



**EXCELSIOR MINING CORP.**

**ANNUAL INFORMATION FORM  
For the year ended December 31, 2022**

**Suite 2400, 1055 West Georgia Street.  
Vancouver, B.C. V6E 3P3**

**March 24, 2023**

**EXCELSIOR MINING CORP.  
ANNUAL INFORMATION FORM  
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**ANNUAL INFORMATION FORM  
EXCELSIOR MINING CORP.**

**PRELIMINARY NOTES**

**Effective Date of Information**

The information contained in Excelsior Mining Corp.'s annual information form ("AIF" or "Annual Information Form") is presented as of December 31, 2022 unless otherwise stated herein. Unless the context otherwise requires, all references to the "Company", "we" or "us" shall mean Excelsior Mining Corp., together with its subsidiaries.

**Currency**

Unless specified otherwise, all references in the AIF to "dollars", "\$" or to "US\$" are to United States of America dollars and all references to "Canadian dollars" or to "Cdn\$" are to Canadian dollars.

**Metric Equivalents**

For ease of reference, the following factors for converting metric measurements into imperial equivalents are provided:

<b>To Convert From Metric</b>	<b>To Imperial</b>	<b>Multiply by</b>
Hectares	Acres	2.471
Metres	Feet (ft.)	3.281
Kilometres (km.)	Miles	0.621
Tonnes	Tons (2000 pounds)	1.102
Grams/tonne	Ounces (troy/ton)	0.029

**Special Note Regarding Forward-Looking Information**

This AIF and the documents incorporated by reference herein, contain "forward-looking information" and "forward looking statements" within the meaning of applicable Canadian and United States securities legislation (collectively herein referred to as "**forward-looking statements**"), including the "safe harbour" provisions of provincial securities legislation and the U.S. Private Securities Litigation Reform Act of 1995, Section 21E of the U.S. Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), and Section 27A of the U.S. Securities Act of 1933, as amended (the "**U.S. Securities Act**"). Forward-looking statements may include, but are not limited to, information with respect to:

- the future price of copper;
- the development of and production from the Gunnison Project, JCM and the S&H Project (each as defined below);
- our planned exploration and development activities;
- the adequacy of our financial resources;
- the estimation of mineral resources and mineral reserves;
- realization of mineral resource and mineral reserve estimates;
- the timeline for commercial production at the Gunnison Project, JCM and the S&H Project;
- costs and timing of future development;

- results of future development programs;
- production and processing estimates;
- capital and operating cost estimates;
- statements relating to the economic viability of the Gunnison Project, JCM or the S&H Project, including mine life, total tonnes mined and processed and mining operations;
- approvals, consents and permits under applicable legislation;
- our relationship with community stakeholders;
- our executive compensation approach and practice;
- litigation risks; currency fluctuations; and
- environmental risks.

Wherever possible, words such as “plans”, “expects”, “projects”, “assumes”, “budgeted”, “strategy”, “scheduled”, “estimates”, “forecasts”, “anticipates”, “believes”, “intends” “modeled” and similar expressions or statements that certain actions, events or results “may”, “could”, “would”, “might” or “will” be taken, occur or be achieved, or the negative forms of any of these terms and similar expressions, have been used to identify forward-looking statements. Statements concerning mineral resource and mineral reserve estimates may also be deemed to constitute forward-looking statements to the extent that they involve estimates of the mineralization that will be encountered if the property is developed. Any statements that express or involve discussions with respect to predictions, expectations, beliefs, plans, projections, objectives, assumptions or future events or performance are not statements of historical fact and may be forward-looking statements. Forward-looking statements are subject to a variety of known and unknown risks, uncertainties and other factors that could cause actual events or results to differ from those expressed or implied by the forward-looking statements, including, without limitation, the following risks and uncertainties referred to under the heading “Risk Factors” in this AIF.

- operational risks inherent in the conduct of mining activities, including the risk of accidents, labour disputes, availability of reagents and power, increases in capital and operating costs and the risk of delays or increased costs that might be encountered during the development process;
- risks inherent in the exploration and development 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 commence at the Gunnison Project, JCM or the S&H Project;
- assumptions regarding expected capital and operating costs and expenditures, production schedules, economic returns and other projections;
- our production estimates, including accuracy thereof;
- risks related to general economic conditions and in particular the potential impact of the COVID-19 pandemic (“COVID-19”) on the Company or its operations and the mining industry;
- the fact that we have no mineral properties in commercial production and no history of production or revenue;
- risks relating to variations in mineral resources and reserves, grade or recovery rates resulting from current exploration and development activities;
- risks related to fluctuations in the price of copper as the Company’s future revenues, if any, are expected to be derived from the sale of copper;
- risks related to a reduction in the demand for copper in the Chinese market which could result in an extended period of lower prices and demand for copper;
- financing, capitalization and liquidity risks, including the risk that the financing necessary to fund the development and construction activities at the Gunnison Project, JCM or the S&H Project may not be available on satisfactory terms, or at all;
- the Company has no history of commercially viable mining operations and no revenues from operations and expects to incur losses for the foreseeable future;
- risks associated with secured debt and the copper stream agreement;

- risks related to the Company obtaining and maintaining various permits required to conduct its current and anticipated future operations;
- risks related to disputes concerning property titles and interest;
- risks relating to the ability to access infrastructure;
- risks related to the significant governmental regulation to which the Company is subject;
- environmental risks;
- climate change risks;
- risks related to the adequacy of financial assurance arrangements with State and Federal Governments;
- reliance on key personnel;
- risks related to increased competition in the market for copper and related products and in the mining industry generally;
- cybersecurity risks;
- risks related to potential conflicts of interests among the Company's directors and officers;
- exchange rate fluctuations between the Canadian and United States dollar;
- uncertainties inherent in the estimation of inferred mineral resources;
- land reclamation requirements may be burdensome;
- risks associated with the acquisition of any new properties;
- risks related to legal proceedings to which the Company may become subject;
- potential liabilities associated with JCM (as defined herein);
- our ability to comply with foreign corrupt practices regulations and anti-bribery laws;
- changes to relevant legislation, accounting practices or increasing insurance costs;
- significant growth could place a strain on our management systems;
- share ownership by our significant shareholders and their ability to influence our governance;
- risks relating to the Company's Common Shares, including that future sales or issuances of our debt or equity securities may decrease the price of our securities;
- the trading price of our Common Shares is subject to volatility due to market conditions;
- the absence of dividends or intent to pay dividends in the near future;
- certain actions under U.S. federal securities laws may be unenforceable;
- our broad discretion relating to the use of any proceeds raised hereunder;
- non-U.S. holders of Common Shares could be subject to U.S. federal income tax from the sale or other taxable disposition of Common Shares;
- withholding to Non-U.S. investors will apply to our dividends on our Common Shares;
- our being treated as a U.S. domestic corporation for U.S. federal income tax purposes;
- the uncertainty of maintaining a liquid trading market for the Company's Common Shares;
- the absence of a market through which the Company's securities, other than Common Shares, may be sold; and
- risks related to the debt securities being unsecured.

This list is not exhaustive of the factors that may affect any of our forward-looking statements. Although we have attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking statements, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such information. Forward-looking statements involve statements about the future and are inherently uncertain, and our actual achievements or other future events or conditions may differ materially from those reflected in the forward-looking statements due to a variety of risks, uncertainties and other factors, including, without limitation, those referred to in this AIF under the heading "Risk Factors" and elsewhere in this AIF and the documents incorporated by reference. Our forward-looking statements are based on the beliefs, expectations and opinions of management on the date the statements are made. In connection with the

forward-looking statements contained in this AIF and the documents incorporated, or deemed to be incorporated, by reference, we have made certain assumptions about our business, including about our planned exploration, development and production activities; the accuracy of our mineral resource estimates; capital and operating cost estimates; production and processing estimates; the results, costs and timing of future exploration and drilling; timelines and similar statements relating to the economic viability of the Gunnison Project; timing and receipt of approvals, consents and permits under applicable legislation; and the adequacy of our financial resources. We have also assumed that no significant events will occur outside of our normal course of business. Although we believe that the assumptions inherent in the forward-looking statements are reasonable as of the date of this AIF, forward-looking statements are not guarantees of future performance and, accordingly, undue reliance should not be put on such statements due to the inherent uncertainty therein. For the reasons set forth above, prospective investors should not place undue reliance on forward-looking statements. Except as required by applicable securities laws, the Company does not undertake any obligation to publicly update or revise any forward-looking information.

### **Cautionary Note to U.S. Investors –**

Technical disclosure regarding our properties included in this AIF and in the documents incorporated herein by reference has not been prepared in accordance with the requirements of U.S. securities laws. Without limiting the foregoing, such technical disclosure uses terms that comply with reporting standards in Canada and certain estimates are made in accordance with National Instrument 43-101 — Standards of Disclosure for Mineral Projects (“**NI 43-101**”). NI 43-101 is a rule developed by the Canadian Securities Administrators that establishes standards for all public disclosure an issuer makes of scientific and technical information concerning mineral projects. Unless otherwise indicated, all mineral reserve and mineral resource estimates contained in the technical disclosure have been prepared in accordance with NI 43-101 and the Canadian Institute of Mining, Metallurgy and Petroleum Definition Standards on Mineral Resources and Reserves (“**CIM Definition Standards**”).

Canadian standards, including NI 43-101, differ significantly from the historical requirements of the Securities and Exchange Commission (the “**SEC**”), and mineral reserve and resource information contained or incorporated by reference in this AIF may not be comparable to similar information disclosed by U.S. companies.

The SEC has adopted amendments to its disclosure rules to modernize the mineral property disclosure requirements for issuers whose securities are registered with the SEC. These amendments became effective February 25, 2019 (the “**SEC Modernization Rules**”) and, following a two-year transition period, the SEC Modernization Rules have replaced the historical property disclosure requirements for mining registrants that are included in SEC Industry Guide 7. U.S. companies are now required to provide disclosure on mineral properties under the SEC Modernization Rules.

Under the SEC Modernization Rules, the definitions of “proven mineral reserves” and “probable mineral reserves” have been amended to be substantially similar to the corresponding CIM Definition Standards and the SEC has added definitions to recognize “measured mineral resources”, “indicated mineral resources” and “inferred mineral resources” which are also substantially similar to the corresponding CIM Definition Standards; however, there are still differences in the definitions and standards under the SEC Modernization Rules and the CIM Definition Standards. As a foreign private issuer, the Company is permitted to continue to comply with NI 43-101 disclosure rules. Therefore, the Company’s mineral resources and reserves as determined in accordance with NI 43-101 may be significantly different than if they had been determined in accordance with the SEC Modernization Rules.

**NOTICE PURSUANT TO TREASURY DEPARTMENT CIRCULAR 230: NOTHING CONTAINED IN THIS AIF CONCERNING ANY U.S. FEDERAL TAX ISSUE IS INTENDED OR WRITTEN TO BE USED, AND IT CANNOT BE USED, BY A HOLDER, FOR THE PURPOSE OF AVOIDING U.S. FEDERAL TAX PENALTIES UNDER THE CODE (AS DEFINED BELOW). THIS SUMMARY WAS WRITTEN TO SUPPORT MATTERS ADDRESSED BY THIS DOCUMENT. EACH HOLDER SHOULD SEEK U.S. FEDERAL TAX ADVICE, BASED ON SUCH HOLDER'S PARTICULAR CIRCUMSTANCES, FROM AN INDEPENDENT TAX ADVISOR.**

## GLOSSARY

In the AIF, unless otherwise defined or unless there is something in the subject matter or context inconsistent therewith, the following terms have the meanings set forth herein or therein:

“**AIF**” or “**Annual Information Form**” means this annual information form and any appendices, schedules or attachments hereto;

“**Altius**” means Altius Royalty Corporation;

“**Altius Agreement**” means the Share Purchase and Royalty Option Agreement dated July 19, 2013 between Excelsior, the Trust and Callinan. Pursuant to the terms of the Altius Agreement, Callinan had the option to acquire certain gross revenue royalties (“**GRRs**”) on the Gunnison Project. On May 5, 2015, Altius Minerals Corporation acquired all of the outstanding securities of Callinan and on October 1, 2016, Altius Prairie Royalties Corp. and Callinan were amalgamated to form Altius;

“**AzTech**” means AzTech Minerals, Inc., an Arizona corporation, which was merged with and into Excelsior Arizona;

“**BCBCA**” means the *Business Corporations Act* (British Columbia), C-57, as amended;

“**Business Day**” means any day on which commercial banks are generally open for business other than a Saturday, Sunday or a day observed as a holiday (i) in Vancouver under the laws of British Columbia, (ii) in Toronto under the laws of Ontario, or (iii) under the federal laws of Canada;

“**Callinan**” means Callinan Royalties Corporation;

“**Code**” means the U.S. Internal Revenue Code of 1986, as amended;

“**Common Share**” means the common (voting) shares in the capital of Excelsior;

“**Company**” means, collectively, Excelsior, Excelsior Arizona and Excelsior Holdings;

“**Control Person**” means any Person that holds or is one of a combination of Persons that holds a sufficient number of any of the securities of an issuer so as to affect materially the control of that issuer, or that holds more than 20% of the outstanding voting securities of an issuer except where there is evidence showing that the holder of those securities does not materially affect the control of the issuer;

“**Definitive Agreement**” means the agreement and plan of merger dated as of August 19, 2010 among Excelsior, Excelsior Arizona and AzTech, as amended from time to time;

“**Excelsior**” means Excelsior Mining Corp., a corporation incorporated under the laws of the Province of British Columbia;

“**Excelsior Arizona**” means Excelsior Mining Arizona, Inc., a company incorporated under the laws of Arizona, and which is a wholly-owned subsidiary of Excelsior;

“**Excelsior JCM**” means Excelsior Mining JCM, Inc., a company incorporated under the laws of Arizona, and which was a wholly-owned subsidiary of Excelsior prior to its merger with Excelsior Arizona;

“**Excelsior Holdings**” means Excelsior Mining Holdings, Inc., a company incorporated under the laws of Arizona, and which is a wholly-owned subsidiary of Excelsior;

“**Excelsior Stock Option Plan**” means the stock option plan of Excelsior, pursuant to which options to purchase Common Shares may be issued in accordance with the policies of the TSX;

“**Exchange**” or “**TSX**” means the Toronto Stock Exchange;

“**Greenstone**” means Greenstone Excelsior Holdings L.P., an affiliate of Greenstone Resources;

“**Greenstone II**” means Greenstone Resources II L.P., an affiliate of Greenstone Resources;

“**Greenstone IR Agreement**” means the Investor Rights Agreement dated August 13, 2014 between Greenstone and Excelsior, as amended by the Amending Agreement to the Greenstone IR Agreement dated January 19, 2018 between the Company, Greenstone and Greenstone No. 2; further amended by the Second Amending Agreement to the Greenstone IR Agreement, dated December 5, 2018 between the Company, Greenstone, Greenstone II, Greenstone No. 1 and Greenstone No. 2; and further amended by the Third Amending Agreement to the Greenstone IR Agreement, dated December 5, 2018 between the Company, Greenstone, Greenstone II, Greenstone No. 1, Greenstone No. 2 and Greenstone Resources;

“**Greenstone No. 1**” means Greenstone Co-Investment No. 1 (Excelsior) L.P. an affiliate of Greenstone Resources;

“**Greenstone No. 2**” means Greenstone Co-Investment No. 2 (Excelsior) L.P. an affiliate of Greenstone Resources;

“**Greenstone Resources**” means Greenstone Resources L.P.;

“**Gunnison Project**” means the Gunnison Copper Project consisting of unpatented mining claims, private land, exploration permits, mineral leases and direct ownership of mineral rights in an area that encompasses approximately 10 square miles, located in Cochise County, Arizona, approximately 62 miles east of Tucson, Arizona in the Johnson Camp mining district;

“**IRS**” means the United States Internal Revenue Service;

“**JCM**” or “**Johnson Camp**” means the Johnson Camp Copper mine located immediately adjacent to the Gunnison Project;

“**JCM Purchase Agreement**” means the asset purchase agreement dated October 7, 2015 between Christopher G. Linscott (as court appointed receiver for the assets of Nord) and Excelsior JCM pursuant to which Excelsior JCM acquires all of the assets of Nord as they relate to the JCM for total consideration of US\$8.4 million;

“**Leverage Ratio Grace Period**” has the meaning given to such term in “*Risk Factors*”;

“**Nebari**” means Nebari Natural Resources Credit Fund I, LP;

“**Nebari Credit Agreement**” means the credit agreement dated October 31, 2019, as amended, between Excelsior, Excelsior Arizona and Nebari pursuant to which Nebari has provided the Nebari Credit Facility;

“**Nebari Credit Facility**” means the US\$15 million credit facility provided by Nebari to Excelsior and Excelsior Arizona pursuant to the Nebari Credit Agreement;

“**Non-U.S. Holder**” means any beneficial owner of Common Shares that is neither a U.S. Holder nor a partnership (including an entity treated as a partnership for U.S. federal income tax purposes).

“**Non-Voting Shares**” means the non-voting shares of Excelsior;

“**Nord**” means Nord Resources Corporation;

“**North Star Deposit**” means the North Star Deposit of the Gunnison Project as identified on Figure 1-1 in this AIF;

“**Person**” or “**person**” means a company or individual;

“**South Star Deposit**” means the South Star Deposit of the Gunnison Project as identified on Figure 1-1 in this AIF;

“**Stream Agreement**” means the copper purchase and sale agreement (the “**Stream Agreement**”) dated October 30, 2018, as amended, between Triple Flag, Excelsior, Excelsior Arizona and Excelsior JCM pursuant to which Triple Flag has committed to fund a deposit of US\$65 million for the future purchase of refined copper from Excelsior Arizona;

“**S&H or S&H Project**” means the Strong and Harris copper-silver-zinc project located in Cochise County, Arizona;

“**S&H PEA Technical Report**” means the technical report entitled “Estimated Minerals Resources and Preliminary Economic Analysis, Strong and Harris Copper-Silver-Zinc Project, Cochise County, Arizona” dated effective September 9, 2021 prepared by Jeffery Bickel, C.P.G., Michael M. Gustin, C.P.G., Ph.D., Thomas L. Dyer, P.Eng. and Robert Bowell, Ph.D., C.Chem., C.Geol., FIMMM;

“**Tax Act**” means the *Income Tax Act* (Canada), as amended, including the regulations promulgated thereunder;

“**Technical Report**” or “**Report**” means the technical report entitled “Gunnison Copper Project Prefeasibility Study Update and JCM Heap Leach Preliminary Economic Assessment”, dated effective February 1, 2023 prepared by Richard Zimmerman, SME-RM; Jeffrey Bickel, CPG; Thomas L. Dyer, PE, SME-RM; Neil Prenn, MMSA-QPM; Robert J. Bowell, PhD, C.Chem., C.Geol; Dr. Terry McNulty, PE, DSc; and R. Douglas Bartlett, CPG.

“**Triple Flag**” means Triple Flag Mining Finance Bermuda Ltd.;

“**Triple Flag Subscription Agreement**” means the subscription agreement dated November 30, 2018 between Triple Flag and Excelsior pursuant to which Triple Flag subscribed for a total of 13,818,977 Common Shares at a purchase price of Cdn\$0.9462 per Common Share for gross proceeds of US\$10 million;

“**Trust**” means the James L. Sullivan Trust dated November 24, 2004;

“**TSX**” or “**Exchange**” means the Toronto Stock Exchange;

“**U.S.**” or “**United States**” means the United States of America, any state thereof, and the District of Columbia;

**“U.S. Holder”** means a beneficial owner of Common Shares, that is, for U.S. federal income tax purposes: (i) a citizen or individual resident of the United States; (ii) a corporation (or other entity taxable as a corporation) organized under the laws of the United States, any state thereof or the District of Columbia; (iii) an estate whose income is subject to U.S. federal income taxation regardless of its source; or (iv) a trust that (1) is subject to the primary supervision of a court within the U.S. and the control of one or more U.S. persons for all substantial decisions or (2) has a valid election in effect under applicable Treasury Regulations to be treated as a U.S. person; and

Words importing the singular number, where the context requires, include the plural and vice versa and words importing any gender include all genders.

## ABBREVIATIONS

In the AIF, unless otherwise defined or unless there is something in the subject matter or context inconsistent therewith, the following abbreviations have the meanings set forth herein or therein:

Abbreviation	Term
%	percent
ADEQ	Arizona Department of Environmental Quality
APP	Aquifer Protection Permit
ASCu	Acid-soluble copper
AzTech	AzTech Minerals, Inc.
BADCT	Best-Available Demonstrated Control Technology
cm	Centimeter
Cu	Copper
EIS	Economic Impact Study
ft	foot (feet)
GA	General Arrangement
gpl	gram per liter
gpm	gallons per minute
G&A	General & Administrative
Ha	hectares
HDPE	High Density Polyethylene
IRR	Internal Rate of Return
ISR	In Situ Recovery
km	kilometer
kV	kilovolt
lb	pound
lixiviant	liquid medium used for metal extraction
M	meter
M3	M3 Engineering & Technology Corp.
Ma	million years ago
MDA	Mine Development Associates
Mlb	million pounds
mm	millimeter
NI 43-101	Canadian National Instrument 43-101
NPV	Net Present Value
PLS	Pregnant Leach Solution
QA/QC	Quality Assurance/Quality Control
RC	reverse circulation drilling
SEC	U.S. Securities & Exchange Commission
SG	specific gravity
SX-EW	Solvent Extraction (SX) / Electrowinning (EW)
TCu	Total copper
UIC	Underground Injection Control
WTP	Water treatment plant

## CORPORATE STRUCTURE

### Name, Address and Incorporation

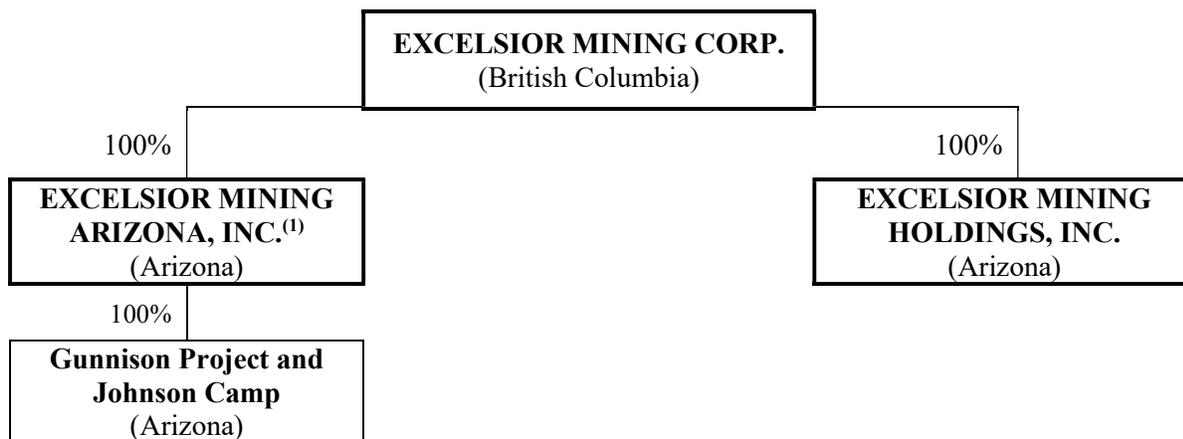
Excelsior was incorporated under the name “Excelsior Mining Corp.” pursuant to the provisions of the BCBCA on June 9, 2005 with an authorized capital of an unlimited number of Common Shares without par value.

On October 14, 2010, a special resolution of shareholders was passed to create a new class of shares, the Non-Voting Shares. Also on October 14, 2010, Excelsior effected consolidation of its Common Shares on the basis of three pre-consolidation Common Shares for one post-consolidation Common Share. Presently, the authorized share capital of Excelsior consists of an unlimited number of Common Shares, without nominal or par value, and an unlimited number of Non-Voting Shares, without nominal or par value. The Non-Voting Shares are convertible into Common Shares on the basis of one Non-Voting Common Share for one Common Share at the election of the holder of such Non-Voting Common Shares. All Common Share numbers reported in this AIF are reported on a post-consolidation basis with a corresponding adjustment to Common Share price if applicable.

The Common Shares are listed on the TSX under the trading symbol “MIN” and trade on OTCQB under the symbol “EXMGF” and on the Frankfurt Exchange under the symbol “3XS”. Excelsior’s head office is located at Concord Place, 2999 N. 44th St, Suite 300, Phoenix, AZ, USA 85018 and its registered and records office is located at Suite 2400, 1055 West Georgia Street, Vancouver, British Columbia, V6E 3P3, Canada.

### Inter-corporate Relationships

As set out in the corporate structure chart below, Excelsior has two wholly-owned subsidiaries, Excelsior Arizona and Excelsior Mining Holdings, Inc., both incorporated under the laws of Arizona.



1. Effective March 1, 2021, Excelsior JCM was merged with and into Excelsior Arizona, with Excelsior Arizona as the surviving corporation.

## DESCRIPTION AND GENERAL DEVELOPMENT OF THE BUSINESS

### Three Year History

The principal business of Excelsior is the acquisition, exploration and development of copper mineral properties in Arizona. Significant business, operations and management developments for Excelsior over the three most recently completed fiscal years have been as follows:

#### Year Ended December 31, 2020 Developments

##### *Mining Operations commence at the Gunnison Project*

On January 2, 2020, Excelsior announced that it had commenced mining operations at the Gunnison Project. Delivery of mining fluids to the copper orebody commenced with fluids circulating through a closed-loop system until the concentration of copper held in solution meets sufficient grade to be treated through the JCM processing facilities to then extract copper and produce copper cathode sheets.

##### *Operations Updates*

On January 8, 2020, Excelsior provided an update on operations at the Gunnison Project. Initial copper recovery grades were exceeding feasibility study expectations. Pregnant leach solution (PLS) grade was measuring 0.15 grams per liter (gpl) copper in the primary recovery pond. Acid injection was being steadily increased and was at approximately 50% of the full production rate.

On February 4, 2020, Excelsior provided an update following the first month of mining operations at the Gunnison Project, announcing that it has collected a significant amount of data over the first month of operations and based on the data has identified optimization programs that are currently being implemented.

Excelsior completed the following optimizations to the production wellfield:

- Improved preventative maintenance to limit pump and wellfield down-time;
- Injection wells were retrofitted with pumps allowing them to be used as recovery wells when needed; and
- Wellheads and related piping were reconfigured to allow for both injection and recovery operations in each well, this addition will make the wellfield entirely reversible in terms of fluid flow; thereby allowing for greater flexibility during operations.

These upgrades were planned to take place over time once nameplate production had been achieved; however, Excelsior decided to implement these changes during the ramp-up period to assist with breakthrough and production optimization.

On March 26, 2020, Excelsior provided an operations update, announcing that the retrofit and wellfield upgrades had been successfully completed. Excelsior also announced that due to the unfolding global COVID-19 pandemic, it was placing the Gunnison Project on temporary suspension, advising that the wellfield would continue to be maintained in accordance with all state and federal permit requirements during the suspension.

On April 9, 2020, Excelsior provided an update on the temporary suspension of operations at the Gunnison Project, announcing that it was taking steps to conserve cash and in order to provide liquidity during the suspension, it had received the second installment of the Nebari Credit Facility in the amount of US\$5,000,000. Excelsior also announced that it was reducing its workforce, while retaining the personnel

necessary to maintain the facilities and sustain environmental monitoring and compliance requirements, The Gunnison Project would be maintained in a safe care and maintenance state allowing Excelsior the ability to re-start the Project once the uncertainty caused by the COVID-19 pandemic was resolved.

On August 12, 2020, Excelsior announced the appointment of Mr. Robert Winton as Senior Vice President and General Manager of the Gunnison Project. Excelsior also provided an operations update, announcing that despite continued uncertainty surrounding the COVID-19 pandemic, it was planning for an eventual restart of mining operations and had recently begun injecting acid solution into a limited number of wells and then recovering solution from adjacent wells. The purpose of these activities was to test the retro-fit wells under small-scale operating conditions and to gain knowledge on the new “Push-Pull” operating procedures. Excelsior also announced that the small-scale activities are preferred by the Company as health risks to its workforce related to COVID-19 continue and that it had put in place various procedures to mitigate the risk of transmission of the COVID-19 virus on site.

On November 10, 2020, Excelsior provided an operations update, announcing that limited operations in response to the COVID-19 pandemic had been implemented in order to optimize the many aspects of the production wellfield. Highlights of the wellfield optimization program include:

- The issue of copper precipitates and other precipitates blocking wells has been solved; the upgrades to the wellfield implemented earlier in the year have proven effective;
- Copper grades in the wells that have been consistently operated are in-line with expectations;
- These activities have generated sufficient copper in solution to commence operation of the Solvent Extraction-Electrowinning (SX-EW) production facility, which has been turned on;
- Copper cathode production was expected to commence within 30 days;
- Staffing levels remain reduced and restricted due to the COVID-19 Pandemic. Operations have been conducted in a safe manner with only one COVID-19 case at Gunnison reported. In response, successful contact tracing and isolation measures were implemented without any requirement to shut-down operations;
- A variety of issues still need to be worked through, such as how to minimize the impact of carbon-dioxide on fluid flows and how best to maximize flow rates in general.
- Expansion of activities to surrounding wells is occurring, with a view to ramping-up to full, nameplate, capacity through 2021; and
- It is expected that additional time will be required during this ramp-up to optimize the wells and resolve any challenges as they occur.

Results from current testing confirms that several wells have achieved partial acid breakthrough; these wells have shown no signs of precipitates blocking or restricting recovery flow. Therefore, Excelsior has confirmed that the need to backflush in order to remove precipitates diminishes or goes away entirely once breakthrough has occurred. Wells that have not broken through still require intermittent back flushing using the modified infrastructure, which has proven very effective.

On December 21, 2020, Excelsior announced that first copper cathode production had been achieved at the Gunnison Copper Project in Arizona. The wellfield optimization program has expanded to include more production wells; additional time will be required to bring the entire wellfield into production. First copper cathode sales are anticipated for January 2021.

### *Copper Offtake Agreement*

On March 11, 2020, the Company announced it entered into a purchase and sale agreement with Trafigura Trading LLC for 100% of copper cathode production from the Gunnison Project in 2020 on commercially competitive terms.

### *Base Shelf Prospectus*

On December 9, 2020, Excelsior announced it had filed a preliminary base shelf prospectus (the “**Shelf Prospectus**”) with each of the securities regulatory authorities in each of the Province of Canada (except Quebec). The final Shelf Prospectus was filed on December 22, 2020. The Shelf Prospectus enables Excelsior to make offerings of up to US\$30,000,000 of any combination of common shares, debt securities, subscription receipts, units, warrants and share purchase contracts, during the 25-month period that the Shelf Prospectus, including any amendments thereto, remains valid. The nature, size and timing of any such financings (if any) will depend, in part, on Excelsior's assessment of its requirements for funding and general market conditions. Unless otherwise specified in the prospectus supplement relating to a particular offering of securities, the net proceeds from any sale of any securities will be used for working capital requirements and for the development, construction and maintenance of the Company's mineral properties. The specific terms of any future offering will be established in a prospectus supplement to the Shelf Prospectus, which supplement will be filed with the applicable Canadian securities regulatory authorities.

## **Year Ended December 31, 2021 Developments**

### *Bought Deal Financing*

On February 10, 2021, Excelsior announced that it had entered into an agreement with Scotiabank and PI Financial Corp. as joint bookrunners and underwriters (the “**Underwriters**”), pursuant to which the Underwriters have agreed to buy on a bought deal basis 21,100,000 units (the “**Units**”) of the Company, at a price of C\$0.95 per Unit for gross proceeds of approximately C\$20 million (the “**2021 Offering**”). Each Unit consists of one common share (each a “**Common Share**”) and one warrant (each a “**2021 Warrant**”). Each 2021 Warrant is exercisable to acquire a Common Share at an exercise price of C\$1.25 for a period of 18 months from the closing of the 2021 Offering.

The Company also granted the Underwriters an option, exercisable at the offering price for a period of 30 days following the closing of the 2021 Offering, to purchase up to an additional 3,165,000 Units to cover over-allotments, if any, and for market stabilization purposes.

On February 11, 2021, Excelsior announced that it had entered into an amending agreement with the Underwriters to increase the size of the 2021 Offering. Pursuant to the revised terms of the offering, the Underwriters have agreed to buy on a bought deal basis 29,000,000 Units of the Company, at a price of C\$0.95 per Unit for gross proceeds of approximately C\$28 million.

The Company also granted the Underwriters an option, exercisable at the offering price for a period of 30 days following the closing of the 2021 Offering, to purchase up to an additional 4,350,000 Units to cover over-allotments, if any, and for market stabilization purposes.

A prospectus supplement (the “**Prospectus Supplement**”) to the Shelf Prospectus was filed on February 12, 2021 with the securities commissions or securities regulatory authorities in each of the provinces of Canada, excluding Quebec.

On February 22, 2021, Excelsior announced that the 2021 Offering closed and that the Underwriters exercised the over-allotment option in full. The Company issued a total of 33,350,000 Units at a price of C\$0.95 per Unit for gross proceeds of C\$31,682,500. Each Unit consists of one Common Share and one 2021 Warrant. Each 2021 Warrant is exercisable to acquire a Common Share at an exercise price of C\$1.25 until August 22, 2022. The 2021 Warrants were listed for trading on the Toronto Stock Exchange under the symbol MIN.WT.

The net proceeds from the 2021 Offering were used for working capital requirements and for the development, sustaining capital and maintenance of the Company's mineral properties.

### *Merger*

On March 1, 2021, the Company completed a merger of its wholly-owned subsidiaries Excelsior Arizona and Excelsior JCM, with Excelsior Arizona as the surviving entity. This merger will not have a material impact on operations and was completed for administrative purposes.

### *Operations Update*

On January 28, 2021, Excelsior announced the sale of the first copper cathode from the Gunnison Copper Project in Cochise County, Arizona. A total of 90,000 pounds of copper cathode were sold under the off-take agreement with Trafigura Trading LLC (see "*Description and General Development of the Business – Three Year History – Year Ended December 31, 2020 – Copper Offtake Agreement*"). Assays confirm that the copper content achieved 99.998%; copper purity is projected to achieve 99.999% ("five-nines copper") as per the feasibility design, for all future copper harvests.

On April 14, 2021, Excelsior provided an update on the Gunnison Copper Project, advising that flow rates have been reduced by the presence of carbon-dioxide and this has slowed the ramp-up to Stage-1 name plate production of 25 million pounds per annum. Water injection has been shown to remove carbon dioxide and restore flows. The current operating plan was to cycle back and forth between acid injection, water injection and recovery and this is occurring during daily operations. Excelsior believes the carbon dioxide is a finite problem that will be resolved over time. In an effort to speed up this process, the Company was also conducting numerous additional wellfield improvement programs including the following:

- Infrastructure upgrades to provide additional water and evaporation capacity.
- Investigating alternatives to using water as the flushing agent.
- Implementation of various field tests designed to better focus and make more efficient the remediation efforts including tracer studies, flow measuring and geophysical networks.
- Additional modelling to understand the best methods for remediation of CO<sub>2</sub>.

On September 9, 2021, Excelsior provided an update on the Gunnison Copper Project, Johnson Camp and additional exploration and development properties, including the release of a Preliminary Economic Assessment (the "S&H PEA Technical Report") on the S&H copper-zinc-silver deposit.

### Gunnison Copper Project

Excelsior's Gunnison Copper Project has experienced delays due to carbon dioxide gas bubbles reducing injection flows and preventing timely ramp-up to name-plate production. The gas bubbles are the result of the interaction of the weak acid injection with finite amounts of secondary calcite within the permeable fracture system.

Cycling periods of fresh water injection with acid injection and recovery has demonstrated sustained flow improvements on individual wells.

Until recently, the fresh water cycling had been focused on a central 5-spot of wells. Although not completely removed, the calcite appears to be dissolved enough for the wells to operate and flow sufficiently and as a result fresh water cycling has been moved to another 5-spot of wells to improve their fluid flows.

Excelsior believes the problem to be finite because as the calcite interacts with the acid it is dissolved and leaves the system. However, due to water conservation and evaporation capacity, individual well flushing with fresh water is not considered the optimal long-term solution. The preferred path at this time involved flushing with neutralized raffinate, which does not require additional water or evaporation infrastructure, however does require additional solution treatment infrastructure.

### Johnson Camp

To achieve additional copper production as Gunnison resolves its ramp-up issues, Excelsior intends to restart operations of the historic Johnson Camp open pits. The Company is analyzing the economics of doing this.

### S&H

Excelsior's most advanced exploration property is the S&H copper-zinc-silver deposit located just 1.5 miles (2.4km) north of Excelsior's Johnson Camp SX-EW facility, and directly adjacent to the location of the potential new leach pad.

Mining of the S&H deposit would be by traditional open pit with high-grade underground mining of the remaining sulfides at the bottom of the pit. A Preliminary Economic Assessment (the "S&H PEA") has been completed by Mine Development Associates, a division of RESPEC (MDA), the highlights of which are tabulated below assuming a \$3.50/lb. copper price, \$1.28/lb. zinc price, and \$110/ton acid cost.

Mine Life	~7 years
Material Mined	~54 M ton
Cu/Zn Grades	0.56% / 0.68%
Cu/Zn Produced	437 M lb / 575 M lb
Initial Capital	\$328 million
Operating Costs (\$/lb CuEq)	\$1.76
Average Cu/Zn annual production	62 Mlbpa / 82 Mlbpa
Pre-Tax NPV/IRR (8% discount rate)	\$325M / 25%

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

Cu Price US\$/lb	NPV Pre-Tax @ 8%	IRR	NPV After-Tax @ 8%	IRR
<b>\$ 3.00</b>	<b>\$ 111,387</b>	<b>14%</b>	<b>\$ 38,999</b>	<b>10%</b>
<b>\$ 3.25</b>	<b>\$ 218,426</b>	<b>19%</b>	<b>\$ 113,438</b>	<b>15%</b>
\$ 3.50	\$ 325,466	25%	\$ 186,958	19%
<b>\$ 3.75</b>	<b>\$ 432,505</b>	<b>30%</b>	<b>\$ 260,306</b>	<b>23%</b>
<b>\$ 4.00</b>	<b>\$ 539,544</b>	<b>35%</b>	<b>\$ 333,264</b>	<b>27%</b>

The S&H 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 S&H PEA will be realized. Mineral resources that are not mineral reserves do not have demonstrated economic viability.

The Company's next steps with S&H are a drill program targeting adjacent geophysical anomalies with the goal of expanding the mineral resource, metallurgical test work and completion of a feasibility study.

The S&H Mineral Resources are provided in the table below.

<b>% Cu Cutoff</b>	<b>Tons</b>	<b>% Cu</b>	<b>% CuOx</b>	<b>% Zn</b>	<b>oz Ag/ton</b>	<b>lbs Cu</b>	<b>lbs CuOx</b>	<b>lbs Zn</b>	<b>oz Ag</b>
<b>0.1</b>	<b>76,161,000</b>	<b>0.52</b>	<b>0.33</b>	<b>0.56</b>	<b>0.12</b>	<b>794,049,000</b>	<b>500,155,000</b>	<b>858,425,000</b>	<b>9,515,000</b>
0.2	54,187,000	0.67	0.42	0.70	0.15	731,493,000	458,808,000	757,677,000	7,900,000
0.4	34,848,000	0.90	0.56	0.87	0.17	624,078,000	390,701,000	605,666,000	5,768,000
0.6	22,176,000	1.12	0.71	1.05	0.18	498,599,000	314,910,000	463,692,000	4,050,000
0.8	12,280,000	1.48	0.94	1.35	0.20	362,913,000	231,657,000	330,633,000	2,455,000
1	7,077,000	1.91	1.25	1.77	0.23	271,046,000	176,599,000	250,717,000	1,645,000

*Mineral resources that are not mineral reserves do not have demonstrated economic viability. Mineral resources are reported at a 0.1 % Cu cut-off (indicated in bold lettering and italics in the table) in consideration of potential open-pit mining and heap-leach and flotation processing. The Mineral Resource is constrained by a pit optimization. All other sensitivity cut-offs are applied to the in-pit Mineral Resource and represent subsets of the Mineral Resource. Rounding as required by reporting guidelines may result in apparent discrepancies between tons, grades, and contained metal content. The effective date of the Mineral Resource estimate is September 9, 2021. See additional resource estimate notes below.*

The estimate is classified as an inferred mineral resource, consistent with the CIM definitions referred to in National Instrument 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.

The S&H PEA is based on conventional open pit mining with a contract miner using 100-ton capacity haul trucks and wheeled loaders. Pit designs include 4 pit phases to achieve the ultimate pit. Waste is planned to be stored in a single waste rock facility located to the east of the pit.

Processing assumes leaching of oxide and lower-grade mixed material in a single leach pad located to the west of the ultimate pit. In addition, higher-grade mixed material and sulfide material are planned to be processed using flotation and concentration of material. The concentrate would be transported to a suitable smelter. A conceptual tailings facility of suitable capacity is located to the west of the ultimate pit buttressed to the north by the heap leach pad. Construction of the tailings embankment is assumed to be completed using mined waste material.

A processing rate of 20,000 tons per day for run-of-mine ("ROM") leaching. ROM leaching costs were estimated to be \$5.62 per ton processed with a recovery rate of 92.3% for soluble copper and 82.3% for zinc. Acid costs are estimated to be \$110 per ton and are included in the ROM leaching cost.

Flotation processing rate of 5,000 was used in the S&H PEA assuming a cost of \$11.70 per ton. In addition, other costs are applied including: \$76/ton of copper concentrate, \$140/ton of zinc concentrate and \$6.00 per ton penalties. These costs were converted into \$/ton processed based on a mass pull of 4% into the concentrate. This yields: \$3.04, \$5.60, and \$0.24 per ton processed for treatment, transportation, and penalties respectively. Flotation recoveries for copper of 80.1% and 84.0% were used for mixed and sulfide respectively. Zinc recoveries of 69.7% and 89.0% were used for mixed and sulfide material respectively.

Royalties on production were applied using a 3% GRR with the exception of Sections 23 and 24 which carry a royalty of 17.785% GRR (including the impact of the stream). Mineralization from these Sections represents approximately 2.5% of the total \$3.50/lb. copper price constrained PEA open pit.

Mining costs of \$2.50 per ton were assumed which are based on similar projects with actual contractor quotations. The total mining cost assumption used is \$2.50/ton mined including \$0.03/ton for mine management.

Mine design was completed in 3-D and included 20 foot bench heights, 50 foot wide ramp at 1 in 9 grade, ore and waste scheduling and trucking distances.

The economic parameters discussed above were used for pit optimizations. Four pit phases were designed based on the pit optimizations. An NSR equivalent value in \$/ton was developed in the resource model and NSR cutoff grades were applied to the resources inside of the pit designs.

The mineral resource estimate was completed in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (“CIM”) Standards on Mineral Resources and Mineral Reserves, adopted by the CIM Council, as amended. Estimation methods are summarized below:

- The copper, zinc, and silver mineral resources at the S&H project were modeled and estimated by:
  - Developing a geological model, reflecting stratigraphic control of mineralization hosted in receptive rocks;
  - Developing oxidation surfaces based on the soluble copper total copper ratios from the assay data;
  - Evaluating the drill data statistically;
  - Interpreting domain polygons on sets of cross sections spaced at 200-foot intervals for copper, zinc, and silver;
  - Coding a block model comprised of 20 x 20 x 20 (x, y, z) foot blocks to the domains using the sectional mineral-domain polygons;
  - Analyzing the modeled mineralization geostatistically to aid in the establishment of estimation and classification parameters;
  - Interpolating copper, soluble copper ratios, zinc, and silver grades into the model blocks using the mineral- domain coding to explicitly constrain the grade estimations; and
  - Evaluating the resulting model in detail prior to finalizing the mineral resource estimation.
- The S&H Deposit Mineral Resources have been constrained to lie within optimized pit shells created using a copper price of USD \$3.50/pound of copper and \$1.28/pound of zinc. Silver resources were not considered in the constraint. Additional inputs for the pit-optimizations include: Mining - \$2.00/ton mined, heap leaching - \$5.00/ton processed, flotation- \$9.00/ton processed; and G&A cost of \$0.83/ton at an assumed 7.2 million tons per year processing rate. Copper and zinc recoveries are based on historical test data. Leaching recovery rates of 92.3% for soluble copper and 82.3% for zinc were used in the optimization. Flotation recoveries for copper of 80.1% and 84.0% were used for mixed and sulfide material respectively. Zinc recoveries of 69.7% and 89.0% were used for mixed and sulfide material respectively.
- A refining cost of \$0.08/pound and a 3.0% gross revenue royalty were also applied.
- The mineral resource estimate for the S&H deposit is based on results from 152 drill holes totalling 130,678 feet (ft).
- The mineral resource estimate is contained within a block model of the deposit covering a surface area of 3.91 square miles and to a maximum depth of 2,820 feet below the topographic surface. The major geologic formations and oxidization types are incorporated into the block model based on the drill hole intercept data.

Additional information about the S&H Project can be found in the technical report filed on SEDAR at [www.sedar.com](http://www.sedar.com) entitled: “Estimated Mineral Resources and Preliminary Economic Analysis, Strong and Harris Copper-Zinc-Silver Project, Cochise County, Arizona” dated effective of September 9, 2021.

### Additional Exploration Properties

Excelsior has also assembled a number of exploration and development properties in the Cochise Mining District. The Cochise Mining District hosts several known copper and copper-zinc deposits with production dating back to the early 1900s. The district has never been consolidated into one entity until Excelsior completed this task by acquiring firstly the JCM and then S&H. No modern exploration has occurred in the district which has substantial geological and drilling data sets. Given this land consolidation and available data sets, Excelsior decided in 2020 to initiate an exploration program to capitalize on the opportunities available to it. Excelsior has identified several magnetic and/or electrical geophysical anomalies on Excelsior’s properties in the Cochise Mining District.

On November 9, 2021, Excelsior provided an update on current Environmental, Social, Governance (“ESG”) initiatives.

Excelsior’s goal is to support the green mining revolution by providing “green copper” that is mined in an environmentally friendly and socially responsible manner. The Company’s ESG strategy will reinforce the following goals and initiatives the Company currently holds in high regard:

### Environment

- The Gunnison Copper Project is the world’s most environmentally friendly base metal mining project.
- In-situ copper mining recycles water. As a result, the project consumes less water, and overall water consumption is negligible compared to other conventional mining operations.
- During operations, the in-situ mine does not generate any significant dust, air, or noise pollution.
- Excelsior’s carbon emissions are insignificant compared to most industries.
- Excelsior’s mine closure plan for Gunnison combines industry leading sustainability and environmental stewardship. In-situ mining does not permanently scar the natural landscape; once mining operations cease, the land can be repurposed for any use going forward.
- There is no possibility of acid mine drainage or other residual effects often attributed to traditional mining methods.

### Social

- Gunnison’s environmental attributes are a key reason the project has enjoyed strong community support from inception.
- Excelsior has been engaging with local communities for over a decade, and has made effective employee health & safety protocols, consistent community engagement, and genuine transparency with local stakeholders’ key priorities.
- Excelsior participates in community support through its donations of money, people and materials to assist local community groups.
- Excelsior is a member of the Southeast Arizona Economic Development Group (SAEDG) which promotes economic development in the region.
- Excelsior’s social and environmental license to operate is further confirmed by an almost unprecedented settlement agreement that was reached with a number of environmental activist groups.

## Governance

Excelsior has completed a reorganization of its corporate governance structure by completing the following:

- Appointed Fred DuVal as Independent Chair of the Board of Directors. Mr. DuVal is a prominent Arizona businessman and education leader with extensive experience in both the private and public sector at both the state and federal level. Mr. DuVal was the Democratic nominee for Governor of Arizona in 2014 and served as Chairman of the Arizona Board of Regents and on the Arizona Commerce Commission. Mr. DuVal was Chief of Protocol of the United States, Assistant to President Clinton in the White House and responsible for all Governors and state issues.
- Restructured its Compensation Committee, Corporate Governance and Nominating Committee to consist entirely of independent directors.

### *Notice of Civil Action*

On November 3, 2021, Excelsior announced that it was aware of a civil claim filed against the Company and certain of its officers and directors in the Supreme Court of British Columbia (the “**Action**”). The plaintiff to the Action seeks certification of the Action as a class proceeding on behalf of a class of all persons and entities, wherever they may reside or may be domiciled, who purchased the securities of Excelsior offered by the Company’s Prospectus Supplement dated and filed on February 12, 2021 (the “**Prospectus**”).

The plaintiff alleges that the Prospectus contained misrepresentations related to the Company’s anticipated timeline to achieve a production rate of 25 million pounds per annum. The plaintiff alleges that as a result of the misrepresentations in the Prospectus, the securities of the Company were sold to the public at an artificially inflated price. The plaintiff seeks an order certifying the Action as a class proceeding, a declaration the Prospectus contained a misrepresentation, unspecified damages, pre- and post-judgment interest and costs.

Excelsior contends the allegations made against it in the Action are meritless and will be vigorously defended.

### *Extension of and Increase to Nebari Credit Facility*

The Company requested and Nebari provided an extension of the term of the Nebari Credit Facility to March 23, 2022.

Subsequently, on December 23, 2021, Excelsior announced that it and Excelsior Arizona had agreed with Nebari Natural Resources Credit Fund I LP (“Nebari”) to extend the maturity date of its existing US\$15 million credit facility to September 29, 2023. In addition, subject to the satisfaction of certain conditions, Nebari has agreed to provide an additional US\$15 million credit facility (increasing the total facility to US\$30 million) and further extend the maturity date of the facility to July 31, 2024.

The Company, Excelsior Arizona and Nebari entered into an Amended and Restated Credit Agreement (the “ARCA”). The ARCA provides for the extension of the maturity date of the existing US\$15 million credit facility to September 29, 2023 (the “First Extension”). The ARCA also provides for the availability of a further US\$15 million (the “Facility Increase”) and a further extension of the maturity date of the facility to July 31, 2024 (the “Second Extension”). The Facility Increase provides for an initial draw of US\$5 million and two additional draws of US\$5 million each at the sole option of Excelsior Arizona. There are no common shares, warrants or other convertible securities issuable to Nebari in connection

with the ARCA. The Proceeds of the Facility Increase will be used to progress towards and restart the JCM open pit mining operations, establish a new heap leach facility, and achieve associated copper production.

Each of the First Extension, the Second Extension and the Facility Increase was subject to certain consents from Triple Flag International Ltd. (“Triple Flag”) which are discussed below. The Facility Increase and Second Extension were also subject to certain additional conditions including completion of additional due diligence by Nebari, receipt of all required permits for Excelsior’s JCM operating plan, additional security over the Strong & Harris Project and conclusion of certain agreements with Triple Flag.

In order to proceed with the ARCA, certain consents and agreements were required from Triple Flag related to the existing Copper Purchase and Sale Agreement (the “Stream Agreement”). Triple Flag agreed to amend the Stream Agreement to permit the First Extension in exchange for the removal of the Company’s right to repurchase, in certain circumstances, a portion of the metal stream and the re-pricing of Triple Flag’s existing 3.5 million common share purchase warrants (the “Warrants”) to have an exercise price of Cdn\$0.54 per common share (25% premium to current market price) from a prior exercise price of Cdn\$1.50. Triple Flag further agreed to amend the Stream Agreement to permit the Facility Increase and Second Extension, subject to the satisfaction of certain conditions. These conditions include Triple Flag and Nebari reaching agreement on certain security matters.

Subsequent to the year ended December 31, 2021, the availability period for the additional US\$15 million under the ARCA expired and Excelsior no longer has access to such additional funding.

## **Year Ended December 31, 2022 Developments**

### *Operations Update*

On January 11, 2022, Excelsior announced that 2 diamond drills have been mobilized to the JCM for infill drilling of the Burro and Copper Chief open pits, as well as drilling of the geophysical anomalies at the S&H and Peabody Sill deposits. Godbe Drilling LLC. from Colorado has been retained to conduct the drilling. The plan is to first drill the JCM deposit infill and metallurgical holes. The drill rigs will then be moved to S&H and Peabody Sill for exploration drilling and finally for the infill and metallurgical drilling there.

On March 30, 2022, Excelsior announced the results of its Prefeasibility Study Update (the “**2022 Gunnison PFS**”) on the North Star Deposit of the Gunnison Copper Project and Preliminary Economic Assessment (the “**2022 JCM PEA**”) on the Johnson Camp Mine Heap Leach, both located in Cochise County, southeastern Arizona. The Gunnison Project is designed as a copper in-situ recovery mine using solvent extraction-electrowinning. Subsequently the 2022 Gunnison PFS and 2022 JCM PEA were replaced and superseded by the results of the Technical Report.

On April 11, 2022, Excelsior announced assay results from the infill drill program on the Johnson Camp mine pits (JCM) located in Cochise County, southeastern Arizona. The improved results at the north end of the pit, including the high average leaching potential, should allow the Company to develop a mine plan that targets the high-grade section to maximize cashflows at the start of operations.

On October 3, 2022, Excelsior announced the final assay results from the infill drill program on the Johnson Camp mine pits (JCM) located in Cochise County, southeastern Arizona. Excelsior also announced a new Chief Financial Officer and provided an operations update.

Due to successful drilling in the NE corner of Burro pit, additional holes were added and those with assays returned are reported below. The improved results will allow the Company to develop a mine plan that focuses on this new, higher-grade, mineralized zone. Permitting of the new leach pad to restart operations is in progress (subsequently approved in January 2023), however the additional drilling and metallurgical testing will push the Company's goal of making a development decision on restarting mining operations at JCM into 2023.

All assays have been returned for the 43 diamond hole program. Sequential copper assays have an average leaching potential exceeding 68% (excludes intervals that contain sulfide mineralization). Assay highlights are included in Table 1 below. Full assays are included in Table 2.

**Table 1**

Hole ID	From (Ft)	To (Ft)	Interval (Ft)	True Thickness (Ft)	TCu%	Type	Avg. Leaching Potential %
EBM-38	190	550	360	354.6	0.46	O&T	72%
EBM-39	230	550	320	315.2	0.43	O&T	58%
EBM-40	282	501	219	215.7	0.41	O&T	67%

Mineralized Zone: O = Oxide, T = Transition, S = Sulfide. TCu% = Total Copper %

The leaching potential of copper mineralization is defined as acid soluble copper (AsCu) plus sodium cyanide soluble copper (CNCu) divided by total copper (TCu).

All samples are prepared from manually split or sawn PQ or HQ core sections on site in Arizona. Drill core samples are then sent to Skyline Assayers & Laboratories in Tucson, Arizona for Total Copper and Sequential Copper analyses. 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. Pulps and sample rejects are stored by Excelsior for future reference.

**Table 2**

Hole ID	From (Ft)	To (Ft)	Interval (Ft)	True Thickness (Ft)	TCu%	Type	Avg. Leaching Potential %
EBD-14	109	120	11	8.4	0.3	T	49%
	150	190	40	30.6	0.24	S	15%
	230	290	60	46.0	0.33	S	10%
EBD-15	300	330	30	23.0	0.28	S&T	23%
	12	12.5	0.5	0.4	0.72	O	94%
EBD-16	170	330	160	122.6	0.26	S&T	33%
	0	20	20	20.0	0.24	O	82%
EBM-38	175	285	110	110.0	0.28	S&T&O	51%
	80	100	20	19.7	0.285	O	94%
	110	120	10	9.9	0.27	O	96%

Hole ID	From (Ft)	To (Ft)	Interval (Ft)	True Thickness (Ft)	TCu%	Type	Avg. Leaching Potential %
	140	150	10	9.9	0.18	O	91%
	160	170	10	9.9	0.11	O	80%
	190	550	360	354.6	0.46	O&T	72%
EBM-39	100	110	10	9.9	0.27	O	90%
	120	162	42	41.4	0.21	O&T	81%
	180	200	20	19.7	0.71	O&T	65%
	210	220	10	9.9	0.11	O	88%
	230	550	320	315.2	0.43	O&T	58%
EMB-40	35	95	60	59.1	0.24	O	86%
	125	135	10	9.9	0.84	S	14%
	145	162	17	16.7	0.19	O&T	79%
	182	192	10	9.9	0.12	O&T	74%
	242	252	10	9.9	0.14	O&T	83%
	282	501	219	215.7	0.41	O&T	67%
Mineralized Zone: O = Oxide, T = Transition, S = Sulfide. TCu% = Total Copper %							

The Johnson Camp Mine 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).

Excelsior also announced that effective October 10, 2022, Mr. Danny Heatherson would be appointed as the Interim Chief Financial Officer of the Company.

Excelsior also provided an update on operations and future plans. Excelsior's near-term focus is on the following:

1. Using the newly collected data at the Johnson Camp mine to evaluate the potential for mining the old Burro open pit. The Company's goal is to restart mining operations at JCM in 2023 assuming mine planning demonstrates an economic operation.
2. Ongoing modelling, planning, and permitting for well stimulation trials, designed to determine the effectiveness of this technique to alleviate production problems at the Gunnison in-situ mine. Excelsior is presently engaged with EPA on well stimulation approvals. Well stimulation has the potential to reduce the need for raffinate neutralization or change the design criteria for the neutralization plant. As such, detailed work on the design and testing of neutralized raffinate will be delayed pending the results of the well stimulation trials.
3. Excelsior is continuing its compilation and investigation of the Cochise Mining District (Johnson Camp Mine area) which has enjoyed a long history of underground and open pit operations (Cu, Zn, Pb and Ag).

On October 18, 2022, Excelsior announced the results of the Well Stimulation modelling for the Gunnison Copper Project, located in Cochise County, southeastern Arizona. Well stimulation has the potential to

fundamentally change the performance of the wellfield, reduce the need for raffinate neutralization or change the design criteria for the neutralization plant.

Well stimulation is primarily intended to inflate (open-up) the pre-existing mineralized fracture network in the wellfield to help gas bubbles (CO<sub>2</sub>) escape. It can enlarge pre-existing channels and flow paths, increase pore space and make it possible for the solution to move more readily from injection to recovery well. Doing so would improve connectivity between these wells, improve flow rates and copper production. To this end Excelsior commissioned a leading engineering and environmental consulting firm to undertake well stimulation modelling on a selection of wells within the current wellfield. The model showed that well stimulation successfully inflated pre-existing fractures over significant volumes around the central well within the 5-spot pattern.

Based on the successful modelling results, Excelsior intends to proceed with field trials in 2023, subject to EPA approval. The EPA is currently processing Excelsior's permit amendment to allow well stimulation, which is expected to be approved in Q2 2023. Field trials are planned as soon as practicably after EPA approvals and subject to financing.

Summary:

- Well stimulation is expected to be successful at increasing the natural fracture permeability for significant volumes within the wellfield
- Immediate permeability enhancement is expected to be one to two orders of magnitude
- Although modelling results are very encouraging, field trials may not perform as modelled and operational conditions may affect the final results.
- Risk factors that will be evaluated further as part of the field trials.

#### *Litigation Update*

On September 2, 2022, Excelsior provided a litigation update (see "*Description and General Development of the Business – Three Year History – Year Ended December 31, 2021 – Notice of Civil Action*"). Excelsior announced that the British Columbia Supreme Court granted Excelsior's application to strike the Plaintiff's certification application and further ordered the Plaintiff to remove all pleadings relating to advancing a class action proceeding against Excelsior. Excelsior was awarded its costs of the application in any event of the cause. The Plaintiff's action may continue as an individual claims, however, the Plaintiff has been found to be incapable of advancing the action as a class proceeding. Subsequently, the Plaintiff appealed this ruling to the British Columbia Court of Appeal with a hearing scheduled for April 2023.

#### *Passing of Director, Mr. Jim Kolbe*

On December 5, 2022, Excelsior announced the passing of Mr. Jim Kolbe who had served as a director of Excelsior for over 10 years.

## Developments Subsequent to December 31, 2022 and Outlook

### *Operations Update*

On January 16, 2023, Excelsior announced that it had entered into a Collaboration Agreement with Nuton LLC, a Rio Tinto venture, to evaluate the use of its Nuton™ copper heap leaching technologies at Excelsior’s Johnson Camp mine in Cochise County, Arizona.

On January 23, 2023, Excelsior announced that it had received approval from Arizona Department of Environmental Quality (ADEQ) for a new leach pad at its Johnson Camp Mine (JCM) facility. The Aquifer Protection Permit (APP) for Johnson Camp has been amended to include the construction and operation of a heap leach pad to produce copper from the legacy open pits at Johnson Camp in Cochise County, Arizona.

On February 22, 2023, Excelsior announced 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 Technical Report also includes 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 are in United States dollars. Please refer to “*Mineral Properties*” for a description of the results of the PFS and PEA.

On February 28, 2023, Excelsior announced that it had filed the Technical Report on SEDAR.

### *Extension of Nebari Credit Facility*

On January 30, 2023, Excelsior announced that it and its wholly-owned Excelsior Arizona had agreed with Nebari to extend the maturity date of its existing US\$15 million credit facility to March 31, 2025 (see “*Description and General Development of the Business – Three Year History – Year Ended December 31, 2021 – Extension of and Increase to Nebari Credit Facility*”).

The Company, Excelsior Arizona and Nebari have entered into a Second Amendment to the Amended and Restated Credit Agreement (the “**Second Amended ARCA**”). The Second Amended ARCA provides for the extension of the maturity date of the existing US\$15 million credit facility to March 31, 2025 (the “**Extension**”) and reducing the minimum cash balance requirement to US\$2.5 million.

The Extension is subject to certain conditions including completion of the Debenture Offering by February 17, 2023 and conclusion of certain agreements with Triple Flag International. All conditions to the extension were satisfied in February, 2023, including an amendment to the Stream Agreement to extend the Leverage Ratio Grace Period to March 31, 2025.

As consideration for the Second Amended ARCA, subject to Toronto Stock Exchange approval, the Company was required to issue common shares of the Company to nominees of Nebari in a number equal to US\$450,000, converted to Canadian dollars at an exchange rate equal to the average market rate posted by the Bank of Canada for the 5 days preceding the issuance, divided by the lower of (i) the conversion price of the Debenture Offering and (ii) the volume weighted adjusted price of the Common Shares for the 5 trading days immediately preceding the issuance. In addition, commencing January 31, 2024 the Company will begin amortizing US\$5 million of the principal amount of the facility in monthly instalments of US\$333,333.

On February 9, 2023, Excelsior announced that in connection with the Second Amended ARCA, it had issued 2,368,421 Common Shares to nominees of Nebari.

On February 22, 2023 the Company and Triple Flag entered into an amendment to the Stream Agreement to extend the leverage ratio grace period to March 31, 2025 to match the extended term of the Nebari credit facility.

### *Debenture Financing*

On January 30, 2023, Excelsior announced that it had entered into agreements for a US\$3 million private placement of unsecured convertible debentures (the “**Debenture Offering**”).

Pursuant to the Debenture Offering, investors will subscribe for a total of US\$3 million principal amount of convertible debentures (the “**Debentures**”). The terms of the Debentures include:

- a maturity date of three years from the date of closing (the “**Maturity Date**”) and the principal amount, together with any accrued and unpaid interest, will be payable on the Maturity Date, unless earlier converted in accordance with their terms;
- the Debentures bear interest (the “**Interest**”) at the rate of 10% per annum, which Interest will be payable on April 1, 2025 and on the Maturity Date, unless earlier converted into Common Shares;
- the principal amount of the Debenture is convertible into Common Shares at the option of the holder at a conversion price of US\$0.19 per Common Share;
- the accrued and unpaid Interest is convertible into Common Shares at a conversion price equal to the volume weighted average trading price on the Toronto Stock Exchange for the five trading days prior to the date of conversion; and
- the Debentures are unsecured.

The Company intends to use the proceeds of the Debenture Offering for project development expenses and working capital.

On February 9, 2023, Excelsior announced the closing of the Debenture Offering. In connection with the Debenture Offering, Greenstone Resources L.P. (“**Greenstone**”) participated in the Debenture Offering. Greenstone and its affiliated entities currently hold 116,028,937 Common Shares. Greenstone also owns and controls 1,250,000 options to acquire Common Shares. Upon conversion of the Debentures held by Greenstone (assuming conversion of all interest payments on the maturity date, using a conversion price of US\$0.19), Greenstone would acquire ownership and control over an additional 10,263,158 Common Shares, representing approximately 3.7% of the Company’s current issued and outstanding Common Shares. As a result, together with the Common Shares it currently owns and controls, Greenstone would hold a total of 126,292,095 Common Shares, which will represent, in aggregate, approximately 43.93% of the issued and outstanding Common Shares (assuming conversion of only the Debentures held by Greenstone and assuming the conversion of all interest to maturity at US\$0.19).

## *Outlook*

The Company has previously disclosed the various issues that have been identified during the ramp-up phase of initial production. Certain issues have been resolved but a variety of issues still need to be worked through, such as how to minimize the impact of carbon-dioxide on fluid flows and how best to maximize flow rates in general. The reduced flow rates are slowing ramp-up to nameplate production of 25 million pounds per annum. The Company continues to investigate remedial processes and believes well stimulation has the potential to substantially improve the situation. Subject to relevant approvals the Company intends to undertake well stimulation trials in 2023. At this time the Company is unable to forecast when nameplate production will be reached as it needs to complete its review of remedial processes and fully assess any required adjustments to the operating plan.

For the year ended December 31, 2022, total copper sold was 1,037,440 lbs. with an additional 74,886 lbs. in inventory. This low total production number is due to certain factors including lower than expected flow rates and the wellfield operating at a reduced capacity throughout the entire year of 2022. Additional wellfield optimization initiatives are being planned or considered. While Management is focused on mitigating the impact of the various wellfield issues and the impact of the optimization initiatives on ramp-up, they will contribute to further delays to production ramp-up period, increased capital or operating costs or decreased production as noted above.

Excelsior's focus continues to be on attaining a sustained production rate of 25 million pounds of copper per year, after which Excelsior will focus on expanding that production rate. Achieving this outcome is contingent on resolving ramp-up issues and successfully implementing many of our wellfield optimization programs.

The Company is exploring additional options to accelerate the removal of carbon-dioxide that if successful could potentially lower the required capital and operating costs as compared to the previous raffinate neutralization path. This includes a plan to undertake well stimulation trials in the first half of 2023 with timing primarily dependent upon EPA approval. Well stimulation has the potential to clean out some of the CO<sub>2</sub> bubbles, improve flow rates, improve sweep efficiency, and increase permeability and copper production. Data will be collected during the trials to ascertain the effectiveness of the technique. The trials will be subject to EPA approval. The Company is also continuing to move forward with evaluating the oxide and sulfide potential of all its mining assets, which may be extracted using conventional mining methods.

In addition to Gunnison, Excelsior has been progressing the JCM open pits towards a restart of mining and processing operations. Successful restart of mining and process at JCM has the potential to generate cashflow to support the Company during remediation of the Gunnison wellfield. Restart of the JCM open pits is contingent of successful metallurgical test work related to sulfide and transitional mineral leaching. Investigation of sulfide leaching is being conducted in collaboration with Nuton (a subsidiary of Rio Tinto). It is expected this test work will be completed in 2023 and may lead to a commercial transaction with Nuton on the restart of the JCM open pits.

The Company intends to take a more holistic approach to the investigation and development of all its assets in the Cochise Mining District in 2023.

## **Significant Acquisitions**

The Company has made no significant acquisitions for which disclosure is required under Part 8 of National Instrument 51-102.

## **NARRATIVE DESCRIPTION OF THE BUSINESS**

### **Summary of the Business**

The Company is focused on mining operations at its core asset, the Gunnison Project located in Cochise County, Arizona.

### **Competitive Conditions**

The mineral exploration and mining business is a competitive business. The Company competes with numerous other companies and individuals in the search for and the acquisition of attractive mineral properties. The success of the Company will depend not only on its ability to operate and develop its properties but also on its ability to select and acquire suitable properties or prospects for development or mineral exploration.

The mineral resource industry is intensely competitive in all of its phases, and the Company competes with other mineral resource companies in connection with the acquisition of properties, the recruitment and retention of qualified personnel and contractors, the supply of equipment and, ultimately, customers for any copper that may be produced from the Gunnison Project if it reaches production. Many of the companies the Company competes with have greater financial resources, operational experience and technical facilities than the Company. Consequently, the Company's future revenue, operations and financial condition could be materially adversely affected by competitive conditions. See also "Risk Factors".

### **Employees**

The Company had 39 employees as of December 31, 2022.

### **Environmental Protection**

The Company understands the importance of environmental protection. The Company's activities are subject to extensive federal, state and local laws and regulations governing environmental protection and employee health and safety. The Company is required to obtain government permits and comply with bonding requirements under environmental laws. All phases of the Company's operations are subject to environmental regulation. These regulations mandate, among other things, the maintenance of water quality standards and land reclamation. They also set forth limitations on the generation, transportation, storage and disposal of solid and hazardous waste. Environmental legislation is evolving in a manner which will require stricter standards and enforcement, increased fines and penalties for non-compliance, and more stringent environmental assessments of proposed projects. For further information related to environmental protection see "Mineral Properties – Gunnison Project – Mining Operations – Environmental and Permitting."

The environmental protection requirements affect the financial condition and operational performance and earnings of the Company as a result of the capital expenditures and operating costs needed to meet or exceed these requirements. These expenditures and costs may also have an impact on the competitive position of the Company to the extent that its competitors are subject to different requirements in other governmental jurisdictions. To date the effect of these requirements has been limited due to the small amount of production activity of the Company, but they are expected to have a larger effect in future years as the Company moves toward commercial production and eventual production expansion. There is no assurance that future changes in environmental regulation, if any, will not adversely affect the Company's operations.

## **Social and Environmental Policies**

The Company places great emphasis on providing a safe and secure working environment for all of its employees and contractors, and it recognizes the importance of operating in a sustainable manner.

The Company's Code of Business Conduct and Ethics ("Code of Conduct") is the policy that sets out the standards which guide the conduct of the Company's business and the behaviour of its employees, officers and our Board of Directors. The Code of Conduct, amongst other things, sets out standards in areas relating to:

- Promotion and provision of a work environment in which individuals are treated with respect, provided with equal opportunity and is free of all forms of discrimination;
- Ethical business conduct and legal compliance, including without limitation prohibition against accepting or offering bribes; and
- Commitment to health and safety in our business operations, and the identification, elimination or control of workplace hazards.

The Company's commitment to safety is defined in its Safety Handbook. The Company is committed to developing and maintaining programs that meet and where practical, exceed the requirements of the law. The Company's ultimate goal is zero accidents and to earn the reputation of being a safety conscious operator. As of December 31, 2022, that Company had achieved over 3,400 days without a lost time incident.

## **MINERAL PROPERTIES**

### **General**

The Company's only material mineral properties are the Gunnison Project and JCM.

### **Gunnison Project**

*The following represents the summary of the Technical Report dated effective February 1, 2023 prepared by Richard Zimmerman, SME-RM; Jeffrey Bickel, CPG; Thomas L. Dyer, PE, SME-RM; Neil Prens, MMSA-QPM; Robert J. Bowell, PhD, C.Chem., C.Geol.; Dr. Terry McNulty, PE, DSc; and R. Douglas Bartlett, CPG. Unless specifically noted otherwise, the following disclosure regarding the Gunnison Project has been prepared under the authority and supervision and with the consent of the authors, each a "qualified person" within the meaning of NI 43-101. The full Technical Report is incorporated by reference into this AIF and is available under Excelsior's corporate profile on SEDAR at [www.sedar.com](http://www.sedar.com). All references in this summary to Sections are to the Sections of the Technical Report.*

### **Summary**

M3 Engineering & Technology Corporation (M3) was commissioned by Excelsior Mining Corp. ("Excelsior") to prepare an updated Prefeasibility Study (PFS) in accordance with the Canadian National Instrument 43-101 ("NI 43-101") standards for reporting mineral properties, for the Gunnison Copper Project (the "Gunnison Project" or the "Project") in Cochise County, Arizona, USA. The Project utilizes in-situ recovery (ISR) methods to leach copper from a buried copper oxide deposit and extract the copper by conventional solvent extraction-electrowinning (SX-EW) technology. The ISR process involves injecting leach solutions acidified with sulfuric acid into the oxidized mineralization to get soluble copper

into solution. Recovery wells pump the copper-bearing pregnant leach solution (PLS) to the surface for copper recovery by SX-EW into salable copper cathodes.

The Gunnison Project is located about 65 miles east of Tucson, Arizona on the southeastern flank of the Little Dragoon Mountains in the Cochise Mining District. The property is within the copper porphyry belt of Arizona. The Gunnison Project hosts the North Star (formerly known as the I-10) deposit and contains copper oxide and sulfide mineralization with associated molybdenum in potentially economic concentrations.

Oxidized, mineralized bedrock that lies 300 feet to 800 feet beneath alluvial basin fill with ISR using a staggered series of injection and recovery wells to circulate acidified leach solution that dissolves the copper. The basin fill is typically above the water table and most of the oxidized mineralization is below the water table. The North Star copper deposit host rocks show significant fracturing and jointing resulting in broken ground that is below the water table (saturated zone) and permeable. The copper silicates and oxides occur preferentially as coatings on the fracture planes and as veinlets or matrix fill to the broken fragments. This should result in preferential exposure of the copper minerals to the leaching solution (lixiviant), thus reducing the amount of acid consumed by the un-exposed gangue rocks. The above features, combined with the large size of the deposit, suggest ISR is a viable approach to mining this deposit.

ISR is a closed-loop mining system, where metal-bearing minerals are dissolved within the host formation using an appropriate leach solution (lixiviant). Production wells constructed in an alternating array are used to deliver (inject) the lixiviant to the ore zone to be drawn toward the recovery wells in the array. Leached metals in the pregnant leach solution (PLS) are recovered to the surface for processing by wells that are equipped with submersible electric pumps. After processing, the solution is recycled to the wellfield to continue the leaching cycle, making ISR a continuous mining operation.

Several ISR operations for copper have operated or been permitted in Arizona including Miami (BHP-Billiton), San Manuel (BHP-Billiton), Silver Bell (ASARCO), Old Reliable (Ranchers Exploration), Santa Cruz (ASARCO et al.), Florence (BHP-Billiton), and Safford area (Kennecott Copper). Considerable expertise in copper oxide ISR mining is available in Arizona and elsewhere in the USA.

The Project envisages development in three production “stages” with capacities of 25 million pounds per annum (mppa) in Stage 1, 75 mppa in Stage 2, and 125 mppa in Stage 3. The stages to ramp up production were meant to minimize capital at risk until the in-situ recovery (ISR) process at the Gunnison Project is better understood. For Stage 1 operations, Excelsior will use the neighboring Johnson Camp Mine (JCM) that has a functional 25 mppa SX-EW plant north of the Gunnison Project wellfield on the north side of Interstate 10 that it purchased in 2015.

Stage 1 construction was completed in the fourth quarter (Q4) of 2020 and went into production using the JCM SX-EW plant. Once Stage 1 production has been reached, Stage 2 production will commence in Year 4 of the mine plan. A 50 mppa Gunnison SX-EW plant will be constructed on the south side of Interstate 10 next to the Gunnison wellfield to accommodate the increased production. Stage 3 production will commence in Year 7 of the mine life by doubling the size of the Gunnison SX-EW plant to 100 mppa, increasing production capacity to 125 mppa.

Excelsior selected M3 and other respected third-party consultants to prepare mine plans, resources/reserve estimates, process plant designs, and to complete environmental studies and cost estimates used for the Technical Report. All consultants have the capability to support the Project, as required and within the confines of their expertise. The costs are based on fourth-quarter 2021 U.S. dollars, except for the cost of acid and molten sulfur which were updated to align with the Johnson Camp Mine update presented in Section 24.

Stage 1 construction was completed in the fourth quarter (Q4) of 2020. The wellfield was installed and tested with groundwater circulating through the formation. Acidified leach solution began being circulated through the formation, representing the start of ISR operations. Challenges to the operation were encountered, most notably declining flow rates in the wellfield due to the buildup of carbon dioxide in the formation. A water treatment plant will be required to provide neutralized solutions to the wellfield to dissolve the carbon dioxide and restore flow rates in the formation. This will require further design, engineering and test work before construction should commence.

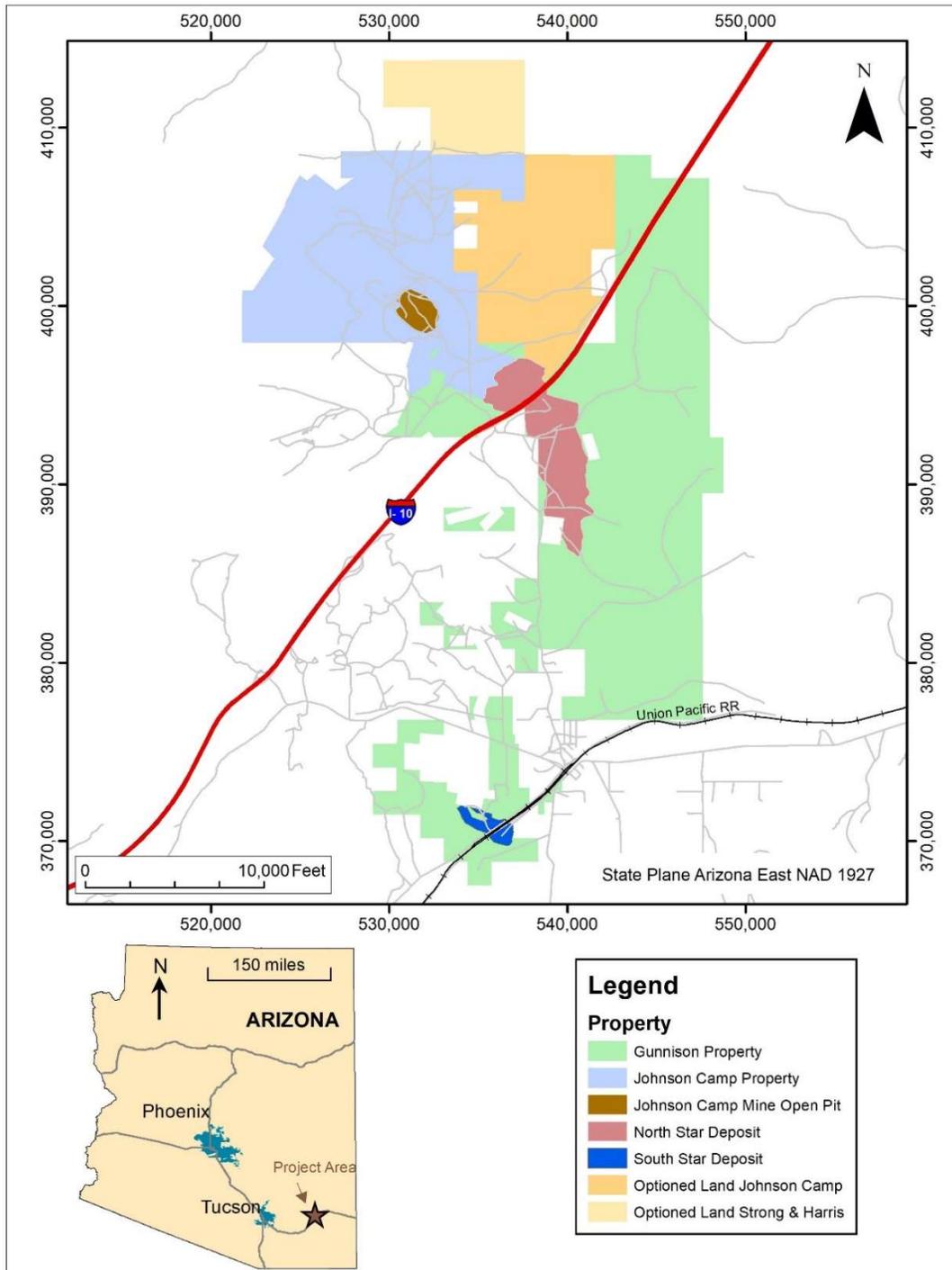
## **Key Data**

The key results of this study are as follows:

- The average annual Stage 3 production is projected to be approximately 125 million pounds of copper. Total life of operation production is projected at approximately 2,154 million pounds of copper.
- The Project currently has 873 million short tons of measured and indicated oxide and transitional mineral resources (0.29% Total Copper Grade) at a 0.05% Total Copper cut-off grade, as well as 187 million short tons of inferred mineral resources (0.17% Total Copper Grade).
- The Project currently has a diluted mineral reserve of 782 million short tons of probable mineral reserves (0.29% Total Copper Grade).
- ISR is anticipated to recover approximately 48.4% of the total copper with an average “sweep efficiency” of 74%.
- The average life-of-mine direct operating cost estimated to be \$0.945 per pound of copper for the Base Case, which includes building a sulfuric acid plant that commences operation in Year 7 (Stage 3). The average life-of-mine direct operating cost for the Alternate Case (No acid plant) is \$1.354 per pound of copper.
- The estimated initial capital cost is \$47.6 million which includes \$9.2 million in capitalized pre-production costs.
- The total life-of-operation sustaining capital cost for the Base Case is estimated to be \$1,033 million while the total life-of-operation sustaining capital cost for the Alternate Case is \$880 million.
- The total cost for reclamation and closure is estimated to be \$60 million and averages \$0.028 per pound of copper recovered.
- The economic analysis for the Base Case before taxes indicates an Internal Rate of Return (IRR) of 40.6% and a payback period of 6.5 years. Based on a copper price of \$3.75 per pound, the Net Present Value (“NPV”) before taxes is \$1,435 million at a 7.5% discount rate.
- The economic analysis for the Base Case after taxes indicates that the Project has an IRR of 37.5% with a payback period of 6.7 years. The NPV after taxes is \$1,166 million at a 7.5% discount rate.

## **Property Description and Location**

The Project is located in Cochise County, Arizona, approximately 65 miles east of Tucson and 1.5 miles southeast of the historic Johnson Camp mining district. **Figure 0-1** is a general location map and property location near the US Interstate 10 (I-10) freeway. Total area is approximately 11,802 acres (5,876 hectares).



**Figure 0-1: Project Location Map, North and South Star Deposits and Johnson Camp Mine**

The Project is held by Excelsior through its wholly owned subsidiary Excelsior Mining Arizona, Inc. (Excelsior Arizona). Acquisition of all mineral interest from the James L. Sullivan Trust was completed in January of 2015. These assets represent, among other things, the mineral rights to the North Star and South Star Copper deposits (the Gunnison Project). Additionally, in December 2015 Excelsior purchased all assets of Nord Resources Corporation (Nord), as they relate to the JCM, through a court-appointed receiver.

### **Accessibility, Climate, Local Resources, Infrastructure and Physiography**

The Project is located in a sparsely populated, flat to slightly undulating ranching and mining area about 65 road miles east of Tucson, Arizona. The Tucson metropolitan area is a major population center (approximately 1,000,000 persons) with a major airport and transportation hub and well-developed infrastructure and services that support the surrounding copper mining and processing industry. The towns of Benson and Willcox are nearby and combined with Tucson can supply sufficient skilled labor for the Project.

Access to the Project is via the I-10 freeway from Tucson and Benson to the west or Willcox to the east. The North Star deposit can be accessed via good quality dirt roads heading approximately 1 mile east from the south side of “The Thing” travel center and roadside attraction on the Johnson Road exit from I-10. Access to the Johnson Camp mine is via good quality dirt roads approximately 2.5 miles north of the Johnson Road exit from I-10.

The elevation on the property ranges from 4,600 to 4,900 feet above mean sea level in the eastern Basin and Range physiographic province of southeastern Arizona. The climate varies with elevation, but in general the summers are hot and dry, and winters are mild.

Vegetation on the property is typical of the upper Sonoran Desert and includes bunchgrasses, yucca, mesquite, and cacti.

### **History**

There is no direct mining history of the North Star deposit; however, the district has seen considerable copper, zinc, silver, and tungsten mining beginning in the 1880’s and extending to the present day. Modern mining and leaching operations at the Johnson Camp Mine, began in the 1970s by Cyprus Minerals. Successor owners and operators include Arimetco, North Star, Summo Minerals, and Nord Resources Corporation. Nord mined fresh material until mid-2010 and maintained leaching operations until late 2015, when the property was purchased by Excelsior.

In 1970, a division of the Superior Oil Company (“Superior”) joint ventured into the northern half of the North Star deposit with Cyprus and the private owners (J. Sullivan, pers. com.). During the early 1970s, Superior did most of the drilling and limited metallurgical testing on North Star and by early 1974 had defined several million tons of low-grade acid-soluble copper mineralization.

### **Geological Setting and Mineralization**

There are several oxide copper deposits controlled by Excelsior, North Star, South Star and the Johnson Camp Mines, all situated in the Mexican Highland section of the Basin and Range physiographic province. The province is characterized by fault-bounded mountains, typically with large igneous intrusives at their cores, separated by deep basins filled with Tertiary and Quaternary gravels.

The Gunnison Project (North Star) lies on the eastern edge of the Little Dragoon Mountains. The ages of the rocks range from 1.4-billion-year-old Pinal Group schists to recent Holocene sediments. The southern

portion of the Little Dragoon Mountains consists predominately of the Tertiary Texas Canyon Quartz Monzonite whereas the Pinal Group schists and the Paleozoic sediments that host the regional copper mineralization dominate the northern half.

Copper sulfide mineralization has formed preferentially in the proximal (higher metamorphic grade) skarn facies, particularly along stratigraphic units such as the Abrigo and Martin Formations near the contact with the quartz monzonite and within structurally complex zones. Primary mineralization occurs as stringers and veinlets of chalcopyrite and bornite. Primary (unoxidized) mineralization remains “open” (undetermined limits) at depth and to the north, south, and east.

Oxidation of the mineralization occurs to a depth of approximately 1,600 feet, resulting in the formation of dominantly chrysocolla and tenorite with minor copper oxides and secondary chalcocite. The bulk of the copper oxide mineralization occurs as chrysocolla, which has formed as coatings on rock fractures and as vein fill. The remainder of the oxide mineralization occurs as replacement patches and disseminations.

### **Deposit Types**

The North Star deposit is a classic copper-bearing, skarn-type deposit (Einaudi et al., 1980; Meinert et al., 2005). Skarn deposits range in size from a few million to 500 million tons and are globally significant, particularly in the American Cordillera. The North Star deposit is large, being at the upper end of the range of size for skarn deposits and is associated with a mineralized porphyry copper system that has been largely unexplored.

### **Exploration**

Since North Star’s discovery, numerous companies have explored the area. During this time period, extensive drilling, and assaying, magnetic and IP geophysical surveys, metallurgical testing, hydrological studies, ISR tests, and preliminary mine designs and evaluations have occurred. The focus since the 1970’s has been to utilize ISR or a combination of ISR and open pits as a potential mining strategy.

Mr. Stephen Twyerould first became involved with the Gunnison Project in mid-2005 and AzTech (Excelsior precursor) became involved in mid-2006. Since that time, significant work has been completed such as cataloguing, reviewing, and compiling high-quality historical data spanning over thirty years of investigations by Superior Oil and Gas, Cyprus, Quintana, CF&I, Magma Copper Corporation, Phelps Dodge Corporation, and James Sullivan. Excelsior conducted detailed ground magnetics over the exploration targets in June 2011.

Excelsior initiated a re-logging program in December 2010 that was completed in the third quarter of 2011. In addition, a re-assaying program began in March 2011 during which all of the Magma holes were re-assayed. In May 2011, a re-assay program was initiated for the Quintana Minerals holes (DC, S, and T series) to include sequential copper analyses for acid-soluble copper (ASCu). Previous results only included total copper (TCu) assays.

### **Drilling**

The North Star deposit drillhole database includes 88 historical drillholes that were completed by several companies. These holes extend to a depth of approximately 2,450 ft below the surface at North Star and cover an area of approximately 310 acres, with additional drilling extending beyond this area. There is a slightly higher density of drilling along the central axis of the North Star deposit. The 88 holes drilled by previous owners include 5,585 assays for total copper (TCu) and 2,754 assays for acid soluble copper as well as other assays for molybdenum, gold, silver, and tungsten.

Between 2010 and 2015, 54 diamond core holes were drilled by Excelsior for a total of 78,615 feet of drilling. Fifteen of these holes were for metallurgical samples and the rest were drilled for resource definition or exploration purposes (Table 10-6; Figure 10-2).

### **Sample Preparation, Analysis and Security**

The laboratory sample preparation and analysis procedures used by the previous owners of the deposits are unknown; however, major commercial laboratories using best practices at the time completed the majority of analyses.

The data, information, samples, and core from the deposits have been under the control and security of AzTech Minerals since November 2006 and then Excelsior since October 2010. The original information and samples are stored at a core storage facility in Casa Grande, with numerous copies held by Excelsior at its Phoenix, Arizona office. It is the opinion of RESPEC Company LLC (RESPEC), the reviewer of the assay data for the Technical Report, that the sample procedures, processes, and security are reasonable and adequate.

### **Data Verification**

The verification of location and assay data in the drillhole database covers historic drilling and the verification of the data collected by Excelsior. No significant issues have been identified with respect to the data provided by Excelsior's quality assurance/quality control ("QA/QC") programs. QA/QC data are not available for the historical drilling programs at North Star, but Excelsior analyses dominate the assays used directly in the estimation of the mineral resources. Additionally, most of the historical data were generated by well-known mining companies, and the Excelsior drill data are generally consistent with the results generated by the historical companies.

Assaying and QA/QC procedures were industry standard. The TCu and ASCu assays used to estimate grades in the North Star model are acceptable for estimating mineral resources, based on RESPEC's review of the available data for repeat, check, duplicate, standard and blank assays, and on paired comparisons of assay data from different drilling campaigns.

### **Mineral Processing and Metallurgical Testing**

There are two fundamental parameters to estimate overall copper recovery and acid consumption for a commercial-scale ISR operation: metallurgical recovery and sweep efficiency. In essence:

- Metallurgical recovery determines the amount and rate at which the copper dissolves from, and acid is consumed by, the rocks when contacted by the leach solution.
- Sweep efficiency determines how much of the copper in the ground will be effectively contacted by leach solution during the mining process.

In addition to historic testing, Excelsior has commissioned several rounds of varied metallurgical testing from as early as 2011 through 2015 that were intended to demonstrate the copper recovery and acid consumption which could be expected in an ISR operation for the Gunnison Project. The most recent testing was conducted at Mineral Advisory Group Research & Development, LLC (MAG) in Tucson, Arizona under the direction and control of Dr. Ronald J. Roman, P.E. of Leach, Inc., Tucson, Arizona. The primary objectives of this most recent group of tests were to:

- Determine the amount of copper that could be leached from the different ore types,

- Determine the relationship between the percentage of copper leached and the acid consumption for the different ore types, and
- Establish ISR metallurgical parameters at a feasibility level of confidence.

In addition to these tests, several rinsing tests were conducted for the purpose of determining a rinsing protocol to be employed after a block of ore had been leached by the ISR technique.

### **New Column Testwork**

Since the 2014 PFS, two additional test programs have been completed. In the first of these, 19 modified column tests were run. The purpose of the new column testing was to determine how different ore samples would respond to the same leaching parameters to determine the variability of the ore with respect to the leachability.

Column tests were run on 51 to 52 kg of material crushed to minus 1 inch using 15 g/l sulfuric acid solution for up to 80 days. Separate columns were run for Lower Abrigo, Middle Abrigo, Upper Abrigo, and combined Martin and Escabrosa formations. The results show that the recovery of acid soluble copper ranges from 65% to +90% but was dependent on rock type with Lower Abrigo formation having the highest and shortest duration leach cycle and the Martin-Escabrosa column tests having the lowest recovery over the longest period. Nearly all of the column leach plots of recovery vs time had positive slopes at the end of leaching, indicating the leaching process had not been completed in 80 days. As with prior test work, additional copper was recovered from the solubilization of minerals which do not report to the traditional ambient acid-soluble copper assay. These minerals include slowly soluble oxide copper minerals and transitional sulfides. Therefore, the conventional “acid-soluble copper assay” gives a good, if not conservative, approximation of the amount of copper which can be leached from the ore in the presence of a weak sulfuric acid solution.

### **Core Tray Tests**

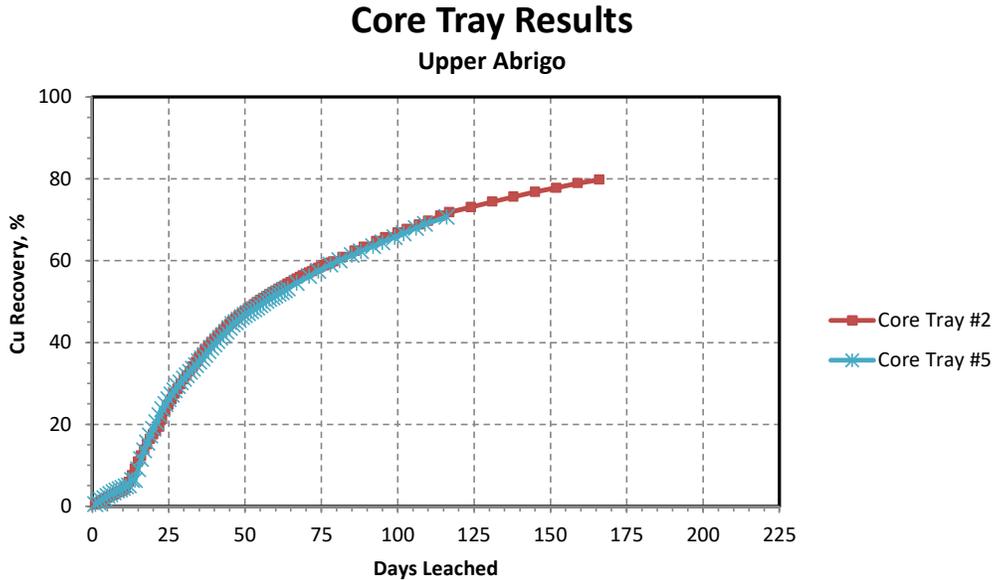
The second new test program termed “Core Tray” tests was intended to more closely simulate the in-situ recovery process than the modified column tests. In the Core Tray test pieces of core were mounted in epoxy in a tray with only the natural fracture surface exposed to the leach solution flowing across the top through the core tray.

Initially, the leach solution contained approximately 1.0 gram per liter (gpl) free acid. The free acid was increased in steps with time until it reached 15 gpl free acid. The data collected were recorded and an estimate of the following information about the response of the sample to leaching made:

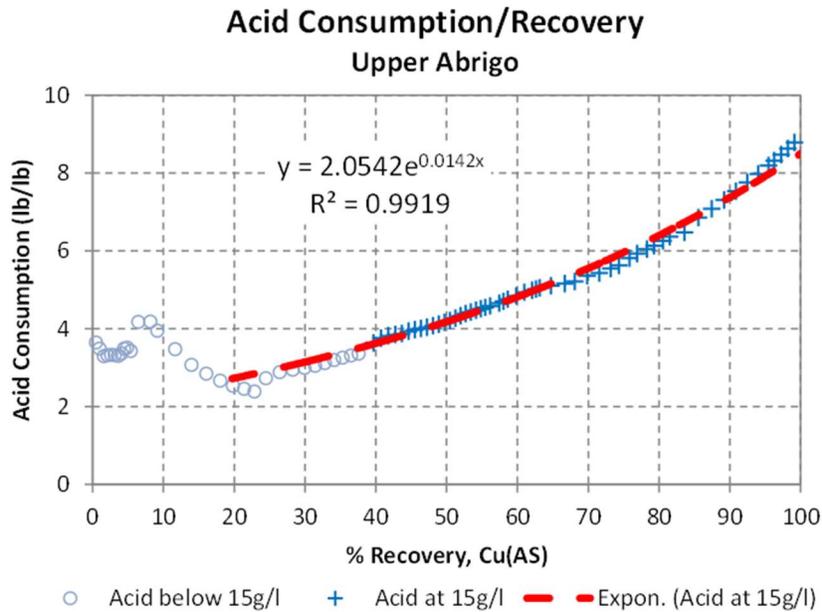
- Incremental and cumulative recoverable copper, lbs/100 ft<sup>2</sup> of fracture surface
- Incremental and cumulative recoverable copper, wt%
- Incremental and cumulative gangue acid consumption, lbs/100 ft<sup>2</sup> of fracture surface
- Incremental and cumulative net acid consumption, grams of acid/gram of copper leached
- From these results the following were determined:
  - Recovery/time relationship

- Acid Consumption/recovery relationship

The results of the Core Tray tests were stratified by rock type. **Figure 0-2** is an example of the results for the Upper Abrigo formation. For all formations, the time vs recovery curves still have positive slopes during the test times of up to 200 days. **Figure 0-3** is the Core Tray acid consumption data for the Upper Abrigo formation that indicates that the acid consumption curve steepens with recovery as expected.



**Figure 0-2: Core Tray Time vs Copper Recovery Results for Upper Abrigo Formation**



**Figure 0-3: Core Tray Copper Recovery vs Acid Consumption Results for Upper Abrigo Formation**

Sweep efficiency (or mining efficiency) for the North Star deposit is considered a function of fracture intensity. The most highly fractured rocks where most pieces of core are 4” or less are considered to have a sweep efficiency of 100%. In contrast, rocks that exhibit very weak fracturing are considered to have a low sweep efficiency of approximately 20%. The rocks at North Star exhibit a continuum of fracture intensities from very low (Fracture Intensity value of 1), to very high (Fracture Intensity value of 5), as determined by geological logging, geophysics and three-dimensional interpretation and modeling. To reflect this continuum, a polynomial algorithm was used to derive a predictive relationship between sweep efficiency and fracture intensity of the rocks.

Combining sweep efficiency with metallurgical test results and modelling of copper recovery it is possible to estimate cumulative copper recovery and acid consumption over a period of time for a 5-spot well pattern. The results of such calculations are shown in **Table 0-1** below. The overall effect is for a weighted average total copper recovery of approximately 48% (acid soluble recovery of 74%).

**Table 0-1: Predictive Model for Sweep Efficiency Factored, Cumulative Acid Soluble Copper Recovery and Acid Consumption for a 5-Spot Well Field Pattern**

<b>Cumulative Acid Soluble Cu Recovery (%)</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
Martin	40.2	55.8	65.9	72.8
Upper Abrigo	43.5	58.7	68.2	75.0
Middle Abrigo	42.0	57.6	67.6	74.9
Lower Abrigo	43.6	58.8	67.3	74.5
Bolsa, TQM, other*	43.6	58.7	67.2	74.4
Weighted average	41.9	57.3	67.0	74.0
<b>Cumulative Acid Consumption (lb/lb)</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
Martin	5.2	6.8	8.6	10.1
Upper Abrigo	4.7	6.0	7.5	8.9
Middle Abrigo	5.1	6.9	8.6	10.2
Lower Abrigo	3.7	5.0	5.8	6.9
Bolsa, TQM, other*	4.5	4.6	4.9	5.2
Weighted average	4.8	6.4	7.9	9.3

\*The Bolsa Quartzite, TQM and other minor host rocks make up less than 2% of the Probable Reserve and were not tested but are expected to perform similar to or better than the Lower Abrigo.

## ***Wellfield Issues***

Operation of the Gunnison wellfield has revealed that solution injection flowrates diminish with time, but that substitution of water for injected acidified raffinate restores the flowrate. The interpretation of this behavior is that CO<sub>2</sub> gas is accumulating in flow channels, impeding solution flow through the formation. Flow in the field was improved by flushing with neutral water under pressure, indicating that pH is highly likely to control gas solubility. After flushing with low solute water, flow improves substantially. Repeated acid leaching then repeated this cycle of leaching followed by loss of flow and the need to flush with fresh water again. The sustained improvement of flow rates due to the cycling of water and acid injection and recovery clearly indicates that the blocking mechanism is remediated on water injection but exacerbated by acid injection. Given the CO<sub>2</sub> comes from the calcite in the fracture system, then once this calcite has been dissolved or removed from a particular fluid pathway, CO<sub>2</sub> gas will no longer form along that pathway and restrict acid injection flows. In general, the data indicate flow rates can be improved with repeated cycling of freshwater injection, acid injection and recovery.

It has been documented experimentally that multiple immiscible phases flowing intermingled through a porous medium will generally do so at lower effective rates than either phase flowing on its own. According to relative permeability theory, the higher the saturation of one immiscible flowing phase (as a fraction of the connected pore space), the lower the effective permeability of the other phase. The magnitude of this reduction is generally larger for the wetting phase, which is acid/water for the Gunnison case. Each phase will generally establish an “immobile” saturation below which it cannot flow due to capillary pressure and interfacial tension effects. Typically, the phase with the greater affinity for the solid surface (called the wetting phase) will have a higher immobile saturation than that of the non-wetting phase.

Geochemical modelling and literature regarding CO<sub>2</sub> sequestration in saline waters indicates neutralized raffinate would have a similar albeit reduced capacity to dissolve/remove CO<sub>2</sub> gas as does freshwater. For each new block of wells, Excelsior plans to use acidified leach solution to dissolve calcite creating CO<sub>2</sub> gas and then cycle it with neutralized solution to dissolve the CO<sub>2</sub> and restore flow to the formation. Excelsior’s proposal to use neutralized raffinate to flush out CO<sub>2</sub> and dissolve calcite on a cyclical basis over a 12-to-15-month period is supported by the limited wellfield data available to date and is supported by the chemistry of raffinate versus water’s ability to sequester CO<sub>2</sub>.

## **Mineral Resource Estimate**

The North Star deposit mineral resource reported by RESPEC (M3, 2017) have been updated to include resources on lands newly acquired by Excelsior with the purchase of the Johnson Camp property. Table 0-2 is a summary of the oxide, transitional, and sulfide mineral resource tabulated at a total copper cut-off of 0.05% for oxide and transitional and 0.30% for sulfide.

**Table 0-3** is a summary of the sulfide portion of the deposit at a 0.50% TCu cut-off. Measured and indicated oxide and transition mineral resources are inclusive of mineral reserves.

**Table 0-2: North Star Oxide, Transition, and Sulfide Mineral Resource Summary  
Effective October 1, 2016**

<b>Resource Category</b>	<b>Short Tons (millions)</b>	<b>Total Cu (%)</b>	<b>Contained Copper (million pounds)</b>
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 and transitional, 0.30% TCu cut-off for sulfide			

**Table 0-3: North Star Deposit Total – Copper Resources  
Effective October 1, 2016**

<b>Oxide Resources @ 0.05% TCu Cut-off</b>			
<b>Resource Class</b>	<b>Short Tons (millions)</b>	<b>Total Cu (%)</b>	<b>Cu Pounds (billions)</b>
Measured	157.2	0.38	1.201
Indicated	502.1	0.28	2.782
Measured + Indicated	659.3	0.30	3.983
Inferred	108.0	0.16	0.351
<b>Transitional Resources @ 0.05% TCu Cut-off</b>			
<b>Resource Class</b>	<b>Short Ton (millions)</b>	<b>Total Cu (%)</b>	<b>Cu Pounds (billions)</b>
Measured	41.9	0.27	0.227
Indicated	172.0	0.23	0.785
Measured + Indicated	213.9	0.24	1.02
Inferred	79.2	0.18	0.279
<b>Oxide + Transitional Resources @ 0.05% TCu Cut-off</b>			
<b>Resource Class</b>	<b>Short Tons (millions)</b>	<b>Total Cu (%)</b>	<b>Cu Pounds (billions)</b>
Measured	199.1	0.36	1.427
Indicated	674.0	0.27	3.567
Measured + Indicated	873.2	0.29	4.995
Inferred	187.2	0.17	0.630
<b>Resource Class</b>			

	<b>Short Tons (millions)</b>	<b>Total Cu (%)</b>	<b>Cu Pounds (billions)</b>
Measured	1.6	0.39	0.012
Indicated	36.8	0.42	0.308
Measured + Indicated	38.4	0.42	0.32
Inferred	53.7	0.41	0.44

**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.
4. Sulfide Mineral Resources are reported at a 0.30% total-copper cut-off in consideration of potential mining by open-pit extraction.
5. Rounding may result in apparent discrepancies between tons, grade, and contained metal content.
6. The Effective Date of the mineral resource estimate is October 1, 2016.

**Mineral Reserve Estimate**

The mineral resource estimate discussed in Section 14 is used to estimate the probable mineral reserve estimate for the North Star deposit. **Table 0-4** shows the diluted Probable mineral reserve estimate as defined for the PFS. The mineral reserves are in the Probable category. The estimate includes material from the measured and indicated categories of the mineral resource and excludes inferred mineral resources. It does not include material from the sulfide zone.

**Table 0-4: Probable Diluted Reserve Estimate (October 2016)**

Short Tons (millions)	782.2
TCu Grade (%)	0.29
TCu Contained Copper (million lbs)	4,505
Average Total Copper Recovery (%)	48
Recoverable Copper** (million lbs)	2,155
*Probable reserves were defined from measured and indicated resources. Inferred resources were not converted into reserves.	
**Total includes copper losses to water treatment.	

The Probable mineral reserve estimate summary prepared for the PFS was created using data and input from RESPEC and Excelsior. It is based on RESPEC's resource estimate detailed in Section 14. It assumes the use of ISR as a mining method, which requires a wellfield (injection and recovery wells) and pumps pregnant leach solution to an SX-EW plant to recover the copper. The boundaries of the Probable mineral reserve were defined using economic parameters and then further modified to consider lost production under the freeway and along some lease boundaries. Excelsior developed a wellfield / production schedule for the Project, and the mineral reserve estimate is the sum of the production schedule, which is discussed in Section 16.

## Mining Method

Excelsior proposes to use the ISR method to extract copper from oxide mineralization located within the North Star Deposit (see location map on **Figure 0-1**). The ISR mining method was based on the fractured nature of the host rock, the presence of water-saturated joints and fractures within the ore body, copper mineralization that preferentially occurs along fracture surfaces, the ability to operate in the vicinity of Interstate 10, and to avoid the challenges of open pit mining in an area with alluvium overburden thickness ranging from approximately 300 feet to 800 feet.

The forecasted copper production for the Gunnison Project commences with an initial stage of 25 million pounds per annum (mppa) from Years 1 through 3, followed by a second stage of production of 75 mppa in Years 4 through 6, and followed a third stage reaching 125 mppa from Year 7 through Year 20 with a decline in production beginning in Year 21 through the end of the mine life in Year 24. The total amount of copper production forecasted over the 24-year LoM is approximately 2,165 million pounds. The following inputs and assumptions were used to generate the copper extraction forecast:

- Key physical parameters from RESPEC's 100-foot x 50-foot resource block model such as rock type, specific gravity of each rock type, total copper percentage and acid soluble copper percentage, fracture intensity, ore thickness, water table elevation, ore greater than 0.05% total copper, and lease boundaries (see Section 14 for details).
- Incremental acid soluble copper recovery curves over a 4-year recovery period and recovery factor (as discussed in Section 13.3); and
- Recovery well production rates described in Section 16.4.3.

ISR process injects a barren leach solution (lixiviant) with weak sulfuric acid into the ore body using a series of injection wells. The acidified solution dissolves oxide copper minerals as it migrates through the joints and fractures within the mineralized bedrock. Recovery wells surrounding each injection well extract copper-bearing pregnant leach solution (PLS) and combine to form the feed solution for the SX-EW process.

New blocks of wells require conditioning before leach solutions can be effective in removing copper due to the generation of CO<sub>2</sub> blocking the fluid flow paths, as presented in Section 1.11.3. Excelsior plans to alternate the circulation of acidified leach solutions to dissolve calcite with neutralized solutions to dissolve the CO<sub>2</sub> that is created the calcite.

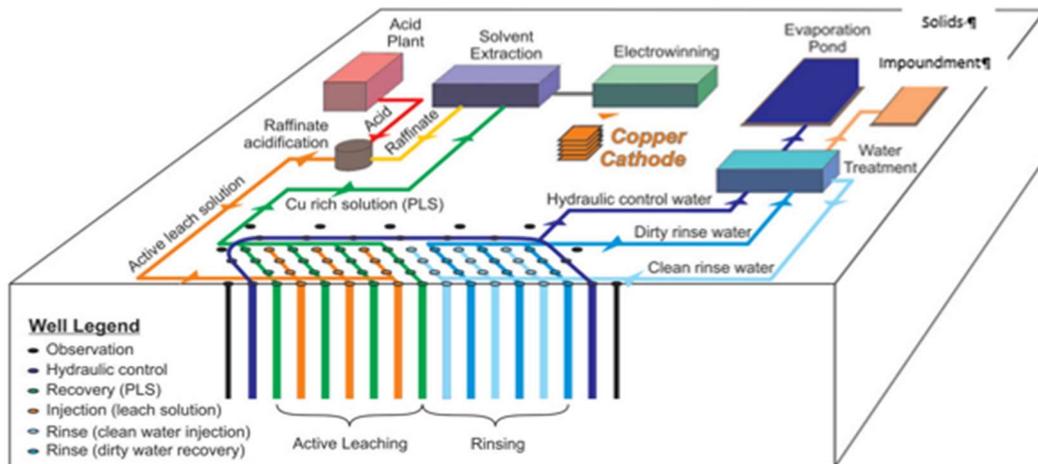
Acidified raffinate will be introduced into half of the injection wells. The extracted solutions from the recovery wells will be pumped to the PLS pond and on to SX-EW. A portion of the raffinate equal to the flow rate of acidified raffinate solution will be diverted to the water treatment plant (Section 1.15.1) to be neutralized and pumped to the other half of the injection wells. Thus, half the wells will be receiving acid and half neutralized solution to flush out the CO<sub>2</sub>. Approximately every month, the wells receiving acidified raffinate will be switched to neutralized raffinate and vice versa. The process will continue until the flow rates of the injection wells stabilize at the "pre-acid" flow rates signaling that the calcite has been removed and copper leaching can begin.

The wellhead design enables each of the wells to be operated as either a recovery well or an injection well. The change is facilitated by adjustments at the valve skids and connecting or disconnecting power to the well pump. This enables the operators of change and reverse the flow paths of solutions in the formation to resolve flow problems, reduce downhole scaling, and improve copper removal by varying the flow and direction of solution movement.

An additional one year of conditioning is projected to resolve the flow problems due to CO<sub>2</sub> generation in the fractures. Once the new wells are able to sustain pre-condition (before acid introduction) flow rates, the wells can be brought into full production. Copper and acid losses to neutralization in the water treatment plant have been estimated and are included in the financial model.

The SX-EW facility is designed to recover copper from PLS at a copper feed grade of approximately 1.6 gram per liter (gpl) (1.5 gpl net copper grade) to produce cathode-quality copper with 99.999% purity. The anticipated PLS flow rates are 3,800 gallons per minute (gpm) for Stage 1, 11,500 gpm for Stage 2, and 19,500 gpm for Stage 3. The process solutions are piped to and from the SX-EW plants in high density polyethylene (HDPE) piping. The process consists of the following elements (schematic representation in **Figure 0-4**):

- ISR wellfield
- Wellfield and drilling services building
- Lined PLS and raffinate ponds
- Solvent Extraction (SX) plant
- Tank Farm for handling process liquids
- Electrowinning (EW) Tankhouse equipped with an Automatic Stripping Machine
- Electrical substation
- Sulfuric Acid Receiving/Storage
- Administration offices, Security Building, and a Change House
- Plant Warehouse, Laboratory, and Plant Maintenance buildings
- Water treatment plant with a Clean Water Pond, Evaporation Ponds, and Solids Impoundments



**Figure 0-4: Recovery Process**

Depleted portions of the mineralized zone are rinsed by injecting non-acidic (clean) water to flush out the leach solution and reduce the metals and other constituents to acceptable concentrations. A block of mineralization is considered depleted when the copper grade of the recovered PLS falls below an economic cutoff. The rinsing process consists of a three-stage process consisting of an early rinse, rest period, and late rinse. Early rinsing flushes and dilutes the PLS remaining in the formation.

At a certain level of dilution, typically 90 percent, the wellfield is shut in allowing the intrinsic neutralization capacity of the formation to neutralize the acid in the diluted solution. The final stage of rinsing flushes out the neutralized solution until all regulated constituents are below stipulated concentrations. Injection and recovery wells are abandoned by grout injection from the bottom of the well when wellfield closure criteria have been satisfied.

Production wells will be designed to meet Underground Injection Control Class III requirements and will be constructed in accordance with the guidelines of ADEQ's Mining BADCT Guidance Manual (2004). Boreholes will be drilled using air rotary, direct mud rotary, reverse circulation mud rotary, or casing advance drilling methods. Borehole diameters will be sufficient to allow for installation of casing that will accommodate the pumps. The cased portions of the boreholes will be 12-inch nominal (small diameter injection/recovery wells and hydraulic control wells), 15-inch nominal (large diameter injection/recovery wells), and 10-inch nominal (observation and POC wells). The open borehole sections within bedrock will be 5 and 7 inches in nominal diameter. Well screen may be used if the borehole is unstable. The outer annulus of the cased portions of Class III wells will be grouted to 100 feet above the basin fill/bedrock contact (or static groundwater level, whichever is shallower). The ISR operations do not require hydraulic fracturing of the mineralized formation.

### **Project Infrastructure**

The primary access to the site will be from Interstate 10 via the Johnson Road exit between Benson and Willcox, Arizona. The mine access road to the Johnson Camp side of the property is approximately one mile long to the north. A new, asphalt paved access road to the Gunnison wellfield and plant site will head south and east from the Interstate exit for a distance of one mile.

The Johnson Camp mine has existing plant facilities, ponds and infrastructure and is currently in use for Stage 1 production. The JCM facilities will continue to be used for production at its rated capacity of 25 mppa for Stages 1, 2, and 3 of the mine plan.

The Gunnison SX-EW plant will be constructed for Stage 2 production in Year 3 for operation in Year 4 at an initial rate of 50 mppa. The electrowinning building (tankhouse) will be a steel building with corrugated metal roofing and siding. It will contain 80 electrowinning cells on one end of the building and the Automatic Stripping Machine, and the cathode handling equipment are on the other, with a paved cathode storage area outdoors. For Stage 3 production, 80 EW cells will be added to the opposite side of the building, mirroring the first 80 cells.

The Gunnison Tank Farm will be built for Stage 2 and have tankage added in Stage 3. It is uncovered and located downhill from the SX area and the tankhouse to facilitate gravity drainage of solutions to the Tank Farm. The Tank Farm has a concrete containment that drains to a sump with an oil-water separator to return spilled liquid to the proper location for recycling. There is a Plant Runoff Pond located downstream of the Tank Farm to capture any surface flows in the event of an upset condition at the plant.

Ancillary facilities needed to support the Gunnison Project include buildings, ponds, tanks, and trenches. Ancillary buildings include an Administration Building, Warehouse, Plant Maintenance building, Change House, Security Building (gatehouse), Wellfield Maintenance Building, Water Treatment Plant, and

Sulfuric Acid Plant-Cogeneration complex. Other facilities will include ponds, and tanks. The Gunnison Project will use the existing assay lab located at the Johnson Camp mine.

Power for the facility will be taken from an existing 69 kilovolt (kV) power line feeding the existing Johnson Camp Mine located on the north side of I-10. The power line approaches the plant site along the eastern boundary of Section 31 shown on **Error! Reference source not found.** The existing power line is owned by the Sulfur Springs Valley Electric Cooperative Inc. located in Willcox, Arizona. A 69kV power line was constructed from the JCM substation and followed the pipeline route to the Gunnison project area. A substation and transformer near the PLS pond are used to power the Stage 1 operation. This powerline will be replaced for Stage 2 operation. A tap will be taken from the power line on the eastern boundary and connected to the plant main electrical substation located near the EW building.

Fresh well water will be taken from existing wells and mine shafts on the Johnson Camp property and pumped to an existing 500,000-gallon fresh water/fire water storage tank located on Water Tank Hill at the JCM site. The lower 300,000 gallons in the storage tank will be reserved for fire water. Process water for plant use will be taken from the storage tank above this reserve level for fire suppression. The JCM site has an existing potable water system. The Gunnison site will be served by an additional 7,000-gallon potable water tank and chlorination system, which will use a water supply well to be constructed east of the operation during Stage 2 development.

### ***Water Treatment Plant***

Water treatment is required for two primary purposes, neutralizing raffinate for dissolution of carbon dioxide during wellfield conditioning and removing acid, metals, and sulfate from solutions to rinse the formation after it is depleted of copper. The neutralization process requires raising the pH to near neutral (~7). The removal of metals and sulfate requires nanofiltration in addition to the neutralization. Rinsing of the formation is not scheduled to begin until Year 8 of the mine plan, so the water treatment plant (WTP) is planned for construction in phases.

Since wellfield conditioning is required to prepare the ore blocks for copper production, Phase 1 of the WTP (Train A) will be constructed in Year -1. Phase 2 is required to increase the capacity of the Train A neutralization system in advance of the Stage 2 ISR production expansion to 75 mppa. The Phase 3 WTP expansion adds a second train (Train B) that includes two stages of pH adjustment, clarification, filtration, nanofiltration, and desaturation to produce low-sulfate water for rinsing. Phase 4 adds additional capacity to Train B to produce a higher flow rate of low-sulfate water for rinsing.

Solids produced by the Phase 1 WTP will be discharged to the Evaporation Pond. Starting with Phase 2, all of the solids from the various clarifiers are discharged to a solids impoundment for dewatering and final solids disposal. Water drained from the solids impoundment or pumped from the supernatant pool in the impoundment is returned to the WTP as influent to Train A.

### ***Acid Generation Plant***

A sulfur-burning sulfuric acid plant is scheduled to be constructed for use in Stage 3. A PFS-level design and cost estimate were produced for this study by NORAM Engineering (2022). The plant is designed to produce 1,650 tonnes of concentrated sulfuric acid per day. Sulfuric acid generation uses molten sulfur to make sulfuric acid through the process of oxidation, which produces heat. Waste heat from the acid making process produces steam as a by-product to generate 9 MW of electrical power, which reduces operating costs from \$150/short ton to \$52/short ton of acid. The facility includes molten sulfur day tanks, sulfur burner and waste-heat boiler, drying and adsorption tower area, cogeneration building, water treatment

building, power distribution building and substation, cooling towers, office building, sulfuric acid storage area, and a rail yard for unloading molten sulfur and sulfuric acid.

Molten sulfur is received at the plant in rail tank cars with a payload capacity of approximately 100 tons. The rail cars can be heated by steam to re-liquify the sulfur that may have solidified in transit. The molten sulfur is discharged to a receiving pit and pumped into heated storage tanks. Molten sulfur is oxidized with high-pressure air and converted to 98.5% sulfuric acid through a series of Adsorption, Interpass, and Final towers and sent to storage tanks.

Steam produced in the Waste Heat Boiler from cooling the sulfur burner is superheated and used to create electrical power in the steam turbine generator (STG). Steam production is proportional to the acid production: approximately 1.25 tons of steam per ton of acid. The Start-up/Emergency Boiler creates low-pressure steam needed to start up the sulfur burner and provide low-pressure steam when the process is down. Some low-pressure steam is extracted from the STG and used in the deaerator and molten sulfur heating system during the acid-making process. Condensate from the STG system is collected and polished (treated) to be reused as waste heat boiler feed water.

### ***Market Studies and Contracts***

The Company has an offtake agreement for the copper cathodes produced by the Project that is negotiated annually. The current agreement is for payment at the average monthly HG Copper COMEX settlement price.

The use of consensus prices obtained by collating the prices used by peers or as provided by industry observers and analysts is recognized by the Canadian Institute of Mining and Metallurgy (CIM) for technical reports and has the advantage of providing prices that are acceptable to a wide body of industry professionals (peers). These prices are generally acceptable for most common commodities, major industrial minerals, and some minor minerals.

The PFS has selected \$3.75/lb copper for all years.

Market studies indicate that the long-term prices for the major reagents are as follows.

Sulfuric Acid	\$150/st
Molten Sulfur	\$130/st
Lime	\$170/st

The price for sulfuric acid is predicted to be \$150/st by truck and \$130/st by rail after Year 6 for the remainder of the life of the project. The price of lime is \$170/st based on quotes for supply and estimates for the transportation costs.

### **Environmental and Permitting**

#### ***Environmental Studies***

Anthropological and floral and faunal studies were carried out by Excelsior in 2010 over the wellfield area. There is no potential for U.S. Fish and Wildlife Service endangered, threatened, proposed, and candidate species (special-status species) to occur in the study area.

An archaeological study was conducted that showed no cultural resource sites in the mining area. Further archeological and floral/faunal studies were conducted by WestLand Resources (2014) for areas covered by infrastructure such as the SX-EW plant, evaporation ponds, sulfuric acid plant and railway facilities. No cultural resource sites were identified.

### ***Groundwater Modeling***

A groundwater model was constructed by Clear Creek Associates (CCA) to cover the greater Gunnison Project area of 87.8 square miles in support of the Aquifer Protection Permit (APP) and Underground Injection Control Permit (UIC) applications. The model was constructed using a number of extensive datasets created by Excelsior, including a detailed mapping of fracture intensity, which is key to groundwater flow in the Project area.

The model demonstrates that control of mining solutions can be maintained with hydraulic control wells located around the wellfield. Predicted pumping rates for hydraulic control presently range from a total of 15 gpm to approximately 200 gpm in later years. Water produced during hydraulic control will be used in the process, recycled, or evaporated.

### ***Water Management***

The Project's water management plan was designed to make the most efficient use of water resources and eliminate discharges. During Stage 1 of the Gunnison Project, existing lined ponds at JCM will be used. As production increases and Stage 2 and Stage 3 facilities are constructed south of Interstate 10, new solution and water management ponds will be constructed to support the Project. These include: the PLS pond, Raffinate pond, Plant Runoff Pond, Clean Water pond, Recycled Water pond, Evaporation ponds, and Solids Impoundments, which contain the precipitate from the Water Treatment Plant. With the exception of the Plant Runoff and Clean Water ponds, the ponds will be constructed with a double liner and a leak detection and recovery system between the liners according to prescriptive BADCT design.

Excess solutions will initially be routed to evaporation ponds where mechanical evaporators will be installed. During later stages of the Project, when the Water Treatment Plant is in operation, approximately 80% of the influent will be treated for reuse in the process or for rinsing, and it will report to the Clean Water Pond. The solids from the WTP process will be pumped to the Solids Impoundments as precipitated solids and the concentrate brine and filter backwash from the WTP will be pumped to the evaporation ponds. Groundwater produced from hydraulic control pumping will be conveyed to the Clean Water Pond or, if impacted by PLS, to the Evaporation Pond.

### ***Geochemical Modeling***

Geochemical modeling of raffinate and rinsing solutions indicates that the following 3-step closure strategy will result in concentrations of regulated constituents below Aquifer Water Quality Standards:

- Step 1: Rinsing 3 pore volumes
- Step 2: A rest phase (approximately 200 days or more) until near neutral pH conditions are attained
- Step 3: Rinsing at least 2 additional pore volumes
- Hydraulic control is maintained during rinsing

### ***Community Relations***

Excelsior has developed a broad-based community relations and stakeholder outreach program in support of the Gunnison Project. Elements of this program include:

- Targeted stakeholder outreach to government, community, business, non-profit and special interest groups, and leaders at the local, county and state level.
- Development of community relation and communication tools and resources (e.g., Project website, Project e-newsletter, and presentation materials).
- Public open houses and technical briefings when appropriate.

Crucial elements of Excelsior’s community relations efforts will involve ensuring consistent and ongoing communication with all stakeholders and providing opportunities for meaningful two-way dialogue and active public involvement. Excelsior will focus on ensuring the public benefits related to the Gunnison Project, such as employment opportunities, supplier services, infrastructure development and community investment are optimized for the local communities.

### ***Economic Benefits***

Excelsior commissioned an Economic Impact Study through Arizona State University’s W. P. Carey School of Business which forecasts the increase in economic activity within Arizona during the construction phase and life of the mine. The economic impact of mine development to surrounding communities and the State in general:

- Over 800 direct and indirect new jobs.
- Employment benefits are distributed in mining, construction, professional & technical services, and government sectors as well as other sectors.
- The annual average value added to Arizona’s Gross State Product (GSP) during the entire Project life – pre-production, production, and closure – is approximately \$109 million with approximately \$28 million added within Cochise County. The total addition to the GSP is \$2.9 billion, with \$757 million locally within Cochise County.
- Economically modeling predicts the Project will have an average annual impact on state revenues of \$10.9 million for a total impact of \$295 million.

### ***Permitting***

The Gunnison Copper Project is permitted to the rate of 125 mppa of copper production and has been in early-stage operation since December 30, 2019. The Project is in compliance with all existing permits. There have been no new environmental related studies since the issuance of the various permits, therefore, the discussions on plans have been removed from this updated report.

Key federal, state, and local government environmental permits are listed in **Table 0-5** along with permits that may be required when the Project expands onto BLM lands or additional processing facilities are planned at the wellfield.

**Table 0-5: Environmental Permits**

<b>Agency</b>	<b>Permit</b>	<b>Description</b>	<b>Citation</b>	<b>When Required/ Permit No.</b>
<i>Federal</i>				
Bureau of Land Management	Mining	<ol style="list-style-type: none"> <li>1. Notice Level Operations may not exceed 5 acres.</li> <li>2. All operations on public lands that disturb the surface require a Plan of Operations will require an environmental assessment or environmental impact statement and posting of a reclamation bond.</li> </ol>	43 CFR §3809	Applicable only when mining on BLM lands
US Environmental Protection Agency (EPA)	Underground Injection Control	Establishes an Area of Review (AOR), beyond which mining related solutions shall not pass. Covers all subsurface well activities, i.e., monitor wells and injection/recovery wells located within the AOR. Will require amendment for life-of-mine production.	40 CFR §§124, 144, 146, 147 and 148	R9UIC-AZ3-FY16-1
US Fish & Wildlife Service	Incidental Take Permit	Mining activities that may affect species listed as endangered or threatened need to conduct studies to identify any targeted species and to apply for a permit to conduct their activities. Any identified threatened or endangered species identified in pre-mining surveys would need to be mitigated before mining could proceed.	50 CFR Sections 7 and 10	Non previously identified. New studies required prior to disturbing new ground
Nation Historic Preservation Act	Consultation and Mitigation	Requires Federal agencies to take into account the effects of their undertakings, such as construction projects, on properties covered by the NHPA.	42 CFR §137.88	None previously identified. New studies required prior disturbing new ground.
Section 404 of the Clean Water Act	Jurisdictional Waters of the US	Regulates the discharge of dredged or fill material into waters of the United States,	33 CFR §323	No jurisdictional waters identified

Agency	Permit	Description	Citation	When Required/ Permit No.
<i>State of Arizona</i>				
Arizona Department of Environmental Quality (ADEQ)				
Air Quality Division	Air Quality Control Permit	Ensures air pollutants from any source does not exceed the National Ambient Air Quality Standards. Will require amendment to incorporate for the Acid Plant option.	ARS §49-402	AQP-71633
Groundwater Section	Aquifer Protection Permit	Covers surface impoundments, solid waste disposal facilities, mine tailings piles and ponds, heap leaching operations. This permit requires designs for the proper management of process facilities, ponds, tailings impoundments, and includes monitoring requirements to ensure compliance with the permit. Will require amendment for life-of-mine production.	AAC R18-9 Articles 1 - 4	P-511633
	Reclamation & Closure Plan for Facilities covered by APP	Reclamation plan; estimated cost of executing reclamation plan and surety bond. The reclamation plan includes reclamation activities and post-closure monitoring, and bonding estimate must be approved by the agencies and the bond must be posted prior to commencement of construction. Will require amendment for life-of-mine production.	AAC R18-9 Articles 1 - 4	P-511633
Waste Management Division	EPA ID Number	Generators of hazardous waste must have an EPA ID prior to offering the waste for shipment.	ARS §49-922	Currently covered under Johnson Camp
	Pollution Prevention Plan	Plan identifying opportunities to reduce waste.	ARS §49-961 thru 973	Annually
	Toxic Release Inventory	Submit Form R for quantity of copper in waste rock.	40 CFR 372	Annually
Arizona Dept of Water Resources	Dam Safety Regulations	Obtain permit for qualifying dams and ponds	ARS §45-1201	Not Required
Arizona State Mine Inspector	Mined Land Reclamation Plan and Bond	Exploration and mining activities on private land with greater than 5 acres disturbance. Does not include facilities covered in Aquifer Protection Permit.	AAC R11-2-101 thru 822	Approved Oct 9, 2018

Agency	Permit	Description	Citation	When Required/ Permit No.
Arizona Department of Agriculture	Notice of Intent to Clear Land	Ensures enforcement of Arizona Native Plant Laws	ARS §3-904	60 days prior to disturbance
Arizona Game and Fish Department		Ascertain whether or not the mining operation would endanger fish and game habitat, etc.	AAC Title 12	No T&E Species identified
Arizona Department of Transportation	Encroachment Permit	Obtained to allow jack and bore installation of process solution pipelines under I-10.	AAC R17-3-502	Completed
State Historic Preservation Office		Submit a legal description with map of the area to be disturbed SHPO can inform applicants whether work will occur in a state designated historic district.	ARS §43-861	Only applies to public lands

### ***Closure and Reclamation Costs***

All Project facilities governed by Arizona’s Aquifer Protection Permit (APP) rules must be closed at the end of operations in accordance with the APP closure plan. Non-APP facilities, such as buildings and infrastructure, will be reclaimed in accordance with the Mined Land Reclamation Program overseen by the Arizona State Mine Inspector’s Office. This program requires the development of reclamation plans that will ensure safe and stable post-mining land use. The plans must include cost estimates and financial assurance for implementing the reclamation plans.

APP-regulated impoundments, including the PLS, Raffinate, Recycled Water, and Evaporation Ponds will be closed in accordance with the approved closure plan. The solution ponds containing liquids (PLS, raffinate, pipeline draindown, etc.) will be emptied and cleaned. Liners will be inspected for signs of leakage. The soils beneath prospective defects will be investigated and remediated as necessary. After clearance, the liner materials will be folded into the bottom of the pond for burial in place. Perimeter berms above the natural land surface will be pushed into the pond to cover the liner, contoured, and revegetated to shed surface runoff and minimize infiltration. The impoundments containing solids (Evaporation and Solids Impoundments) will be closed in place and covered to minimize infiltration. The edges of the liner will be folded inward and covered with a low permeability cap. The cap will be contoured and revegetated to shed surface runoff and minimize infiltration.

### **Capital and Operating Costs**

Capital and operating costs for the Gunnison Copper Project were estimated on the basis of the prefeasibility design, estimates of materials and labor based on that design, analysis of the process flowsheets and predicted consumption of power and supplies, budgetary quotes for major equipment, and estimates from consultants and potential suppliers to the Project.

### ***Capital Cost***

Capital cost (CAPEX) is divided into initial and sustaining capital costs. Stage 1 of the original Gunnison Project was constructed in 2020 with acid injection commencing in December of 2020.

For this study, Pre-Stage 2 initial capital is defined as improvements to Stage 1 in Years -2 and -1 of the Gunnison wellfield, mainly the addition of the Phase 1 water treatment plant. This plant is needed to neutralize raffinate to dissolve CO<sub>2</sub> from the subsurface.

Sustaining capital costs include the ongoing year-by-year additions to wellfield drilling and development, construction of the Stage 2 SX-EW and Stage 3 SX-EW plants on the Gunnison side of the property, each adding 50 million pounds per annum (mppa) of copper cathode capacity, the addition of a new 69 kV to 24.9 kV Gunnison substation, three expansions of the water treatment plant, the addition of water ponds and solids ponds to support plant operation and water treatment, the construction of a sulfur burning sulfuric acid and cogeneration plant, and the addition of a railroad siding and railcar unloading facility.

**Table 0-6: Summary of Capital Cost Spending Over the Life-of-Project**

Stage	Copper Production	Description	Total (\$000)
Initial Capital	25 mppa	Pre-production wellfield drilling, development & operations; Installation & operation of Phase 1 Water Treatment Plant	\$47,621
Phase 2 WTP (Year 2)		First expansion of water treatment; Installation of Feed Water Pond, Recycled Water Pond; & Solids Ponds 1A & 1B	\$7,629
Stage 2 (Years 2& 3)	75 mppa	Gunnison 50 mppa SX-EW; 80 EW cells; New Raffinate pond; new Gunnison substation, Gunnison ancillary bldgs. to support drilling and ISR mining, and the Railyard	\$178,043
Stage 3 (Year 5 & 6)	125 mppa	Wellfield Expansion; Gunnison 50 mppa SX-EW; 80 EW cells; Water Treatment Plant (WTP); Wellfield expansion; Railroad Siding & Railcar Unloading	\$104,263
Acid Plant (Years 5 & 6)		Sulfuric Acid Plant, Molten Sulfur Handling, Cogen Plant; Boiler Water Treatment (Optional)	\$159,860
Phase 3 WTP (Year 7)		Second expansion of water treatment plant for membrane filtration	\$47,435
Wellfield Development Sustaining Capital (All years)		All wellfield drilling costs, wellfield capital equipment and wellfield infrastructure development, Solids Ponds	\$526,990
Phase 4 WTP (Year 17)		Third expansion of water treatment plant for additional membrane filtration capacity	\$8,968
<b>Total</b>		<b>Initial &amp; Sustaining Capital Cost</b>	<b>\$1,080,808</b>

- The capital cost estimates on which this prefeasibility study is based were prepared from a level of engineering commensurate with a +/- 20% level of accuracy except where noted. Indirect capital costs were factored from the direct field cost.
- Indirect field mobilization is 1.5% of the direct field cost without mobile equipment.
- Temporary construction facilities is 0.5% of direct cost less mobile equipment.
- Construction power is 0.1% of direct cost less mobile equipment.
- Engineering Procurement and Construction management is 16.8% of the direct cost plus the indirect cost listed above.
- EPCM temporary facilities and utility setup were estimated as 0.5% of total constructed cost.

- Commissioning was estimated to cost 1% of plant equipment less mobile equipment.
- Vendor supervision is estimated as 1.5% of plant equipment costs during construction and 0.5% of plant equipment costs, each, for pre-commissioning and commissioning.
- Capital spare parts are estimated as 2.0% of plant equipment and commissioning spares are 0.5% of plant equipment.

Sustaining capital costs commences in Year 1 of the mine schedule and includes all capital expenditures that occur after pre-conditioning of the existing well block is completed by the end of Year -1. Starting in Year 1 Excelsior expects that Stage 1 production of PLS production will ramp up to a rate of 4000 gallons per minute (gpm). Stage 1 production will proceed for a period three years during which various wellfield installations will be made.

Sustaining capital costs include all capital expenditures that occur after production begins. For the Gunnison Project, major sustaining capital expenditures are planned for Year 3 when Stage 2 of the Project is constructed and Year 6 with Stage 3 of Project construction. Stage 2 includes construction of a 50 mppa SX-EW plant at the Gunnison site. Major facilities include a SX Facility with two extraction and one strip settlers; an 80-cell EW Tankhouse with an Automatic Cathode Stripping Machine; a Tank Farm to receive, store, process, and transfer process solutions; PLS and Raffinate Ponds, Sulfuric Acid Storage Tanks, a new Electrical Substation; and ancillary buildings including a Security Building with truck scale, Administration Building, Change House, Plant Warehouse, Plant Maintenance Building, and Wellfield Maintenance Building.

Stage 3 construction includes an 80 EW-cell expansion of the Gunnison SX-EW plant for an additional 50 mppa copper production (125 mppa total). Stage 3 also includes the installation of a Sulfuric Acid Plant with railroad siding/railcar unloading. Train B of the Water Treatment Plant will be added in Year 7. Separate capital cost build-ups were constructed for the Stage 2 and Stage 3 SX-EW plants, and the sulfuric acid plant. The Water Treatment Plant expansion CAPEX was included in the Stage 3 expansion CAPEX.

Sustaining capital beyond Year 7 is primarily related to wellfield development, the installation of additional evaporation ponds and solids impoundments for water management, wellfield rinsing and abandonment, and the expansion of the Water Treatment Plant.

The following costs and quantity estimates used by M3 were provided by others:

- Hatch (February 2022) provided phased design, capital cost for equipment and reagent consumption and of the Water Treatment Plant. The new design of the water treatment plant treats two streams of water: raffinate to neutralize for use in flushing the wellfield and water returned from the wellfield for rinsing operations in areas that have been depleted (in-situ leached) of economically recoverable copper.
- Kinley Exploration LLC (Kinley) (December 2021) provided update cost estimates for installation and development of extraction, injection, and hydraulic control wells, as well as well abandonment costs for existing wells and core holes and production wells that have been rinsed and are out of service.
- NORAM Engineering & Constructors of Vancouver, B.C. (January 2022) prepared a new PFS study for the sulfuric acid plant. They provided capital and operating cost for the sulfuric acid plant which will be constructed in Years 5 & 6 for operation in Year 7. The new study designs and costs

equipment for a plant producing 1650 tons per day of concentrated sulfuric acid. The previous NORAM study (2013) was based on a plant that produced 1350 tons per day.

- MHF Services (2016), a railroad consulting company, estimated the capital costs to install a railroad siding off of the Union Pacific Southern Pacific railroad and rail transfer and unloading yard for deliveries of acid and/or sulfur. This study was escalated for the current study and the MTO provided in the MHF study was re-estimated.

### Operating Cost

**Table 0-7** gives example years within Stages 1, 2, and 3 showing the breakdown of SX-EW operating cost by operating labor, reagents, power, maintenance labor and spare parts, and operating supplies.

**Table 0-7: Summary SX-EW Operating Cost (\$000)**

Cost Element	Stage 1 (Year 3)		Stage 2 (Year 6)		Stage 3 (Year 9)	
	Annual Cost (\$000)	\$/lb Copper	Annual Cost (\$000)	\$/lb Copper	Annual Cost (\$000)	\$/lb Copper
SX-EW Labor	\$1,657	\$0.07	\$3,020	\$0.04	\$3,111	\$0.02
Electrical Power	\$3,659	\$0.15	\$8,824	\$0.12	\$13,817	\$0.11
Reagents	\$833	\$0.03	\$2,479	\$0.03	\$2,948	\$0.02
Maintenance Parts & Services	\$1,752	\$0.07	\$6,642	\$0.09	\$6,780	\$0.05
Supplies & Services	\$197	\$0.01	\$508	\$0.01	\$799	\$0.01
<b>Total SX-EW Operating Costs</b>	<b>\$8,098</b>	<b>\$0.33</b>	<b>\$21,473</b>	<b>\$0.29</b>	<b>\$27,454</b>	<b>\$0.22</b>

### *General and Administrative Operating Costs*

General and Administrative (G&A) costs include labor and fringe benefits for administration and support personnel and other support expenses. G&A expenses are projected to increase slightly with Stages 2 and 3 but decrease in cost per pound of copper produced as shown in **Table 0-8**.

**Table 0-8: Summary General and Administrative Operating Cost**

Cost Item	Year 3		Year 6		Year 9	
	Annual Cost	\$/ lb Copper	Annual Cost	\$/ lb Copper	Annual Cost	\$/ lb Copper
Copper Cathode Produced	24,851,262		73,906,508		125,697,500	
Labor & Fringes	\$3,667,054	\$0.148	\$4,124,423	\$0.056	\$4,124,423	\$0.033
Accounting (excluding labor)	\$25,000	\$0.001	\$25,000	\$0.000	\$25,000	\$0.000
Safety & Environmental (excluding labor)	\$25,000	\$0.001	\$25,000	\$0.000	\$25,000	\$0.000
Human & Resources (excluding labor)	\$25,000	\$0.001	\$25,000	\$0.000	\$25,000	\$0.000

Security (excluding labor)	\$25,000	\$0.001	\$25,000	\$0.000	\$25,000	\$0.000
Assay Lab (excluding labor)	\$300,000	\$0.012	\$300,000	\$0.004	\$300,000	\$0.002
Office Operating Supplies and Postage	\$40,000	\$0.002	\$40,000	\$0.001	\$40,000	\$0.000
Maintenance Supplies	\$306,516	\$0.012	\$306,516	\$0.004	\$306,516	\$0.002
Propane Power	\$36,183	\$0.001	\$47,337	\$0.001	\$47,501	\$0.000
Communications	\$70,000	\$0.003	\$70,000	\$0.001	\$70,000	\$0.001
Small Vehicles	\$125,000	\$0.005	\$125,000	\$0.002	\$125,000	\$0.001
Claims Assessment	\$10,000	\$0.000	\$10,000	\$0.000	\$10,000	\$0.000
Legal & Audit	\$300,000	\$0.012	\$300,000	\$0.004	\$300,000	\$0.002
Consultants	\$150,000	\$0.006	\$150,000	\$0.002	\$150,000	\$0.001
Janitorial Services	\$50,000	\$0.002	\$50,000	\$0.001	\$50,000	\$0.000
Insurances	\$2,000,000	\$0.080	\$2,000,000	\$0.027	\$2,000,000	\$0.016
Subs, Dues, PR, and Donations	\$60,000	\$0.002	\$60,000	\$0.001	\$60,000	\$0.000
Travel, Lodging, and Meals	\$150,000	\$0.006	\$150,000	\$0.002	\$150,000	\$0.001
Recruiting/Relocation	\$125,000	\$0.005	\$125,000	\$0.002	\$125,000	\$0.001
<b>Total General &amp; Administrative Cost</b>	<b>\$7,489,753</b>	<b>\$0.301</b>	<b>\$7,958,276</b>	<b>\$0.108</b>	<b>\$7,958,440</b>	<b>\$0.063</b>

### *Water Treatment Plant Operating Costs*

An estimate of annual OPEX has also been developed based on vendor data, previous estimates for similar treatment systems and plant operating experience (Hatch, 2022). Major OPEX categories include labor, utility power, chemical reagents, process consumables, waste disposal and compliance sampling, analysis, and reporting. Annual wages for operators and electrical power cost are site specific and were provided by M3. A summary of operating costs for the Water Treatment Plant is provided in **Table 0-9**.

**Table 0-9: Water Treatment Plant Operating Cost Summary**

<b>Cost Element</b>	<b>Minimum (Year 4) (\$000)</b>	<b>Maximum (Year 20) (\$000)</b>	<b>LoM (\$000)</b>	<b>Costs</b>
Labor	\$906	\$906	\$25,371	
Power	\$94	\$4,289	\$38,484	
Reagents	\$1,853	\$47,223	\$469,686	
Maintenance	\$8	\$319	\$5,499	
<b>Total WTP Operating Costs</b>	<b>\$2,861</b>	<b>\$52,738</b>	<b>\$539,040</b>	

***Sulfuric Acid Plant***

The annual operating costs for the sulfuric acid plant, power plant, and associated facilities is \$34.4 million or \$58.29 per ton sulfuric acid and \$0.24 per pound of copper produced. The acid plant operating costs are summarized in **Table 0-10**.

**Table 0-10: Sulfuric Acid Plant Operating Costs**

<b>Annual Sulfuric Acid Production</b>	<b>589,475</b>	<b>short tons / year</b>	
<b>Annual Average Copper Production</b>	<b>124,672,205</b>	<b>lbs / year</b>	
<b>Cost Element</b>	<b>Annual Cost (\$000)</b>	<b>\$/ Short ton Acid</b>	<b>\$ / lb Copper</b>
Labor	\$5,114	\$8.68	\$0.04
Reagents	\$28,902	\$49.03	\$0.20
Fuel (propane)	\$631	\$1.07	\$0.01
Power (Credit)	(\$6,385)	(\$10.83)	-\$0.05
Maintenance	\$3,232	\$5.48	\$0.03
Supplies	\$2,865	\$4.86	\$0.02
<b>Total Acid Plant Operating Costs</b>	<b>\$34,359</b>	<b>\$58.29</b>	<b>\$0.24</b>

***Reclamation and Closure Cost***

The reclamation and closure costs for the Project include reclamation and closure activities at both JCM and Gunnison plant sites, reclamation of legacy heaps and stockpiles at JCM, well abandonment and closure of the ISR wellfield, and bonding costs. ISR rinsing and water treatment activities are not included in this category. Much of the well abandonment will be conducted concurrently with production. **Table 0-11** summarizes the total reclamation and closure costs for the Project. Details of the activities included in reclamation and closure are provided in Section 21.6. Approximately 45% (\$26.9 million) of these expenses are projected to be made prior to the end of production.

**Table 0-11: Summary of Reclamation and Closure Costs**

Area	Reclamation & Closure Costs (\$000)
JCM Buildings, Ponds, Waste Dump & Heap	\$5,084
Well Abandonment	\$17,708
Gunnison Plant, Ponds	\$24,647
Bond Fees	\$12,444
<b>Total Reclamation &amp; Closure</b>	<b>\$59,884</b>

**Economic Analysis**

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 operation based on the estimates of capital expenditures and production cost and sales revenue. The sales revenue is based on the production of a copper cathode.

The economic analysis was conducted on two cases: 1) a base case that includes the construction of a sulfuric acid plant in Year 7 of operation, lowering the price of acid from \$150/ton to \$52/ton (Base Case) and 2) an alternate case that uses purchased sulfuric acid for the life of the operation (Alternate Case). Both cases use a copper price of \$3.75/lb.

**Table 0-12** compares the financial indicators for both the Base Case and the Alternate Case. The payback period does not represent the payback solely for initial CAPEX. Rather, it includes the accumulation of initial capital to start the Project using the existing Johnson Camp SX-EW plant and sustaining capital from two successive stages of construction for the Gunnison SX-EW plant, sulfuric acid plant, the rail spur, and water treatment plant.

**Table 0-12: Financial Indicators**

	Base Case	Alternate Case
Years of Commercial Production	24	24
Total Copper Produced (million lbs)	2,154	2,154
LoM Copper Price (avg \$/lb)*	\$3.75	\$3.75
Initial Capital Cost (\$M)	\$47.6	\$47.6

Sustaining Capital Cost (\$M)	\$1,033	\$880
Payback of Capital (pre-tax / after-tax)	6.5 / 6.7	5.9 / 6.0
Internal Rate of Return (pre-tax / after-tax)	40.6 % / 37.5%	41.0% / 38.1%
LoM Direct Operating Cost (\$/lb Copper recovered)	\$0.95	\$1.35
LoM Total Production Cost (\$/lb Copper recovered)	\$1.22	\$1.63
Pre-Tax NPV at 7.5% discount rate (\$M)	\$1,435	\$1,178
After-Tax NPV at 7.5% discount rate (\$M)	\$1,167	\$976

\*Price provided by Excelsior

**Table 0-13** provides a sensitivity analysis for the Base Case project financial indicators with the financial indicators when other different variables are applied. The results indicate that Project economics are impacted the most by fluctuation in the copper price. Fluctuation in the initial capital cost has the least impact on Project economic indicators.

**Table 0-13: Base Case After – Tax Sensitivities (\$millions)**

<b>Copper Price</b>			
	<b>NPV @ 7.5% (\$M)</b>	<b>IRR%</b>	<b>Payback</b>
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
<b>Operating Cost</b>			
	<b>NPV @ 7.5% (\$M)</b>	<b>IRR%</b>	<b>Payback</b>
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
<b>Initial Capital</b>			
	<b>NPV @ 7.5% (\$M)</b>	<b>IRR%</b>	<b>Payback</b>
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 **Table 0-14**.

**Table 0-14: Alternate Case After – Tax Sensitives (\$millions)**

<b>Copper Price</b>			
	<b>NPV @ 7.5% (\$M)</b>	<b>IRR%</b>	<b>Payback</b>
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
<b>Operating Cost</b>			
	<b>NPV @ 7.5% (\$M)</b>	<b>IRR%</b>	<b>Payback</b>
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

<b>Initial Capital</b>			
	<b>NPV @ 7.5% (\$M)</b>	<b>IRR%</b>	<b>Payback</b>
Base Case	\$976	38.1%	6.0
20%	\$969	36.6%	6.1
10%	\$972	37.4%	6.1
-10%	\$979	38.9%	6.0
-20%	\$982	39.8%	6.0

### **Adjacent Properties**

The Gunnison Project lies within the porphyry copper metallogenic province of the southwestern United States. It is located in the Cochise Mining District, which is dominated by Cu-Zn skarns. With the acquisition of the Johnson Camp Mine, Excelsior now controls a majority of historical producing properties in the district. Tungsten and minor lead-silver-gold have been produced in adjacent properties in the district (Cooper and Silver, 1964). In particular, tungsten has been historically produced in the area west of the Gunnison Project in the northern half of the Texas Canyon quartz monzonite stock before and during World War I. Lead-silver was also historically produced from Paleozoic limestones in the Gunnison Hills east of the Gunnison Project in the early 1900s (Cooper and Silver, 1964). Mineralization on adjacent properties is not necessarily indicative of the mineralization on the Gunnison Project. The author has relied on reports by others (as referenced) for the information presented in this section and has been unable to verify the information.

### ***Johnson Camp Mine Heap Leach PEA***

Excelsior and its consultants, RESPEC Company LLC (RESPEC), T.P. McNulty & Associates, M3 Engineering & Technology Corporation (M3), and Clear Creek Associates (CCA) have prepared a preliminary economic analysis (PEA) for a copper heap leaching operation using the existing Burro and Copper Chief open pits on the Johnson Camp Mine (JCM) property. These deposits have been mined episodically since the mid-1970s and were last mined in 2010. The PLS from the proposed leach heap would be processed in the existing JCM SX-EW that is currently in operation.

Section 24 of the Technical Report contains the full PEA for the JCM heap leach option. A new mineral resource estimate was prepared by RESPEC for this study. JCM has a mineral resource of 20.8 million short tons of measured, 87.1 million short tons of indicated, and 51.0 million short tons of inferred mineral resources with respective total copper grades of 0.31% measured, 0.32% indicated, and 0.32% inferred.

A review of past metallurgical testwork including several rounds of column testing and literature on sulfide leaching suggests that a recovery of 95% of the acid soluble and cyanide soluble copper and 70% of the sulfide copper is reasonable. The mined copper is modeled to release 80% of the recovery in the first year on the leach pad and 20% in the second year. Overall life-of-mine recovery of total copper averages 77%.

RESPEC prepared a mining cost and conceptual mine plan for the remining of the JCM deposits. The mine plan includes 69.7 million tons of M&I and 15.6 million tons of Inferred with an average grade of 0.37%

TCu. The waste tonnage is 110.8 million tons, and the stripping ratio is 1.3:1 (waste to mineralized material). The conceptual mine plan is spread over 20 years with leaching. The first three quarters of Year -1 will be used to pre-stripping the pits for mining.

The new leach pad, Pad 5, will need to be constructed. Half of Pad 5 design will be constructed to handle an initial 25.7 million tons of leach material. The remainder of the current Pad 5 design will be built out in Year 4, and another addition (35 percent of Pad 5 capacity) will need to be added in Year 14. M3 has prepared a capital cost estimate for Pad 5 including earthworks, piping, and electrical installations.

The JCM plant is a fully operational solvent extraction-electrowinning facility. It was upgraded for operation of the Stage 1 Gunnison ISR wellfield production in 2019 and 2020. Solution from the new leach pad will be pumped to the existing solution ponds.

The financial indicators for the JCM heap leach operation are shown in Table 0-15.

**Table 0-15: Financial Indicators for JCM Heap Leach PEA**

<b>Item</b>	<b>LoM</b>
Years of Commercial Production	20
Total Copper Produced (klbs)	491,754
LoM Copper Price (avg \$/lb)	\$3.75
Initial Capital Cost (\$M)	\$58.9
Sustaining Capital Cost (\$M)	\$36.1
Payback of Capital (pre-tax / after-tax)	4.01 / 4.04
Internal Rate of Return (pre-tax / after-tax)	32.2% / 30.4%
LoM Direct Operating Cost (\$/lb Copper recovered)	\$1.95
LoM Total Production Cost (\$/lb Copper recovered)	\$2.24
Pre-Tax NPV at 7.5% discount rate (\$M)	\$212.5
After-Tax NPV at 7.5% discount rate (\$M)	\$180.0

The cost of reclamation of the JCM site including Pad 5, waste stockpiles, and existing leach pads with demolition of piping on the JCM property and bonding costs is estimated at approximately \$15.8 million.

### **Interpretations and Conclusions**

A Gunnison production schedule has been developed using input from independent consultants and existing Project data. The production schedule anticipates recovery of 48.4% of the mineral reserves resulting in production of 2,154 million pounds of cathode copper over a mine life of 24 years.

The base-case economic analysis indicates an after-tax NPV of \$1,167 million at a 7.5% discount rate with a projected IRR at 37.3%. The Base Case includes a sulfuric acid plant constructed in Year 6 to supply the acid for ISR copper extraction. If the sulfuric acid plant is replaced by purchased sulfuric acid supplied by rail, the after-tax NPV at a 7.5% discount rate is \$976 million with projected IRR of 38.1%. Payback is anticipated in 6.7 years of production for the acid plant case and in 6.0 years in the case using purchased sulfuric acid.

The economics are based on a \$3.75/lb copper price, a staged production schedule of 25 mppa for Years 1-3, 75 mppa for Years 4-6 and a full production design copper production rate of 125 mppa for Years 7-16, decreasing in the final 8 years of the mine life. Direct operating costs are estimated at \$0.95/lb of copper in the acid plant case and \$1.35/lb of copper using purchased acid. Initial capital costs are estimated at \$47.6 million. Sustaining capital costs of \$1,033 million are projected in the sulfuric acid plant case and \$879.7 million using purchased sulfuric acid.

### ***Project Risks***

Initial operations commencing in 2020 highlighted a number of challenges related to flow attenuation, lower than expected flow rates, and hence copper production. Project-specific risks are identified in Section 25.2 along with the measures that Excelsior envisages to mitigate these risk. The risks identified are in the categories of copper recovery, wellfield flow attenuation, reagent consumption and cost, wellfield design and spacing, gypsum formation and rinsing, and permitting difficulties. Flow attenuation (reduced flow rate and thus sweep efficiency) are believed to be due to CO<sub>2</sub> gas bubbles forming in the flow paths and restricting or blocking further flow along that flow path. It is possible other mechanism are also contributing to flow attenuation, or that CO<sub>2</sub> related attenuation is masking other problems within the wellfield that could result in reduced copper production, lower sweep efficiency or poor performance. Recommendations are provided to investigate potential risk items or advance mitigation strategies.

Mitigation of copper recovery challenges are based on adaptive management using data collected during operations. Mitigation of the flow attenuation due to CO<sub>2</sub> requires approximately 15 months of wellfield pre-conditioning using injection of neutralized raffinate cycled between periods of acidified raffinate injection and recovery. It may take longer than 15 months to clean out the CO<sub>2</sub> from effected wells. Availability of neutralized raffinate is addressed by the water treatment plant, which is supported by geochemical modelling with CO<sub>2</sub> dissolution using neutralized raffinate. Actual results may differ from the modelled results. Reagent consumption and cost can be mitigated by the addition of the acid plant, use of limestone from onsite sources, and obtaining lime from a closer source or the revitalization of a dormant lime kiln in Cochise County, Arizona. Mitigating well design and spacing issues and gypsum formation and rinsing problems are based on experience and adaptive management. Permitting difficulties associated with future additions and expansions will be managed by maintaining strong relationships with regulators, the local community, government officials, mining support groups, and other identified stakeholders.

### ***Project Opportunities***

Several opportunities have been identified which could enhance the viability and economic attractiveness of the Project. Opportunities, detailed in Section 25.3, include higher copper recoveries than predicted, increases in the price of copper, identification of additional resources, wellfield optimization, and reductions to capital costs, particularly in the initial stage of operation. Other opportunities for reducing costs and schedule include exploring the use of portable water treatment equipment for the first three years, use of onsite limestone either directly in water treatment or as a source for making lime at the site, and the possibility of restarting the dormant lime plant in Cochise County to supply lime at a reduced price for water treatment at the site.

## **Recommendations**

Based on the results of this Prefeasibility Study, it is recommended that Excelsior proceed with the Project through the engineering, procurement, and construction necessary to restart active production once financing is secured. The engineering for the water treatment infrastructure needs to be advanced in accord with the project development schedule. The drilling, mineral resource estimation, wellfield mine planning, wellfield drilling, and infrastructure development and the staged SX-EW plant have all been adequately defined. The initial wellfield is drilled, and solution is being pumped for processing, but the addition of raffinate neutralization capability is considered necessary to resolve the wellfield circulation and production difficulties. The following sections discuss areas for potential investigation and risk reduction.

There are four recommendations for investigating in-situ leaching with different lixivants: sulfurous acid, ammonium carbonate, ammonium sulfate with oxygen, and glycine leaching. These techniques have received some attention as opportunities to leach metals without the formation of gypsum. A program of laboratory testwork should be undertaken to determine if any of these lixivants are worth pursuing.

Flow attenuation associated with the addition of acidified leach solutions to the wellfield has been attributed to the buildup of CO<sub>2</sub> in the formation due to the dissolution of calcite and other carbonates. Continued research into the causes of the flow rate attenuation and buildup in the formation should be continued. Flow profiling and changes in wellfield operational parameters should be considered to learn more about the conditions which lead to reductions in flow and the methods which can be used to enhance flow.

Laboratory experimentation is recommended to ensure that neutralized raffinate is effective in dissolving CO<sub>2</sub> in the subsurface while the engineering, procurement, and construction is at an early stage to enhance the water treatment design criteria. Those experiments should also address the solubility of gypsum in mixed acidified and neutralized raffinate solutions to avoid conditions which might result in damage to the formation.

Well stimulation trials should be investigated as a mechanism to alleviate CO<sub>2</sub> blocking, improve connectiveness, increase flow rates and sweep efficiency. If well stimulation is effective, it has the potential to negate or reduce the amount of raffinate neutralization which would impact the design criteria for the neutralization plant. Well stimulation is allowed under Class III Underground Injection Control permits but requires EPA approval of the stimulation programs.

A scope of work and bid package should be assembled to select a water treatment vendor to design the water treatment system. Vendors should be screened and selected to advance the engineering process to shrink the implementation schedule. Selection criteria should favor rapid, low-cost solutions to demonstrate that the technology is effective in solving the wellfield challenges.

Excelsior has proposed a list and budget for additional work that will support the feasibility study. **Table 0-16** defines the cost of the technical activities.

**Table 0-16: Feasibility Budget for the Gunnison Project**

<b>Detail</b>	<b>Cost US\$</b>
<b>Metallurgical Testwork</b>	
Sulfurous acid leaching	\$50,000
Ammonium carbonate leaching	\$40,000
Ammonium sulfate leaching with oxygen	\$40,000
Glycine leaching investigation	\$65,000

<b>Subtotal metallurgical testwork</b>	<b>\$190,000</b>
<b>Wellfield Studies</b>	
Flow attenuation	\$150,000
CO <sub>2</sub> dissolution in neutralized raffinate testwork	\$100,000
Well Stimulation Trials	\$1,500,000
Flow profiling (mapping)	\$500,000
<b>Subtotal wellfield studies</b>	<b>\$2,250,000</b>
<b>Water Treatment Testwork</b>	
Raffinate neutralization testwork	\$50,000
Solids management and densification testwork	\$50,000
Solid liquid separation and filtration studies	\$75,000
<b>Subtotal Water Treatment Studies</b>	<b>\$175,000</b>
<b>Total</b>	<b>\$2,615,000</b>

### **Johnson Camp Mine**

*The following represents the summary of the Johnson Camp Mine PEA section of the Technical Report dated effective February 1, 2023 prepared by Richard Zimmerman, SME-RM; Jeffrey Bickel, CPG; Thomas L. Dyer, PE, SME-RM; Neil Prens, MMSA-QPM; Robert J. Bowell, PhD, C.Chem., C.Geol; Dr. Terry McNulty, PE, DSc; and R. Douglas Bartlett, CPG. Unless specifically noted otherwise, the following disclosure regarding the Johnson Camp Mine has been prepared under the authority and supervision and with the consent of the authors, each a “qualified person” within the meaning of NI 43-101. The full Technical Report is incorporated by reference into this AIF and is available under Excelsior’s corporate profile on SEDAR at [www.sedar.com](http://www.sedar.com). All references in this summary to Sections are to the Sections of the Technical Report.*

M3 Engineering & Technology Corporation (M3) was commissioned by Excelsior Mining Corp. (Excelsior) to prepare a preliminary economic assessment (PEA) in accordance with the Canadian National Instrument 43-101 (NI 43-101) standards for reporting mineral properties, for the Johnson Camp Mine Heap Leach Project (the “JCM Project” or the “Project”) in Cochise County, Arizona, USA. The Project’s goal is to supplement mining and heap leaching at Excelsior’s Johnson Camp Mine using conventional heap leaching and processing at the JCM solvent extraction-electrowinning (SX-EW) plant that is fully operational. The plant was upgraded in 2019 and 2020 to treat PLS solutions from the Gunnison ISR Project located nearby to effect copper recovery by SX-EW, producing salable copper cathodes.

The Johnson Camp Mine is located about 65 miles east of Tucson, Arizona, on the southeastern flank of the Little Dragoon Mountains in the Cochise Mining District. The property is within the copper porphyry belt of Arizona. The Johnson Camp Mine contains two open pit mines, the Burro pit and the Copper Chief pit, that contain copper oxide, transition, and sulfide mineralization with associated molybdenum (not recovered by heap leaching), in potentially economic concentrations. Mining by a former owner, Nord Resources Corporation (Nord), ceased in 2012.

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) by Year 3.

To restart the Johnson Camp Mine 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 can commence. Piping of PLS and raffinate lines from Pad 5 to the JCM ponds also fits within this time frame.

Excelsior plans to use a contract miner for all mine activities and its own staff for heap leach management, process plant operation, and general site management.

Excelsior selected M3 and other third-party consultants to prepare mine plans, a mineral resource estimate, a conceptual mine plan for economic assessment, a high-level capital cost for mine redevelopment and Pad 5 construction, to complete environmental studies, and prepare a discounted cash flow model to assess the viability of the JCM combined oxide, transition, and sulfide heap leach project, presented in the Technical Report. All consultants have the experience and capability to support the Project, as required and within the confines of their expertise.

The costs are based on fourth quarter 2022 U.S. dollars.

## **Key Data**

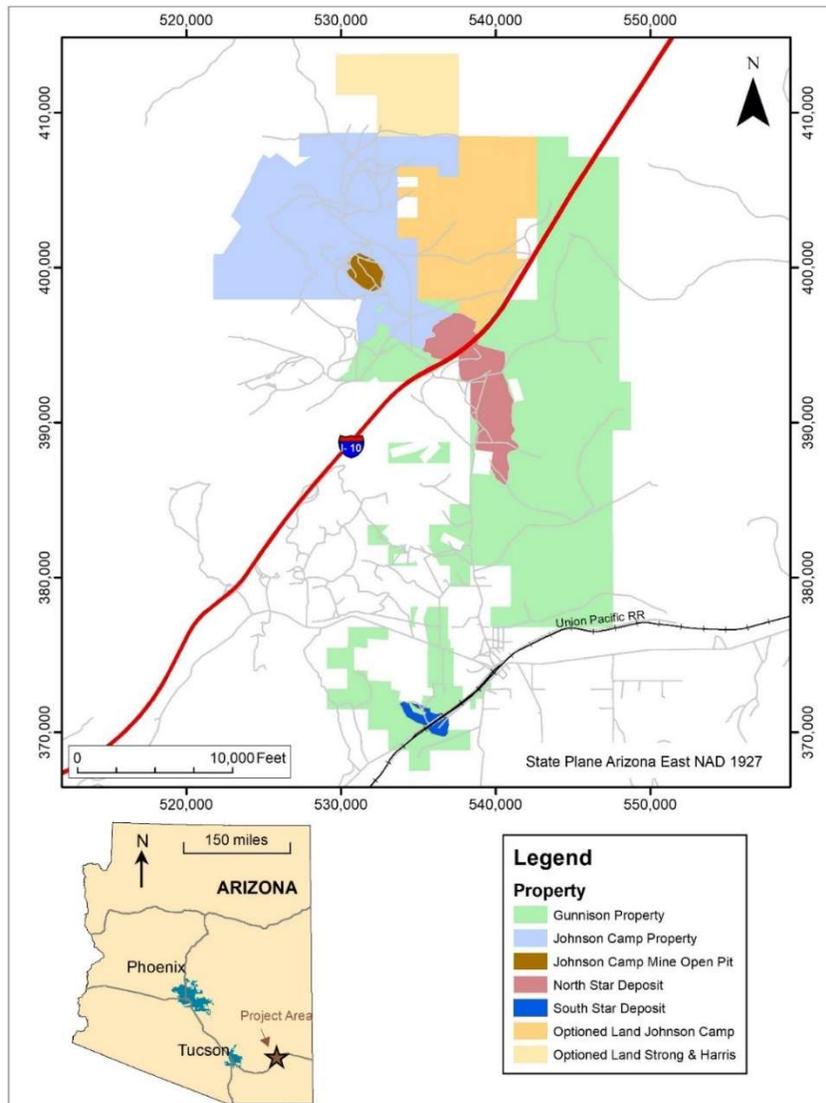
The key results of this study are as follows.

- The Project currently has a pit constrained mineral resource of 20.8 million short tons of measured, 87.1 million short tons of indicated, and 51.0 million short tons of inferred mineral resources with respective total copper grades of 0.31% measured, 0.32% indicated, and 0.32% inferred.
- The conceptual mine plan includes 85.3 million short tons of mineralized material mined over 20 years. The waste tons mined are estimated to be 110.8 million short tons, yielding a stripping ratio of 1.3 to 1 (waste to mineralization).
- The estimated copper production is approximately 492 million lbs of copper over 21 years.
- Life of mine total copper recovery is estimated to be 77%, made up of 95% acid soluble and cyanide soluble copper recovery and 70% primary sulfide copper recovery. Recovery of copper is estimated to be 80% during the first year after placement on the leach pad and 20% during the second year.
- Much of the primary sulfide copper mineralization is chalcopyrite, which typically responds very poorly to conventional heap leaching conditions; however, the unusually high pyrite-to-chalcopyrite ratio of about 3.5-to-1 makes the resource a good candidate for accelerated conditions that are promoted through rapid oxidation of the pyrite by microbial attack with ensuing increased rock and solution temperatures and supplemented by forced aeration.
- Accelerated leaching of all sulfide minerals will be enhanced by crushing and agglomeration with acidified raffinate that has been inoculated with native microbial cultures.
- The estimated initial capital cost is \$58.9 million split between mine pre-production costs, fuel and explosives, refurbishment of the crushing-conveying system, and construction of the new Pad 5 leach pad.

- The total cost for reclamation and closure, including demolition of surface piping is estimated to be \$15.8 million and averages \$0.03 per pound of copper recovered.
- The economic analysis for the Base Case before taxes indicates an Internal Rate of Return (IRR) of 32.2% and a payback period of 4.01 years. Based on a copper price of \$3.75 per pound, the Net Present Value (“NPV”) before taxes is \$212.5 million at a 7.5% discount rate.
- The economic analysis for the Base Case after taxes indicates that the Project has an IRR of 30.4% with a payback period of 4.04 years. The NPV after taxes is \$180.0 million at a 7.5% discount rate.
- Sensitivities for NPV@7.5%, IRR, and payback period for copper price, operating cost, and capital cost were determined for the JCM open pit, heap leach project. At a copper price \$4.50/lb, 20% higher than the base study price of \$3.75/lb, the after-tax IRR is 49.2% and the NPV is \$321 million. A reduction in copper price (\$3.00/lb) of 20% yields an after-tax IRR of 11.5% and an NPV@7.5% of \$32 million.
- Bacterial oxidation of sulfide minerals will reduce acid consumption for the heap leaching operation so that after Year 2, acid may not be required for the heap leach pad, only for the agglomerator.

### **Property Description and Location**

The Project is located in Cochise County, Arizona, approximately 65 miles east of Tucson in the historic Johnson Camp mining district. **Figure 0-5** is a general location map and location of the Johnson Camp Mine on the north side of US Interstate 10 (I-10). The light blue color represents the Johnson Camp property boundary and the brown color shows the location of the Burro pit.



Source: Excelsior, 2023

**Figure 0-5: Project Location Map**

The Project is held by Excelsior through its wholly owned subsidiary Excelsior Mining Arizona, Inc. (Excelsior Arizona). Acquisition of the Nord Resources Corporation assets took place through a court-appointed receiver in December 2015.

**Accessibility, Climate, Local Resources, Infrastructure and Physiography**

The Project is located in a sparsely populated, flat to slightly undulating ranching and mining area about 65 road miles east of Tucson, Arizona. The Tucson metropolitan area is a major population center (approximately 1,000,000 persons) with a major airport and transportation hub and well-developed infrastructure and services that support the surrounding copper mining and processing industry. The towns of Benson and Willcox are nearby and combined with Tucson can supply sufficient skilled labor for the Project.

Access to the Project is via the I-10 freeway from Tucson and Benson to the west or Willcox to the east. The Johnson Camp Mine can be accessed via good quality dirt roads heading approximately 1 mile north from the Johnson Road exit from I-10.

The elevation on the property ranges from 4,800 to 5,300 feet above mean sea level in the eastern Basin and Range physiographic province of southeastern Arizona. The climate varies with elevation, but in general the summers are hot and dry, and winters are mild.

Vegetation on the property is typical of the upper Sonoran Desert and includes bunchgrasses, yucca, mesquite, and cacti.

## **History**

Modern mining and leaching operations at the Johnson Camp Mine began in the 1970s by Cyprus Minerals. Successor owners and operators include Arimetco, who mined JCM in the 1980s-early 90s, North Star, Summo Minerals, and Nord Resources Corporation who commenced mining in 2009 until 2012. Nord mined fresh material until mid-2010 and maintained leaching operations until late 2015, when the property was purchased by Excelsior.

## **Geological Setting and Mineralization**

The Johnson Camp Mine is located within the Mexican Highland region of the Basin and Range province, which is characterized by fault-bounded mountain ranges, with large intrusions forming the cores of the ranges. The Project lies on the eastern edge of the Little Dragoon Mountains within the Cochise mining district. The Little Dragoon Mountains are an isolated, fault bounded horst block comprised of rocks spanning from 1.4 billion years ago (Ga) Pinal Group schists to Holocene sediments. The southern portion of the Little Dragoon Mountains consists predominately of the Texas Canyon Quartz Monzonite of Tertiary age, whereas the Pinal Group schists and a sequence of Paleozoic sedimentary units dominate the northern half of the range. At Johnson Camp, the important Paleozoic host is the Cambrian Abrigo Formation. The Texas Canyon Quartz Monzonite is porphyritic intrusion that crops out to the southwest of the Burro Pit at the Johnson Camp Mine.

Several deformations have occurred in the area with the most recent being the latest Cretaceous-Paleocene Laramide Orogeny compression, followed by Miocene and younger Basin and Range extension that has modified the topography to its current appearance.

The stratigraphy of the Burro pit and Copper Chief pit includes, from lowest to highest, Pioneer shale, diabase sill, Bolsa quartzite, three members of the Abrigo formation, and the Martin dolomite. Most mineralization is hosted in the lower and middle members of the Abrigo formation.

Moderate to intense calc-silicate alteration including garnet, epidote, and diopside are common in various assemblages, most intense calc-silicate alteration in the Lower and Middle Abrigo formations. Pervasive quartz veining occurs in both the Abrigo Formation and underlying Bolsa Quartzite throughout the Johnson Camp Mine area. Quartz vein orientations are typically sub-parallel to the stratigraphic units.

Primary copper mineralization at the Johnson Camp Mine is dominantly found along bedding planes or in veins and replacements as chalcopyrite along with quartz and pyrite, closely associated with skarn and calc-silicate alteration in the rock. The host formations are generally within the Bolsa Quartzite, Diabase Units, Lower and Middle Abrigo Formations. Oxidized mineralization consists of chrysocolla, malachite, copper limonite, and manganiferous wad; decreases with depth; but penetrates faults and stratigraphic contacts. Supergene chalcocite and occasional native copper occur generally below the oxidized zone. Below the

supergene zone, the mineralization transitions to primary sulfides with local zones of supergene mineralization.

### Deposit Types

The Johnson Camp Mine copper deposit is a type of copper skarn. The copper skarn at Johnson Camp and collectively in the Cochise mining district is presumably related to the Texas Canyon Quartz Monzonite. Copper skarns generally form in calcareous shales, dolomites, and limestones peripheral or adjacent to the margins of diorite to granite intrusions that range from dikes and sills to large stocks or phases of batholithic intrusions, and frequently are associated with mineralized intrusions. Copper mineralization forms along structurally complex and fractured rocks and convert the calcareous shales and limestones to andradite-rich garnet assemblages near the intrusive body, and to pyroxene and wollastonite rich assemblages at areas more distal to the intrusive that are subject to retrograde alteration with mineral hydrated silicate assemblages that overprint earlier garnet and pyroxene.

Mineralization at Johnson Camp occurs approximately 500 ft northeast of known occurrences of the Texas Canyon Quartz Monzonite intrusion as proximal skarn related to a porphyry copper system. This assumption is supported by the high abundance of garnet-epidote alteration in the mineralized zones, and the characterization of the deposits in numerous historical publications.

### Exploration

Open pit mining commenced in 1975 by Cyprus and replaced the underground mining operations following the completion of an exploratory drilling program that defined the reserve of the Burro deposit. Cyprus and Arimetco collectively drilled 254 holes within both the Burro and Copper Chief pits. In 1999, Nord focused drilling exploration efforts on prospective targets outside of the pits that added no copper mineralization could be classified as reserves. Excelsior completed an exploration drilling program in 2022.

### Drilling

The Johnson Camp Mine database contains 357 drill holes total 121,536 feet of drilling. Several drilling campaigns and operators span the contents of the database. Based on RESPEC’s current knowledge, historical operators of the campaigns include Cyprus Mining (187 drill holes), Arimetco (83 drill holes), Nord (31 drill holes), Sumitomo (12 drill holes), and 16 drill holes were completed by an operator unknown to RESPEC. Excelsior drilled 44 holes. Drilling is concentrated in and immediately around the historically producing open pits.

**Error! Reference source not found.** shows the collar locations for the drill holes in the database and **Table 0-17** is a breakdown of the drilling and operators in the Johnson Camp Mine area.

**Table 0-17: Summary of Johnson Camp Drilling**

Cyprus Mining	1960 – 1986	187	61,417
Arimetco	1989 - 1997	83	24,638
Summo USA Corp.	1998	12	5,800
Nord Resources Corp.	2008-2010	31	14,368
Excelsior	2022	44	15,313
<b>Totals</b>		<b>357</b>	<b>121,536</b>

The drilling sampling procedures provided samples that are representative and of sufficient quality for use in the resource estimations discussed in Section 24.14. The QP is unaware of any sampling or recovery factors that materially impact the mineral resources discussed in Section 24.14.

There is a general lack of down-hole deviation survey data for the historical holes in the Johnson Camp Mine area. The paucity of such data is not unusual for drilling done prior to the 1990s, the lack of deviation data contributes a level of uncertainty as to the exact locations of drill samples at depth. However, these uncertainties are mitigated to a significant extent by the vertical orientation of nearly all drill holes, and the open-pit nature of any potential future mining operation that is based in part on data derived from the historical holes.

### **Sample Preparation, Analysis and Security**

All of the historical drilling, sample preparation and analysis of the samples presented in the Technical Report was under the control of the previous property owners. Excelsior drilled forty-four holes in 2022 and conducted core-duplicate sampling in 2016 and 2017.

The laboratory sample preparation and analysis procedures used by the previous owners of the deposits are unknown; however, major commercial laboratories using best practices at the time completed the majority of analyses. Additionally, most of the historical data were generated by well-known mining companies.

The data, information, samples, and core from the deposits have been under the control and security of AzTech Minerals since November 2006 and then Excelsior since October 2010. The original information and samples are stored at Excelsior's core storage facility in Casa Grande, with numerous copies held by Excelsior at its Phoenix, Arizona office.

The certification status of some of the historical analytical laboratories is not known. Southwestern Assayers and Chemists is the predecessor to Skyline. Mr. Bickel believes the historical labs were independent commercial laboratories that were widely recognized and used by the mining industry at that time.

Documentation of the methods and procedures used for historical sample preparation, analyses, and sample security, as well as for quality assurance/quality control procedures and results, is incomplete and in many cases not available. Despite this, some of the historical assay certificates have been preserved and Excelsior was able to reasonably duplicate the original results (described in 24.12.2.4). The QP is satisfied that the historical analytical data are adequate to support the current resources, interpretations, conclusions, and recommendations summarized in the Technical Report.

Excelsior's sample preparation and analyses were performed at a well-known certified laboratory, and the sample security and QA/QC procedures are adequate to support the current resources, interpretations, conclusions, and recommendations summarized in the Technical Report.

### **Data Verification**

Data verification, the process of confirming that data has been generated with proper procedures, has been accurately transcribed from the original source and is suitable to be used, has been performed by Mr. Bickel through reviews of original data and certificates, drill core, a site visit, and audits and analyses of Excelsior's drill-hole database. As a part of the verification of historical assays, RESPEC also analyzed core-duplicate data generated by Excelsior in 2016 and 2017 and compared the results to historical assays. The results are discussed in Section 24.12. There were no limitations on, or failure to conduct, the data verification for the

Technical Report other than those discussed in the Technical Report. Mr. Bickel has verified that the project data are adequate as used in the Technical Report, most significantly to support the estimation and classification of the mineral resources reported herein.

### **Mineral Processing and Metallurgical Testing**

Metallurgical testwork has been conducted in numerous campaigns by previous operators and owners including Superior Oil, Quintana Minerals, Phelps Dodge, Magma Copper, Arimetco, and Nord Resources. Testwork included a number of rounds of bottle roll and column testing. Early test programs indicated that total sulfuric acid consumption (before the electrowinning credit) will be approximately 9 lb H<sub>2</sub>SO<sub>4</sub>/lb of copper dissolved, that average PLS grade will be as high as 1.5 gpl Cu, and that about 65% of the total copper will dissolve, while about 95% of the ASCu should dissolve after sufficient contact time. This prior test work did not include augmented sulfide and transitional mineral leaching.

Nord Resources conducted eight column tests in 2011 on crushed and agglomerated material and 35 column tests in 2012 on crushed material minus 1" and minus 6". Of these columns, 23 provided useful results to determine copper recovery and acid consumption. The column testing programs are described in Section 24.13.2.1. The results of some of the column tests produced ambiguous results regarding acid consumption (higher in 6" crush than 1" crush).

There were only a few comparisons between fine and coarse column feeds, but they do not always make a strong case for converting JCM from ROM to crushing and agglomeration. A minus 6-inch fragment population probably does not represent ROM very faithfully, so it is possible that ROM underperforms a finer heap feed sufficiently to consider reactivating the crushing and screening plant. Crushing may be especially important as the pits deepen into transition mineralization.

Lacking recent laboratory testing and comparison of results with current heap performance, a meaningful prediction of near-term operating results requires further test work. However, for the purpose of this study it is not unreasonable to expect 95% average ASCu and CNCu extraction and net acid consumptions in pounds per ton of mineralized material as follows: Upper Abrigo, 45; Middle Abrigo, 55; Lower Abrigo, 40; Bolsa Quartzite, 25; and Martin/Escabrosa, 70.

Excelsior management, in collaboration with an industry leading sulfide leaching organization, have launched a sampling and metallurgical column testing program for material from the Burro pit, focusing on sulfide and mixed sulfide/transition/oxide mineralization. As the JCM pits deepen and non-ASCu copper minerals begin to overtake predominantly non-sulfide species, total copper extraction will decline, and the rate of extraction will diminish. Augmented bio-leaching is designed to counteract this effect by leaching the sulfide and transitional mineralization.

Crushing has been done at Johnson Camp, and the original crushing plant could be reactivated after repairing and upgrading primary and secondary crushers and screens. Excelsior should consider conducting additional parallel large-diameter column (or equivalent) tests on a bulk sample. These tests should mimic future operating conditions as faithfully as possible and should record standard parameters, including ORP/EMF.

### **Mineral Resource Estimate**

The mineral resource estimation for the Johnson Camp Mine project was completed for disclosure in accordance with NI 43-101 with an effective date of July 13, 2022. The Johnson Camp Mine mineral resources are classified in order of increasing geological and quantitative confidence into Inferred, Indicated, and Measured categories in accordance with the "CIM Definition Standards - For Mineral

Resources and Mineral Reserves” (2014). All mineral resources in this estimate are classified as Inferred. A full description of the Johnson Camp mineral resource estimation methodology is presented in Section 24.14.

The Johnson Camp Mine copper resources were modeled and estimated using information provided by Excelsior. The information is derived from historical core holes drilled by Cyprus Mining, Arimetco, Summo USA Corp., and Nord Resources Corp. The drill hole database also includes analyses performed by Excelsior on the historical core.

Mineral domains were modeled by RESPEC to respect the lithologic and structural interpretations of the deposit. Following statistical evaluation of the drillhole data, mineral domains were modeled on cross sections for total copper (“CuT”). Low-, mid-, and high-grade domains were modeled for total copper and were numbered 100, 200, and 300, respectively. Grade domains were interpreted based on copper grade domains that ideally correspond to the underlying geology. The grade domain ranges are shown in **Table 0-18** below:

**Table 0-18: Grade Domain Ranges**

Domain	Total Copper (%)
100	~0.025 to ~0.15
200	~0.15 to 0.7
300	> ~0.7

Soluble copper ratios were estimated within the total copper domains and lithologic units and used to calculate a soluble copper grade. A full description of the soluble copper estimate is in Section 24.14.6.2.

Mineral resources were estimated for total copper (“CuT”), acid-soluble copper (“CuAs”), cyanide-soluble copper (“CuCN”), and sulfide copper (“CuSu”). Once the final estimate was complete, a pit optimization using the inputs described in Section 24.14.10 were applied to the resource to evaluate if it has reasonable prospects for economic extraction. The contained resources within the cutoff grade defined by the pit optimization are given in **Table 0-19**.

**Table 0-19: Johnson Camp Mineral Resources**  
(0.1% CuT cut-off)

Classification	Tons	% Cu	% CuAs	% CuCN	% CuSu	lbs CuT	lbs CuAs	lbs CuCN	lbs CuSu
Measured	20,771,000	0.31	0.13	0.05	0.09	127,545,000	54,762,000	22,564,000	37,551,000
Indicated	87,166,000	0.32	0.13	0.05	0.11	550,118,000	218,657,000	82,380,000	184,432,000
Inferred	50,998,000	0.32	0.12	0.04	0.12	322,656,000	119,614,000	45,377,000	122,781,000

1. The Effective Date of the mineral resources is July 13, 2022.
2. The project mineral resources are shown in bold and 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, sociopolitical, marketing, or other relevant issues.
5. Rounding as required by reporting guidelines may result in apparent discrepancies between tons, grade, and contained metal content.

Table 0-20 provides a breakdown of tons and grade of the JCM mineral resources by oxidation groups defined in modeling at a cut-off grade of 0.1% CuT that fit within the simulated economic pit shell.

**Table 0-20: Johnson Camp Mineral Resources by Oxidation Group**  
(0.1% CuT cut-off)

Classification	Oxidation Group	tons	% CuT	% CuAs	% CuCN	% CuSu	lbs CuT	lbs CuAs	lbs CuCN	lbs CuSu
Measured	sulfide	1,257,000	0.29	0.02	0.03	0.24	7,245,000	600,000	727,000	5,918,000
Indicated	sulfide	6,784,000	0.42	0.04	0.04	0.34	56,881,000	5,392,000	5,652,000	45,836,000
Inferred	sulfide	5,876,000	0.35	0.04	0.05	0.26	41,455,000	5,038,000	5,514,000	30,902,000
Measured	transition	6,049,000	0.32	0.09	0.10	0.12	38,593,000	11,092,000	12,648,000	14,853,000
Indicated	transition	8,440,000	0.31	0.10	0.09	0.12	52,354,000	16,043,000	15,657,000	20,654,000
Inferred	transition	2,130,000	0.28	0.09	0.09	0.10	11,902,000	3,665,000	3,896,000	4,342,000
Measured	mixed	7,595,000	0.30	0.11	0.04	0.08	45,486,000	16,302,000	6,825,000	12,524,000
Indicated	mixed	55,824,000	0.30	0.11	0.05	0.09	338,947,000	123,230,000	54,370,000	103,121,000
Inferred	mixed	38,438,000	0.30	0.11	0.04	0.11	229,387,000	82,314,000	33,219,000	81,145,000
Measured	oxide	5,870,000	0.31	0.23	0.02	0.04	36,220,000	26,768,000	2,364,000	4,255,000
Indicated	oxide	16,118,000	0.32	0.23	0.02	0.05	101,935,000	73,991,000	6,700,000	14,821,000
Inferred	oxide	4,555,000	0.44	0.31	0.03	0.07	39,912,000	28,598,000	2,748,000	6,392,000

Future drilling, exploration, and resource definition at Johnson Camp Mine should focus on increasing the understanding of the distribution of cyanide soluble copper mineralization. Infill drilling in key areas to increase drill density, and drill-testing of the unconstrained limits of the deposit, particularly down-dip from known mineralization, should be prioritized.

#### Mineral Reserve Estimate

No mineral reserves are reported for this PEA.

## **Mining Method**

The Johnson Camp Mine 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 execute the mining of the pits and deliver 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.

Mined material is planned to be crushed and agglomerated before being placed on the leach pad using a conveyor stacker system. The mine plan is designed to provide 25 million pounds of recoverable copper per year to the existing SX-EW plant. The mine plan includes 69.7 million tons of M&I and 15.6 million tons of Inferred for placement on the leach pad over 20 years of mining, which includes a year of pre-production stripping and leach pad placement. The mine plan also includes mining and stockpiling of 111 million tons of waste for a LoM stripping ratio of 1.3:1.

## **Project Infrastructure**

The Johnson Camp Mine is an existing and operating copper hydrometallurgical plant. The site includes the open pits, waste dumps, SX-EW plant facilities and mine infrastructure that will be used when mine operations in the Burro and Copper Chief pits resumes.

Water is supplied by two wells on site that produce 200 gpm of process make-up water.

An existing 69 kV power line runs to the JCM substation where power is stepped down to 5 kV for distribution around the JCM mine site.

## **Market Studies and Contracts**

Excelsior has entered into a copper cathode purchase and sale agreement with Trafigura Trading LLC (“Trafigura”) for 100% of copper cathode production from Excelsior’s mineral projects. The agreement has a one year term and has been renewed on an annual basis each year, most recently to December 31, 2023. Pricing for product is based on Comex settlement prices, including a premium or discount depending on copper grade.

Please refer to Section 19 of the Technical Report for other relevant Market Studies and Contracts.

## **Environmental and Permitting**

The Johnson Camp Mine (JCM) is an inactive open pit mine. A processing (SX-EW) plant and associated ponds located at JCM are used to process pregnant leach solutions (PLS) from the Gunnison Project. A pipeline under I-10 connects Gunnison with JCM. JCM plans to resume mining of the open pit and process the mineralized material in a new heap leach pad. Existing permits will be modified to address resumption of mining at JCM.

Section 24.20 of the Technical Report describes the permit modifications that Excelsior will need to address to construct Pad 5 and reopen the two open pits for mining. The Aquifer Protection Permit, APP closure plan and bonding, will need to be amended for Pad 5. Five other state permits may have to be addressed with minor amendments.

## Capital and Operating Costs

Mine operating costs reflect the operating costs to mine the Johnson Camp Mine from Year 1 through the end of mining in Year 19. The total mine operating costs are estimated to be \$508 million or \$2.59/t mined (mineralization and waste), including mining G&A.

The mine capital costs are estimated to be \$9.8 million. These costs include contractor mobilization, construction of initial haul roads and the cost of mining for the first three quarters to achieve consistent release of leachable material (pre-production).

Capital and operating costs for the JCM Heap Leach Copper Project were estimated at a PEA level based on previous designs and operations, which included construction of Leach Pad 5. The current plan develops half of Pad 5 including design, excavation/grading, overliner material crushing and placement, and collection, aeration and leach piping and all of the emergency pond, the pump station and pumps and containment trenches. The estimated capital cost to develop Pad 5 and supporting infrastructure to the leach pad is \$27.7 million.

An existing crushing and agglomeration plant will be used, requiring refurbishment of existing equipment and procurement and installation of additional equipment including conveyors and a stacker to place the leach material on the pad. Capital costs for refurbishment of the crush-agglomeration circuit and conveying-stacker system is estimated to be \$21.4 million.

The plant operating cost includes the management and irrigation of Pad 5, and the JCM SX-EW plant. Components of the operating cost are labor, power, reagents & consumables, spare & maintenance supplies, and services. The heap leaching costs for Pad 5 are summarized in Table 0-21. The largest heap leach operating cost is sulfuric acid for heap leaching. The assumption is that for JCM as a standalone project, acid will have to be purchased at the nominal rate of \$150/st. However, if the mining and heap leaching of JCM is done after the sulfuric acid plant for the Gunnison ISR option, the acid cost would be approximately \$52/st after credit for power cogeneration.

**Table 0-21: JCM Heap Leaching Operating Cost (Heap Leach only)**

<b>Cost Element</b>	<b>LoM Operating Cost (\$000)</b>	<b>\$/st leached material</b>	<b>\$/lb Copper</b>
Labor	\$23,898	\$0.28	\$0.05
Power	\$32,080	\$0.38	\$0.07
Reagents	\$113,644	\$1.33	\$0.23
Maintenance	\$46,051	\$0.54	\$0.09
Supplies & Services	\$10,553	\$0.12	\$0.02
<b>Total Leach Pad Costs</b>	<b>\$226,226</b>	<b>\$2.65</b>	<b>\$0.46</b>

Operating costs for the JCM plant are well known from recent operations of the plant. Staffing for plant maintenance labor were provided by Excelsior with updated salaries and benefit rates. Reagent pricing and

consumptions (sulfuric acid, extractant, diluent, etc.) are known from ongoing operations. The JCM plant operating costs are summarized in **Table 0-22**.

**Table 0-22: JCM Plant Operating Costs (SX-EW only)**

<b>Cost Element</b>	<b>LoM Operating Cost (\$000)</b>	<b>\$/st leached material</b>	<b>\$/lb Copper</b>
Labor	\$29,918	\$0.35	\$0.06
Power	\$53,090	\$0.62	\$0.11
Reagents	\$16,598	\$0.19	\$0.03
Maintenance	\$26,345	\$0.31	\$0.05
Supplies & Services	\$6,261	\$0.07	\$0.01
<b>Total Plant Operating Costs</b>	<b>\$132,211</b>	<b>\$1.55</b>	<b>\$0.27</b>

General and Administrative (G&A) costs include labor and fringe benefits for administration and support personnel and other support expenses detailed in Section 24.21.4.2. G&A expenses are based on the 2023 JCM budget provided by Excelsior and estimates for various services and expenses from recent studies of JCM for the Gunnison Project. The G&A cost for JCM averages \$4.1 million annually of which labor is 38% and insurance is 22%. The cost per lb is approximately \$0.31/lb Cu.

The reclamation and closure costs for the Project include reclamation and closure activities at both the JCM plant site and reclamation of leach heaps and stockpiles and are estimated to be \$15.8 million, which also includes estimated bonding costs.

### **Economic Analysis**

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 operation based on the estimates of capital expenditures and production cost and sales revenue. The sales revenue is based on the production of copper cathode.

Table 0-23 compares the financial indicators for JCM Heap Leach Project. The preliminary economic assessment is preliminary in nature, that 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, and there is no certainty that the preliminary economic assessment will be realized.

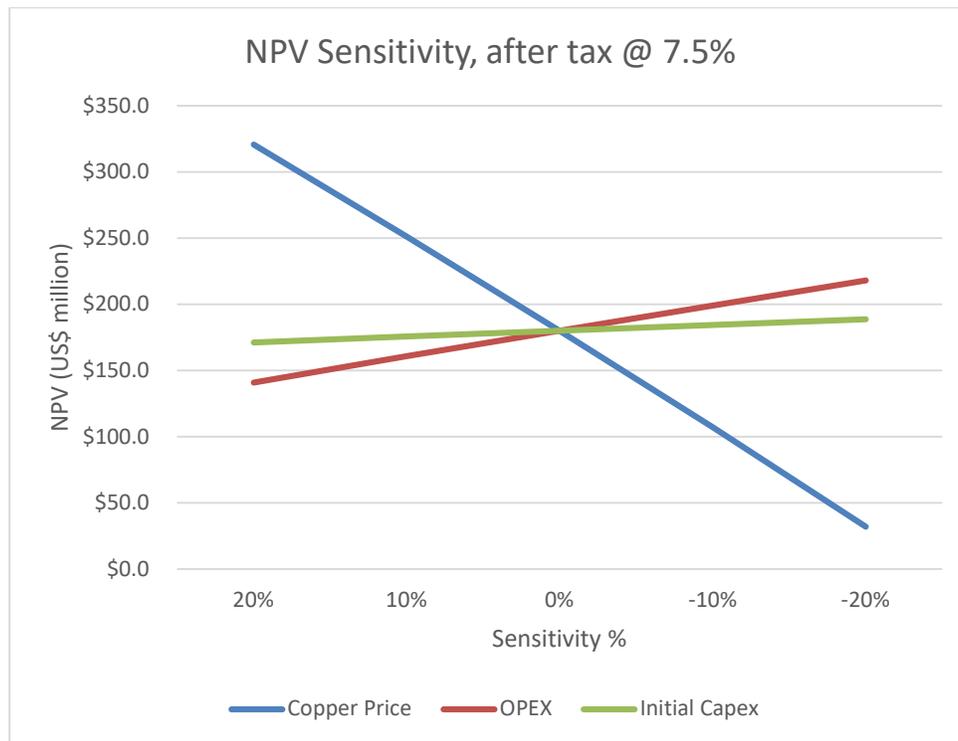
**Table 0-23: Financial Indicators**

<b>Item</b>	<b>LoM</b>
Years of Commercial Production	20
Total Copper Produced (klbs)	491,754
LoM Copper Price (avg \$/lb)	\$3.75
Initial Capital Cost (\$M)	\$58.9
Sustaining Capital Cost (\$M)	\$36.1
Payback of Capital (pre-tax / after-tax)	4.01 / 4.04
Internal Rate of Return (pre-tax / after-tax)	32.2% / 30.4%
LoM Direct Operating Cost (\$/lb Copper recovered)	\$1.95
LoM Total Production Cost (\$/lb Copper recovered)	\$2.24
Pre-Tax NPV at 7.5% discount rate (\$M)	\$212.5
After-Tax NPV at 7.5% discount rate (\$M)	\$180.0

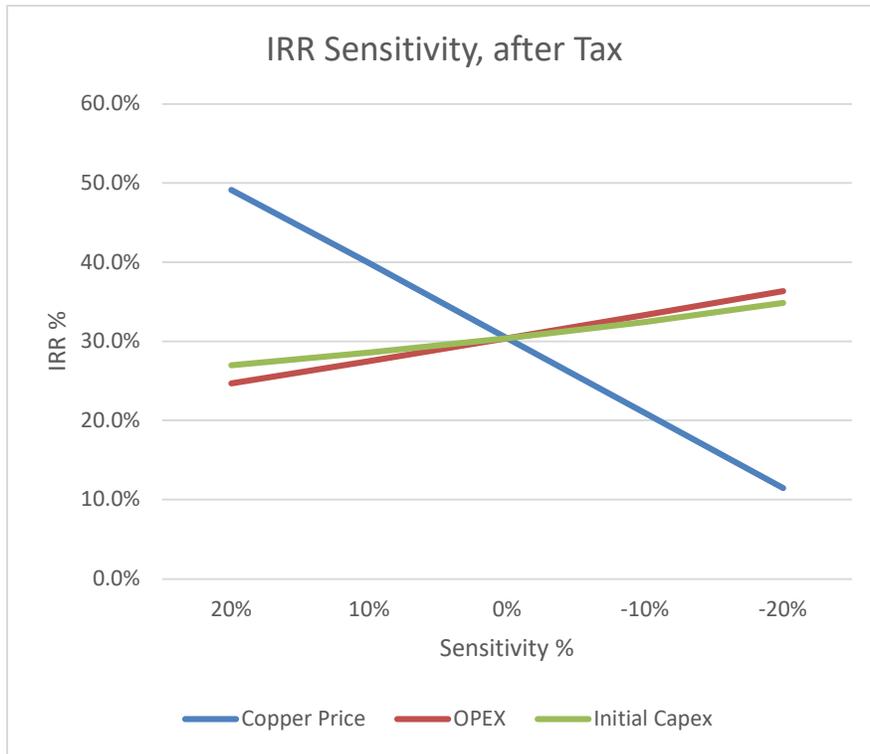
Table 0-24 provides a sensitivity analysis for the Base Case project financial indicators with the financial indicators when other different variables are applied. The results indicate that Project economics are impacted the most by fluctuation in the copper price. Fluctuation in the initial capital cost has the least impact on Project economic indicators.

**Table 0-24: JCM Base Case After – Tax Sensitivities (\$millions)**

<b>Copper Price</b>			
	<b>NPV @ 7.5% (\$M)</b>	<b>IRR%</b>	<b>Payback (yrs)</b>
	180.0	30.4	4.0
20%	321	49.2	2.1
10%	251	39.9	2.6
-10%	107	20.9	4.9
-20%	32	11.5	10.6
<b>Operating Cost</b>			
	<b>NPV @ 7.5% (\$M)</b>	<b>IRR%</b>	<b>Payback (yrs)</b>
	180.0	30.4	4.0
20%	141	24.7	4.5
10%	161	27.5	4.3
-10%	199	33.3	3.4
-20%	218	36.4	2.9
<b>Initial Capital</b>			
	<b>NPV @ 7.5% (\$M)</b>	<b>IRR%</b>	<b>Payback (yrs)</b>
	180.0	30.4	4.0
20%	171	27.0	4.3
10%	176	28.6	4.2
-10%	184	32.4	3.7
-20%	189	34.9	3.3



**Figure 0-6: JCM NPV Sensitivity- After-Tax**



**Figure 0-7: JCM IRR Sensitivity – After-Tax**

**Adjacent Properties**

There are no relevant adjacent properties that are not controlled by Excelsior Mining.

**Interpretation and Conclusions**

The JCM plant has already been upgraded and JCM ponds are fully operational. The crushing plant will be utilized and this capital upgrade has been included along with the construction of the new leach pad, Pad 5.

Based on the current pit shell, mineral resources for the two pits is approximately 108 million tons of M&I and 51 million tons of Inferred at a cut-off grade of 0.1% CuT. The amount that is included in the conceptual mine plan over 19 years of mining is 69.7 million tons of M&I and 15.6 million tons of Inferred. It is possible that the mine life for the JCM open pit operation could be extended for several more years if copper prices continue to be favorable.

The full capital cost for restarting the JCM heap leaching operation between mining pre-production, first fills/Owners costs, leach pad construction, crusher and agglomerator refurbishment, new leach pad stackers and haul road construction is approximately \$58.8 million. This project is a low-cost opportunity to exploit existing mineral resources with considerable upside if long-term copper prices and sulfuric acid prices remain favorable.

**Recommendations**

Excelsior management has launched a sampling and metallurgical testing program to evaluate the leaching strategy proposed in this study. The sampling and testwork program will assess the metallurgical zonation

within the pits to estimate copper recoveries more accurately from each zone including testing the solubility of sulfide species. This program will help determine the long-term outlook for open pit mining and heap leaching at JCM.

The current plan includes crushing and agglomeration with conveying and stacking the agglomerated material on the leach pad. Excelsior should refine the cost to reactivate the crushing-agglomerating plant, design the conveyor system, and the stacking plan for the life of the mine.

Excelsior should consider conducting parallel large-diameter column (or equivalent) tests on a bulk sample. Metallurgical testing using bacterial enhancement and aeration should be conducted to more accurately evaluate its application to JCM sulfide mineralization and further evaluate the sulfide recoveries and leaching kinetics.

Excelsior should commission the re-design and estimating of Pad 5 using a footprint that can accommodate all of the leaching material in the mine plan to improve the accuracy of the initial and sustaining capital cost estimates for the leach pad.

**Table 0-25: Budget for Recommended JCM Heap Leach Investigations**

Detail	Cost US\$
Metallurgical Testwork	\$250,000
Feasibility Study	\$500,000
Detailed Engineering for Leach Pad and Crusher refurbishment	\$500,000
<b>Total</b>	<b>\$1,250,000</b>

### **Other Assets**

The Company does not have any material properties other than those described above.

### **RISK FACTORS**

*Investing in our securities is speculative and involves a high degree of risk due to the nature of our business and the present stage of its development. The following risk factors, as well as risks currently unknown to us, could materially adversely affect our future business, operations and financial condition and could cause them to differ materially from the estimates described in forward-looking statements relating to the Company, or its business, property or financial results, each of which could cause purchasers of our securities to lose part or all of their investment. The risks set out below are not the only risks we face; risks and uncertainties not currently known to us or that we currently deem to be immaterial may also materially and adversely affect our business, financial condition, results of operations and prospects. You should also refer to the other information set forth or incorporated by reference in this AIF.*

## **Risks Related to the Business of the Company**

### ***Mining operations generally involve a high degree of risk.***

Excelsior's mining operations are subject to all of the hazards and risks normally encountered in the exploration for and development and production of metals, including, but not limited to: unusual and unexpected geologic formations, carbon-dioxide gas restricting fluid flows, environmental hazards, seismic activity, structural collapse, fire, flooding, variations in grade, deposit size, density and other geological problems, hydrological conditions, metallurgical and other processing problems, mechanical equipment performance problems, industrial accidents, the unavailability of power, the unavailability of materials and equipment including reagents and fuel, acid supply, labour force disruptions, unanticipated transportation costs, unanticipated regulatory changes, unanticipated or significant changes in the costs of supplies including, but not limited to, petroleum and reagents, acid supply, and adverse weather conditions and other conditions involved in the drilling and removal of material, these and other hazards may cause damage to, or destruction of, all or part of the Gunnison Project and other facilities, injuries or death to employees, contractors or other persons at the Company's mineral properties, severe damage to and destruction of the Company's property, plant and equipment, and contamination of, or damage to, the environment, and may result in the suspension of the Company's development and production activities. Safety measures implemented by the Company may not be successful in preventing or mitigating future accidents.

In addition, from time to time the Company may be subject to governmental investigations and claims and litigation filed on behalf of persons who are harmed while at its properties or otherwise in connection with the Company's operations. To the extent that the Company is subject to personal injury or other claims or lawsuits in the future, it may not be possible to predict the ultimate outcome of these claims and lawsuits due to the nature of personal injury litigation. Similarly, if the Company is subject to governmental investigations or proceedings, the Company may incur significant penalties and fines, and enforcement actions against it could result in the closing of the Gunnison Project or the JCM. If claims and lawsuits or governmental investigations or proceedings are finally resolved against the Company, the Company's financial performance, financial position and results of operations could be materially adversely affected.

Excelsior maintains insurance to protect against certain risks. At a minimum, these comply with all regulatory requirements and contractual obligations of the Company. However, insurance will not cover all of the potential risks associated with the Company's operations. Excelsior also may be unable to maintain insurance to cover certain risks at economically feasible premiums. Insurance coverage may not continue to be available or may not be adequate to cover all resulting losses or liability. Excelsior might also become subject to liability for pollution or other hazards against which it may not be insured, may be underinsured or that Excelsior may elect not to insure against because of premium costs or other reasons. Losses from these events may cause Excelsior to incur significant costs that could have a material adverse effect upon its financial position, results of operations or cash flows.

### ***The successful start of mining operations at, and the development of, the Gunnison Project or JCM into a commercially viable mine cannot be assured.***

The commercial viability of a mineral deposit is dependent upon a number of factors which are beyond the Company's control, including the attributes of the deposit, commodity prices, government policies and regulation and environmental protection. Fluctuations in the market prices of minerals may render resources and deposits containing relatively lower grades of mineralization uneconomic. There is no certainty that Excelsior will be able to have available funds to finance mining operations, avoid potential increases in costs, recruit and train personnel, or that Excelsior will be able to update, renew and obtain all necessary permits to start or to continue to operate the Gunnison Project or JCM. Most of these activities require significant lead times, and Excelsior will be required to manage and advance these activities concurrently in order to begin production. A failure or delay in the completion of any one of these activities may delay production, possibly

indefinitely, at the Gunnison Project or JCM and would have a material adverse effect on Excelsior's business, prospects, financial position, results of operations and cash flows. There is no assurance that Excelsior will ever achieve commercial production or that Excelsior will ever be profitable if production is achieved.

In addition, the Gunnison Project, given its unique geological conditions, will deploy an in-situ wellfield recovery method that, while in use in other resource extraction sectors (most notably in uranium), will be one of the first of its kind to extract copper at commercial levels relying solely on this method. This in-situ mining method of the Gunnison Project presents additional development ramp-up risks and complexity compared to a traditional underground or open pit operation which could result in delays, interruptions, lower recoveries than forecasted and/or increased costs to the development of the Gunnison Project. These risks include the impact of precipitates or carbon-dioxide blocking or restricting recovery flow, which in turn reduces copper production.

There is no assurance that the in-situ extraction of copper at the Gunnison Project can be completed as currently contemplated in the Technical Report for the Gunnison Project. Specifically, there is no assurance that current operations will establish that the recoveries of leached copper solution, known as sweep efficiencies, will be as expected. In addition, the results of operations may indicate that changes to mining operations at the Gunnison Project may be required, which may result in delays and/or higher than anticipated construction and operating costs to achieve commercial production at the Gunnison Project.

***Actual capital costs, operating costs and expenditures, production schedules and economic returns may differ significantly from those we have anticipated.***

Our expected capital costs, operating costs and expenditures, All-In Costs, production schedules, economic returns and other projections for the Gunnison Project which are contained in the Technical Report are based on assumed or estimated future metals prices, cut-off grades, operating costs, capital costs and expenditures and other factors that each may prove to be inaccurate. Therefore, the Technical Report may prove to be unreliable if the assumptions or estimates do not reflect actual facts and events. For example, significant declines in market prices for copper or extended periods of inflation would have an adverse effect on the economic projections set forth in the Technical Report.

Any material reductions in estimates of mineralization or increases in capital costs and expenditures, or in our ability to maintain a projected budget or renew a particular mining permit, could also have a material adverse effect on projected production schedules and economic returns, as well as on our overall results of operations or financial condition. There is also a risk that rising costs for labour and material could have an adverse impact on forecasted construction costs and that shortages of labour and material could have a negative impact on any mine development schedule. An increase in any of these costs, or a lack of availability of commodities and goods, may have an adverse impact on our financial condition and results of operations.

The Company may be required to seek additional debt or equity capital in order to continue mining operations at the Gunnison Project and we may not be able to access capital on commercially reasonable terms or at all and, even if successful, we may not be able to raise enough capital to allow us to fully fund the costs required to continue mining operations at the Gunnison Project.

***There is uncertainty relating to production estimates.***

We have prepared estimates of future production and future production costs for the Gunnison Project and JCM. No assurance can be given that production estimates will be achieved. These production estimates are based on, among other things: the accuracy of reserve estimates; the accuracy of our assumptions as to future events and circumstances; metallurgical, geological, geochemical and hydrological characteristics; and the accuracy of estimated rates and costs of mining and processing. Actual production may vary from estimates for a variety of reasons, including, among other things: actual ore mined varying from estimates of grade,

tonnage, dilution, metallurgical and other characteristics; short-term operating factors relating to the ore reserves, such as the need for sequential development of ore bodies and the processing of new or different ore grades; risk and hazards associated with mining; natural phenomena, such as inclement weather conditions, floods, earthquakes, cave-ins; and unexpected labour shortages or strikes. Failure to achieve production estimates could have an adverse impact on our future cash flows, earnings, results of operations and financial condition.

***General economic conditions may adversely affect Excelsior's growth, future profitability, ability to finance and operations.***

Global financial conditions continue to be characterized as volatile. In recent years, global markets have been adversely impacted by various credit crises and significant fluctuations in metals prices and fuel and energy costs. Many industries, including the mining industry, have been impacted by these market conditions. Global financial conditions remain subject to sudden and rapid destabilizations in response to future events. A continued or worsened slowdown in the financial markets or other economic conditions, including but not limited to consumer spending, employment rates, business conditions, inflation, fuel and energy costs, consumer debt levels, lack of available credit, the state of the financial markets, interest rates and tax rates, may adversely affect our growth and profitability. Future crises may be precipitated by any number of causes, including natural disasters, geopolitical instability, changes to energy prices or sovereign defaults. If increased levels of volatility continue or in the event of a rapid destabilization of global economic conditions, it may result in a material adverse effect on commodity prices, demand for metals, including, copper, availability of credit, investor confidence, and general financial market liquidity, all of which may adversely affect our business and the market price of our securities.

In addition, the current outbreak of the novel coronavirus (COVID-19) that was first reported from Wuhan, China in December 2019, and any future emergence and spread of similar pathogens could have a material adverse effect on global economic conditions which may adversely impact our business and results of operations and the operations of our suppliers, contractors and service providers, and the demand for our production. The extent to which the coronavirus impacts our operations will depend on future developments, which are highly uncertain and cannot be predicted with confidence, including the duration of the outbreak, new information that may emerge concerning the severity of the coronavirus and the actions taken to contain the coronavirus or treat its impact, among others.

Moreover, the actual and threatened spread of the coronavirus globally could also have a material adverse effect on the regional economies in which we operate, could continue to negatively impact stock markets, including the trading price of our shares, could adversely impact our ability to raise capital, could cause continued interest rate volatility and movements that could make obtaining financing or refinancing our debt obligations more challenging or more expensive and could result in any operations affected by coronavirus becoming subject to quarantine. Any of these developments, and others, could have a material adverse effect on our business and results of operations.

***The development of our properties will be subject to all of the risks associated with establishing new mining operations.***

Development of our mineral properties will require the operation of mines, processing plants and related infrastructure as well as restarting or running at full capacity the SX-EW plant at JCM. As a result, we are and will continue to be subject to all of the risks associated with establishing new mining operations, restarting operations, and ramping-up or running operations, including:

- the timing and cost, which can be considerable, of the construction and operation of mining and processing facilities;

- the availability and cost of skilled labour, mining equipment and principal supplies needed for operations;
- the need to maintain necessary environmental and other governmental approvals and permits;
- the availability of funds to finance mining operations;
- potential opposition from non-governmental organizations, environmental groups, local groups or other stakeholders which may delay or prevent mining operations; and
- potential increases in construction and operating costs due to changes in the cost of labour, fuel, power, materials and supplies.

It is common in new mining operations to experience unexpected costs, problems and delays during construction, development and mine start-up. Accordingly, we cannot provide assurance that our activities will result in profitable mining operations at our mineral properties.

***Mineral reserve and mineral resource calculations are only estimates.***

Any figures presented for mineral reserves and mineral resources in this AIF and the Technical Report are only estimates. There is a degree of uncertainty attributable to the calculation of mineral reserves and mineral resources as they are determined based on assumed future prices, cut off grades and operating costs. Until mineral reserves or mineral resources are actually mined and processed, the quantity of metal and grades must be considered as estimates only and no assurances can be given that some or all of the indicated levels of metals will be produced. In making determinations about whether to advance any part of the Gunnison Project to development, Excelsior must rely upon estimated calculations as to the mineral reserves, mineral resources and grades of mineralization on the Gunnison Project.

Estimating mineral reserves and mineral resources is a subjective process that relies on the judgment of the persons preparing the estimates. Estimates of mineral resources are, to a large extent, based on the interpretation of geological data obtained from drillholes and other sampling techniques. This information is used to calculate estimates of the configuration of the mineral resource, expected recovery rates, anticipated environmental conditions and other factors. As a result, mineral resource estimates for the Gunnison Project may require adjustments or downward revisions based upon further exploration or development work or upon actual production experience, thereby adversely impacting the economics of the Gunnison Project. In addition, the grade of ore ultimately mined, if any, may differ from that indicated by drilling results. There can be no assurance that minerals recovered in small-scale tests will be duplicated in large-scale tests under on-site conditions or in production scale. Any material change in the quantity of mineralization or grade may render portions of the Company's mineralization uneconomic and result in reduced reported mineralization. Any material reductions in estimates of mineralization, or of the Company's ability to extract this mineralization, could have a material adverse effect on the Company's results of operations or financial condition.

***Changes in the market price of copper, which in the past has fluctuated widely, will affect the projected results of Excelsior's operations, financial position and cash flows.***

Excelsior's revenues in the future, if any, are expected to be derived in large part from the sale of copper. The price of this commodity has fluctuated widely in recent years and is affected by factors beyond the control of Excelsior including, but not limited to international economic and political trends, changes in industrial demand, currency exchange fluctuations, economic inflation and expectations for the level of economic inflation in the consuming economies, interest rates, global and local economic health and trends, speculative activities, the availability and costs of substitutes and changes in the supply of this commodity due to new mine developments and mine closures. All of these factors, which are impossible to predict with certainty, will impact the viability of the Gunnison Project.

***Reduction in the demand for copper in the Chinese markets may negatively impact Excelsior's operations and financial condition.***

China has been a significant driver of global demand for minerals and metals, including copper. A slowing in China's economic growth could result in lower prices and demand for copper. China is increasingly seeking strategic self-sufficiency in key commodities, including investments in existing businesses or new developments in other countries. These investments may adversely impact future copper demand and supply balances and prices.

***Excelsior will require additional capital in the future, and no assurance can be given that such capital will be available at all or available on terms acceptable to Excelsior.***

Excelsior currently has no significant cash flow from production. While initial construction has been completed, due to ramp-up challenges the resumption of mining operations or expansion in production capacity of the Gunnison Project or JCM depends upon Excelsior's ability to obtain financing through strategic partnerships, equity or debt financings, production-sharing arrangements or other dilutive or non-dilutive means. There is no assurance that Excelsior will be successful in obtaining required financing on acceptable terms, or at all. If Excelsior is unable to obtain additional financing it may consider other options, such as (i) selling assets, (ii) selling equity, or (iii) selling interests in the Gunnison Project or JCM. If Excelsior raises additional funding by issuing additional equity securities or other securities that are convertible into equity securities, such financings may substantially dilute the interest of existing or future shareholders. Sales or issuances of a substantial number of securities, or the perception that such sales could occur, may adversely affect the prevailing market price of the Common Shares. With any additional sale or issuance of equity securities, investors will suffer dilution of their voting power and may experience dilution in earnings per share. If Excelsior raises additional funding by entering into stream agreements, royalty agreements or other similar agreements, the Company may be required to deliver a portion of future metals production or revenue derived from operations. Such contractual obligations may have a negative effect on our future financial condition and results of operations and investors may suffer dilution in earnings per share. There is no assurance we will be able to negotiate acceptable terms for the sale of any interests in the Gunnison Project. Failure to obtain additional financing could result in an indefinite postponement of further exploration and development of the Gunnison Project and JCM, and will have a material adverse effect on Excelsior's business, prospects, financial position, results of operations and cash flows.

***Excelsior has no history of mining operations and no revenue from operations.***

We have recently commenced the ramp-up phase leading to commercial production at the Gunnison Project and have achieved first copper production. However, due to issues related to ramp-up copper production has not yet reached levels that are economically viable. As such, we are subject to many risks common to a start-up mining operation, including under-capitalization, cash shortages, limitations with respect to personnel, financial and other resources and lack of revenues. There can be no assurance that significant losses will not occur in the near future or that we will be profitable in the future. Our operating expenses and capital expenditures may increase in the future as consultants, personnel and equipment costs associated with advancing development and commercial production of our properties increase. We expect to continue to incur losses unless and until such time, if ever, we enter into commercial production and generate sufficient revenues to fund our continuing operations. There can be no assurance that we will generate any revenues. If we are unable to generate significant revenues at the Gunnison Project or JCM, we will not be able to earn profits or continue operations.

***Excelsior has a history of losses and expects to incur losses for the foreseeable future.***

Excelsior has incurred losses since its inception and expects to incur losses for the foreseeable future. Excelsior expects to continue to incur losses unless and until such time as the Gunnison Project or JCM enters into

commercial production and generates sufficient revenues to fund continuing operations. The operation of the Gunnison Project and JCM will require the commitment of substantial financial resources. The amount and timing of expenditures will depend on a number of factors, including the progress of mining operations, the results of consultant analysis and recommendations, the rate at which operating losses are incurred, the execution of any agreements with strategic partners, and Excelsior's acquisition of additional properties. Some of these factors are beyond Excelsior's control. There can be no assurance that Excelsior will ever achieve profitability.

***Risks associated with secured debt.***

The Company's obligations under the Nebari Credit Agreement are secured against the Gunnison Project. Any failure to meet any of the payment obligations under the Nebari Credit Agreement, or otherwise adhere to the positive and negative covenants therein or fulfill the other obligations thereunder, may trigger an event of default and a demand for full immediate repayment of all amounts outstanding under the Nebari Credit Agreement. We may be able to generate cash flow from operations in the future sufficient to service our debt and make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring debt or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations. If the Company is unable to repay all amounts outstanding under the Nebari Credit Agreement, Nebari may realize on its security and the Company could lose its interest in the Gunnison Project.

***Risks associated with Copper Stream Agreement.***

Pursuant to the Stream Agreement with Triple Flag, the Company is required to maintain a leverage ratio of 3.5:1.0. The leverage ratio is calculated as the ratio of indebtedness of the Company to net income (adjusted for certain items). The applicability of the leverage ratio has been suspended until March 31, 2025 (the "**Leverage Ratio Grace Period**"). Because the Gunnison project is in the process of ramping up to production, management does not expect that the leverage ratio will be able to be met until sustained production is achieved. If the Company does not meet the leverage ratio prior to the end of the Leverage Ratio Grace Period, the Company will be in default of this covenant in the Stream Agreement. If the Company defaults, then Triple Flag will have certain options available to it. In a default scenario Triple Flag may demand from the Company all amounts and deliveries due from the Company to Triple Flag but not paid or made. In addition, Triple Flag may also elect to terminate the Stream Agreement. If Triple Flag terminates the Stream Agreement, it can seek to recover the greater of its target return amount and the value of the deliveries that would have occurred over the life of the Stream Agreement if it had not been terminated. A default under the Stream Agreement would also cause a default under the terms of the Nebari Credit Agreement. If the Company is unable to repay all amounts owing to Triple Flag and Nebari, Nebari may realize on its security and the Company could lose its interest in the Gunnison Project.

***Excelsior requires various permits in order to conduct its current and anticipated future operations, and any delays in obtaining or a failure to obtain such permits, or a failure to comply with the terms of any such permits that Excelsior has obtained or will obtain, could have a material adverse impact on Excelsior.***

Excelsior's current and anticipated future operations, including further exploration, evaluation and development activities on the Gunnison Project and JCM, require permits from various United States federal, state, and local government authorities. Obtaining or renewing governmental permits is a complex and time-consuming process. The duration and success of efforts to obtain and renew permits are contingent upon many variables not within Excelsior's control.

Shortage of qualified and experienced personnel in the various levels of government could result in delays or inefficiencies. Backlog within the permitting agencies could affect the permitting timeline of the Gunnison Project and JCM. Other factors that could affect the permitting timeline include (i) the number of other large-scale projects currently in a more advanced stage of development which could slow down the review process for the Gunnison Project and JCM, and (ii) significant public response regarding the Gunnison Project or JCM that could lead to delays in the process or appeals of issued permits. There can be no assurance that all permits which Excelsior requires for its development activities and construction of expanded mining facilities and the conduct of mining operations will be obtainable or renewable on reasonable terms, or at all. Delays or a failure to obtain such permits, or the expiry, revocation or a failure to comply with the terms of any such permits that Excelsior has obtained, could have a material adverse impact on Excelsior.

***Title and other rights to the Gunnison Project and the JCM cannot be guaranteed and may be subject to prior unregistered agreements, transfers or claims and other defects.***

Excelsior cannot guarantee that title to the Gunnison Project or the JCM will not be challenged. Excelsior may not have, or may not be able to obtain, all necessary surface rights to develop, or all water rights needed to operate the Gunnison Project. Title insurance generally is not available for mineral properties and Excelsior's ability to ensure that it has obtained secure claim to individual mineral properties or mining concessions comprising the Gunnison Project and the JCM may be severely constrained; however, Excelsior Arizona does have title insurance for the portions of the JCM that are patented mining claims and fee title property. The Gunnison Project and the JCM may be subject to prior unregistered agreements, transfers or claims, and title may be affected by, among other things, undetected defects. Excelsior has not conducted surveys of all of the claims in which it holds direct or indirect interests. A successful challenge to the precise area and location of these claims could result in Excelsior being unable to operate on all or part of the Gunnison Project or the JCM as permitted or being unable to enforce its rights with respect to all or part of the Gunnison Project or the JCM. Surface owners may also be able to obtain damages or an injunction that prevents continued mining operations at the Gunnison Project. These circumstances could result in a material adverse impact on Excelsior and Excelsior not being compensated for its prior expenditures relating to the properties.

***Excelsior needs to enter into contracts with external service and utility providers.***

Mining, processing, development and exploration activities depend, to one degree or another, on adequate infrastructure. In order to develop a mine at the Gunnison Project, Excelsior will need to negotiate, conclude and maintain various agreements with external service and utility providers for power, water, transportation and shipping and these are important determinants that affect capital and operating costs.

There is no certainty that Excelsior will be able to conclude or maintain various agreements with external service and utility providers on economically feasible terms and this could have a material adverse effect on Excelsior's results of operations, financial position and cash flows and render the development of a mine on the Gunnison Project unviable.

***Excelsior is subject to significant governmental regulation.***

Excelsior's operations and exploration and development activities in the United States are subject to extensive federal, state and local laws and regulation governing various matters, including environmental protection, management and use of toxic substances and explosives, management of natural resources, exploration, development of mines, production and post-closure reclamation, exports, price controls, taxation, mining royalties, management of tailing and other waste generated by operations, labour standards and occupational health and safety, including mine safety, and historic and cultural preservation.

Failure to comply with applicable laws and regulations may result in civil or criminal fines or penalties or enforcement actions, including orders issued by regulatory or judicial authorities enjoining or curtailing

operations or requiring corrective measures, installation of additional equipment or remedial actions, any of which could result in Excelsior incurring significant expenditures. Excelsior may also be required to compensate private parties suffering loss or damage by reason of a breach of such laws, regulations or permitting requirements. It is also possible that future laws and regulations, or a more stringent enforcement of current laws and regulations by governmental authorities, could cause Excelsior to incur additional expense, capital expenditures, restrictions on or suspensions of Excelsior's operations and delays in the development of the Gunnison Project.

The Canadian *Extractive Sector Transparency Measures Act* (“ESTMA”), which became effective June 1, 2015, requires public disclosure of payments to governments by mining companies engaged in the commercial development of minerals who are either publicly listed in Canada or with business or assets in Canada. Mandatory annual reporting is required for extractive companies with respect to payments made to foreign and domestic governments at all levels, including entities established by two or more governments. ESTMA requires reporting on the payments of any taxes, royalties, fees, production entitlements, bonuses, dividends, infrastructure improvement payments, and any other prescribed payment over C\$100,000. Failure to report, false reporting or structuring payments to avoid reporting may result in fines of up to C\$250,000 (which may be concurrent). If we find ourselves subject to an enforcement action or in violation of ESTMA, this may result in significant penalties, fines and/or sanctions imposed on us resulting in a material adverse effect on our reputation.

***Excelsior’s activities are subject to environmental laws and regulations that may increase Excelsior’s costs of doing business and restrict the Company’s operations.***

All of Excelsior's exploration, potential development and production activities in the United States are subject to regulation by governmental agencies under various environmental laws, including with respect to, air emissions, discharges into water, management of waste, management of hazardous substances, protection of natural resources, antiquities and endangered species and reclamation of lands disturbed by mining operations. Environmental legislation, including with respect to climate change, in many countries is evolving and the trend has been towards stricter standards and enforcement, increased fines and penalties for non-compliance, more stringent environmental assessments of proposed projects and increasing responsibility for companies and their officers, directors and employees. Compliance with environmental laws and regulations may require significant capital outlays on behalf of Excelsior and may cause material changes or delays in Excelsior's intended activities. There can be no assurance that future changes in environmental regulations will not adversely affect Excelsior's business, and it is possible that future changes in these laws or regulations could have a significant adverse impact on some portion of Excelsior's business, causing Excelsior to re-evaluate those activities at that time. Failure to comply with applicable environmental laws, regulations and permitting requirements may result in enforcement actions thereunder, including orders issued by regulatory or judicial authorities, causing operations to cease or to be curtailed, and may include corrective measures requiring capital expenditures, installation of additional equipment or remedial actions.

Environmental hazards may exist on the Gunnison Project or the JCM that are unknown to Excelsior at the present time and that have been caused by previous owners or operators or that may have occurred naturally. Excelsior may be liable for remediating such damage.

***Climatic conditions can affect Excelsior future operations.***

Arizona can be subject to periods of drought. Operations at the Gunnison Project and JCM will require water for normal operations. A lack of necessary water for a prolonged period of time could affect operations at the Gunnison Project and JCM, and materially adversely affect Excelsior’s results of operations. Arizona can also be subject to significant rainfall events which could result in flooding and materially adversely affect the Company’s results of operations.

Governments are moving to introduce climate change legislation and treaties at the international, national, state/provincial and local levels. The regulatory requirements are evolving and are not consistent across the jurisdictions in which we operate. However, regulation relating to emission levels (such as carbon taxes) and energy efficiency is becoming more stringent. If the current regulatory trend continues, we expect that this will result in increased costs at our operations. In addition, the physical risks of climate change may also have an adverse effect on our operations. These risks include the following:

- Sea level rise: Changes in sea levels could affect ocean transportation and shipping facilities that are used to transport supplies, equipment to our operations and products from those operations to world markets.
- Extreme weather events: Extreme weather events (such as increased frequency or intensity of hurricanes, increased snow pack, prolonged drought) have the potential to disrupt operations at our mine. Extended disruptions to supply lines could result in interruption to production.
- Resource shortages: our facilities depend on regular supplies of consumables (stainless steel, copper cable, acid, etc.) and reagents to operate efficiently. In the event that the effects of climate change or extreme weather events cause prolonged disruption to the delivery of essential commodities, our production efficiency is likely to be reduced.

The occurrence of such physical climate change events may result in substantial costs to respond to the event or recover from the event, and to prevent recurrent damage, through either the modification of, or addition to, existing infrastructure at our operations. The scientific community has predicted an increase, over time, in the frequency and severity of extraordinary or catastrophic natural phenomena as a result of climate change. We can provide no assurance that we will be able to predict, respond to, measure, monitor or manage the risks posed as a result. Physical climate change events, and the trend toward more stringent regulations aimed at reducing the effects of climate change, could impact our decision to pursue future opportunities, or maintain our existing operations, which could have an adverse effect on our business and our future operations.

We can provide no assurance that efforts to mitigate the risks of climate changes will be effective and that the physical risks of climate change will not have an adverse effect on our operations and profitability.

***Failure to provide regulatory authorities with the required financial assurances could potentially result in the closure of one or more of our operations, which could result in a material adverse effect on our operating results and financial condition.***

We are required by regulatory authorities of the State of Arizona and United States Federal Government to provide financial assurances sufficient to allow a third party to implement approved closure and reclamation plans if we are unable to do so. These laws are complex and govern the determination of the scope and cost of the closure and reclamation obligations and the amount and forms of financial assurance.

The amount and nature of the financial assurances are dependent upon a number of factors, including our financial condition and reclamation cost estimates. Changes to these amounts, as well as the nature of the collateral to be provided, could significantly increase our costs, making the maintenance and development of existing and new mines less economically feasible. Regulatory authorities may also require further financial assurances. To the extent that the value of the collateral provided to the regulatory authorities is or becomes insufficient to cover the amount of financial assurance we are required to post, we would be required to replace or supplement the existing security with more expensive forms of security, which might include cash deposits, which would reduce our cash available for operations and financing activities. We can provide no assurance that we will be able to maintain or add to our current level of financial assurance or that we will have sufficient capital resources to further supplement our existing security, which could result in a material adverse effect on our operating results and financial condition.

***Excelsior may experience difficulty attracting and retaining qualified management and technical personnel to meet the needs of its anticipated growth.***

Excelsior is dependent on the services of key executives including Excelsior's Chief Executive Officer and Senior Vice Presidents, and other highly skilled and experienced executives and personnel focused on managing Excelsior's interests and the advancement of the Gunnison Project, and on identifying new opportunities for growth and funding. Due to Excelsior's relatively small size, the loss of these persons or Excelsior's inability to attract and retain additional highly skilled employees required for the development of Excelsior's activities may have a material adverse effect on Excelsior's business or future operations.

In addition, Excelsior anticipates that with the Gunnison Project commencing production and if appropriate, it acquires additional mineral rights, Excelsior will experience significant growth in its operations. Excelsior expects this growth to create new positions and responsibilities for management and technical personnel and to increase demands on its operating and financial systems. There can be no assurance that Excelsior will successfully meet these demands and effectively attract and retain additional qualified personnel to manage its anticipated growth. The failure to attract such qualified personnel to manage growth would have a material adverse effect on Excelsior's business, financial position, results of operations and cash flows.

***Increased competition could adversely affect Excelsior's ability to attract necessary capital funding or acquire suitable producing properties or prospects for mineral exploration in the future.***

The mining industry is intensely competitive. Significant competition exists for the acquisition of properties producing or capable of producing copper or other metals. Excelsior may be at a competitive disadvantage in acquiring additional mining properties because it must compete with other individuals and companies, many of which have greater financial resources, operational experience and technical capabilities than Excelsior. Excelsior also may encounter increasing competition from other mining companies in its efforts to hire experienced mining professionals. The Company's competitors may be able to respond more quickly to new laws or regulations or emerging technologies, or devote greater resources to the expansion of their operations, than the Company can. In addition, current and potential competitors may make strategic acquisitions or establish cooperative relationships among themselves or with third parties. Increased competition could adversely affect Excelsior's ability to attract necessary capital funding or to acquire suitable producing properties or prospects for mineral exploration in the future. If Excelsior is unsuccessful in acquiring additional mineral properties or services or qualified personnel it will not be able to grow at the rate it desires, or at all. The Company may not be able to compete successfully against current and future competitors, and any failure to do so could have a material adverse effect on the Company's business, financial condition or results of operations.

***Excelsior may experience cybersecurity threats.***

Excelsior relies on secure and adequate operations of information technology systems in the conduct of its operations. Access to and security of the information technology systems are critical to Excelsior's operations. To Excelsior's knowledge, it has not experienced any material losses relating to disruptions to its information technology systems. Excelsior has implemented ongoing policies, controls and practices to manage and safeguard Excelsior and its stakeholders from internal and external cybersecurity threats and to comply with changing legal requirements and industry practice. Given that cyber risks cannot be fully mitigated and the evolving nature of these threats, Excelsior cannot assure that its information technology systems are fully protected from cybercrime or that the systems will not be inadvertently compromised, or without failures or defects. Disruptions to Excelsior's information technology systems, including, without limitation, security breaches, power loss, theft, computer viruses, cyber-attacks, natural disasters, and non-compliance by third party service providers and inadequate levels of cybersecurity expertise and safeguards of third party information technology service providers, may adversely affect the operations of Excelsior as well as present significant costs and risks including, without limitation, loss or disclosure of confidential, proprietary, personal

or sensitive information and third party data, material adverse effect on its financial performance, compliance with its contractual obligations, compliance with applicable laws, damaged reputation, remediation costs, potential litigation, regulatory enforcement proceedings and heightened regulatory scrutiny.

***Conflicts of interest may arise among the Company's directors and officers as a result of their involvement with, or shareholdings in, other mineral resource companies.***

Certain of Excelsior's directors and officers also serve as directors or officers for, or have significant shareholdings in, other companies involved in natural resource exploration and development or mining-related activities. To the extent that such other companies may participate in ventures in which Excelsior may participate in, or in ventures which Excelsior may seek to participate in, its directors and officers may have a conflict of interest in negotiating and concluding terms respecting the extent of such participation. In all cases where the Company's directors and officers have an interest in other companies, such other companies may also compete with Excelsior for the acquisition of mineral property investments. Such associations may give rise to conflicts of interest for Excelsior's directors and officers resulting in a material and adverse effect on the Company's profitability, results of operation and financial condition. As a result of these potential conflicts of interest, Excelsior may miss the opportunity to participate in certain transactions, which may have a material adverse effect on its financial position. The directors of the Company are required by law to act honestly and in good faith with a view to the best interests of the Company and its shareholders and to disclose any interest which they may have in any project or opportunity of the Company, but each officer or director has the identical obligation to other companies for which such officer or director serves as an officer or director.

***Excelsior is exposed to exchange rate fluctuations because it raises funds in Canadian dollars and its costs are incurred in United States dollars.***

Exchange rate fluctuations may affect the costs that Excelsior incurs in its operations. Excelsior has historically raised funds in Canadian dollars and its costs are incurred principally in United States dollars. Any appreciation of the US dollar against the Canadian dollar will reduce the purchasing power of each Canadian dollar raised, which could increase the risk that the Company would not be able to finance its operations and projects. The Company has assessed this risk and has not presently adopted an active currency hedging program given the current currency exchange rates.

***Uncertainty exists related to inferred mineral resources.***

Inferred Resources are estimated on the basis of limited geological evidence and sampling and while, by definition, it can reasonably be expected that a majority of inferred mineral resources referred to in this prospectus could be upgraded to indicated resources with further exploration, there is no assurance of such further exploration will take place, or that further exploration will result in the Company's inferred resources being converted into measured or indicated mineral resources as there may be limited ability to assess geological continuity. Due to the uncertainty that may attach to inferred mineral resources, there is no assurance that inferred mineral resources will be upgraded to resources with sufficient geological continuity to constitute proven and probable mineral reserves as a result of continued exploration.

***Land reclamation requirements for the Company's mineral properties may be burdensome.***

Land reclamation requirements are generally imposed on mineral exploration companies (as well as companies with mining operations) in order to minimize long term effects of land disturbance. Reclamation may include requirements to:

- treat ground and surface water to drinking water standards;
- control dispersion of potentially deleterious effluents; and

- reasonably re-establish pre-disturbance land forms and vegetation.

In order to carry out reclamation obligations imposed on the Company in connection with exploration, development and production activities, Excelsior must allocate financial resources that might otherwise be spent on further exploration and development programs. In addition, regulatory changes could increase the Company's obligations to perform reclamation and mine closing activities. If the Company is required to carry out unanticipated reclamation work, its financial position could be adversely affected.

***Risks inherent in the acquisition of new properties.***

Excelsior may actively pursue the acquisition of exploration, development and production assets consistent with its acquisition and growth strategy. From time to time, Excelsior may also acquire securities of or other interests in companies with respect to which it may enter into acquisitions or other transactions. Acquisition transactions involve inherent risks, including but not limited to:

- accurately assessing the value, strengths, weaknesses, contingent and other liabilities and potential profitability of acquisition candidates;
- ability to achieve identified and anticipated operating and financial synergies;
- unanticipated costs;
- diversion of management attention from existing business;
- potential loss of key employees or key employees of any business acquired;
- unanticipated changes in business, industry or general economic conditions that affect the assumptions underlying the acquisition;
- decline in the value of acquired properties, companies or securities;
- assimilating the operations of an acquired business or property in a timely and efficient manner;
- maintaining the Company's financial and strategic focus while integrating the acquired business or property;
- implementing uniform standards, controls, procedures and policies at the acquired business, as appropriate; and
- to the extent that the Company makes an acquisition outside of markets in which it has previously operated, conducting and managing operations in a new operating environment.

Acquiring additional businesses or properties could place increased pressure on the Company's cash flow (if any) if such acquisitions involve a cash consideration. The integration of the Company's existing operations with any acquired business will require significant expenditures of time, attention and funds. Achievement of the benefits expected from consolidation would require the Company to incur significant costs in connection with, among other things, implementing financial and planning systems. The Company may not be able to integrate the operations of a recently acquired business or restructure the Company's previously existing business operations without encountering difficulties and delays. In addition, this integration may require significant attention from the Company's management team, which may detract attention from the Company's day-to-day operations. Over the short-term, difficulties associated with integration could have a material

adverse effect on the Company's business, operating results, financial condition and the price of the Common Shares. In addition, the acquisition of mineral properties may subject the Company to unforeseen liabilities, including environmental liabilities, which could have a material adverse effect on the Company. There can be no assurance that any future acquisitions will be successfully integrated into the Company's existing operations.

Any one or more of these factors or other risks could cause Excelsior not to realize the anticipated benefits of an acquisition of properties or companies, and could have a material adverse effect on its financial condition.

***Excelsior may become subject to legal proceedings.***

Due to the nature of its business, the Company may become subject to regulatory investigations, claims, lawsuits and other proceedings in the ordinary course of its business. The results of these legal proceedings cannot be predicted with certainty due to the uncertainty inherent in litigation, including the effects of discovery of new evidence or advancement of new legal theories, the difficulty of predicting decisions of judges and juries and the possibility that decisions may be reversed on appeal. There can be no assurances that these matters will not have a material adverse effect on the Company's business.

***Excelsior may be exposed to potential liabilities associated with the acquisition of JCM.***

We conducted due diligence with respect to the JCM prior to our acquisition of such assets in December 2015; however, there is no certainty that our due diligence procedures revealed all of the risks and liabilities associated with the acquisition of JCM. There may be material environmental or other material liabilities that we are not aware of and, accordingly, the potential monetary cost of such liabilities is also unknown.

***Failure to comply with the U.S. Foreign Corrupt Practices Act ("FCPA"), as well as the anti-bribery laws of the nations in which we conduct business (such as the Corruption of Foreign Public Officials Act of Canada ("CFPOA")), could subject us to penalties and other adverse consequences.***

Our business is subject to the FCPA which generally prohibits companies and company employees from engaging in bribery or other prohibited payments to foreign officials for the purpose of obtaining or retaining business. The FCPA also requires companies to maintain accurate books and records and internal controls, including at foreign-controlled subsidiaries. In addition, we are subject to other anti-bribery laws of the nations in which we conduct business that apply similar prohibitions as the FCPA (such as the CFPOA and the OECD Anti-Bribery Convention). Our employees or other agents may, without our knowledge and despite our efforts, engage in prohibited conduct under our policies and procedures and the FCPA or other anti-bribery laws that we may be subject to for which we may be held responsible. If our employees or other agents are found to have engaged in such practices, we could suffer severe penalties and other consequences that may have a material adverse effect on our business, financial condition and results of operations.

***Legislative actions, potential new accounting pronouncements, and higher insurance costs are likely to impact our future financial position or results of operations.***

Future changes in financial accounting standards may cause adverse, unexpected revenue fluctuations and affect our financial position or results of operations. New pronouncements and varying interpretations of pronouncements are expected to occur in the future. Compliance with changing regulations of corporate governance and public disclosure may result in additional expenses. All of these uncertainties are leading generally toward increasing insurance costs, which may adversely affect our business, results of operations and our ability to purchase any such insurance, at acceptable rates or at all, in the future.

***A period of significant growth can place a strain on management systems.***

If we experience a period of significant growth in the number of our personnel this could place a strain upon our management systems and resources. Our future will depend in part on the ability of our officers and other key employees to implement and improve our financial and management controls, reporting systems and procedures on a timely basis and to expand, train and manage our employee workforce. There can be no assurance that we will be able to effectively manage such growth. Our failure to do so could have a material adverse effect upon our business, prospects, results of operation and financial condition.

***Significant shareholders of the Company could influence our business operations and sales of our Common Shares by such significant shareholders could influence our Common Share price.***

To the best knowledge of the Company, as of the date of hereof, Greenstone Resources, through its affiliates Greenstone, Greenstone II, Greenstone No. 1 and Greenstone No. 2, hold 116,028,937 Common Shares representing approximately 41.86% of our outstanding Common Shares. Greenstone has control over the passage of any resolution of our shareholders (such as would be required, to amend our constating documents or take certain other corporate actions).

***Negative Operating Cash Flow.***

Given that none of the Company's properties have yet to enter commercial production and generate cash flow, the Company had negative operating cash flow for its financial year ended December 31, 2022. To the extent that the Company has negative cash flow in future periods, the Company may need to deploy a portion of its cash reserves to fund such negative cash flow.

**Risks Related to our Securities**

***Future sales or issuances of debt or equity securities could decrease the value of any existing Common Shares, dilute investors' voting power, reduce our earnings per share and make future sales of our equity securities more difficult.***

We may sell or issue additional debt or equity securities in offerings to finance our operations, exploration, development, acquisitions or other projects. Our significant shareholders, including Greenstone may also sell the Common Shares they hold in the future.

We cannot predict the size of future sales and issuances of debt or equity securities or the effect, if any, that future sales and issuances of debt or equity securities will have on the market price of the Common Shares.

Sales or issuances of a substantial number of equity securities, or the perception that such sales could occur, may adversely affect prevailing market prices for the Common Shares. With any additional sale or issuance of equity securities, investors will suffer dilution of their voting power and may experience dilution in the Company's earnings per share. Sales of our Common Shares by shareholders might also make it more difficult for us to sell equity securities at a time and price that we deem appropriate.

***Our Common Share price has experienced volatility and may be subject to fluctuation in the future based on market conditions.***

The market prices for the securities of mining companies, including our own, have historically been highly volatile. The market has from time to time experienced significant price and volume fluctuations that are unrelated to the operating performance of any particular company. In addition, because of the nature of our business, certain factors such as our announcements and the public's reaction, our operating performance and the performance of competitors and other similar companies, fluctuations in the market prices of our resources,

government regulations, changes in earnings estimates or recommendations by research analysts who track our securities or securities of other companies in the resource sector, general market conditions, announcements relating to litigation, the arrival or departure of key personnel and the factors listed under the heading “Special Note Regarding Forward-Looking Information” can have an adverse impact on the market price of our Common Shares.

Any negative change in the public’s perception of our prospects could cause the price of our securities, including the price of our Common Shares, to decrease dramatically. Furthermore, any negative change in the public’s perception of the prospects of mining companies in general could depress the price of our securities, including the price of our Common Shares, regardless of our results. Following declines in the market price of a company’s securities, securities class-action litigation is often instituted. Litigation of this type, if instituted, could result in substantial costs and a diversion of our management’s attention and resources.

***Future issuances of securities by us or sales by our existing shareholders may cause the price of our securities to fall.***

The market price of our securities could decline as a result of issuances of securities by us or sales by our existing shareholders in the market, or the perception that these sales could occur. Sales of our Common Shares by shareholders might also make it more difficult for us to sell equity securities at a time and price that we deem appropriate. With an additional sale or issuance of equity securities, investors will suffer dilution of their voting power and may experience dilution in earnings per share.

***Excelsior does not intend to pay dividends in the foreseeable future.***

No dividends on the Company’s Common Shares have been declared or paid by Excelsior to date. Excelsior does not currently anticipate that dividends will be declared in the foreseeable future. Payment of future dividends, if any, will be at the discretion of Excelsior’s Board of Directors after taking into account many factors, including Excelsior’s operating results, financial condition and current and anticipated cash needs.

***Non-U.S. Holders of Common Shares could be subject to U.S. federal income tax from the sale or other taxable disposition of Common Shares.***

It is possible that the Company will be considered a U.S. real property holding corporation for U.S. federal income tax purposes if its assets are determined to consist primarily of “United States real property interests” as defined in the Internal Revenue Code of 1986, as amended, or the Code, and applicable Treasury regulations. Under the Foreign Investment in Real Property Tax Act, or FIRPTA, certain Non-U.S. Holders may or may in the future be subject to U.S. federal income tax on any gain from the disposition of shares of our Common Shares, in which case they would also be required to file U.S. tax returns with respect to such gain. In general, whether these FIRPTA provisions apply depends on the amount of our Common Shares that such Non-U.S. Holders hold. In addition, such Non-U.S. Holders may or may in the future be subject to withholding if, at the time they dispose of their shares, our common stock is not regularly traded on an established securities market within the meaning of the applicable Treasury regulations. So long as our Common Shares continue to be regularly traded on an established securities market, only a Non-U.S. Holder who has owned, actually or constructively, more than 5% of our Common Shares at any time during the shorter of (i) the five-year period ending on the date of disposition and (ii) the Non-U.S. Holder’s holding period for its shares may or may in the future be subject to U.S. federal income tax on the disposition of our Common Shares under FIRPTA.

***Withholding to Non-U.S. investors will apply to our dividends on our Common Shares.***

Because we are a U.S. corporation for U.S. federal income tax purposes, a 30% withholding tax (subject to reduction under an applicable tax treaty) will generally apply to dividend distributions we make to non-U.S. persons. Because we may not know the extent to which a distribution is a dividend for U.S. federal income tax

purposes at the time it is made, for purposes of these withholding rules we may treat the entire distribution as a dividend.

***The Company expects that it will be treated as a U.S. domestic corporation for U.S. federal income tax purposes.***

The Company believes that it should be treated as a U.S. domestic corporation for U.S. federal income tax purposes under Section 7874 of the U.S. Internal Revenue Code and be subject to U.S. tax on its worldwide income. Treatment of the Company as a U.S. corporation for U.S. federal income tax purposes may have adverse tax consequences for non-U.S. shareholders. Holders of the Company's Common Shares are urged to consult their own tax advisors regarding the acquisition, ownership and disposition of the Company's Common Shares. This paragraph is only a brief summary of these tax rules.

***There is no assurance of a sufficient liquid trading market for the Company's Common Shares in the future.***

Shareholders of the Company may be unable to sell significant quantities of Common Shares into the public trading markets without a significant reduction in the price of their Common Shares, or at all. There can be no assurance that there will be sufficient liquidity of the Company's Common Shares on the trading market, and that the Company will continue to meet the listing requirements of the TSX or achieve listing on any other public listing exchange.

## **DIVIDENDS**

Excelsior has not, since the date of its incorporation, declared or paid any dividends on its Common Shares and does not currently have a policy with respect to the payment of dividends. For the immediate future, Excelsior does not envisage any earnings arising from which dividends could be paid. The payment of dividends in the future will depend on Excelsior's earnings, if any, Excelsior's financial condition and such other factors as the directors of Excelsior consider appropriate.

## **DESCRIPTION OF CAPITAL STRUCTURE**

The authorized share capital of Excelsior consists of an unlimited number of Common Shares and an unlimited number of Non-Voting Shares. As of the date of this AIF, 277,204,365 Common Shares and no Non-Voting Shares were issued and outstanding as fully paid and non-assessable shares.

The holders of the Common Shares are entitled to receive notice of and to attend and vote at all meetings of the shareholders of Excelsior and each Common Share confers the right to one vote in person or by proxy at all meetings of the shareholders of Excelsior. The holders of the Common Shares, subject to the prior rights, if any, of any other class of shares of Excelsior, are entitled to receive such dividends in any financial year as the Board of Directors of Excelsior may by resolution determine. In the event of the liquidation, dissolution or winding-up of Excelsior, whether voluntary or involuntary, the holders of the Common Shares are entitled to receive, subject to the prior rights, if any, of the holders of any other class of shares of Excelsior, the remaining property and assets of the Company.

The Non-Voting Shares are restricted securities within the meaning of National Instrument 51-102. Non-Voting Shares do not carry the right to vote at any meetings of the shareholders. Non-Voting shares may be converted at the option of the holder into Common Shares on the basis of one (1) Non-Voting Share for one (1) Common Share of Excelsior. As the Non-Voting Shares are convertible into Common Shares, pursuant to Multilateral Instrument 62-104, a take-over bid for the Common Shares must also be made to the holders of the Non-Voting Shares.

## MARKET FOR SECURITIES

### Market

Excelsior’s Common Shares are listed on the TSX under the trading symbol “MIN” and trade on the OTCQX International under the symbol “EXMGF” and on the Frankfurt Exchange under the symbol “3XS”. Excelsior also had warrants listed for trading on the TSX under the trading symbol “MIN.WT”.

### Trading Price and Volume

The following table sets out the monthly high and low trading prices and the monthly volume of trading of the Common Shares of Excelsior on the TSX for the most recently completed financial year:

	<u>High (Cdn\$)</u>	<u>Low (Cdn\$)</u>	<u>Volume</u>
January 2022	0.52	0.40	3,585,551
February 2022	0.46	0.38	1,724,139
March 2022	0.43	0.37	2,598,917
April 2022	0.385	0.25	3,922,076
May 2022	0.285	0.23	1,483,715
June 2022	0.25	0.155	2,083,358
July 2022	0.20	0.155	1,312,974
August 2022	0.21	0.17	970,820
September 2022	0.195	0.15	1,040,919
October 2022	0.17	0.13	1,513,945
November 2022	0.18	0.15	478,557
December 2022	0.19	0.145	823,861

The following table sets out the monthly high and low trading prices and the monthly volume of trading of the Warrants of Excelsior on the TSX for the most recently completed financial year. The Warrants expired and ceased trading on the TSX on August 22, 2022:

	<u>High (Cdn\$)</u>	<u>Low (Cdn\$)</u>	<u>Volume</u>
January 2022	0.02	0.01	393,970
February 2022	0.015	0.005	275,625
March 2022	0.005	0.005	98,250
April 2022	0.01	0.005	9,003
May 2022	0.005	0.005	21,000
June 2022	0.005	0.005	0
July 2022	0.005	0.005	0
August 1-22, 2022	0.005	0.005	18,000

## Prior Sales

No Common Shares were issued by Excelsior during the most recently completed financial year ended December 31, 2022.

## ESCROWED SECURITIES AND SECURITIES SUBJECT TO CONTRACTUAL RESTRICTION ON TRANSFER

As at December 31, 2022, Excelsior has no escrowed securities or securities subject to contractual restriction on transfer.

## DIRECTORS AND OFFICERS

The names and provinces or states and countries of residence of the directors and officers of Excelsior as at December 31, 2022, positions held by them with Excelsior and their principal occupations for the past five years are as set forth below. The term of office of each of the present directors expires at the next annual general meeting of shareholders. After each such meeting, the Board of Directors appoints the Company's officers and committees for the ensuing year.

<b>Name, Province or State and Country of Ordinary Residence of Nominee<sup>(1)</sup> and Present Positions with Excelsior</b>	<b>Principal Occupation during the last Five Years<sup>(1)</sup></b>	<b>Period from which person has been a Director or Officer</b>	<b>Number of Common Shares Held<sup>(2)</sup></b>
Stephen Twyerould <sup>(5)</sup> Director, President, CEO Arizona, USA	President and Chief Executive Officer of Excelsior since October 14, 2010.	October 14, 2010	5,293,786
Fred DuVal <sup>(3)(4)(6)</sup> Director, Chairman Arizona, USA	President of DuVal and Associates since 2001.	June 28, 2018	Nil
Colin Kinley <sup>(3)(5)</sup> Director Kansas, USA	Currently Director and Senior Advisor, President and CEO of Kinley Exploration LLC from 2007 to present; Director; COO of Eco Oil and Gas Ltd. from 2011 to present; President CEO of Manx Energy Inc. 2009 to present.	October 14, 2010	378,652
Jim Kolbe <sup>(8)</sup> Director Arizona, USA	President, JTK Consulting, Inc.	February 15, 2012	356,208
Stephen Axcell <sup>(4)(5)(6)</sup> Director Colorado, USA	Independent Consultant providing services to the Mining Industry.	August 20, 2018	Nil
Michael Haworth <sup>(3)(5)(7)</sup> Director United Kingdom	Managing Partner with Greenstone Capital LLP since August, 2013.	September 9, 2014	Nil

Lord Robin Renwick <sup>(6)</sup> Director United Kingdom	Director, Stonehage Fleming since August 2000.	October 20, 2014	311,640
Roland Goodgame Chief Operating Officer Texas, USA	Senior Vice President, Business Development of the Company since December, 2020; Senior Vice President from November, 2020 to December, 2020; Chief Operating Officer from April, 2017 to November, 2020; Executive Vice President of Excelsior from May, 2014 to April, 2017.	October 14, 2010	1,998,127
Danny Heatherson Interim Chief Financial Officer Arizona, USA	Interim Chief Financial Officer of the Company since October 2022; Corporate Accounting Manager of the Company from July 2020 to October 2022; Director of Accounting for Cozy Comfort Company, LLC from December 2019 to June 2020; Assistant Controller of Paradigm Precision from May 2018 – December 2019; Assistant Controller of Phoenix Formulations from July 2017 – May 2018.	October 10, 2022	Nil
Robert Winton	General Manager & Senior Vice President Operations of the Company since August, 2020; President & General Manager of Nystar Clarksville Inc. from January 2018 to August 2020; Vice President, MBU of Hudbay Minerals Inc. from September 1997 to June 2016.	August 24, 2020	Nil
Sheila Paine Corporate Secretary British Columbia, Canada	Corporate Secretary of King & Bay West Management Corp. since December 2009.	May 17, 2010	Nil

(1) The information as to city and province of residence and principal occupation, not being within the knowledge of Excelsior, has been furnished by the respective directors individually.

(2) Common Shares beneficially owned, directly and indirectly, or over which control or direction is exercised, at the date hereof, based upon the information furnished to Excelsior by individual directors and officers. Unless otherwise indicated, such Common Shares are held directly. These figures do not include Common Shares that may be acquired on the exercise of any stock options held by the respective directors or officers.

(3) Current Member of the Audit Committee of Excelsior.

(4) Current Member of the Compensation Committee of Excelsior.

(5) Current Member of the Project Steering Committee of Excelsior.

(6) Current Member of the Nominating and Corporate Governance Committee of Excelsior.

(7) Michael Haworth is a Managing Member of Greenstone Capital LLP and a Director of Greenstone Management Ltd., the General Partner to Greenstone Resources. Greenstone Resources, through its affiliates Greenstone, Greenstone II, Greenstone No. 1 and Greenstone No. 2, is the beneficial owner of 116,028,937 Common Shares representing approximately 41.86% of the issued and outstanding Common Shares.

(8) Mr. Kolbe passed away on December 3, 2022.

As of December 31, 2022, the directors, nominees, officers and other members of Management of Excelsior, as a group beneficially owned, directly or indirectly, 8,338,413 Common Shares of Excelsior representing 3.01% of the total issued and outstanding Common Shares of Excelsior.

### **Cease Trade Orders, Bankruptcies, Penalties or Sanctions**

No director or executive officer of Excelsior is, or has been in the last 10 years, a director, chief executive officer or chief financial officer of any company (including Excelsior) of an issuer that, while that person was acting in that capacity,

- (a) was the subject of a cease trade order or similar order or an order that denied the issuer access to any exemptions under Canadian securities legislation, for a period of more than 30 consecutive days; or
- (a) was subject to an event that resulted, after that person ceased to be a director, chief executive officer or chief financial officer, in the company being the subject of a cease trade or similar order or an order that denied the issuer access to any exception under Canadian securities legislation, for a period of more than 30 consecutive days.

No director or executive officer or shareholder holding a sufficient number of securities of Excelsior to materially affect the control Excelsior:

- (a) is, as at the date of this AIF, or has been within the 10 years before the date of this AIF, a director or executive officer of any company (including Excelsior) that while that person was acting in that capacity, or within a year of that person ceasing to act in the capacity, became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver manager or trustee appointed to hold its assets; or
- (b) has, within 10 years before the date of this AIF become bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or become subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver manager or trustee appointed to hold the assets of the director, executive officer or shareholder.

No director or officer of Excelsior or a shareholder holding a sufficient number of Common Shares to affect materially the control of Excelsior has been subject to:

- (a) any penalties or sanctions imposed by a court relating to securities legislation or by a securities regulatory authority or has entered into a settlement agreement with a securities regulatory authority; or
- (c) any other penalties or sanctions imposed by a court or regulatory body that would likely be considered important to a reasonable investor in making an investment decision.

### **Conflicts of Interest**

Certain directors and officers of Excelsior are also directors, officers or shareholders of other companies that are similarly engaged in the business of acquiring, developing and exploiting natural resource properties. Such associations to other public companies in the resource sector may give rise to conflicts of interest from time to time. As a result, opportunities provided to a director of Excelsior may not be made available to Excelsior, but rather may be offered to a company with competing interests. The directors and senior officers of Excelsior are required by law to act honestly and in good faith with a view to the best interests of Excelsior and to disclose

any personal interest which they may have in any project or opportunity of Excelsior, and to abstain from voting on such matters.

The directors and officers of Excelsior are aware of the existence of laws governing the accountability of directors and officers for corporate opportunity and requiring disclosure by the directors of conflicts of interests and Excelsior will rely upon such laws in respect of any directors' and officers' conflicts of interest or in respect of any breaches of duty by any of its directors and officers.

Michael Haworth is a Managing Member of Greenstone Capital LLP and a Director of Greenstone Management Ltd., the General Partner to Greenstone Resources. Mr. Haworth has disclosed to Excelsior that he has an interest in any transaction between the Company and Greenstone Resources, Greenstone, Greenstone II, Greenstone No. 1 or Greenstone No. 2.

## **LEGAL PROCEEDINGS AND REGULATORY ACTIONS**

During the most recently completed financial year, (i) no penalties or sanctions were imposed against the Company by a court or regulatory body and (ii) no settlement agreements were entered into by the Company with a court or a securities regulatory authority. Except as disclosed below, the Company and its properties are not subject to any legal or other actions, current or pending, which may materially affect the Company's operating results, financial position or property ownership.

On November 3, 2021 the Company became aware of a civil claim filed against the Company and certain of its officers and directors in the Supreme Court of British Columbia by MM Fund (the "Action"). The plaintiff seeks certification of the Action as a class proceeding on behalf of a class of all persons and entities, wherever they may reside or may be domiciled, who purchased the securities of the Company offered by the Company's Prospectus Supplement dated and filed on February 12, 2021 (the "Prospectus").

The plaintiff alleges that the Prospectus contained misrepresentations related to the Company's anticipated timeline to achieve a production rate of 25 million pounds per annum. The plaintiff alleges that as a result of the misrepresentations in the Prospectus, the securities of the Company were sold to the public at an artificially inflated price. The plaintiff seeks an order certifying the Action as a class proceeding, a declaration the Prospectus contained a misrepresentation, unspecified damages, pre- and post-judgment interest and costs.

The Company contends the allegations made against it in the Action are meritless and will be vigorously defended, although no assurance can be given with respect to the ultimate outcome of the Action.

On September 1, 2022, the British Columbia Supreme Court granted the application by the Company to strike MM Fund's certification application and further ordered MM Fund to remove all pleadings relating to advancing a class proceeding against the Company. The Company was awarded its costs of the application in any event of the cause. MM Fund's action may continue as an individual claim; however, subject to appeal, MM Fund has been found to be incapable advancing the action as a class proceeding. Subsequently on September 26, 2022, MM Fund appealed this ruling to the British Columbia Supreme Court.

## **PROMOTERS**

No person has acted as a promoter of Excelsior during the last two most recently completed financial years or during the current financial year.

## **INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS**

Other than as set forth below and other than transactions carried out in the ordinary course of business of the Company, none of the directors or executive officers of Excelsior, any shareholder directly or indirectly beneficially owning, or exercising control or direction over, more than 10% of the outstanding Common

Shares, nor an associate or affiliate of any of the foregoing persons has had, during the three most recently completed financial years of the Company or during the current financial year, any material interest, direct or indirect, in any transactions that materially affected or would materially affect the Company.

Greenstone Resources, through its affiliates Greenstone, Greenstone II, Greenstone No. 1 and Greenstone No. 2, is the beneficial owner of 116,028,937 Common Shares representing approximately 42.21% of the issued and outstanding Common Shares. Mr. Haworth is a Managing Member of Greenstone Capital LLP and a Director of Greenstone Management Ltd., the General Partner to Greenstone Resources. The details of Greenstone's strategic investments in Excelsior are described under "Glossary" and "Description and General Development of the Business – Developments Subsequent to December 31, 2022 and Outlook".

### **TRANSFER AGENT AND REGISTRAR**

Excelsior's registrar and transfer agent is TSX Trust Company, with its office located at 2700 – 650 West Georgia Street, Vancouver, British Columbia, V6B 4N9.

### **MATERIAL CONTRACTS**

The Company has entered into the following material contracts:

- (a) Definitive Agreement, as amended, as described in this AIF under "Glossary".
- (b) Management Services Agreement dated as of May 17, 2010 between King & Bay West Management Corp. ("**King & Bay West**") and the Company pursuant to which King & Bay West provides the Company with administrative and management services, including shared facilities, geological, technical, accounting, investor relations, legal and corporate development services. The fees for these management services are determined and allocated to the Company based on the cost or value of the services provided to the Company as determined by King & Bay West, and the Company reimburses King & Bay West for such costs on a monthly basis.
- (c) Altius Agreement, as described in this AIF under "Glossary".
- (d) Greenstone IR Agreement as described in this AIF under "Glossary".
- (e) JCM Purchase Agreement as described in this AIF under "Glossary".
- (f) Amending Agreement to the Greenstone IR Agreement dated January 19, 2018 between the Company, Greenstone and Greenstone No. 2 pursuant to which certain rights granted to Greenstone under the Greenstone IR Agreement were amended to permit the joint or several exercise by Greenstone and Greenstone No. 2.
- (g) Second Amending Agreement to the Greenstone IR Agreement dated December 5, 2018 between the Company, Greenstone, Greenstone II, Greenstone No. 1 and Greenstone No.2 pursuant to which certain rights granted to Greenstone and Greenstone No. 2 under the Amending Agreement to the Greenstone IR Agreement were amended to permit the joint or several exercise by Greenstone, Greenstone II, Greenstone No. 1 and Greenstone No. 2.
- (h) Stream Agreement, as amended, as described in this AIF under "Glossary" and "Description and General Development of the Business – Three Year History – Year Ended December 31, 2021 Developments – Extension and Increase to Nebari Credit Facility".

- (i) Nebari Credit Agreement, as amended and restated, as described in this AIF under “Glossary”, “Description and General Development of the Business – Three Year History – Year Ended December 31, 2021 Developments – Extension and Increase to Nebari Credit Facility” and Description and General Development of the Business – Three Year History – Developments Subsequent to December 31, 2022 and Outlook – Extension of Nebari Credit Facility”.

### **INTEREST OF EXPERTS**

The disclosure with respect to the Gunnison Project contained in this AIF is based on the Technical Report jointly prepared by Richard Zimmerman, SME-RM; Jeffrey Bickel, CPG; Thomas L. Dyer, PE, SME-RM; Neil Prenn, MMSA-QPM; Robert J. Howell, PhD, C.Chem., C.Geol; Dr. Terry McNulty, PE, DSc; and R. Douglas Bartlett, CPG., each a qualified person as defined in NI 43-101. Each of Messrs. Zimmerman, Bickel, Prenn, Dyer, Howell, McNulty and Bartlett has reviewed and approved the scientific and technical disclosure with respect to the Gunnison Project contained in this AIF under the heading “Mineral Properties.

The disclosure with respect to the S&H Project contained in the AIF is based on the S&H PEA Technical Report jointly prepared by Jeffrey Bickel, C.P.G., Michael M. Gustin, C.P.G., Ph.D., Thomas L. Dyer, P.Eng. and Robert Howell, Ph.D., C.Chem., C.Geol., FIMMM, each a qualified person as defined in NI 43-101. Each of Messrs. Bickel, Gustin, Dyer and Howell has reviewed and approved the scientific and technical disclosure with respect to the S&H Project contained in this AIF under the heading “Mineral Properties”.

The remainder of scientific and technical disclosure contained in this AIF has been reviewed and approved by Stephen Twyerould, Fellow of AUSIMM, President & CEO of Excelsior and a Qualified Person as defined by NI 43-101.

To the best knowledge of the Company, except for Mr. Twyerould, none of the qualified persons referenced above, or any director, officer, employee or partner thereof, as applicable, received or has received a direct or indirect interest in the property of the Company or of any associate or affiliate of the Company. As at the date hereof, the aforementioned persons (except for Mr. Twyerould), and the directors, officers, employees and partners, as applicable, of each of the aforementioned companies and partnerships beneficially own, directly or indirectly, in the aggregate, less than one percent of the securities of Excelsior. Except for Mr. Twyerould, none of the qualified persons referenced above is or is expected to be elected, appointed or employed as a director, officer or employee of the Company or any associate or affiliate of the Company. Mr. Twyerould is the President & CEO of the Company and information as to his ownership of securities of the Company is set forth under the heading “Directors and Officers” in this AIF.

The Company’s auditors are PricewaterhouseCoopers LLP, Chartered Professional Accountants, who have prepared an independent auditor’s report dated March 22, 2023 in respect of the Company’s consolidated financial statements as at December 31, 2022 and 2021 and for years then ended. PricewaterhouseCoopers LLP has advised that they are independent with respect to the Company within the meaning of the Chartered Professional Accountants of British Columbia Code of Professional Conduct.

### **ADDITIONAL INFORMATION**

Additional information on the Company may be found on SEDAR at [www.sedar.com](http://www.sedar.com). Additional information, including directors’ and officers’ remuneration and indebtedness to Excelsior, principal holders of the securities of Excelsior and securities authorized for issuance under equity compensation plans, is contained in Excelsior’s management information circular for its most recent annual general meeting, which is filed on SEDAR. Additional financial information is provided in Excelsior’s audited consolidated financial statements for the year ended December 31, 2022 and the related management’s discussion and analysis of financial conditions and results of operations, both of which are available on SEDAR.

## AUDIT COMMITTEE

Pursuant to the provisions of National Instrument 52-110 Audit Committees (“NI 52-110”), reporting issuers are required to provide disclosure with respect to its audit committee, including the text of the audit committee’s charter, composition of the committee, and the fees paid to the external auditor. Accordingly, the Company provides the following disclosure with respect to its Audit Committee.

### **Audit Committee Charter**

Excelsior has adopted a Charter of the Audit Committee of the Board of Directors, which is attached as Schedule A to this AIF.

### **Composition of the Audit Committee**

Until December 6, 2022, Excelsior’s Audit Committee was comprised of three directors Jim Kolbe, Michael Haworth and Fred DuVal. As defined in NI 52-110, Messrs. Kolbe and DuVal are considered “independent” and are “financially literate”. Mr. Haworth is “financially literate”; however, as a nominee of Greenstone Resources he is not considered “independent”.

Mr. Kolbe passed away on December 3, 2022 and Colin Kinley was appointed as a member of the Audit Committee in Mr. Kolbe’s place. While Mr. Kinley is “financially literate”, he is the principal of Kinley Exploration, LLC. Kinley Exploration, LLC entered into a consulting agreement with Excelsior Arizona to provide consulting services to Excelsior Arizona with respect to the Company’s Gunnison Copper Project. Therefore, Mr. Kinley is not considered “independent”.

Currently the Excelsior’s Audit Committee is comprised of three directors, Fred DuVal, Michael Haworth and Colin Kinley. Mr. DuVal is considered “independent” while Mr. Haworth and Mr. Kinley are not considered “independent”. All are “financially literate”.

### **Relevant Education and Experience**

All of the members of the Audit Committee are senior level executive business persons with extensive experience in financial matters; each has a broad understanding of accounting principles used to prepare financial statements and varied experience as to general application of such accounting principles, as well as the internal controls and procedures necessary for financial reporting, garnered from working in their individual fields of endeavour. In addition, each of the members of the Audit Committee have knowledge of the role of an audit committee in the realm of reporting companies from their years of experience as directors or senior officers of public companies other than Excelsior.

Mr. Haworth co-founded Greenstone Resources in 2013 after a 16 year career in the mining sector. Mr. Haworth, with his co-founder, oversees all aspects of the management of Greenstone Resources. He also services as a director of Greenstone Management Ltd., Greenstone Resource’s General Partner and is a member and co-Chairman of Greenstone Resources’ Investment Committee. Prior to founding Greenstone Resources, Mr. Haworth founded and is a director of Ncondezi Energy Limited (AIM). Until 2006 he held the positions of Managing Director and Head of Mining and Metals Corporate Finance of JP Morgan in London, United Kingdom. Mr. Haworth obtained a Bachelor of Commerce from University of Witwatersrand, South Africa in 1988 and his Chartered Accountant designation from the South African Institute of Chartered Accountants in 1992. Mr. Haworth is a non-practicing Chartered Accountant.

Mr. DuVal is currently a consultant to many American businesses, and a member of Dentons Law, the largest law firm in the world. He is also a senior advisor to Macquarie Infrastructure on public-private partnerships. Mr. DuVal was the Democratic nominee for Governor of Arizona in 2014 and served as Chairman of the Arizona Board of Regents and on the Arizona Commerce Commission. Mr. DuVal was Chief of Protocol of

the United States, Assistant to President Clinton in the White House and responsible for all Governors and state issues; he was also the Political Director for Vice President Al Gore. Mr. DuVal obtained a Bachelor of Arts, Luce Scholar for International Studies from Occidental College in 1976 and his J.D. from Arizona State University in 1980.

Mr. Kinley spent 26 years as an executive for Layne Christensen Company specializing in engineered drilling and resource development projects and he is currently an executive or director of several companies focused on oil or mineral resource exploration and development. He is the President and CEO of Kinley Exploration LLP.

### **Reliance on Certain Exemptions**

Except as disclosed below, at no time since the commencement of the Company's most recently completed financial year, has the Company relied on any of the exemptions contained in the following sections of NI 52-110: section 2.4 (*De Minimis Non-audit Services*), section 3.2 (*Initial Public Offerings*), section 3.4 (*Events Outside Control of Member*), section 3.5 (*Death, Disability or Resignation of Audit Committee Member*) or an exemption from NI 52-110, in whole or in part, granted under Part 8 (*Exemptions*) of NI 52-110.

As a result of the death of Mr. Kolbe, the Company is currently relying on the exemption set out section 3.5 (*Death, Disability or Resignation of Audit Committee Member*) of NI 52-110 with the appointment of Mr. Kinley as his replacement. The Company intends to appoint a new independent Board member at its 2023 annual general meeting who will then replace Mr. Kinley on the Audit Committee.

### **Reliance on Exemption in Subsection 3.3(2) or Section 3.6**

As a result of Michael Haworth being a Managing Member of Greenstone Capital LLP and a Director of Greenstone Management Ltd., the General Partner to Greenstone Resources, the Company is relying on the exemption contained in subsection 3.3(2) (*Controlled Companies*) of NI 52-110. Neither Greenstone Capital LLP nor Greenstone Management Ltd. have securities trading on a marketplace. Mr. Haworth's background as a Chartered Accountant allows him to provide valuable oversight and analysis as a member of the Audit Committee. Mr. Haworth is also able to exercise the impartial judgement necessary for him to fulfill his responsibilities as an Audit Committee member, and his appointment is required by the best interests of the Company and its shareholders.

At no time since the commencement of the Company's most recently completed financial year, has the Company relied on the exemptions contained section 3.6 (*Temporary Exemption for Limited and Exceptional Circumstances*) of NI 52-110.

### **Reliance on Section 3.8**

At no time since the commencement of the Company's most recently completed financial year, has the Company relied on section 3.8 (*Acquisition of Financial Literacy*) of NI 52-110.

### **Audit Committee Oversight**

At no time since the commencement of the Company's most recently completed financial year, has the Company's Board of Directors failed to adopt a recommendation of the Audit Committee to nominate or compensate an external auditor.

### **Pre-Approval Policies and Procedures**

Pursuant to the terms of the Company's Audit Committee Charter, the Audit Committee is required to review and pre-approve any non-audit services provided by the Company's external auditors. The Audit Committee

has adopted a written Audit Committee Pre-Approval Policy with respect to audit and non-audit services to be performed by the Company’s external auditors. The Audit Committee will pre-approve all audit services provided by the external auditor through their recommendation of the external auditor as shareholders’ auditors at the Company’s annual meeting and through the Audit Committee’s review of the external auditor’s annual audit plan. The Audit Committee Chair may pre-approve a request for non-audit services where the aggregate fees are estimated to be less than or equal to \$50,000 but the Chair must advise other Audit Committee members of such pre-approval no later than the next regularly scheduled Audit Committee meeting. For non-audit services where the aggregate fees are estimated to be greater than \$50,000, the approval of the full Audit Committee is required. In no event can the external auditor undertake non-audit services prohibited by legislation or professional standards.

### External Auditor Service Fees

In the following table, “audit fees” are fees billed by Excelsior’s external auditor for services provided in auditing Excelsior’s annual financial statements for the subject year and include audits of its subsidiaries and interim reviews of quarterly financial statements.

“Audit-related fees” are fees not included in audit fees that are billed by the auditor for assurance and related services that are reasonably related to the performance of the audit or review of Excelsior’s financial statements. During the Company’s fiscal years ended December 31, 2022 and December 31, 2021, there were no fees billed in this category.

“Tax fees” are fees billed by the auditor for professional services rendered for tax compliance, tax advice, corporate acquisitions, corporate reorganization and structuring. For the fiscal years ended December 31, 2022 and December 31, 2021 these fees related to Canadian and US tax compliance services, general tax consultations on matters related to Federal, Provincial, Payroll, Sales and US taxes.

“All other fees” are fees billed by the auditor for products and services not included in the foregoing categories.

The fees paid by Excelsior to its auditor during the Company’s fiscal years ended December 31, 2022 and December 31, 2021, by category, are as follows:

Year Ended	Audit Fees	Audit Related Fees	Tax Fees	All Other Fees
December 31, 2022	US\$277,243	Nil	US\$61,243	Nil
December 31, 2021	US\$157,000	Nil	US\$106,000	Nil

## SCHEDULE A



### AUDIT COMMITTEE CHARTER

As of March 25, 2019

The following Audit Committee Charter was adopted by the Audit Committee of the Board of Directors and the Board of Directors of Excelsior Mining Corp. (the "Company"):

#### *Mandate*

The primary function of the audit committee (the "Committee") is to assist the Company's Board of Directors in fulfilling its financial oversight responsibilities by reviewing the financial reports and other financial information provided by the Company to regulatory authorities and shareholders, the Company's systems of internal controls regarding finance and accounting and the Company's auditing, accounting and financial reporting processes. Consistent with this function, the Committee will encourage continuous improvement of, and should foster adherence to, the Company's policies, procedures and practices at all levels. The Committee's primary duties and responsibilities are to:

- serve as an independent and objective party to monitor the Company's financial reporting and internal control system and review the Company's financial statements;
- review and appraise the performance of the Company's external auditors; and
- provide an open avenue of communication among the Company's auditors, financial and senior management and the Board of Directors.

#### *Composition*

The Committee shall be comprised of a minimum three directors as determined by the Board of Directors, all of whom shall be free from any relationship that, in the opinion of the Board of Directors, would interfere with the exercise of his or her independent judgment as a member of the Committee.

All members of the Committee shall have accounting or related financial management expertise. All members of the Committee who are not financially literate will work towards becoming financially literate to obtain a working familiarity with basic finance and accounting practices. For the purposes of this Audit Committee Charter, the definition of "financially literate" is the ability to read and understand a set of financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of the issues that can presumably be expected to be raised by the Company's financial statements.

The members of the Committee shall be elected by the Board of Directors at its first meeting following the annual shareholders' meeting. Unless a Chair is elected by the full Board of Directors, the members of the Committee may designate a Chair by a majority vote of the full Committee membership. The position description and responsibilities of the Chair are set out in Schedule "A" attached hereto.

### *Meetings*

The Committee shall meet at least quarterly, or more frequently as circumstances dictate. As part of its job to foster open communication, the Committee will meet at least annually with the Chief Financial Officer and the external auditors in separate sessions. The Committee may ask members of management of the Company or others to attend meetings or to provide information as necessary.

Quorum for the transaction of business at any meeting of the Committee shall be a majority of the number of members of the Committee or such greater number as the Committee shall by resolution determine.

Meetings of the Committee shall be held from time to time as the Committee or the Chair shall determine upon 48 hours' notice to each of its members. The notice period may be waived by unanimous resolution of the Committee.

The Committee shall keep minutes of its meetings which shall be submitted to the Board. The Committee may, from time to time, appoint any person who need not be a member, to act as a secretary at any meeting.

Any matters to be determined by the Committee shall be decided by a majority of votes cast at a meeting of the Committee called for such purpose. Actions of the Committee may be taken by an instrument or instruments in writing signed by all of the members of the Committee, and such actions shall be effective as though they had been decided by a majority of votes cast at a meeting of the Committee called for such purpose. The Committee shall report its determinations to the Board at the next scheduled meeting of the Board, or earlier as the Committee deems necessary.

### *Responsibilities and Duties*

To fulfill its responsibilities and duties, the Committee shall:

#### **1. Documents/Reports Review**

- (a) review and update this Audit Committee Charter as required; and
- (b) review the Company's financial statements, MD&A and any annual and interim earnings press releases before the Company publicly discloses this information and any financial reports or other financial information (including quarterly financial statements), which are submitted to any governmental body, or to the public, including any certification, report, opinion, or review rendered by the external auditors.

#### **2. External Auditors**

- (a) review annually, the performance of the external auditors who shall be ultimately accountable to the Company's Board of Directors and the Committee as representatives of the shareholders of the Company;
- (b) obtain annually, a formal written statement of external auditors setting forth all relationships between the external auditors and the Company, consistent with the professional standards for the external auditors;
- (c) review and discuss with the external auditors any disclosed relationships or services that may impact the objectivity and independence of the external auditors;

- (d) take, or recommend that the Company's full Board of Directors take appropriate action to oversee the independence of the external auditors, including the resolution of disagreements between management and the external auditor regarding financial reporting;
- (e) recommend to the Company's Board of Directors the selection and, where applicable, the replacement of the external auditors nominated annually for shareholder approval;
- (f) recommend to the Company's Board of Directors the compensation to be paid to the external auditors;
- (g) at each meeting, consult with the external auditors, without the presence of management, about the quality of the Company's accounting principles, internal controls and the completeness and accuracy of the Company's financial statements;
- (h) review and approve the Company's hiring policies regarding partners, employees and former partners and employees of the present and former external auditors of the Company;
- (i) review with management and the external auditors the audit plan for the year-end financial statements and intended template for such statements; and
- (j) review and pre-approve all audit and audit-related services, and any non-audit services, and the fees and other compensation related thereto provided by the Company's external auditors in accordance with the Audit Committee Pre-Approval Policy.

### **3. Financial Reporting Processes**

- (a) in consultation with the external auditors, review with management the integrity of the Company's financial reporting process, both internal and external;
- (b) consider the external auditors' judgments about the quality and appropriateness of the Company's accounting principles as applied in its financial reporting;
- (c) consider and approve, if appropriate, changes to the Company's accounting principles and practices as suggested by the external auditors and management;
- (d) review significant estimates and judgments made by management in the preparation of the financial statements and the view of the external auditors as to appropriateness of such estimates and judgments;
- (e) following completion of the annual audit, review separately with management and the external auditors any significant difficulties encountered during the course of the audit, including any restrictions on the scope of work or access to required information;
- (f) review any significant disagreement among management and the external auditors in connection with the preparation of the financial statements;
- (g) review with the external auditors and management the extent to which changes and improvements in financial or accounting practices have been implemented;
- (h) review any complaints or concerns about any questionable accounting, internal accounting controls or auditing matters;

- (i) establish a procedure for the receipt, retention and treatment of complaints received by the Company regarding accounting, internal accounting controls or auditing matters;
- (j) establish a procedure for the confidential, anonymous submission by employees of the Company of concerns regarding questionable accounting or auditing matters; and
- (k) review with management the Chief Executive Officer and Chief Financial Officer certificates prepared in connection with the annual and interim continuous disclosure regulatory filings.

#### **4. Other Responsibilities**

- (a) review and approve any related-party transactions;
- (b) the Committee shall perform any other activities consistent with this Audit Committee Charter and governing law, as the Committee or the Board deems necessary or appropriate.

#### *Authority*

The Committee shall have the authority to:

- (a) engage independent counsel and other advisors including accounting or other consultants or experts as it determines necessary to carry out its duties;
- (b) set and pay the compensation for advisors employed by the Committee;
- (c) communicate directly with the external auditors;
- (d) access, on an unrestricted basis, the books and records of the Company; and
- (e) conduct any investigation appropriate to its responsibilities, and it may request the external auditors, as well as any officer of the Company, or outside counsel for the Company, to attend a meeting of the Committee or to meet with any members of, or advisors to, the Committee;
- (f) the Committee shall have the authority to engage the external auditors to perform a review of the interim financial statements.

## SCHEDULE "A"

### Position Description for the Chair of the Audit Committee

#### I. Purpose

The Chair of the Audit Committee of the Board shall be a director who is elected by the Board to act as the leader of the Committee in assisting the Board in fulfilling its financial reporting and control responsibilities to the shareholders of the Company.

#### II. Who may be Chair

The Chair will be selected from amongst the directors of the Company who have a sufficient level of financial sophistication and experience in dealing with financial issues to ensure the leadership and effectiveness of the Committee.

#### III. Responsibilities

The following are the primary responsibilities of the Chair:

- chairing all meetings of the Committee in a manner that promotes meaningful discussion;
- ensuring adherence to this Audit Committee Charter and that the adequacy of it is reviewed as required;
- providing leadership to the Committee to enhance the Committee's effectiveness, including:
  - providing the information to the Board relative to the Committee's issues and initiatives and reviewing and submitting to the Board an appraisal of the Company's independent auditors and internal auditing functions;
  - ensuring that the Committee works as a cohesive team with open communication, as well as ensuring open lines of communication among the independent auditors, financial and senior management and the Board of Directors for financial and control matters;
  - ensuring that the resources available to the Committee are adequate to support its work and to resolve issues in a timely manner;
  - ensuring that the Committee serves as an objective party to monitor the Company's financial reporting process and internal control systems, as well as to monitor the relationship between the Company and the independent auditors to ensure independence;
  - ensuring that procedures are in place to assess the audit activities of the independent auditors; and
  - ensuring that procedures are in place for dealing with complaints received by the Company regarding accounting, internal controls and auditing matters, and for employees to submit confidential anonymous concerns regarding questionable accounting or auditing matters.
- managing the Committee, including:
  - adopting procedures to ensure that the Committee can conduct its work effectively and efficiently, including committee structure and composition, scheduling, and management of meetings;

- preparing the agenda of the Committee meetings and ensuring pre-meeting material is distributed in a timely manner and is appropriate in terms of relevance, efficient format and detail;
- ensuring meetings are appropriate in terms of frequency, length and content;
- obtaining and reviewing with the Committee an annual report from the independent auditors, and arranging meetings with the auditors and financial management to review the scope of the proposed audit for the current year, its staffing and the audit procedures to be used;
- overseeing the Committee's participation in the Company's accounting and financial reporting process and the audits of its financial statements;
- ensuring that the auditors' report directly to the Committee, as representatives of the Company's shareholders; and
- annually reviewing with the Committee its own performance.

## SCHEDULE “B”

### EXCELSIOR MINING CORP.

#### AUDIT COMMITTEE PRE-APPROVAL POLICY

As of March 25, 2019

This Policy identifies the Audit Committee’s procedures and conditions for pre-approving audit, audit-related, tax and other non-audit services performed by a public accounting firm that acts as the independent auditor (the “Auditor”) responsible for auditing the consolidated financial statements of Excelsior Mining Corp. (the “Company”), and its subsidiaries and affiliates.

#### **1. Introduction**

The CPA Code of Professional Conduct (the “CPA Code”) sets out the rules for auditor independence. They include prohibitions or restrictions on services that may be provided by independent auditors to their audit clients. The independence rules identify non-audit services that are deemed inconsistent with an auditors’ independence (“Prohibited Services”). When determining whether a non-audit service is a Prohibited Service, specific reference will be made to the underlying independence rules.

In addition, under Canadian Securities Administrators (“CSA”) rules, a public company’s Audit Committee will be responsible for pre-approving all non-audit services to be provided to the company or its subsidiaries by the company’s independent auditors or the independent auditors of the company’s subsidiaries.

Under both the CPA Code and CSA rules, pre-approval of services by the Audit Committee may be accomplished either by specific approval of each engagement or by adopting pre-approval policies and procedures. The CSA rules require public companies to disclose in their Annual Information Form a description of the policies and procedures their Audit Committee has established to pre-approve non-audit services. The CSA rules also require public disclosure of fees paid to the independent auditors under the captions “Audit Fees”, “Audit-Related Fees”, “Tax Fees”, and “All Other Fees”. The four categories of service, as defined in the CSA rules are:

#### Audit Services

Include services that are normally provided by the independent auditor in connection with statutory and regulatory filings or engagements.

#### Audit Related Services

Include services by an independent auditor that are reasonably related to the performance of the audit of the issuer’s financial statements and are not reported as Audit Services.

#### Tax Services

Include professional services rendered by an independent auditor for tax compliance, tax advice, and tax planning.

#### All Other Services

Include products and services provided by the independent auditor not included in the previous three categories.

## **2. Permitted Services**

The Company and its subsidiaries will not engage the Auditor to carry out any Prohibited Service. The Audit Committee will consider the pre-approval of permitted services to be performed by the independent auditor in each of the following broad categories.

### **Audit Services**

- Audit of annual financial statements of the Company.
- Review of quarterly interim financial statements.
- Issuance of comfort letters to underwriters and consents to the securities administrators related to a debt or equity financing.

### **Audit Related Services**

- Accounting consultations on specific issues.
- Accounting and reporting consultations on proposed transactions.
- Accounting work related to mergers and acquisitions.
- Audit of employee benefits plan.
- Due diligence assistance.
- General advice on accounting standards.

### **Tax Services**

- Compliance Income and Mining Taxes Services, including tax return preparation.
- Payroll tax services.
- Tax advice and consultations relating to proposed transactions.
- Advice on GST and HST.
- Other tax services not included in the audit and audit-related categories.

### **Other Non-Audit Services**

- Valuation Services.
- Information Technology Advisory and Risk Management Services.
- Actuarial Services.
- Forensic and Related Services.
- Corporate Recovery Services.

- Transaction Services.
- Corporate Finance Services.
- Project Risk Management Services.
- Operational Advisory and Risk Management Services.
- Regulatory and Compliance Services.
- Translation Services.

### **3. Approval of Permitted Services**

For permitted services the following pre-approval policies will apply:

#### **A. Audit Services**

The Audit Committee will pre-approve all audit services provided by the Auditor through their recommendation of the Auditor as shareholders' auditors at the Company's annual meeting and through the Audit Committee's review of the Auditor's annual Audit Plan.

#### **B. Pre-Approval of Audit Related, Tax Services and Other Non-Audit Services**

Annually, the Audit Committee will pre-approve the audit-related, tax and other non-audit services to be provided by the Auditor that are recurring or otherwise reasonably expected to be provided by the external auditor, including involvement with regulatory filings and offering documents. In addition, the Audit Committee will pre-approve the auditor entering into discussion with and providing preliminary advice to management in connection with accounting, internal controls and taxation matters where they are responding to management's request and the fees for the services of this nature are to be less than \$5,000 individually or \$50,000 in aggregate during the year. Where the auditor presents an engagement letter in connection with any requested services, the pre-approval of the Audit Committee should be evidenced by the signature of the Audit Committee Chair or his designate. The Audit Committee shall be subsequently informed, at least quarterly, of the services for which the External Auditor has been actually engaged. Any additional requests for pre-approval shall be addressed on a case-by-case specific engagement basis as described in (C) below.

#### **C. Approval of Additional Services**

With respect to services not covered in (A) or (B) above, the Company employee making the request will submit the request for service to the Chief Financial Officer of the Company. The request for service should include a description of the service, the estimated fee, a statement that the service is not a Prohibited Service and the reason the Auditor is being engaged. All fees related to tax services will be discussed and reviewed by the Audit Committee or its designee prior to beginning the proposed engagement.

- (i) Services where the aggregate fees are estimated to be less than or equal to \$50,000.

Recommendations, in respect of each engagement, will be submitted by the Chief Financial Officer of the Company to the Chair of the Audit Committee for consideration and approval. The full Audit Committee will subsequently be informed of the service, at its next meeting. The engagement may commence upon approval of the Chair of the Audit Committee.

(ii) Services where the aggregate fees are estimated to be greater than \$50,000.

Recommendations, in respect of each engagement, will be submitted by the Chief Financial Officer of the Company to the full Audit Committee for consideration and approval, generally at its next meeting or at a special meeting called for the purpose of approving such services. The engagement may commence upon approval of the full Audit Committee.