Flat Project, Form 43-101F1 Technical Report, Feasibility Study, New Mexico, USA" which has an effective date of October 7, 2013.

3. I am a graduate of Humboldt State University in California where I earned a Bachelor of Arts degree in Geology in 1984. I am also a graduate of the New Mexico Institute of Mining and Technology where I earned a Master of Science degree in Mineral Engineering in 2003.

   I am a:

   - Certified Professional Geologist (CPG) in accordance with the American Institute of Professional Geologists (AIPG) (No. 8586)
   - Member in good standing of the Society of Mining, Metallurgy, and Exploration (SME)
   - Member in good standing of the Association of Environmental and Engineering Geologists (AEG)

4. I have practiced as a geologist or engineering geologist for 27 years. Two years in the oil industry managing seismic data and plotting geophysical maps, 14 years in the environmental industry as an applied hydrogeologist and environmental engineer, and 11 years in the mining industry practicing mine reclamation and closure, hydrology, geochemistry, geotechnical engineering, and mine permitting.

5. I have visited the site numerous times for a variety of purposes and durations; however, the most recent being April 9, 2013. That duration of that particular visit was one day.

6. I am responsible for the preparation of Sections 4.5-4.7, 5, 6, 18, 20, and 26.4. These sections are part of the technical report titled "Copper Flat Project, Form 43-101F1 Technical Report, Feasibility Study, New Mexico, USA" dated effective October 7, 2013.

7. 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.

8. I am not independent of the issuer, as I am an employee of THEMAC Resources, Copper Flat Mine. However, I am very familiar with the contents of Sections 4.5-4.7, 5, 6, 18, 20, and 26.4 and would have been the source of information for these sections had the sections been prepared by an independent author.

9. I have had prior involvement to the property independent of my employment with THEMAC Resources, Copper Flat Mine, as the property was the subject of my Master's degree project report, which is now a publically available document published by the New Mexico Bureau of Geology and Mineral Resources in Socorro, New Mexico.

10. I have read the National Instrument 43-101, and Sections 4.5-4.7, 5, 6, 18, 20, and 26.4 of the Technical Report and concur that it has been prepared in compliance with the instrument and form.

11. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

12. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 21st day of November, 2013

Signature of Qualified Person

Jon Steven Raugust
Print name of Qualified Person

AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGISTS
CERTIFICATE NUMBER
8586
AIPG
J. STEVEN RAUGUST
CERTIFIED PROFESSIONAL GEOLOGIST
Expires 12/31/2013

CERTIFICATE of QUALIFIED PERSON

I, Raymond Ellison Irwin, C.P.G., do hereby certify that:

1. I am currently employed as Vice President of Exploration by:

   THEMAC Resources Group
   2424 Louisiana Blvd, NE, Suite 301
   Albuquerque, New Mexico 87110
   USA

2. This Certificate applies to the report "Copper Flat Project, Form 43-101F1 Technical Report, Feasibility Study, New Mexico, USA" which has an effective date of October 7, 2013.

3. I am a graduate of New Mexico State University where I received a Bachelor of Science degree in Geology with a minor in Chemistry in 1972.

   - I am a Certified Professional Geologist (CPG) in accordance with the American Institute of Professional Geologists (AIPG No. 4677).
   - I am a registered Professional Geologist in the Commonwealth of Virginia (#497), the state of North Carolina (#603), the state of Kentucky (#652) and the state of Utah (#2250).
   - I am a Fellow in the Society of Economic Geologists, a Registered Member in the Society of Mining, Metallurgy, and Exploration (SME), a member of Geological Society of America (GSA), and a member of the Canadian Institute of Mining (CIM.

4. I have forty years of diversified minerals exploration, mine development and mine operating experience, and have directly participated in significant mineral resource discoveries. Additionally, I have served in senior management roles such as District Geologist, Area Exploration Manager, Chief Geologist and Vice President of Exploration and in the past have served as a Director of Junior natural resource companies.

5. I have read the definition and attended short courses concerning the NI 43-101 regulations and the guidelines to serve as a "Qualified Person (QP)." Based on my educational credentials, work experience, professional memberships and certification with AIPG, I meet the guidelines that have been established, and in fact, I have served as a Qualified Person for various companies since the NI 43-101 guidelines were established.

6. I have had prior involvement with the property, as I planned and directly supervised all facets of the 2012 Exploration Program at the Copper Flat Project, and last visited the project on October 30, 2013.

7. I am responsible for the preparation of Sections 4.1-4.4, 7, 8, 9, and 23. These sections are part of the technical report titled "Copper Flat Project, Form 43-101F1 Technical Report, Feasibility Study, New Mexico, USA" dated effective October 7, 2013.

8. I am not independent of the issuer, as I am an employee of THEMAC Resources Group. However, I am very familiar with the contents of Sections 4.1-4.4, 7, 8, 9, and 23 and would

have provided much of the updated information of these sections had the sections been prepared by an independent author.

9. I have read the National Instrument 43-101, and Sections 4.1-4.4, 7, 8, 9, and 23 of the Technical Report and concur that it has been prepared in compliance with the instrument and form.

10. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 21st day of November, 2013

Raymond E. Irwin
Signature of Qualified Person

Raymond E. Irwin
Print name of Qualified Person

CERTIFICATE OF QUALIFIED PERSON

I, John M. Marek P.E. do hereby certify that:

a) I am currently employed as the President and a Senior Mining Engineer by:

> Independent Mining Consultants, Inc.
> 3560 E. Gas Road
> Tucson, Arizona, USA 85714

b) This certificate is part of the report titled "Copper Flat Project, Form 43-101F1 Technical Report, Feasibility Study", dated 21 November 2013.

c) I graduated with the following degrees from the Colorado School of Mines
> Bachelors of Science, Mineral Engineering – Physics 1974
> Masters of Science, Mining Engineering 1976

I am a Registered Professional Mining Engineer in the State of Arizona USA
Registration # 12772
I am a Registered Professional Engineer in the State of Colorado USA
Registration # 16191

I am a Registered Member of the American Institute of Mining and Metallurgical Engineers, Society of Mining Engineers

I have worked as a mining engineer, geoscientist, and reserve estimation specialist for more than 37 years. I have managed drill programs, overseen sampling programs, and interpreted geologic occurrences in both precious metals and base metals for numerous projects over that time frame. My advanced training at the university included geostatistics and I have built upon that initial training as a resource modeler and reserve estimation specialist in base and precious metals for my entire career. I have acted as the Qualified Person on these topics for numerous Technical Reports.

My work experience includes mine planning, equipment selection, mine cost estimation and mine feasibility studies for base and precious metals projects world wide for over 35 years.

d) I visited the Copper Flat property on September 7 – 8, 2011.

e) I am responsible for the following sections of the report titled "Copper Flat Project, Form 43-101F1 Technical Report, Feasibility Study", dated 21 November 2013: 10, 11, 12, 14, 15, 16, 21.1.7, 21.2.1, and 26.1.

f) I am independent of THEMAC Resources Group Limited applying the tests in Section 1.5 of National Instrument 43-101.

g) Independent Mining Consultants, Inc. has worked on this project during 2011 and 2012. John M. Marek worked briefly on the project as a junior engineer during the early 1980's while employed at different company. John Marek was an author of the document "Copper Flat Project, Form 43-101F1 Techncal Report, Mineral Resource Statement" dated 23 January 2012.

h) I have read National Instrument 43-101 and Form 43-101F1, and to my knowledge, the Technical Report has been prepared in compliance with that instrument and form.

i) As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated: November 18, 2013.

SME
Society for Mining, Metallurgy & Exploration
John M. Marek
SME Registered Member No. 2021600
Signature
Date Signed 18 Nov 2013
Expiration date 31 Dec 2014

John M. Marek
Registered Member of the American Institute of Mining and Metallurgical Engineers, Society of Mining Engineers

CERTIFICATE of QUALIFIED PERSON

I, Thomas L. Drielick, P.E., do hereby certify that:

1. I am currently employed as Sr. Vice President by:

   M3 Engineering & Technology Corporation
   2051 W. Sunset Road, Ste. 101
   Tucson, Arizona 85704
   U.S.A.

2. I am a graduate of Michigan Technological University and received a Bachelor of Science degree in Metallurgical Engineering in 1970. I am also a graduate of Southern Illinois University and received an M.B.A. degree in 1973.

3. I am a:

   - Registered Professional Engineer in the State of Arizona (No. 22958)
   - Registered Professional Engineer in the State of Michigan (No. 6201055633)
   - Member in good standing of the Society for Mining, Metallurgy and Exploration, Inc. (No. 850920)
   - Member in good standing of AACE (Association for the Advancement of Cost Engineering) International, Inc. (No. 05031)

4. I have practiced metallurgical and mineral processing engineering and project management for 42 years. I have worked for mining and exploration companies for 18 years and for M3 Engineering and Technology, Corporation for 24 years.

5. 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.

6. I am responsible for the preparation of Section 13 "Mineral Processing and Metallurgical Testing", Section 17 "Recovery Methods", Section 22 "Economic Analysis", Section 21.1 "Process Operating Cost Estimate", Section 21.2.2 "Plant Capital Cost", and Section 26.2 "Metallurgy" of the technical report titled "Copper Flat Project, Form 43-101F1 Technical Report, Feasibility Study, New Mexico, USA" dated effective October 7, 2013 (the "Technical Report").

7. I have prior involvement with the property that is the subject of the Technical Report. I was a contributing author of a previous Technical Report on the subject property titled "Copper Flat Project, Form 43-101F1 Technical Report, Prefeasibility Study" (the "Technical Report") dated August 22, 2012.

8. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information required to be disclosed to make the report not misleading.

9. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Signed and dated this 21st day of November, 2013.

Signature of Qualified Person

Thomas L. Drielick
Print name of Qualified Person

Golder Associates

CERTIFICATE of QUALIFIED PERSON

I, Eugene Muller, PE, do hereby certify that:

1. I am a Senior Consultant employed by Golder Associates Inc. and contributed to the Technical Report titled "Copper Flat Project, Form 43-101F1 Technical Report, Feasibility Study, New Mexico, USA" dated effective October 7, 2013, prepared by M3 Engineering and Technology Corp. Golder Associate's address is:

   Golder Associates Inc.
   4730 N. Oracle Road Suite 210
   Tucson, Arizona 85705

2. I received Bachelor of Science degrees in Geosciences and Civil Engineering from the University of Arizona in 1978 and 1986. I earned a Master of Science in Civil Engineering in 1989 from the University of Arizona.

3. I am a Registered Professional Engineer in the State of Arizona.

4. I have worked for over 20 years as a geologist and engineer on a variety of mining industry projects. Most of my project experience is directly relevant and applicable to the contributions made to the above referenced report.

5. 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.

6. I prepared Sections 20.2, 21.2.3, 25.2.1, 25.3.1, and 26.3 of the report regarding aspects of tailings disposal.

7. I have had prior involvement with the property that is the subject of the Technical Report. I provided consulting engineering services to a previous project proponent.

8. I have visited the project site on a number of occasions, most recently in December 2012.

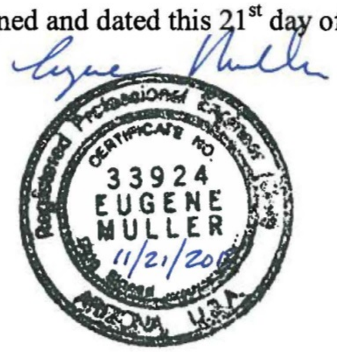
9. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

10. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.

11. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

12. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Signed and dated this 21st day of November, 2013.



Signature of Qualified Person

Eugene Muller
Print Name of Qualified Person

srk consulting

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Suite 300
5250 Neil Road
Reno, NV 89502

T: 775.828.6800
F: 775.828.6820

reno@srk.com
www.srk.com

CERTIFICATE OF AUTHOR

I, Mark Allan Willow, do hereby certify that:

1. I am Practice Leader and member of the Board of Directors of:

   SRK Consulting (U.S.), Inc.
   5250 Neil Road, Suite 300
   Reno, Nevada 89502-6568
   U.S.A.

2. I graduated with Bachelor's degree in Fisheries and Wildlife Management from the University of Missouri in 1987 and a Master's degree in Environmental Science and Engineering from the Colorado School of Mines in 1995. I have worked as Biologist/Environmental Scientist for over 20 years since my graduation from university. My relevant experience includes environmental due diligence/competent persons evaluations of developmental phase and operational phase mines through the world, including small gold mining projects in Panama, Senegal, Peru and Colombia; open pit and underground coal mines in Russia; several large copper mines and processing facilities in Mexico; and a mine/coking operation in China. My Project Manager experience includes several site characterization and mine closure projects. I work closely with the U.S. Forest Service and U.S. Bureau of Land Management on several permitting and mine closure projects to develop uniquely successful and cost effective closure alternatives for the abandoned mining operations. Finally, I draw upon this diverse background for knowledge and experience as a human health and ecological risk assessor with respect to potential environmental impacts associated with operating and closing mining properties, and have experienced in the development of Preliminary Remediation Goals and hazard/risk calculations for site remedial action plans under CERCLA activities according to current U.S. EPA risk assessment guidance.

3. I am a Certified Environmental Manager (CEM) in the State of Nevada (#1832) in accordance with Nevada Administrative Code NAC 459.970 through 459.9729. Before any person consults for a fee in matters concerning: the management of hazardous waste; the investigation of a release or potential release of a hazardous substance; the sampling of any media to determine the release of a hazardous substance; the response to a release or cleanup of a hazardous substance; or the remediation soil or water contaminated with a hazardous substance, they must be certified by the Nevada Division of Environmental Protection, Bureau of Corrective Action;

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

5. I am responsible for the preparation of Sections 20.6.5 and 22.5.2 of the technical report titled *Copper Flat Project, Form 43-101F1 Technical Report, Feasibility Study, New Mexico, USA* dated effective October 7, 2013 (the "Technical Report") relating to the Copper Flat property. I visited the Copper Flat property on April 13, 2012 for 1 day.

6. I have had prior involvement with the Copper Flat Project that is the subject of the Technical Report. The nature of my prior involvement is the preparation of the mine plan of operations (MPO) in 2011 for submittal to the U.S. Department of the Interior, Bureau of Land Management, in accordance with the requirements of 43 CFR § 3809.401 *et seq*.

7. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.

8. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

9. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

10. As of October 7, 2013, to the best of my knowledge, information and belief, sections 20.6.5 and 22.5.2 contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 21st Day of November, 2013.

Mark A. Willow

Mark A. Willow, M.Sc., C.E.M.
SME-Registered Member No. 4104492
SRK Board of Directors Member
SRK Practice Leader
Principal Environmental Scientist

SME
Society for Mining, Metallurgy & Exploration
Mark A. Willow
SME Registered Member No. 4104492
Signature________
Date Signed________
Expiration date 12-31-14