



NEWS RELEASE

Excelsior Mining Announces Updated Preliminary Economic Assessment on Johnson Camp Mine Incorporating Sulfide Leaching Technology

February 22, 2023

Excelsior Mining Corp. (TSX: MIN) (PFSE: 3XS) (OTCQX: EXMGF) ("Excelsior" or the "Company") is pleased to announce the results of its Updated Preliminary Economic Assessment ("PEA") on the Johnson Camp Mine Heap Leach, located in Cochise County, southeastern Arizona. The PEA considers the results of the drill program completed in 2022 and the implementation of sulfide leaching technology to improve recoveries. As part of the PEA, the combined report (the "Report") will also include a republishing of the Prefeasibility Study Update ("PFS") on the North Star Deposit of the Gunnison Copper Project. The Gunnison Project is designed as a copper in-situ recovery ("ISR") mine using solvent extraction-electrowinning ("SX-EW") to produce copper cathode and the Johnson Camp mine is a conventional open pit and heap leach operation. Results of the PFS and PEA disclosed in this press release are in United States dollars.

JOHNSON CAMP HEAP LEACH PRELIMINARY ECONOMIC ASSESSMENT

Economic Analysis

The Johnson Camp Mine ("JCM") has historically been an open pit, heap leach operation since Cyprus Minerals opened the property in the 1970's. The operation includes two open pits, a two-stage crushing-agglomerating circuit, a fully functioning SX-EW plant capable of producing 25 million pounds of cathode copper per year, a complete set of PLS and raffinate ponds, and full infrastructure (ancillary facilities, access, power, water, and communications).

Heap leaching of sulfide copper with accelerated pyrite oxidation is proposed in this PEA. The Project plans include mining oxide, sulfide, and transition material from the Burro and Copper Chief pits for 20 years and heap leaching for an additional year to produce copper cathode at a capacity up to 25 million pounds per annum (mppa).

To restart JCM for heap leaching, two developments need to take place simultaneously: pre-stripping and mine development, and the construction of a new heap leach pad, Pad 5. Both are considered to require between six and nine months to complete before irrigation of the new leach pad could commence. Piping of PLS and raffinate lines from Pad 5 to the JCM ponds also fits within this time frame. A PEA has been completed by M3 with respect to this planned re-opening.

Mining of JCM would be by traditional open pit and the highlights of the PEA financial model are tabulated below assuming a copper price of \$3.75/lb.

Mine Life and post mining processing	~20 years
Heap Leach Material Mined	85.2 M ton
Total Copper Grade (CuT%)	0.37%
Average LOM Total Copper Recovery*	77%
Cu Produced	492 M lb
Total Tonnage Mined	196 M ton
Initial Mine Capital	\$58.9 million
Total Operating Cash Cost (\$/lb Cu)**	\$2.24
After-Tax NPV/IRR (7.5% discount rate)	\$180.0M / 30.4%
*Total copper recovery includes a combination of oxide, transition and primary sulfide mineral recoveries. ** Includes all operating costs, site G&A, royalties, non-income taxes, salvage, reclamation and closure.	

The table below sets out the sensitivities of the After-Tax NPV and IRR to copper price:

Sensitivity Analysis					
Sensitivity	-20%	-10%	0	+10%	+20%
Cu Price	\$3.00	\$3.375	\$3.75	\$4.125	\$4.50
IRR After-Tax	11.5%	20.9%	30.4%	39.9%	49.2%
NPV* After-Tax	\$32	\$107	\$180	\$251	\$321
*million \$ at 7.5% discount rate					

The PEA is preliminary in nature and includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves. There is no certainty that the conclusions reached in the PEA will be realized. Mineral resources that are not mineral reserves do not have demonstrated economic viability.

Mineral Resources

The JCM Mineral Resources are provided in the table below.

Johnson Camp Mineral Resources (0.1% CuT cut-off)

Classification	Tons	% Cu	lbs CuT
Measured	20,771,000	0.31	127,545,000
Indicated	87,166,000	0.32	550,118,000
M&I	107,932,000	0.32	677,663,000
Inferred	50,998,000	0.32	322,656,000

1. The Effective Date of the mineral resources is July 13, 2022.
2. The project mineral resources are comprised of all model blocks at a 0.1 % CuT cut-off that lie within optimized resource pits.
3. Mineral resources that are not mineral reserves do not have demonstrated economic viability.
4. The estimate of mineral resources may be materially affected by geology, environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.
5. Rounding as required by reporting guidelines may result in apparent discrepancies between tons, grade, and contained metal content.

The JCM copper resources were modeled and estimated using information provided by Excelsior under Mr. Bickel's supervision. The information is derived from historical core holes drilled by Cyprus Mining, Arimetco, Summo USA Corp., and Nord Resources Corp, and new drilling completed by Excelsior in 2022. The drill hole database also includes analyses performed by Excelsior on the historical core. These data, as well as digital topography of the project area, were provided to RESPEC Company LLC ("RESPEC") by Excelsior.

Total copper grades, as well as soluble copper ratios, were interpolated using inverse distance, ordinary kriging, and nearest-neighbor methods. The mineral resources reported herein were estimated by inverse distance interpolation as this method led to results that most appropriately reflected the drill data and geology of the deposit. This is particularly true with respect to the estimation of the lowest-grade areas in the model, where potential over-estimation of volumes could materially impact the resource estimation at grades close to potential open-pit mining cut-offs. The nearest-neighbor estimation was completed for the purposes of statistical checking of the various estimation iterations.

The JCM mineral resources have been estimated to reflect potential open-pit extraction and potential processing by heap leaching. To meet the requirement of the resources having reasonable prospects for eventual economic extraction, a pit optimization was completed using the parameters summarized in the table below.

Parameter	Value	Unit
Copper Price	\$3.75	\$/lb Sold
Contract Mine Cost	\$2.30	\$/ton Mined
Technical Services	\$0.25	\$/ton Processed
Heap Management	\$0.30	\$/ton Processed
Heap Capital Cost	\$0.80	\$/ton Processed
Crushing/Agglomeration Cost	\$1.10	\$/ton Processed
G&A Cost	\$0.05	\$/lb Cu Produced
SX-EW Cost	\$0.25	\$/lb Cu Produced
Recovery	95%	Acid Soluble Cu
Recovery	95%	Cyanide Soluble Cu
Recovery	70%	Sulfide Cu
Royalty (incl. Stream)	17.90%	NSR
Acid Cost	\$150	\$/ ton
Acid Consumption and Costs by Formation		
Formation	Acid Cons. lb/ton	Acid Cost \$/ton Processed
Pioneer Shale	20	\$1.20
Bolsa Quartzite	25	\$1.50
Diabase	30	\$1.80
Middle Abrigo	55	\$3.30
Upper Abrigo	45	\$2.70
Lower Abrigo	40	\$2.40
Martin	70	\$4.20

The pit shells created using these optimization parameters were used to constrain the project resources for comparison purposes. An exclusion line was used to limit the pit optimization on the west side of the Burro Pit to prevent the pit optimizations from encroaching on the existing process plant and the historical leach pad. The in-pit resources were further constrained by the application of a cut-off of 0.1% CuT to all model blocks within the optimized pits.

Mr. Jeffrey Bickel, C.P.G., with the independent firm RESPEC of Reno, Nevada, is a Qualified Person as defined by NI 43-101 and is responsible for this mineral resource estimate. He has verified, reviewed and approved the technical disclosure contained in this section of the news release. Mr. Bickel has verified the data underlying the results by reviewing the drilling, sampling, assay, and quality assurance and quality control data, as well as the geologic interpretations completed by Excelsior. Mr. Bickel is not aware of any environmental, permitting, legal, title, taxation, socio-political, marketing or other issues which may materially affect its estimate of mineral resources.

PEA Assumptions

The JCM plan has been developed based on a new mineral resource estimate for the Burro and Copper Chief deposits. The mine plan targets the full resource at Johnson Camp over a 20-year period. A contract miner will be executing the mining of the pits and delivering material to the primary crusher.

Mining of the deposit is expected to be accomplished with 100-ton haul trucks and front-end loaders. Mining is planned on 20-ft bench heights. The pit configuration is double-benched with catch benches every vertical 40 ft. An annual schedule was developed for the mine plan. Crushed and agglomerated material will be processed by placement on the newly permitted leach pad. This tonnage production is limited by the copper production capacity of the existing SX-EW plant of 25 million pounds of copper per year.

The mining contractor is expected to be responsible for mine supervision, equipment operation, equipment maintenance, and blast hole drilling and loading. The reference to specific equipment manufacturers is to illustrate equipment size and is not to be considered a recommendation. Production drilling is expected to be accomplished with Epiroc DM45 class drills or similar. Loading is expected to be accomplished with 14-yard CAT 992 class front-end loaders. Haul trucks are planned to be CAT 777 class 100-ton trucks.

The existing leach pads (Pads 1, 2 & 3) will not be used for future mining for new material extracted from the Burro and Copper Chief pits. The new leach pad area, Pad 5, is to be located northeast of the existing plant facility and is to be designed such that leach solutions flow by gravity into the new combined ILS-PLS pond located down slope of the new leach pad. The PLS solution will be pumped back to the existing JCM SX-EW plant. A storm water pond is also provided.

The Johnson Camp Mine is currently covered under Aquifer Protection Permit P-100514. Excelsior has obtained a significant amendment to the existing APP to accommodate mining at JCM from the Burro Pit. A new facility, Leach Pad 5, with associated impoundments has been added to the existing APP to accommodate resumption of mining at JCM.

The full capital cost for restarting the JCM heap leaching operation including mining pre-production, first fills/Owner's costs, leach pad construction, new leach pad stacking system, crusher and agglomeration refurbishment and haul road construction is approximately \$58.9 million. Staffing for the JCM project is mostly in place however several new hires will be needed to augment the existing staff.

JCM Opportunities

1. Additional infill and step-out drilling, including drilling focused on deeper sulfides, could yield increased tonnage and/or grade in some areas within the mineral resource.

2. Detailed mine planning and scheduling may result in higher production rates and reduced mining unit costs. Mine plan optimization could bring higher grade material closer to start for better initial cash flow and could reduce waste tons.
3. Planned metallurgical test work on sulfides and transitional mineralization in 2023 could generate higher recoveries or lower acid consumptions than presently estimated and demonstrate that less crushing is required.
4. The estimated capital required for the JCM Project has been prepared to a PEA level. Additional detailed engineering work may reduce this cost.
5. Relocating the existing waste rock stockpile could be performed with smaller, cheaper equipment as well as timed later in the mine schedule to increase near-term revenue.
6. The copper price used for this study is \$3.75/lb. Current copper spot copper prices are above this price level and may continue to increase, given the continued emphasis by the US and other governments towards renewable energy sources and electrification of transportation. Copper has a large role to play in these “green” initiatives.
7. Expansion of the current SX-EW facility to a production capacity of 50 mlbs per annum could be evaluated in a trade-off study to evaluate whether it would improve the project economics by increasing the cash flow.
8. Demonstration of successful leaching of sulfide and transitional material could provide opportunities for mining additional satellite deposits that are known to exist in the Johnson Camp District, including the Strong and Harris and Gunnison deposits.
9. Integration of planning efforts for the Johnson Camp, Strong and Harris, and Gunnison deposits could reveal synergies or development strategies for improving financial returns and increasing the mine life.

JCM Risks

1. Metallurgical test work to be performed on sulfides and transitional mineralization in 2023 could generate lower recoveries or higher acid consumptions than presently estimated.
2. This testing could also indicate that finer crushing is required to achieve high copper recoveries.
3. The acid price could remain high in the short term and could increase the operating cost of heap leaching.
4. Other reagent costs, principally diluent and extractant, could increase materially, increasing SX-EW operating costs.
5. The current increased price of natural gas which is used by the local generating company could impact the long-term cost of power needed for the Project.
6. The selected PEA copper price of \$3.75/lb could be subject to volatility due to external factors.
7. More detailed engineering designs could result in higher costs.
8. Increased lead times for construction could materially delay the start of leaching and generation of revenue.
9. The cost of financing capital for the JCM heap leach could become prohibitive.
10. Obtaining the necessary environmental permit amendments could take longer than anticipated.
11. Changes to the new Pad 5 permit may be required to optimize sulfide leaching which could delay mine start-up.

Recommendations

Excelsior should complete the current metallurgical program and, if warranted, proceed to a feasibility study and then detailed engineering for the leach pad and crusher refurbishment.

GUNNISON PROJECT PREFEASIBILITY STUDY

Highlights of the PFS (United States dollars)

- Net Present Value (“NPV”) of \$1,167 million after-tax
 - at 7.5% discount rate using a life of mine (“LOM”) average copper price of \$3.75/lb;

- Internal Rate of Return (“IRR”) of 37.5% after-tax;
- Pre-production capital costs of \$47.6 million
 - includes 15% contingency, EPCM, freight, mobile equipment, owner’s costs and capital spares;
- Payback period for pre-production capital of 6.7 years after-tax;
- Average life of mine operating costs of \$0.945/lb;
- Total Operating Cash Cost (including royalties, non-income taxes, salvage, reclamation and closure) of \$1.225/lb
- All-In Cost (LOM capital costs plus operating costs) of \$1.727/lb;
- Life of Mine: 2,154 million pounds of commercial production over 24 years;
- Staged production profile: initial production rate of 25 million pounds of copper cathode per annum, followed by an intermediate expansion stage to 75 million pounds per annum and final expansion stage to full production of 125 million pounds per annum (includes the construction of an acid plant at full production). The staged production profile makes possible the funding of future expansions out of cash flow;
- Approximately 15 months of wellfield pre-conditioning (additional operations) to dissolve and remove calcite, along with the addition of a raffinate neutralization plant to assist with the flushing and removal of accumulated CO₂ gas;
- Requirement for some additional work to reduce risk and optimize process and production.

A detailed sensitivity analysis to copper price is set out below under the heading “Financial Analysis”. In addition, the risks and opportunities associated with the Gunnison Project are discussed below.

The PFS was completed by M3 Engineering & Technology Corporation (“M3”) of Tucson, AZ and is effective as of February 1, 2023. The Technical Report (the “Report”) summarizing the results of the PFS and prepared in accordance with National Instrument (“NI”) 43-101, will be filed on SEDAR and Excelsior’s website within 45 days of this news release. The PFS was updated because of the need to update the JCM PEA, which is contained in the same report.

Financial Analysis

The PFS base case generates an after-tax NPV of approximately \$1,166.5 million (at a cash flow discount of 7.5%) and an IRR of 37.5%. This financial analysis is based on a number of assumptions which will be fully set out in the Report.

The base case uses the following parameters over the 24-years of production:

- Copper selling price of \$3.75/lb
- Total copper recovery of approximately 48% (based on a combination of metallurgical recovery and estimated sweep efficiency);
- Average of approximately 9.5 pounds of acid consumed for every pound of copper produced;
- Acid plant construction in year 7 with the price of sulfuric acid prior to that of approximately \$150/ton and the price of sulfur of \$130 per ton delivered after that;
- Combined state and federal tax rate of 25.9%;
- Staged production commencing at 25 million pounds per annum, ramping up to 75 million pounds in year 4, and then to 125 million pounds per annum in Year 7.
- The introduction of an additional year of pre-production calcite removal and neutralized raffinate flushing for every well to address CO₂ flow restrictions.

FINANCIAL ANALYSIS SUMMARY		
	Pre-Tax	Post-Tax
IRR	40.6%	37.5%
Pre-Production Capital Payback (years)	6.5	6.7
NPV (million \$) @7.5%	1,434.8	1,166.5
COST METRICS		
		Cost/lb Copper
Direct Operating Costs		0.945
Royalties, Taxes, Recl. & Salvage		0.274
Total Cash Cost		1.225

Total initial (pre-breakthrough) capital expenditures (including 15% contingency, EPCM, capital spares, owner's costs, mobile equipment and freight) are estimated at \$47.6 million for Stage 1 initial production of copper cathode at approximately 25 million pounds per annum. Total sustaining capital costs over the life of the mine are \$1,080.8 million, which includes production wellfield expansion, SX-EW expansion, acid plant construction and water treatment facilities. The average life of mine Direct Operating Cash Cost is \$0.945/lb and the average life of mine Total Operating Cash Cost (including royalties, non-income taxes, salvage, reclamation, and closure) is \$1.225/lb.

The Company has also evaluated an Alternate case without an Acid Plant. This case generated a pre-tax NPV@7.5% of \$1,177.8 million and an IRR of 41.0% (after-tax: NPV@7.5% of \$975.5 million and IRR of 38.1%). Total initial capital expenditures remain the same as the "Acid Plant" scenario. Total sustaining capital costs over the life of the mine are \$879.7 million, which includes production well-field expansion, SX-EW expansion and water treatment facilities. Average life of mine Operating Direct Cash Costs are estimated at \$1.35/lb for the "No-Acid Plant" option with an average life of mine Total Operating Cash Cost of \$1.63 per pound.

Sensitivity analysis is shown in the table below.

Base Case After – Tax Sensitivities (\$millions)

Copper Price			
	NPV @ 7.5% (\$M)	IRR%	Payback
Base Case	\$1,167	37.5%	6.7
20%	\$1,697	50.4%	4.3
10%	\$1,433	44.0%	6.2
-10%	\$898	30.8%	7.3
-20%	\$627	24.2%	8.0
Operating Cost			
	NPV @ 7.5% (\$M)	IRR%	Payback
Base Case	\$1,167	37.5%	6.7
20%	\$1,031	33.2%	7.1
10%	\$1,099	35.3%	6.9
-10%	\$1,233	39.7%	6.5
-20%	\$1,299	41.9%	6.3
Initial Capital			
	NPV @ 7.5% (\$M)	IRR%	Payback
Base Case	\$1,167	37.5%	6.7
20%	\$1,160	36.1%	6.7
10%	\$1,163	36.8%	6.7
-10%	\$1,170	38.2%	6.7
-20%	\$1,173	39.0%	6.6

The Alternate Case economic after-tax sensitivities are shown in the table below.

Alternate Case After – Tax Sensitives (\$millions)

Copper Price			
	NPV @ 7.5% (\$M)	IRR%	Payback
Base Case	\$976	38.1%	6.0
20%	\$1,505	51.7%	4.3
10%	\$1,241	45.0%	4.8
-10%	\$706	30.8%	6.7
-20%	\$432	23.0%	7.5
Operating Cost			
	NPV @ 7.5% (\$M)	IRR%	Payback
Base Case	\$976	38.1%	6.0
20%	\$790	32.7%	6.5
10%	\$883	35.4%	6.2
-10%	\$1,066	40.8%	5.4
-20%	\$1,157	43.4%	5.0
Initial Capital			
	NPV @ 7.5% (\$M)	IRR%	Payback
Base Case	\$976	38.1%	6.04
20%	\$969	36.6%	6.08
10%	\$972	37.4%	6.06
-10%	\$979	38.9%	6.02
-20%	\$982	39.8%	6.00

Mineral Resources and Mineral Reserves

Mineral Resource Estimate

The mineral resource estimate for the North Star Deposit is based on results from 122 drill holes totalling 158,785 feet and is effective as of October 1, 2016 (unchanged from the original 2016 Feasibility Study on the Gunnison Project). The estimate is classified as a measured, indicated or inferred mineral resource, consistent with the CIM definitions referred to in NI 43-101. Excelsior is not aware of any environmental, permitting, legal, title, taxation, socio-political, marketing or other issues which may materially affect its estimate of mineral resources.

Total Resources (Oxide + Transitional + Sulfide)			
Resource Class	Short Tons (millions)	Total Cu (%)	Cu Pounds (billions)
Measured	200.7	0.36	1.439
Indicated	710.8	0.27	3.875
Measured + Indicated	911.6	0.29	5.315
Inferred	240.9	0.22	1.070
0.05% TCu Cut-off for Oxide + Transitional; 0.30% TCu Cut-off for Sulfide			

Notes:

1. Mineral Resources are inclusive of Mineral Reserves.

2. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
3. Oxidized + Transitional Mineral Resources are reported at a 0.05% total-copper cut-off in consideration of potential mining by in situ recovery.

The North Star mineral resources were modeled to reflect the detailed lithologic, structural, and oxidation modeling completed by Excelsior. Copper mineral domains were interpreted on east-west vertical cross sections on 100-foot spacing, which encompass the 2.3-mile north-south and 1.3-mile east-west extents of the deposit. These domains were then used to explicitly constrain the estimation of copper grades into 50 x 100 x 25-foot (x, y, z) model blocks using 20-foot composites and inverse-distance interpolation. The grade estimation is further controlled by the incorporation of search ellipses that reflect the orientations of modeled structural zones, as well as those of favorable stratigraphic units in areas unaffected by the structures.

All samples were prepared from manually split half-core sections on-site in Arizona. Split drill core samples were then sent to Skyline Assayers & Laboratories ("Skyline") in Tucson, Arizona, an independent laboratory, for Total Copper and Sequential Copper analyses. Skyline is accredited with international standard ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories. Analytical results for Total Copper, Acid Soluble Copper, and Cyanide Soluble Copper were reported. Excelsior has no relationship with Skyline Labs other than Skyline being a service provider. Standards, blanks, and duplicate assays are included at regular intervals in each sample batch submitted from the field as part of an ongoing Quality Assurance/Quality Control Program.

Mr. Jeffrey Bickel, C.P.G., with the independent firm RESPEC of Reno, Nevada, is a Qualified Person as defined by NI 43-101 and is responsible for this mineral resource estimate. He has verified, reviewed, and approved the technical disclosure contained in this section of the news release. Mr. Bickel has verified the data underlying the results by reviewing the drilling, sampling, assay, and quality assurance and quality control data, as well as the geologic interpretations completed by Excelsior. Mineral resources that are not mineral reserves do not have demonstrated economic viability.

Mineral Reserve Estimate

The PFS mineral reserve is based on an economic analysis of the mineral resource using a copper price of \$2.75/lb and key parameters developed from prior test work. The economic optimization was performed on Measured and Indicated Resources at a cut-off grade of 0.05% Total Cu ("CuT"). EBIT (earnings before interest and tax) was calculated on a resource block-by block-basis using the key economic and technical parameters. For a column of resource blocks to be included in the reserve, the capital costs of establishing the wells for those blocks would have to be less than the combine EBIT for the same blocks. The mineral reserve was estimated after applying engineering and operational design parameters which removed the thinner and deeper portions of the mineral resource. Internal dilution has been included in the final mineral reserve estimate. RESPEC is of the opinion that the mineral reserve estimate derived in this PFS reasonably quantifies the economical mineralization of the North Star Deposit. The reserve estimate is as of October 1, 2016 and the mineral reserves presented in the table below are included in the mineral resource estimate set out above.

North Star Mineral Reserves (Oxide and Transition at 0.05% cut-off)⁽¹⁾			
Category	Short Tons (million)	Total Copper (%)	Pounds of Cu (million)
Probable	782	0.29	4,505

1. 48% of the total copper reserve is considered recoverable.

Mr. Neil Prenn, with the independent firm RESPEC of Reno, Nevada, is a Qualified Person as defined by NI 43-101 and is responsible for reviewing and approving this mineral reserve estimate. He has verified, reviewed and approved the technical disclosure contained in this section of the news release. Mr. Prenn

has verified the data underlying the results by reviewing the drilling, sampling, assay, and quality assurance and quality control data, as well as the geologic interpretations completed by Excelsior.

Risks

A number of risks are highlighted in the Report. Those that are more specific to in-situ mining include:

- Potential for lower than predicted (modelled) sweep efficiency.
- Potential for mineral precipitates to restrict flow paths, porosity, and permeability.
- Potential for gas bubbles to restrict flow paths, porosity, and permeability.
- Flushing with neutralized raffinate to remove CO₂ may be less effective than modelled.
- The observed CO₂ attenuation could be masking other wellfield problems.
- Short circuiting can occur through very permeable structures, reducing overall sweep efficiency and affecting modelled parameters.

Opportunities

Opportunities at Gunnison are also highlighted in the Report. Those that are related to in-situ mining include:

- Well stimulation has the potential to alleviate or solve CO₂ gas blocking and greatly improve porosity, permeability, sweep efficiency and flow rates.
- Grouting, down-hole packers, and down-hole flow control valves have the potential to minimize short circuiting.
- Wellfield optimization including well spacing, pump sizing, borehole diameter, hole configuration and down-hole differential flow control have the potential to greatly improve wellfield performance.
- Anticipated copper recoveries could be higher than the estimate of 48 percent of total copper, which would increase total revenue during the life of the mine.
- The conversion of the 187.2 million tons of inferred mineral resources to measured or indicated categories has the potential to increase mineral reserves.
- The Project has high quality limestone resources that could be used to supplement imported lime in the water treatment process.

Recommendations

A number of recommendations included in the report are aimed at improving wellfield performance, reducing risk, and tightening up engineering and design prior to construction of the raffinate neutralization plant. Excelsior intends to investigate and implement these recommendations prior to further development which include:

- **Well Stimulation Trials:** Well stimulation trials should be undertaken to determine if the technique(s) have the potential to alleviate or solve CO₂ blocking, improve connectiveness, and increase flow rates and sweep efficiency. Given that the results of well stimulation have the potential to reduce the need for raffinate neutralization or change the design criteria for the neutralization plant, it should be undertaken before or in parallel with design activities on the water treatment plant. Well stimulation is allowed under Class III Underground Injection Control permits but requires EPA approval of the stimulation programs.
- **Metallurgical Testwork Recommendations:** Investigating in situ leaching with different lixiviants as opportunities to leach metals without the formation of gypsum.
- **Wellfield Recommendations:** Conducting experimentation to ensure that neutralized raffinate is effective in dissolving CO₂ in the subsurface while the engineering, procurement, and construction is at an early stage to enhance the water treatment design criteria.
- **Water Treatment:** A scope of work and bid package should be assembled to select a water treatment vendor to design the water treatment system. Selection criteria should favor rapid, low-cost solutions to demonstrate that the technology is effective in solving the wellfield challenges.

TECHNICAL REPORT AND QUALIFIED PERSONS

The Report will be filed on SEDAR and on Excelsior's website within 45 days of the date of this news release. The Report will consist of a summary of the PFS. The Report is being prepared under the supervision of Richard Zimmerman, SME-RM of M3 Engineering & Technology Corporation, Tucson, Arizona, who is a Qualified Person that is independent of the Company. The Report will also receive contributions from the following additional Qualified Persons, who are also independent of the Company:

- Mr. Richard Zimmerman, of M3 Engineering & Technology Corporation, Tucson, Arizona (recovery methods, capital and operating costs, and economic analysis).
- Mr. Jeffrey Bickel of RESPEC of Reno, Nevada (geology and mineral resource).
- Mr. Neil Prenn, of RESPEC of Reno, Nevada (mineral reserve).
- Mr. Thomas Dyer, of RESPEC of Reno, Nevada (mining methods).
- Dr. Robert J. Bowell of SRK Consulting, Cardiff, UK (wellfield).
- Dr. Terence P. McNulty of T.P. McNulty & Associates of Tucson, Arizona (metallurgy).
- Mr. R. Douglas Bartlett, of Clear Creek and Associates of Phoenix, Arizona (hydrology, mining method, permitting and environment).

Each of these Qualified Persons has reviewed and approved the technical information contained in this news release that is relevant to their area of responsibility and verified the data underlying such technical information.

About Excelsior Mining

Excelsior "*The Copper Solution Company*" is a mineral exploration and production company that owns and operates the Gunnison Copper Project in Cochise County, Arizona. The project is a low cost, environmentally friendly in-situ recovery copper extraction project that is permitted to 125 million pounds per year of copper cathode production. Excelsior also owns the past producing Johnson Camp Mine and a portfolio of exploration projects, including the Peabody Sill and the Strong and Harris deposits.

For more information on Excelsior, please visit our website at www.excelsiormining.com.

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Cautionary Note Regarding Forward-Looking Information

This news release contains "forward-looking information" concerning anticipated developments and events that may occur in the future. Forward looking information contained in this news release includes, but is not limited to, statements with respect to: (i) expectations for the resolution of carbon dioxide issues and increased flow rates; (ii) the future development plans for the Gunnison Project; (iii) operating and capital costs estimates, along with the economics of the Gunnison Project and JCM; (iv) the intention to mine Johnson Camp and future production therefrom; and (v) the results of the PFS and PEA.

In certain cases, forward-looking information can be identified by the use of words such as "plans", "expects" or "does not expect", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate",

or "believes", or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might", "occur" or "be achieved" suggesting future outcomes, or other expectations, beliefs, plans, objectives, assumptions, intentions or statements about future events or performance. Forward-looking information contained in this news release is based on certain factors and assumptions regarding, among other things, the estimation of mineral resources and mineral reserves, the realization of resource and reserve estimates, expectations and anticipated impact of the COVID-19 outbreak, copper and other metal prices, the timing and amount of future development expenditures, the estimation of initial and sustaining capital requirements, the estimation of labour and operating costs (including the price of acid), the availability of labour, material and acid supply, receipt of and compliance with necessary regulatory approvals and permits, the estimation of insurance coverage, and assumptions with respect to currency fluctuations, environmental risks, title disputes or claims, and other similar matters. While the Company considers these assumptions to be reasonable based on information currently available to it, they may prove to be incorrect.

Forward looking information involves known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of the Company to be materially different from any future results, performance or achievements expressed or implied by the forward-looking information. Such factors include risks inherent in the construction and operation of mineral deposits, including risks relating to changes in project parameters as plans continue to be redefined including the possibility that mining operations may not be sustained at the Gunnison Copper Project, risks relating to variations in mineral resources and reserves, grade or recovery rates, risks relating to the ability to access infrastructure, risks relating to changes in copper and other commodity prices and the worldwide demand for and supply of copper and related products, risks related to increased competition in the market for copper and related products, risks related to current global financial conditions, risks related to current global financial conditions and the impact of COVID-19 on the Company's business, uncertainties inherent in the estimation of mineral resources, access and supply risks, risks related to the ability to access acid supply on commercially reasonable terms, reliance on key personnel, operational risks inherent in the conduct of mining activities, including the risk of accidents, labour disputes, increases in capital and operating costs and the risk of delays or increased costs that might be encountered during the construction or mining process, regulatory risks including the risk that permits may not be obtained in a timely fashion or at all, financing, capitalization and liquidity risks, risks related to disputes concerning property titles and interests, environmental risks and the additional risks identified in the "Risk Factors" section of the Company's reports and filings with applicable Canadian securities regulators.

Although the Company has attempted to identify important factors that could cause actual actions, events or results to differ materially from those described in forward-looking information, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended. Accordingly, readers should not place undue reliance on forward-looking information. The forward-looking information is made as of the date of this news release. Except as required by applicable securities laws, the Company does not undertake any obligation to publicly update or revise any forward-looking information.