Stardust Project

Updated Mineral Resource Estimate

NI 43-101 Technical Report

Omineca Mining Division, British Columbia Effective Date: May 17, 2021

Prepared for: Northwest Copper Corp.

Prepared by: Ronald G. Simpson P.Geo., Geosim Services Inc.

Report Date: July 2, 2021

DATE AND SIGNATURE PAGE

The effective date of this NI 43-101 Technical report, entitled "Stardust Project, Updated Mineral Resource Estimate, NI 43-101 Technical Report," is May 17, 2021.



Ronald G. Simpson, P.Geo. Date: July 2, 2021.

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1.0 Summary

1.1 Introduction

Geosim Services Inc. ("Geosim") was requested by Northwest Copper Corp. ("Northwest Copper" or "the Company") to prepare a Technical Report in compliance with National Instrument 43-101 – *Standards of Disclosure for Mineral Projects* (the "Instrument" or "NI 43-101") and Form 43-101F1 for the Stardust Project located in central British Columbia.

The Stardust Property ("the Property", the "Project" or the "Stardust Project), was formerly known as 'Lustdust' and lies in the Omineca Mining Division of north-central British Columbia, approximately 150km north of Fort St. James. It consists of 20 contiguous claims owned 100% by Tsayta Resources Corporation ("Tsayta"), a wholly owned subsidiary of Northwest Copper Corp. There are no title encumbrances, surface rights issues or legal access obligations that must be met in order for Northwest Copper to retain the Property. The Stardust Property is not subject to any royalty terms, back-in rights, payments or any other agreements or encumbrances.

1.2 Project History

The Property has been explored since 1944 when the Takla silver vein (No. 1 Zone) was discovered. Alpha Gold Corporation ("Alpha Gold") carried out exploration on the Property between 1991 and 2012. In June of 2016, Lorraine Copper Corp. ("Lorraine Copper") entered into an agreement to purchase a 100% interest in the Property from Alpha Gold.

In September 2017, 1124245 B.C. Ltd. (subsequently renamed "Sun Metals Corp." ("Sun metals") was granted an option to acquire a 100% interest in the Property subject to certain royalties and terms. Sun Metals fulfilled the 2017 expenditure requirement by completing an exploration program by year end.

In April 2019, Sun Metals acquired all outstanding shares of Lorraine Copper in order to own a 100% interest in the Property.

In March 2021, Sun Metals and Serengeti Resources Inc. ("Serengeti") announced the completion of a merger and a name change to Northwest Copper Corp.

1.3 Mineral Tenure

Northwest Copper, indirectly through its wholly-owned subsidiary Tsayta, owns a 100% interest in the Stardust Project. The Stardust Project encompasses 24 mineral claims covering 11,156 hectares.

1.4 Geology and Mineralization

The Property is located within the Cache Creek Terrane of the Intermontane Belt west of the Pinchi Fault. Once a major thrust fault, the Pinchi was later reactivated as a major right-lateral strike-slip fault which can now be traced roughly 600 kilometers through north-central British Columbia. At Stardust, the Pinchi delineates the terrain contact between the Pennsylvanian-Permian Cache Creek terrane to its southwest and the Quesnellia Terrane, which includes and Jurassic Hogem Batholith and Triassic-Jurassic Takla rocks to the northeast.

Most of the Property is underlain by very strongly deformed Pennsylvanian to Permian Cache Creek units. Much of the mapped regions of the Property contains an assortment of intrusions that cut carbonate rocks interbedded with graphitic, siliceous, and calcareous phyllites, cherts, cherty argillites, and mafic flows. Intrusions are found throughout the Property, except in the far north of the claims, where they may just be buried under deep overburden.

Several styles of mineralization that are zonally related to each other are present on the Property. From most proximal to most distal from the Glover Stock, they are:

- Molybdenum-Copper-Gold Porphyry consisting of quartz-K-spar, pyrite, molybdenite and/or chalcopyrite veinlets associated with potassic, sericitic, and propylitic alteration in intrusive rocks (Glover Stock).
- Multi-stage Garnet-Diopside skarn cut by Cu-Au-Ag-Zn bearing structures with surrounding dispersed Cu-Au mineralization (Canyon Creek Skarn).
- Structurally and stratigraphically controlled massive sulfide Zn, Au, Pb,
- Ag, Cu replacement bodies [CRD] (4b, 3, and 2 Zones) and their oxidized equivalents.
- Sulfosalt-rich veins (Zone 1) which follow faults and are strongly associated with fine-grained, linear, felsic dykes containing high values of Au, Ag, Pb, Zn, Sb and Mn.
- Mercury mineralization in limestone proximal to the Pinchi Fault.
- Sediment-hosted gold mineralization in limestone.

1.5 Metallurgical Testwork

Metallurgical testwork was completed by Base Metallurgical Laboratories Ltd. in Kamloops, BC. A scoping level metallurgical study was undertaken to evaluate the

flotation response of three composites prepared to represent a gradient of feed grades. Testing optimized conditions using the high-grade composite; a series of three rougher kinetic flotation tests evaluated the sensitivity of primary grind before optimizing the cleaner circuit with a further five tests. A single cleaner test was performed for each of the low grade and medium grade composites applying established conditions used for the high-grade composite.

The final flowsheet used for testing included gravity concentration of gold by Centrifugal Gold Concentration (CGC) using a laboratory Knelson, followed by cleaning using a Mozley Table at 150 microns. The combined Knelson and Mozley tails were advanced to 10 minutes of rougher flotation, the rougher concentrate was reground to a target of 40 to 50 microns and cleaned, requiring 2 to 3 stages of dilution cleaning.

The test work showed copper recovery had limited sensitivity to grind sizes between 75 and 150 microns. Gold showed much higher recoveries at 75 microns vs. 100 or 150 microns but the inclusion of a gravity circuit appears to remove the need for a finer primary grind. The inclusion of the gravity circuit allows for a relatively coarse primary grind size of 150 microns. Gravity recovered between 24% and 42% of the gold in the three tests.

Combined gravity and flotation produced copper recoveries from 94.2% to 98.6% and gold recoveries from 93.0% to 93.9%. Those tests produced copper in concentrate grades from 21.8% to 26.2%.

Recoveries used in calculation of the base case cut-off were based on these metallurgical test results and were assumed to be 94% for gold and copper and 86% for silver.

1.6 Exploration

The earliest publicly available reports on exploration on the Property date from 1944 with the discovery of Zone 1 (Zn-Pb-As-Sb veins). Later exploration programs resulted in the discovery of several targets that were drilled sporadically between 1966 and 1981.

Major drill programs began in 1991 when Alpha Gold was the operator. Most of the exploration carried on the Property since 1999 has focused on the Canyon Creek Skarn Zone and peripheral areas. Sun Metals has conducted three drill programs on the Property since 2018 to further delineate and explore for extensions of the Canyon Creek Skarn Zone. These programs resulted in the discovery of the 421 Zone in 2018. Follow-up drilling from this discovery established that the 421 Zone was part of the Canyon Creek Skarn Zone.

1.7 Mineral Resource Estimation

The updated Stardust mineral resource estimate for the Stardust Project Canyon Creek Skarn Zone is presented in Table 14-8. It is based on a cut-off of US \$65/tonne and 2.5 metre minimum mining width.

Table 1-1	Stardust Mineral	Resource Esti	mate – Canvo	n Creek Skarn	Zone
	Staraust Wintera	Resource LSU	mate – canyo	II CIEEK Skaili	LONG

	Tonnos	Grades				
Class	(000)	%Cu	g/t Au	g/t Ag	CuEq	
Indicated	1,963	1.31	1.44	27.1	2.59	
Inferred	5 <i>,</i> 843	0.86	1.17	20.0	1.88	

Notes:

- 1. CIM Definition standards (2014) were used for reporting the mineral resources.
- 2. Mineral resources are not mineral reserves and do not have demonstrated economic viability.
- Mineral resource estimate prepared by Ronald G. Simpson of GeoSim Services Inc. with an effective date of May 17, 2021.
- 4. Reasonable prospects for economic extraction were determined by applying a minimum mining width of 2.5 m. and excluding isolated blocks and clusters of blocks that would likely not be mineable.
- 5. The base case cut-off of US\$65/t was determined based on metal prices of \$1,600/oz gold. \$20/oz silver and \$3.25/lb copper, underground mining cost of US\$45/t, processing cost of US\$15/t and G&A cost of US\$5/t. Recoveries based on recent metallurgical test results were assumed to be 94% for gold and copper and 86% for silver.
- 6. Block tonnes were estimated using a density of 3.4 g/cm3 for mineralized material.
- Copper Equivalent was calculated using the metal price assumptions stated above: CuEq = Cu + Au * 0.718 + Ag * 0.009.
- 8. Six separate mineral domains models were used to constrain the estimate. Minimum width used for the wireframe models was 1.5 m.
- 9. For grade estimation, 2.0-meter composites were created within the zone boundaries using the best-fit method.
- 10. Capping values on composites were used to limit the impact of outliers. For Zone 102, gold was capped at 15 g/t, silver at 140 g/t and copper at 7.5%. For all other zones, gold was capped at 6 g/t, silver at 140 g/t and copper at 5%.
- 11. Grades were estimated using the inverse distance cubed method. Dynamic anisotropy was applied using trend surfaces from the vein models. A minimum of 3 and maximum of 12 composites were required for block grade estimation.
- 12. Blocks were classified based on drill spacing. Blocks falling within a drill spacing of 30m within Zones 2, 3, and 6 were initially assigned to the Indicated category. All other estimated blocks within a maximum search distance of 100 m were assigned to the Inferred category. Blocks were reclassified to eliminate isolated Indicated resources within inferred resources.
- 13. Totals may not sum due to rounding.

1.8 Interpretation and Conclusions

Geosim has prepared a Mineral Resource estimate for the Stardust Project Canyon Creek Zone. The following observations and conclusions were drawn:

• The Canyon Creek zone is a skarn-hosted mineral occurrence hosted by Permian Cache Creek group sediments in proximity to the Glover stock. The presently

defined mineralized zones extend approximately 1200 m along strike and 1000 m down dip.

- The adequacy of sample preparation, security and analytical procedures are sufficiently reliable to support an Indicated and Inferred mineral resource estimation and that sample preparation, analysis, and security are generally performed in accordance with exploration best practices at the time of collection.
- The resource estimate is based on analytical data from 206 drill holes representing 80,700 m of drilling. Fifty-eight of these holes (38,329 m) were completed in the most recent drill programs carried out in 2018, 2019 and 2020. Block grade estimation is based on samples from 186 of these drill holes.
- Statistical analysis of gold grade distribution indicates that cutting or capping of high grades is warranted.
- There is significant potential for expanding the current resource and for discovering additional mineral deposits on the Property and extensions to known mineral showings.

Areas of uncertainty that may materially impact the Project's potential economic viability or continued viability include:

- Commodity price assumptions
- Assumptions that all required permits will be forthcoming
- Metallurgical recoveries
- Mining and process cost assumptions
- Ability to meet and maintain permitting and environmental license conditions and the ability to maintain the social license to operate.

There are no other known factors or issues that materially affect the project other than normal risks faced by mining projects the province of British Colombia in terms of environmental, permitting, taxation, socio economic, marketing, and political factors. Geosim is not aware of any known legal or title issues that would materially affect the Project's potential economic viability.

1.9 Recommendations

The results of the recent exploration programs clearly demonstrate that additional exploration is warranted. The program should continue to focus on expanding the

Canyon Creek Skarn zone as well as testing for additional skarn lenses along the siliciclastic sedimentary – carbonate contact. Infill drilling should be carried out to upgrade Inferred resources to Measured or Indicated. Advanced metallurgical testing should also be carried out. Specific recommendations for a first phase program include:

- Resource expansion drilling in order to potentially expand the mineral resources within the Canyon Creek Skarn Zone.
- Infill drilling to potentially upgrade inferred mineral resources to measured or indicated.
- Further metallurgical testing including comminution testing, locked cycle tests on main rock types, variability testing and detailed concentrate analysis to identify any potential deleterious elements that might impact marketability of the final concentrates.

A second phase of work would consist of a Preliminary Economic Assessment (PEA) once the first phase drilling is complete. The second phase work program would be contingent on the results of the first phase drill program.

2.0 Introduction

Northwest Copper is engaged in the exploration of the Stardust Property, Omineca Mining Division, British Columbia, in which it has a 100% ownership. The Property was historically known as 'Lustdust'. Geosim was retained by the Company to estimate a mineral resource for the Canyon Creek copper-gold skarn deposit and complete a Technical Report summarizing the findings of the study to meet the requirements of NI 43-101 and Form 43-101F1.

2.1 Terms of Reference

Geosim is independent of Northwest Copper and has no beneficial interest in the Property. Fees for this Technical Report are not dependent in whole or in part on any prior or future engagement or understanding resulting from the conclusions of this report.

All measurement units used in this report are metric, and currency is expressed in United States dollars unless stated otherwise.

The geographic projection used for the project maps and surveys is UTM Zone 10, NAD 83.

2.2 Qualified Persons

Ronald G. Simpson, P Geo. (Geosim Services Inc.) served as the Qualified Person (QPs) as defined in NI 43-101.

2.3 Effective Dates

The effective date of this Technical Report is May 17, 2021. The data cut-off date is March 31, 2021.

2.4 Information Sources and References

Information used to support this Technical Report was derived from two previous Technical Reports (Simpson, 2010 & Simpson, 2018) and assessment reports filed by Northwest Copper and previous operators.

The author visited the site on June 14, 2010, October 19, 2017, and September 23, 2020. Details are described in Section 12. 1.

Other supplemental sources of information are cited in the text of this report and listed in Section 20 of this Report.

2.5 Previous Technical Reports

Two previous NI43-101 Technical Reports have been completed on the Project:

Simpson, R.G., (2010): Technical Report, Canyon Creek Copper-Gold Deposit, Stardust Property, Omineca Mining Division, British Columbia, Canada

Simpson, R.G., (2018): Stardust Project NI43-101 Technical Report, Omineca Mining Division, British Columbia, Canada

A Technical Report was prepared by Snowden in 2005 for Alpha Gold but it was never filed on SEDAR. (Palmer & Hanson, 2005).

3.0 Reliance on Other Experts

The QP author of this Technical Report states that he is a qualified person for those areas as identified in the "Certificate of Qualified Person", as included in this Technical Report. The author has not conducted independent land status evaluations and has relied and believe there is a reasonable basis for this reliance, upon information from Northwest Copper and the Mineral Titles Branch, Energy and Minerals Division of the Ministry of Energy and Mines for British Columbia regarding Property status, and legal title for the Property (Sections 4.2 to 4.4), which the author believes to be accurate.

4.0 **Property Description and Location**

The Property is located approximately 150 km north of Fort St. James in the Omineca Mining Division of north-central British Columbia on NTS 93N/11W at latitude 55° 34' North (Northing 6160175) and 125° 25' West (Easting 347850), UTM Zone 10, NAD 83 (Figure 4-1).



Figure 4-1 General Location Map

4.1 Tenure History

Pursuant to agreements dated July 15, 1989, and February 21, 1992, Alpha Gold acquired interest in 77 mineral claims known as the Lustdust Property, Omineca Mining Division. In 2003, Alpha acquired the retained 5% net profits interest and the 2% net smelter return royalties. In 2003, net smelter returns were purchased for these claims. Also, during 2003, an additional 8 two-post claims overlying the historic Takla Bralorne Mercury Mine were

acquired by purchase. In June 2005 all these claim holdings were converted to eleven "cell" claims.

In 2006, six additional "cell" claims were acquired bringing the total to seventeen contiguous claims covering an area of 8,560.75 hectares (Figure 4-2). In 2011 and additional 3 claims were acquired brining the total area to 9,583 hectares. "Cell" claims are geographic blocks with boundaries defined by a computer mapping system. No fractions or ownership disputes are possible with this type of claim.

In August 2013, Alpha Gold was re-named ALQ Gold Corp.

In June of 2016, Lorraine Copper acquired the Property from Alpha Gold. The completion of the sale was announced in a news release dated September 26. 2016. It was stated that "Lorraine Copper purchased a 100% interest in the Lustdust Property by (i) issuing ALQ 5.5 million LLC common shares and (ii) paying ALQ \$50,000 in cash. After acquisition, Lorraine Copper decided to change the Property name to 'Stardust'.

In September 2017, 1124245 B.C. Ltd. (subsequently renamed "Sun Metals Corp.") was granted an option to acquire a 100% interest in the Property subject to certain royalties and terms. Sun Metals fulfilled the 2017 expenditure requirement by completing an exploration program by year end.

In April 2019, Sun Metals acquired all outstanding shares of Lorraine Copper in order to own a 100% interest in the Stardust Project.

In March 2021, Sun Metals and Serengeti announced the completion of a merger and a name change to Northwest Copper Corp.

4.2 Mineral Tenure

Northwest Copper owns a 100% interest in the Stardust Project. The claims are registered to Tsayta, a wholly owned subsidiary of Northwest Copper. The Stardust Project encompasses 24 mineral claims covering 11,156 hectares. Claim details are presented in Table 4-1 and Figure 4-2. A single small claim in the centre of the Property covers the site of a historic mining drift into the Number 1 Vein Zone that is excluded from the Project claims.

Title Number	Claim Name	Мар	Issue Date	Good to Date	Status	Area (ha)
		Number				
505166	Alpha 1	093N	2005/JAN/29	2026/DEC/15	GOOD	347.16
514104		093N	2005/JUN/07	2026/DEC/15	GOOD	603.62
514105		093N	2005/JUN/07	2026/DEC/15	GOOD	493.88
514106		093N	2005/JUN/07	2026/DEC/15	GOOD	365.99

Table 4-1 Stardust Claim Status

Title Number	Claim Name	Map Number	Issue Date	Good to Date	Status	Area (ha)
514109		093N	2005/JUN/07	2026/DEC/15	GOOD	694.67
514111		093N	2005/JUN/07	2026/DEC/15	GOOD	1205.81
514114		093N	2005/JUN/08	2026/DEC/15	GOOD	695.24
514115		093N	2005/JUN/08	2026/DEC/15	GOOD	548.90
514117		093N	2005/JUN/08	2026/DEC/15	GOOD	274.28
514119		093N	2005/JUN/08	2026/DEC/15	GOOD	457.19
514120		093N	2005/JUN/08	2026/DEC/15	GOOD	712.91
533018	ALPHA 2	093N	2006/APR/25	2025/DEC/15	GOOD	219.65
545320	LUSTDUST	093N	2006/NOV/13	2025/DEC/15	GOOD	439.37
545321	LUSTDUST	093N	2006/NOV/13	2025/DEC/15	GOOD	439.65
545682	NAT 1	093N	2006/NOV/22	2025/DEC/15	GOOD	457.80
545684	NAT 2	093N	2006/NOV/22	2025/DEC/15	GOOD	439.70
545688	NAT 3	093N	2006/NOV/22	2025/DEC/15	GOOD	164.92
692403	UTM2	093N	2010/JAN/01	2025/DEC/15	GOOD	456.47
692424	UTM3	093N	2010/JAN/01	2025/DEC/15	GOOD	456.47
692443	UTM4	093N	2010/JAN/01	2025/DEC/15	GOOD	109.57
1052796	KW2	093N	2017/JUN/28	2025/DEC/15	GOOD	347.13
1052797	KWN	093N	2017/JUN/28	2025/DEC/15	GOOD	420.02
1052799	WESTSIDE 1	093N	2017/JUN/28	2025/DEC/15	GOOD	402.92
1052800	WESTSIDE 2	093N	2017/JUN/28	2025/DEC/15	GOOD	402.92
					Total:	11156.26



Figure 4-2 Stardust Claim Boundaries and Local Physiography

4.3 Surface Rights

Surface rights over the Stardust Property are owned by the Crown and administered by the Government of BC and would be available for any eventual mining operation. The ownership of other rights (placer, timber, water, grazing, trapping, outfitting, etc.) affecting the Property were not investigated by the author.

4.4 Agreements

On August 19, 2020, a new Exploration Agreement was announced between Sun Metals (now Northwest Copper) and the Takla First Nation ("Takla"). The new Exploration Agreement replaces an expired agreement and is valid through to December 31, 2021. Sun Metals and Takla's initial two-year agreement was announced in 2018. The agreement respects Aboriginal title, rights, and interests, and continues to recognize Takla's stewardship role in environmental and wildlife monitoring.

4.5 Royalties

The Property is not subject to any royalty terms, back-in rights, payments or any other agreements or encumbrances.

4.6 **Permitting Considerations**

Northwest Copper has an exploration permit issued by the BC Ministry of Energy and Mines and Low Carbon Innovation authorizing mineral exploration for the Stardust Project. The permit is good until December 31, 2021, with the option to extend for an additional 2 years at the discretion of the BC Ministry of Energy and Mines and Low Carbon Innovation.

4.7 Environmental Considerations

The historic Bralorne Takla Mercury Mine is located within the Property boundaries. This historic mine site is under the jurisdiction of the Crown Contaminated Sites Program.

The Crown Contaminated Sites Program (CCSP) in the Ministry of Forests, Lands, Natural Resource Operations and Rural Development manages contaminated sites on Crown land for which there is no existing responsible party. These are typically historic abandoned mine sites and make up a small fraction of the contaminated sites on Crown land. CCSP is not involved with contaminated sites on Crown land where there are specified parties responsible for the contamination.

A full remediation and cleanup program was completed on this site through CCSP in 2018. At this point, only ongoing monitoring through CCSP and their contractors is required. Northwest Copper is not involved with or responsible for any of the ongoing monitoring programs.

4.8 Comments on Section 4

To the extent known there are no other significant factors and risks besides noted in the Technical Report that may affect access, title, or the right or ability to perform work on the Property.

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

5.1 Accessibility

The Property is located in the Omineca Mountains approximately 210 kilometers northwest of Prince George, B.C., and 36 km east of Takla Landing (Figure 4-1). The claims lie immediately west of the old Bralorne-Takla Mercury Mine (Minfile 093N 008) and encompass the historic Takla Silver Mine (Minfile 093N 009).

The Property is accessible by road from Highway 16 at Fort St. James by traveling 30 km along a paved road towards Tachie Lake, then north for 68 km along the all-weather Leo Creek Forest Service Road (FSR), 54 km along the Driftwood FSR, 26 km along the Fall-Tsayta logging road, and 3 km along the Silver Creek Road. Total distance by road is approximately 215 km from Fort St. James and driving time is about 3 hours under good road conditions. The Property is also accessible by float plane, about a 1-hour trip to Tsayta Lake from either Prince George or Smithers, followed by a half an hour drive to the site.

5.2 Climate

The climate is cool and moderate with warm, moist summers and cool winters. Snow accumulations, during average winters, persist from late September through May-June at the higher elevations. Winter temperatures are commonly below freezing and can fall as low as -30°C for short periods of time. The region receives an average of 295 mm of rainfall and 192 cm of snowfall annually with 138 days per year with precipitation exceeding 0.2 mm. Most of the exploration programs conducted on the Property to date have been completed during the June to October field season.

5.3 Local Resources and Infrastructure

The nearby centres of Prince George, Burns Lake, Houston, and Smithers (populations of 65500, 1930, 2100 and 5350 respectively) have provided all the necessary supplies and services to operate past exploration programs. All these communities have a strong mining history. Prince George is the regional centre with a mineral resource sector economic base and is a five-hour drive from the Stardust Property.

Smaller population centres closer to the Property are Takla Landing and Fort St. James.

B.C. Railway Company maintains an active rail line to Fort St. James (approximately 215 km via road) that could potentially be used for concentrate transport.

A core shack, core cutting shack, and an outhouse constructed in 2018 at 4km up the Property road are the only usable structures on the Property. There are also several collapsed cabin structures next to the small lake just south of the reclamation site in an area formerly occupied by historic exploration camps, but these are in complete disrepair. There are also several fishing lodges and guiding camps within the area, including the Tsayta Lake Lodge at 7.5 km on the Fall-Tsayta Road, which was the operations-base for the exploration programs carried out between 2017 and 2020.

5.4 Physiography

The terrain is moderate, ranging in elevation from 1000-1525 m on the Property with little outcrop exposure. Lower elevations are covered by widely spaced lodgepole pine. At elevations above 1200 m, forest cover consists of overmature spruce and balsam with an undergrowth of white rhododendron. Despite fairly moist summers, many drainages are seasonal in nature with progressively diminished flows during the late summer and fall.

5.5 Seismicity

South of 60° N, seismicity in the interior and Rocky Mountain areas drops off rapidly. The largest earthquake recorded in the southern Cordillera was a magnitude 6.0 in 1918 that struck the Valemount area of the Rocky Mountain trench. In 1986 a magnitude 5.5 earthquake occurred near Prince George, causing some minor damage.

5.6 Comments on Section 5

The accessibility, climate, physiography, and seismic situation of the Stardust Project site are sufficiently well understood to allow for mineral resource estimation.

Surface rights over the Stardust Property are owned by the Crown and administered by the Government of BC and would be available for any eventual mining operation. The Property has abundant water and water rights could be obtained for milling.

Further investigations will be required to identify potential tailings storage areas, potential waste disposal areas, and potential processing plant sites to support a PEA or Feasibility Study.

6.0 History

The Stardust area was first staked in 1944 when the No. 1 Zone (Takla Silver Veins) was discovered near the southern end of the Property. Since that time numerous operators have investigated the Property and immediately surrounding area and a number of mineralized zones have been identified.

The Bralorne Takla Mercury mine was in operation from November 1943 to September 1944 when mining ceased. During nine months of operation, 59,914 kg of mercury were recovered from 10,206 tonnes of milled ore from the two largest orebodies (Geological Survey of Canada Memoir 252, page 157).

Bralorne Mines Ltd. explored the Property from 1952-54. In 1960 Bralorne again acquired the Property and from 1960 to 1962 carried out further work (drilling and trenching) in a joint venture with Noranda Exploration Company, Ltd., and Canex Aerial Exploration Ltd. A limited sampling program was also carried out by Bralorne alone in 1963.

The option held by Bralorne was transferred to Talka Silver Mines Ltd. which was organized in September 1964 to explore and develop the Property. A new adit, bypassing the old one, was begun in 1964 and advanced to a total length of 229 m in 1965. Diamond drilling during 1965-1966 totaled 259 metres underground and more than 762 metres on surface. In July 1968, an agreement was reached with Anchor Mines Ltd. by which a new company, Anchor-Takla Mines Ltd., was incorporated for the purpose of performing joint venture work on the Property. Additional ground was acquired in the A.G. 1-6, Ag 1-4, and Keno I-8 claims. Diamond drilling during the fall of 1968 totaled 573 metres in 17 holes underground, and 1337 metres in 13 holes on surface. The underground work was confined to the No. 1 zone. The company (Anchor-Takla) was dissolved in 1977.

In 1977, Granby located the K, L and M claims comprising 38 units to cover a large area with apparent mineral potential. The M claims adjoined Crown Granted Mineral Claims L.6181, 6184, 6186 and 6188 which formed part of the former Bralorne Takla Mercury Mine Property. Pioneer Metals Corporation acquired 100% interest in the Property early in 1985 and followed with some geological work in 1986.

The Air claim was added to the Property in late 1978, and in 1979 three fractions and 52 metric claim units were located.

In 1978 Granby cut 67 km of grid line, carried out a soil geochemical survey and mapped the Property at a scale of 1:5,000. In 1979 a Pulse E.M, survey was conducted by Glen White Geophysics Ltd. followed by a diamond drill program later in the year.

In 1989 Alpha acquired the Property and in 1991 completed 988.2 m of drilling in 11 holes on Zone 3. They followed in 1992 with 30 diamond drill holes totaling 1520 metres on Zone 4B. In 1993, Alpha Gold completed a further 24 diamond drillholes on Zone 4B and purchased 8 two post claims which overlie the historic Bralorne Takla mine. A total of four drillholes were collared in the mine area but only three were successfully completed. An extensive soil geochemical survey was also conducted in the mine area.

Teck Exploration Ltd., under option from Alpha, drilled 16 holes totaling 3063 metres in 1997. Drilling targeted the manto and skarn styles of mineralization that were traced by trenching in 1996. Alpha completed 1103 metres in a 14-hole diamond drilling program in 1998 that targeted Zones 1, 2 and 3. In 1999, Alpha completed an 18-hole, 3045-metre drilling program that accomplished two objectives. It extended the strike length of the skarn zone 1000 metres further to the north (hole LD99-06 intersected 5.2 metres grading 8.3 per cent copper) and provided very encouraging information on a previously untested 400-metre gap between the most southerly skarn holes and most northerly exposures of manto mineralization. In 2000, Alpha drilled 4680 metres of diamond drilling in 29 holes. Most of the drill holes targeted prospective skarn zones, although the company did test areas further west for potential porphyry mineralization. In 2001, Alpha drilled 18 holes on the Canyon Creek Skarn Zone (CCS) and peripheral targets.

Alpha drilled 19 NQ bore holes totaling 7790 metres between July 8 and September 6, 2002, on the CCS deposit. An additional 42 NQ holes totaling 7908 metres, were completed in 2003 and 32 holes totaling 6,010 m in 2004. Most of the drilling was on the CCS deposit.

In 2005, Alpha Gold drilled 5,153 metres in 16 diamond drillholes. Drilling a coincident gold-arsenic soil geochemistry anomaly 300 metres east of the CCS deposit resulted in the discovery of the East zone. In 2005 Alpha also conducted a broad, grid-based soil sampling and bedrock mapping program that covered not only the Dream Creek area north of the Canyon skarn zone but also part of the Pinchi fault system at the former Bralorne Takla mercury mine.

In 2005, a mineral resource estimate was prepared by Snowden reportedly in conformance with the requirements set out in the standards defined by NI 43-101 (Palmer & Hanson, 2005 Palmer & Hanson, 2005). However, this report was never filed publicly on SEDAR.

In 2006, diamond drilling extended the sinuous geometry of the Canyon Creek copper skarn system both down-dip and to the south. Alpha drilled 6855 metres in 31 NQ diamond-drill holes and 3054 metres in 24 rotary holes. Trenching of a gold soil anomaly southeast of the Canyon Creek zone discovered the GD zone. The company completed a reverse circulation drilling program in an area surrounding the historic Bralorne-Takla mercury mine to evaluate gold soil anomalies outlined in 2005.

In 2007, Alpha Gold completed 50-line km of soil geochemistry and IP, mapping, and 11 boreholes totaling about 2757 m. In 2008, Alpha completed about 2400 metres of drilling on untested targets on the southern portion of the Property.

In 2009, Alpha completed 6367m of core drilling in 17 holes, mainly targeting the Canyon Creek skarn zone. In 2010 Alpha drilled 14 holes (3987 m) in the Canyon Creek and Canyon Creek Extension zones.

In 2012, Aurora Geoscience was engaged by Alpha Gold to carry out a data evaluation and report on project potential.

No work was carried out between 2012 and the time the Stardust Project was acquired by Lorraine Copper.

The 2017 exploration project carried out by Lorraine Copper, included a geochemical survey, IP, and magnetometer surveys and a 3-hole diamond drill program.

Work by Sun Metals between 2018 and 2020 is described in Sections 9 and 10.

A summary of work performed by the various parties is shown in Table 6-1. Note that what is listed in the table is not necessarily a complete compilation of exploration work done on the Property, as some original reports on exploration activities could not be located.

Year	Company	Work	Drill Holes	Drilling (m)	Mag (km)	VLF EM (km)	IP (km)	Soil Samp.	Rock Samp.
1944		zone 1 discovery; claim staking							
1945	McKee Gp/Leta	trenching; drilling		0					
1952	Bralorne Mines	trenching; drilling							
1954	Bralorne Mines	drilling		0					
1958	Totem Minerals	mag, geochem.							
1960	Noranda Canex	rock cuts; trenching; test pits							
1963	Bralorne Mines	sampling							
1964	Takla Silver Mines	drifting							

Table 6-1 Exploration History

Year	Company	Work	Drill Holes	Drilling (m)	Mag (km)	VLF EM (km)	IP (km)	Soil Samp.	Rock Samp.
1966	Takla Silver Mines	underground drilling	5	500					
1968	Takla Silver Mines	surf/underg drilling; bulk sample							
1968	Rip Van Mining	Hg soil geochem; trenching							
1978	Granby Mining	geol; geochem; pulse EM						910	
1979	Zapata Granby	EM							
1979	Zapata Granby	drilling	3	615.4					
1980	Noranda (Zapata)	drilling	2	299.3					
1981	Noranda (Zapata)	geochem; drilling; EM; geol.	6	854		26.15		722	
1983	Golden Porphyrite	geol.; geochem.						521	56
1984	Golden Porphyrite	geochem.						66	3
1984	Equinox Res.	geochem.						62	14
1984	Golden Porphyrite	geochem.							9
1986	Welcome North	sampling							
1986	Pioneer Metals	geol.							
1986	Equinox Res.	geochem.						96	15
1989	Eastfield Res.	geochem; mag; vlfem; geol.			21	21		570	
1989	Eastfield Res.	geochem.; geol.					0.45	29	25
1991	Alpha Gold	drilling	11	988.2					
1991	Alpha Gold	resubmission of above AR?							
1992	Alpha Gold	drilling; trenching; geophys.	30	1520		12.5			23
1993	Alpha Gold	summary report	24	2041.84					
1996	Teck/Alpha	geochem; geol.; trenching						513	259
1997	Teck/Alpha	geochem; drilling	16	3062.8					
1998	Teck/Alpha	drilling	14	1105.3					
1999	Alpha Gold	drilling; geol.	18	3050					
2000	Alpha Gold	drilling; geol., mag	29	4680					
2001	Alpha Gold	drilling; geol.	18	5609					
2002	Alpha Gold	drilling	19	7790.4					
2003	Alpha Gold	drilling	42	7908				695	
2004	Alpha Gold	drilling; geochem.	21	6010				724	
2005	Alpha Gold	drilling; geochem, geol.	17	5152.9				587	
2005	Alpha Gold	resource comp. CCSZ							
2006	Alpha Gold	drilling; geochem, trenching	56	9909.2					7
2007	Alpha Gold	airmag/em; drilling	34	8898					
2008	Amark	airmag			74				
2008	Alpha Gold	drilling	5	2140					

Year	Company	Work	Drill Holes	Drilling (m)	Mag (km)	VLF EM (km)	IP (km)	Soil Samp.	Rock Samp.
2009	Alpha Gold	drilling; trenching	17	6366.92					
2009	Alpha Gold	resource estimate							
2010	Alpha Gold	drilling; geol.	14	3986.7				12	28
2010	Alpha Gold	resource comp. CCSZ							
2011	Alpha Gold	geol; geochem						285	
2011	Alpha Gold	airmag/ZTEM			330.6	330.6			
2012	Alpha Gold	Evaluation							
2017	Lorraine Copper	drilling; geochem; IP/Mag	3	343.5	28.1		28.1	744	45
2018	Sun Metals	drilling; geochem; VTEM	23	6877.2		1128		2804	73
2019	Sun Metals	drilling; geophysics	28	14024.2					
2020	Sun Metals	drilling; geophysics	16	11975.4					
		Totals	471	115708	453.7	1518.25		9340	557

6.1 Mineral Resource Estimates

Two previous NI43-101 compliant Mineral Resource Estimates were carried out on the Project in 2010 and 2018 (Simpson, 2010 and Simpson, 2028). These estimates are no longer considered current due to the additional exploration work carried out on the Project since 2017.

6.2 **Production**

There has been no production from the Stardust Property.

7.0 Geological Setting and Mineralization

7.1 Regional Geology

The Stardust Project is located within the Cache Creek Terrane of the Intermontane Belt west of the Pinchi Fault, which roughly follows Silver Creek north-northwest along the eastern bounds of the claim package. Once a major thrust fault, the Pinchi was later reactivated as a major right-lateral strike-slip fault which can now be traced roughly 600 kilometers through north-central British Columbia (Paterson, 1977). At the Stardust Project, the Pinchi delineates the terrain contact between the Pennsylvanian-Permian Cache Creek terrane to its southwest and the Quesnellia Terrane, which includes and Jurassic Hogem Batholith and Triassic-Jurassic Takla rocks to the northeast (Figure 7-1).

The Cache Creek Group comprises a 500-kilometer-long and 3-kilometer-thick complexly deformed sequence of interbedded argillites, cherts, carbonates, and mafic to ultramafic volcanic and plutonic igneous rocks with local alpine peridotites and ophiolite fragments identified in regions to the north of the Stardust Property (Soregaroli, 1999, Schiarizza and MacIntyre, 1999). The argillites and cherts are typically fine-grained, thinly bedded deep-marine sediments (Monger, 1977). The volcanic rocks are tholeiitic, of oceanic affinity and include andesitic to basaltic tuffs, flow-breccias, and pillow lavas. The carbonates are predominantly bioclastic to micritic and algal-bound shallow-water facies limestones, which have been interpreted to originate from carbonate bank or reef depositional environments (Monger, 1977). Though regional studies suggest that contacts between most of the different lithologies are abrupt and likely represent faults, some detailed studies executed close to the Stardust Property, infer a more complex relationship. In 1997, Sano and Struick found limestone conglomerate and sandstones with volcanic fragments, and limestone fragments within the argillite-chert section just south of Mt. Pope, 140km south-southeast of the Stardust Property. Similar relationships are seen in core at the Stardust Property and locally show uninterrupted gradation from massive limestones to mafic volcanic dominated successions. Though the overall metamorphic grade is low throughout the Cache Creek Group, some rock units are locally metamorphosed to blueschist facies.



Figure 7-1 British Columbia Terrane Geology (Source: British Columbia Geological Survey, 2011)

This entire package is folded with a well-developed axial planar foliation with a northnorthwest strike typical of the Intermontane Belt (Gabrielse and Yorath, 1992). Many of the wide range of Jurassic to Tertiary intrusions that cut the Cache Creek Terrane have been emplaced along these prominent northwest trending structures and stratigraphic breaks. Numerous mercury occurrences are present along the length of the Pinchi Fault (Albino, 1987) and a few gold and base metal occurrences are present within Cache Creek rocks near the Pinchi fault including the Stardust, Indata and Axelgold properties. There are several alkalic gold-copper porphyry systems in the immediate Stardust Property

area including Kwanika Creek to the immediate east of the Property. Regional-scale geology is shown in Figure 7-2.



Figure 7-2 Regional Geology (Source: British Columbia Geological Survey, 2018)

7.2 Property Geology

Very strongly deformed Pennsylvanian to Permian Cache Creek units underlie about 80% of the Stardust Property. These units form upright to overturned asymmetrical westdipping folds that plunge north at shallow angles. These folds are subparallel to the north-northwest trending Pinchi Fault that lies along the eastern Property boundary. Stratigraphy most commonly strikes at 320 to 330° and only 10% of strikes do not fall within a west-northwest to north-northeast range. Strike often varies over tens of metres, giving bedding a sinuous, rather than linear, appearance. Dips are generally vertical to moderate westerly but do exhibit large variance due to the intense deformation in the area. Other workers (Ash and MacDonald, 1993) have suggested that the intense deformation of the Cache Creek Group adjacent to the Pinchi Fault in the Stuart Lake area 140km to the south-southeast makes normal stratigraphic interpretation nearly impossible. Likewise, since units on the Stardust Property have been thickened, thinned, pinched, faulted off, or juxtaposed by the intense deformation that they have undergone during continental accretion and the ensuing intrusive phases, interpreting stratigraphy can be a difficult task. That said, previous reports (Ledwon and Beck, 2009 and 2010) indicate conformability to the stratigraphic column at the local scale, making stratigraphic interpretation feasible. There are slivers and lenses of units throughout the Stardust Property when outcrop is present. Sedimentary slump structures have been observed at Stardust, but limited outcrop makes finding them difficult (Ledwon, 2011).

Much of the mapped regions of the Property contains an assortment of intrusions that cut carbonate rocks interbedded with graphitic, siliceous, and calcareous phyllites, cherts, cherty argillites, and mafic flows. Intrusions are found throughout the Property, except in the far north of the claims, where they may just be buried under deep overburden (Ledwon, 2011). Though most commonly dioritic to monzonitic, intrusives also range from felsic to tonalitic. A composite intrusive center and linear dyke array known as the "Glover Porphyry", occurs in the central and north-central portions of the Property. Though elsewhere dykes appear to be subparallel to stratigraphy rather than crosscutting it, here, intrusive body orientation is more northerly. Pervasiveness of Biotite hornfels and skarn increases towards the stock (Evans, 1998) within the Canyon Creek Skarn Zone. Some of the intrusive phases contain significant amounts of magnetite and appear to be responsible for the large magnetic anomaly shown on published regional maps and in Alpha's 2000 ground-magnetics survey (Butler and Jarvis, 2000), Alpha's 2008 airborne aeromagnetic survey (St-Hilaire, 2008), and Alpha's 2011 Airborne AFMAG ZTEM geophysical survey (Legault et al., 2011), in the 2017 ground-magnetic survey (Scott, 2017) and in the 2018 airborne electromagnetic survey (Prikhodko et al., 2018).

Many of the unmineralized veins found on the Property were seen to emanate from dykes and cross-cut all other stratigraphy suggesting that non-Glover dykes may be the youngest rocks on the claims.

The majority of the mafic and andesitic volcanics have been found in the north and western reaches of the claims. Moving eastward, a non-calcareous, often gradational package of argillite-phyllite-siliceous phyllite-chert dominates the centre of the Property. This is followed by swaths of limestone closer to the Pinchi Fault, and finally the Hogem Batholith on the eastern edge of the claims. Linear dykes oriented subparallel to foliation can be found throughout the claims. The Glover Stock occurs in the central to north-central part of the Property. East-west running creeks (Dream Creek, Canyon Creek) likely trace faults, and appear to have offset stratigraphy.

Newly acquired (in 2017) claims to the northeast of the Property (1052797 and 1052796) are almost entirely to the east of the Pinchi Fault and, as indicated by 2005 BCGS regional mapping, are underlain by rocks of the Hogem Plutonic Suite. These claims, plus slivers of other claims to the east of the Pinchi, make up about 23km2 or roughly 20% of the Property. Work previously completed by Serengeti at their Kwanika Creek property to the immediate east of these claims describes multi-phase monzonitic to dioritic Hogem Batholith intrusions within successions of andesitic Takla Volcanic Group rocks. Though geology at the Stardust Property is likely similar, these claims were not mapped during the 2017 field season. Property geology is shown in Figure 7-3.
Figure 7-3 Property Geology



7.2.1 Supracrustal Rocks

Interpretations of primary stratigraphy are challenged by the strong regional deformation. In the area of extensive drilling of the 4b and Canyon Creek Skarn (CCS) zones, several coherent rock panels may be described as follows:

Hanging-wall assemblages to the Canyon Creek Skarn are dominated by a sequence of thinly compositionally laminated, siliceous and/or argillaceous phyllites often with strong biotite compositional layers. These rocks are interpreted as ribbon cherts by British Columbia Geological Survey geologists with extensive regional experience. The argillaceous, clastic component, of these rocks may increase towards the skarn – calc silicate horizon, particularly to the south towards the 4b zone.

Skarn assemblages are developed in weakly compositionally-layered limestones, in calcareous mafic tuffs, or rarely in siliceous phyllites.

Footwall assemblages to the Canyon Creek Skarn are dominated by rocks which are typically described as cherty argillites and/or cherts. Rocks in the footwall are similar to hangingwall rocks but qualitatively appear to have a higher proportion of quartz compositional layers and decreased biotite lamella.

Stratigraphic units are more fully described below:

Limestone (LS)

Light to medium grey, sucrosic, recrystallized limestone, locally with weak stylolitic cleavages. These rocks bleach to off-white adjacent to skarn fronts. They may contain numerous internal horizons of both dark grey clastic beds and mafic tuffaceous horizons.

Calcareous Phyllite (CP)

Dark grey-brown, argillaceous interbeds are intercalated with thin, centimetre scale, calcareous lamella.

Calcite Knot Limestone (Lcs)

Calcite knot limestones may contain either white cm scale calcite aggregates within a darker grey matrix, or they may be a gradational unit to mafic tuffs where10-30% oval to cuspate calcite clasts are supported by a strongly calcareous, light to medium green matrix.

Siliceous Phyllite (SP)

These rocks are defined by compositional layers formed by alternating foliation parallel biotite +/- lesser white micas, with quartz compositional layers. The protoliths of these rocks is interpreted, by many workers, as ribbon cherts.

Chert (C)

With an increase in quartz content, to greater than 75% rock volume, the rocks are logged as cherts. Minor increases in biotite compositional layers may shift these rocks into a phyllitic chert (PC) field.

Argillite (A)

Argillite is a composite unit that includes a wide range of fine-grained, essentially noncalcareous, carbonaceous, thinly bedded sedimentary rocks. It includes argillites (A), cherty argillites (CA), thinly bedded cherts, carbonaceous argillites (CA). Graphitic layers are common throughout. Locally, the thinly bedded units contain fine-grained, continuous pyrite or pyrrhotite layers that appear to be part of the original sediments. As with all supracrustal rocks, these units are strongly deformed.

Mafic Tuffs (MT)

Mafic tuffs are well-foliated and often well compositionally layered dark green, to green and white mottled rocks with highly chloritic and locally calcitic matrices. The chlorite is interpreted to result from alteration of mafic-intermediate tuffaceous materials. 1-30 cm limestone fragments are the dominant clasts, but fragments of intermediate and mafic volcanic rocks are also present. These rocks contain up to 2% finely disseminated pyrite and/or pyrrhotite and are geochemically anomalous for Pb, Zn, and Cu. Grading in limestone fragment size is common. Evans (1997, 1998) believed that there was only one mafic tuff unit and that it was a good marker bed. Previous fieldwork and core logging show that there are multiple mafic tuff units in the section, and they show enough lateral variation that their utility as marker beds may be limited.

7.2.2 Intrusive Rocks

Mineralization throughout the Stardust Property shows a close association with the Glover Porphyry - a composite intrusive complex consisting of stocks and dikes ranging from diorite to monzonite to rhyodacite. Cu-Au skarn forms abundantly along stock and dike contacts (and replaces these rocks) and Zn-Au-Pb-Ag-Cu replacement mineralization is locally well developed along dike margins at more distal locales. Overall, mineralization shows zonation relative to the inferred center of the Glover Porphyry complex. Some of the compositional variations can be attributed to potassic alteration and silicification, which change the original intrusive composition and appearance in

hand specimen, but the majority of the phase differences are real. Intrusive rock units include:

Monzonite (M)

A medium-grained equigranular to weakly porphyritic rock composed of plagioclase>K-feldspar, abundant elongate hornblende, and euhedral biotite. Quartz is present, but in minor amounts. This unit crops out extensively as dikes throughout the southern and southwestern area, and the dikes seem to widen towards the 4b Zone. These dikes locally host replacement mineralization along their flanks.

Megacrystic Monzonite (Mp)

This intrusive phase is defined by the presence of very strongly plagioclase +/- quartz porphyritic monzonites. Contacts of these rocks with finer grained phases may be gradational.

Quartz Monzonite (QM)

These rocks contain 10 -15% free quartz as discrete, millimetre scale phenocrysts. The rock is also hornblende and biotite porphyritic and may be beginning to shift into a granodiorite field.

Diorite (D)

Diorites are fine to medium-grained, medium to dark gray-green and composed of plagioclase, biotite, and hornblende phenocrysts. Accessory magnetite is locally abundant. The phases are distinguished largely on the presence and the abundance of biotite and hornblende. This distinction can be difficult to make in the finer-grained units where potassic alteration has replaced the hornblendes with secondary biotite. Color is determined by mafic phenocryst content and the degree of chloritic alteration.

Monzodiorite (MD)

A shift to increased percentages of fine-grained matrix plagioclase and a decrease in mafic phases, hornblende and biotite are the characteristics of this unit. Free quartz is not identified.

Felsic Dykes (Fd)

Felsic dykes occur across the Property. These are weakly porphyritic felsic rocks with sparse to prominent 1-3 mm quartz and feldspar phenocrysts set in a sugary fine-grained matrix of quartz and feldspar. They are locally well flow-banded with banding generally parallel to their overall orientation. Felsic dykes are often pervasively argillically altered or silicified making them difficult to distinguish from altered fine-grained monzonite.

Felsic dykes in the Number 1 Zone commonly have vein mineralization along one or both contacts.

Felsic Dykes (Fpd) Plagioclase Porphyritic

Distinctive elongate, sericitized feldspar phenocrysts are abundant within this rock matrix and may exceed 35% rock volume. The rock also contains 5-8% coarse quartz phenocrysts.

Mafic Dykes (Bd)

Medium to fine-grained, undifferentiated mafic dykes. Ultramafics (UM) Green to dark black, uralitically altered, ultramafic intrusions. In their unaltered state, the intrusions are likely pyroxenites. Elevated interstitial magnetite is common. Pyrrhotite is locally noted. The intrusions likely trace major strands of the Pinchi Fault. True brittle-ductile fabrics are common within these intrusions.

7.2.3 Structural Geology

Rocks underlying the Stardust Property have experienced multiple deformational events. In the absence of geochronological data, definitive age relations between these events are difficult to establish. However, overall map patterns, rock fabrics and discordant rock fabrics in drill core suggest that at least two penetrative deformational processes, D1 and D2, have influenced the current map pattern.

The development of a pronounced planar S1 fabric, often co-planar to bedding and primary compositional layers, defines an early D1, deformational process. These fabrics are most likely axial planar to the tight to isoclinal, upright to west overturned, east-verging folds. The data of Ray et al., (2002) suggest these folds plunge approximately 40-50° to the north-northwest. The distribution of bedrock lithology has been profoundly influenced by this event.

The rotation of S1 fabrics is evidence for post D1 processes. Although S1 fabrics are clearly rotated, S2 penetrative foliations are weakly developed and may be measured in only very selective core and rock samples. Ray et al. (2002) suggest that D2 folds have similar orientations to D1 folds, but tend to be slightly more open, and have shallower, 20° northwest plunges.

Regionally, folds in the Cache Creek assemblage are typically open (Schiarizza and McIntyre, 1999), but on the Stardust Property folds are generally asymmetrical and overturned with short, shallow, west-dipping western limbs and long, steep, west-dipping eastern limbs. Locally they are isoclinal. Tight folding is likely due to buttressing against the Pinchi Fault, which is believed to have originally been a major thrust fault

(Paterson, 1977). Where observed, these folds have a 10-60 degree N-NW plunge and minor axial plane shears are common. The noses of antiforms are structurally thickened and fractured zones favorable for manto mineralization (Evans, 1998; Megaw, 1999).

The entire Property has a strong NW-trending, grain reflecting bedding, tight asymmetric folding, and bedding plane faults. This structural fabric closely controls intrusive emplacement and most of the dykes of the Glover stock are strongly elongated along this N-NW structural grain. The most important, and consistent, fault structures demonstrated in drill core are roughly coplanar to bedding. Some of these faults have the appearance of early east verging reverse faults, which are largely lithologically controlled and mostly identified in the immediate hangingwall to the Canyon Creek Skarn. These faults may be rotated into slightly steeper positions by latter extension faults.

The strongest and most strike discordant structural zone on the Property is the structural zone and dyke system which hosts the Number 1 veins. This mineralized fault structure has a nearly north-south strike and moderate to steep west dip. In marked contrast, all structures, including lithology and major skarn bodies on the Stardust Property have strike relationships which average 150° to 160° and steep westerly dips.

Compilation of the sub-surface data with the surface geological plans suggests that right stepping lithologic offsets, which occur both to the north and south of Canyon Creek, are related to fold vergance effects - an east verging, right stepping antiform - rather than a fault related offset.

Mapping of carbonates on a property-wide scale (Evans 1997; 1998) shows a wide outcrop band in the southern portion of the Property that appears to decrease in width to the north, largely disappearing at Canyon Creek. This may be an artifact of limited outcrop exposures as integration of the subsurface information from drilling suggests the northern continuity of the most easterly limestone package may be significantly better than initially interpreted (Figure 7-3). The limestone is asymmetrically folded and plunges north at 15-20°.

7.2.4 Mineralization

Several styles of mineralization that are zonally related to each other are present on the Property. From most proximal to most distal from the Glover Stock, they are:

• Molybdenum-Copper-Gold Porphyry consisting of quartz-K-spar, pyrite, molybdenite and/or chalcopyrite veinlets associated with potassic, sericitic, and propylitic alteration in intrusive rocks (Glover Stock).

- Multi-stage Garnet-Diopside skarn cut by Cu-Au-Ag-Zn bearing structures with surrounding dispersed Cu-Au mineralization (Canyon Creek Skarn).
- Structurally and stratigraphically controlled massive sulfide Zn, Au, Pb,
- Ag, Cu replacement bodies [CRD] (4b, 3, and 2 Zones) and their oxidized equivalents.
- Sulfosalt-rich veins (Zone 1) which follow faults and are strongly associated with fine-grained, linear, felsic dykes containing high values of Au, Ag, Pb, Zn, Sb and Mn.
- Mercury mineralization in limestone proximal to the Pinchi Fault.
- Sediment-hosted gold mineralization in limestone.

The location of the historic and current mineralized zones on the Property are presented in Figure 7-4.



Figure 7-4 Mineralized Zones

Principle characteristics of the main mineralized zones may be summarized as follows:

7.2.5 Zn-Pb-As-Sb Vein Zone: Number 1 Zone

The Number 1 Zone, located at the southern end of the Property, was the site of the 1944 discovery of mineralization on the Property. Here, the limestone and graphitic phyllites are cut by numerous monzonite and felsic dikes. Sulfosalt veins composed of nearly massive pyrite, sphalerite, galena, jamesonite, stibnite, arsenopyrite and freibergite with lesser open-space filling quartz and calcite occur both within the sedimentary rocks and along dike contacts. Dunne & Ray (2002) also report traces of very fine-grained calc-silicates in these bodies. Three separate veins have been recognized, all of which appear to dip steeply west. Felsic dikes are closely related to all three veins, but the veins do extend beyond the dikes in many places. The Number 1 Zone has the strongest structural control of any occurrence on the Property. The presence of a regional antiformal crest is likely to be important to the development of significant mineralized zones as is the main fault structure. Argentiferous Manganese Oxide Mineralization (AMOM) occurs throughout the Number 1-Zone. AMOM is a typical distal alteration product in certain major CRD systems (Megaw, 1998) and the Number 1 Zone is strongly anomalous in Mn (Evans, 1997). Based on inclusion chemistry and mineralogic relationships, Dunne & Ray (2002) suggested that the mineralization in this zone might be related to high sulphidation-type veins. However, the alteration mineralogy and textures of quartz and other gangue minerals do not support the high sulphidation model for these veins.

The principal vein was explored by underground drifting and drilling in the 1945 and 1964-65 seasons. The three ore-shoots (minimum 2 m true widths) above the adit level were reported to grade 3.6 g/t Au, 780 g/t Ag, and 5% combined Pb and Zn with 5% Sb. Historic drilling had notoriously bad recovery problems, so in many cases grade was not reported for potentially significant intersections. Compilation of all available data during the 2003 exploration season clearly indicated that the currently known strike length of the Number 1 Fault exceeds 750 m with a significant mineralized zone developed over approximately 450 m.

7.2.6 Zn-Au-Ag-Pb CRD Mineralization: Number 2, 3, 3 Extension, 4b and East Zones

Mineralization in these zones consists of roughly stratigraphically concordant massive sulfide bodies ("mantos") and their oxidized equivalents. The mantos are best developed along permeable and karsted (?) carbonate beds in close proximity to chlorite-altered mafic tuff beds. The mantos occur through the Number 2 to Number 4b Zones and appear to merge into the Canyon Creek Skarn Zone. Drilling results have failed to find substantial discordant chimney feeders to these mantos, although narrow feeders may

have been hit locally (Megaw, 1999). The mantos occur dominantly in structurally thickened and deformed zones along the crests of antiforms. There is some evidence for nesting, or repetition, of mantos in successive limestone beds, giving an overall morphology reminiscent of the stacked "saddle-reef" mantos.

Number 2 Zone

The Number 2 Zone is a minor oxidized replacement zone similar to the Number 3 Zone. The Number 2 Zone is located very close to the crest of a regional antiform which lies just north of the Number 2 Zone trenches. Surface sampling indicates an average of 2.3 g/t Au, 109 g/t Ag, 2.16 % Zn and 2.09 % Pb across an average of 5.3 meters true width. This zone has a strike length, based on surface oxidation, of approximately 200 meters. Its continuity at depth is much more problematic as significant intersections have not been obtained from drill holes to date.

Number 3 Zone

The Number 3 Zone contains the largest identified CRD resource identified to date at Stardust. It is thoroughly oxidized to depths of greater than 100 meters from the surface. The style of mineralization may be highly amenable to low-cost heap-leach extraction processes.

The thickest portions of this manto zone occur in carbonates surrounding a mafic tuff bed along the crest of a regional-scale antiform. The manto may have the form of an oxidized saddle reef replacement body. Drilling has failed to find a feeder vertically beneath it, suggesting that it was probably fed from one end with fluid migration concentrated along the non-reactive tuff bed. Evans (1997) felt that the conduit for this system was down dip along the west limb of the antiform (possibly with a NW rake). This zone, based on the trace of oxidation exposed in surface trenches, has a strike length exceeding 600 meters. The Number 3 zone appears to weaken to the south, south of the Number 2 Zone trenches. The northern extension of the Number 3 Zone has received very limited exploration, as has the down dip extensions to this mineralization.

Number 4b Zone

The Number 4b Zone CRD manto is developed along the 4b Antiform, a tight fold, with 60-degree west dips and a 10-15° plunge to the NW. The trace of this fold lies some 300 meters to the west of the Number 3 Zone antiform. The two zones are linked by a north-northwest plunging synform. Mineralization occurs as a series of aligned, discontinuous (?) massive sulfide pods (with sparse calc-silicate minerals) following the crest of the fold and also along the contact between limestone on the east and hornfelsed graphitic phyllites to the west. A mafic tuff horizon within the limestone appears to be a major

conduit for fluid movement, as is seen in the Number 3 Zone. The 4b Zone is, however, essentially unoxidized: sphalerite, arsenopyrite, coarse-grained well-zoned pyrrhotite, and pyrite are prominently displayed in surface trenches along the zone.

East Zone

The East Zone was discovered in 2005 by drilling a coincident gold-arsenic soil geochemistry anomaly approximately 300 metres east of the Canyon Creek Skarn. This gold-silver-copper-zinc massive sulfide zone is completely "blind" and has been intersected by five drill-holes over a strike length of 150 metres. It is open along strike to the north and in both dip directions. The massive sulfide mineralization consists of pyrite, sphalerite, arsenopyrite, and chalcopyrite. The preliminary interpretation is that the zone is a carbonate replacement similar to the Number 3 and Number 4B zones.

7.2.7 Canyon Creek Skarn (Number 4 Zone)

The Canyon Creek Skarn [CCS] or the Number 4 Zone, is the skarn-replacement zone lying north of the 4b Zone. The discovery of this skarn is recent enough that it was not included in Ray and Dawson's (1998) compilation on B.C. skarns. Prior to the 2001 season, this zone had been cut by 41 drill holes (97-9, 10, and 11; LD99-03 through 12; and LD00-02 through 29) and a few trenches (Evans, 1997, 1998; Megaw 1999, 2000). A high percentage of the pre-2001 holes in skarn intercept high-grade Cu-Au mineralization along structures cutting garnet-pyroxene skarn. Some of these mineralized structures were surrounded by zones of dispersed mineralization a few meters wide (Megaw, 1999; 2000).

At shallow levels, the skarn is composed of early coarse-grained green-tan grossularandradite garnet with minor fine-grained greenish-yellow diopside and rare vesuvianite or pyroxene (Ray et al., 2002). Specularite is locally very common as euhedral plates. At depth, a brown garnet stage crosscuts and overprints the green stage, and at even greater depths, a red-brown garnet stage appears (Megaw, 1999). These minerals replace massive limestone and locally replace intrusives (endoskarn). Drilling in 2001 showed that endoskarn increases with depth (cf. LD01-44, 45). Biotite hornfelsed siliceous phyllite is also overprinted by skarn, especially on the north side of Canyon Creek. Mafic tuff units are altered to distinctive green, banded chlorite-garnet units with 5-15% disseminated pyrite and trace chalcopyrite and sphalerite.

Retrograde hydration of the garnet-diopside skarn also increases with depth. In the retrograde zones, the brown-red, brown, and green garnet stages are hydrated to a cream-colored mass of very fine-grained amphibole, chlorite, quartz, and clays or dark grayish-green masses of felted chlorite, locally preserving the shapes of dodecahedral

garnet crystals. Retrograde alteration is often accompanied by a dramatic increase in magnetite, both as fine-grained masses and as pseudomorphs after bladed specularite, and increased amounts of chalcopyrite (Megaw, 2000, Ray et al., 2002)

Mineralization in the skarn occurs as Ag and Au-bearing chalcopyrite and bornite with abundant pyrite, variable sphalerite, and rare arsenopyrite and stibnite emplaced along and surrounding structures that cut the skarn (Megaw, 1999). Much of the sulfide replaces skarn silicates. Numerous stages of sulfide mineralization are identified as:

- 1. Chalcopyrite deposited in interstices and along garnet grain boundaries.
- 2. Early pyrrhotite (often later pseudomorphed to pyrite) with minor chalcopyrite and locally intergrown with sphalerite.
- 3. Pyrite or pyrrhotite (pseudomorphed to pyrite) that is brecciated and healed with later sphalerite or replaced by chalcopyrite.
- 4. Massive to dispersed, banded and chaotic chalcopyrite along structures and replacing adjoining skarn.
- 5. Magnetite with interstitial chalcopyrite and/or sphalerite, pyrite or pyrrhotite.
- 6. Sphalerite with chalcopyrite cut by later pyrite veinlets.
- 7. Massive sphalerite, brecciated and healed by chalcopyrite and sphalerite.
- 8. Mineralized skarn, brecciated and healed with epithermal style chalcedonic quartz.
- 9. Calcite veins filled with Au sulfides/sulfosalts cutting skarn.

The skarn silicates tend to end abruptly and massive sphalerite-chalcopyrite-pyritepyrrhotite mineralization is locally well-developed along the contact of skarn with recrystallized limestone (marble front). It is near this front that the very high-grade gold grades associated with the 2002 drilling have been recognized (Oliver, 2002). More recent drilling by Sun Metals in 2018 resulted in the discovery of the 421 zone, a deeper and wider extension of the previously explored zones. High-grade gold and sulphiderich replacement bodies may be considered transitional mineralization between the skarn and 4b style of replacement mineralization.

All previous NI 43-101 compliant mineral resource estimates (Simpson, 2010 and Simpson 2018) were confined to the Canyon Creek Skarn Zone.

7.3 Comments on Section 7

The regional and deposit-scale geology and controls on mineralization the Property are sufficiently well understood to permit the construction of geological models and estimation of mineral resources on the Canyon Creek Skarn (or Number 4) Zone.

8.0 Deposit Types

The current exploration concept for the Stardust Property is based on a model proposed by Sillitoe and Bonham in 1990 (Figure 8-1). The model links porphyry, skarn, carbonate replacement, vein, and sediment hosted types of mineralization. Any one or several of these deposit types can be present in a mineralized system (Hanson, 2007). According to the model, Cu-Au-bearing garnet skarns occur as replacements of the limestone hostrocks adjacent to a mineralized porphyry stock. Outboard of the skarn zones, structurally and stratigraphically controlled carbonate replacement massive sulphides deposits (CRD) occur as mantos and chimneys. Sulphosalt veins can occur outboard of the CRD or overlie them in leakage zones. The distal end member mineralization style in this system is the sediment hosted Au-As-Sb (Carlin-type) deposit (Hanson, 2007).

Figure 8-1 Schematic model of possible links between porphyry districts and sedimentary deposits



A conceptual model for the Stardust Property showing the relative positions of the various mineralized zones is illustrated in Figure 8-2.





8.1 Carbonate Replacement Deposits

Carbonate Replacement Deposits (CRDs) are epigenetic, intrusion-related, and hightemperature sulfide-dominant Pb-Zn-Ag-Cu-Au-rich deposits. These CRD's typically grade from lenticular or podiform bodies developed along stock, dyke, or sill contacts to elongate-tubular to elongate-tabular bodies referred to as chimneys and/or mantos depending on their orientation. Limestone, dolomite, and dolomitized limestones are the major host rocks. Ores grade outward from sulfide-rich skarns associated with unmineralized or porphyry-type intrusive bodies to essentially 100% polymetallic massive sulfide bodies. Both sulfide and skarn contacts with carbonate host rocks are razor sharp and evidence for replacement greatly outweighs evidence for open-space filling or syngenetic deposition (Titley & Megaw 1985). In reduced, high to lowtemperature systems, proximal to distal metal zoning generally follows: Cu (Au, W, MO), Cu-Zn (Ag), Zn-Pb-Ag, Pb-Ag, Mn-Ag, Mn, and Hg. This zoning may be very subtle and

large scale (Prescott 1916; Morris 1968; Megaw 1990) or tightly telescoped and smaller scale (Graf 1997).

CRD mineralization is associated with polyphase intrusions that evolve from early intermediate phases towards late, highly evolved felsic intrusions and related extrusive phases. The intrusions most closely related to mineralization are usually the most evolved phases and these are not exposed in many districts. However, they are often encountered when the system is explored to depth.

CRD exploration is difficult enough that considerable care should be taken in selecting a target district/deposit prior to high-cost detailed exploration. However, several features make CRDs highly desirable mining targets including:

- Size-CRDs average 10-13 million tons of ore and the largest range up to ~50 million tons
- Grade-ores are typically polymetallic with metal contents ranging from 2-12% Pb; 2-18% Zn, 60-600 g/T Ag, Tr-2% Cu, and Tr-6 g/T Au. Many have by-product credits for Cd, W, In, Ga, Ge, Bi, and S)
- Deposit morphology-orebodies are continuous and average 0.5 to 2 million tons in size, with some up to 20 million tons
- Extraction and Beneficiation- CRDs are typically metallurgically docile, amenable to low-cost mining methods and the environmental footprint is minimal

Many different features of CRDs tend to be well zoned at district, deposit and handsample scales. The most important zonations are:

- Ore and gangue mineralogy and metal contents
- Orebody geometry
- Intrusive geometry and composition
- Structural controls on mineralization
- Alteration
- Isotopic characteristics of wallrocks.

In general, the largest systems show the best-developed zoning and repetition of zoning and paragenesis. Zoning tends to be most extensive in the elongate manto and chimney systems where individual zones may extend over kilometers vertically and laterally (Megaw 1990, 1998). Zoning in large stock contact skarn systems is typically more

compressed because of telescoping and repeated overprinting (Graf 1997). In all cases, multi-phase mineralization is a reliable indicator of large systems.

The evolution of CRD-skarn systems in time and space, and the gradations seen in single orebodies or districts suggests that the various manifestations of the deposit type can be considered part of a spectrum (Einaudi et al. 1982; Megaw et al. 1988; Titley 1993; Megaw et al. 1998) including:

- Stock contact skarns: formed against either barren or productive (i.e., Porphyry Copper or Molybdenum) stocks
- Dike and sill contact skarns
- Dike and sill contact massive sulfide deposits
- Massive sulfide chimneys
- Massive sulfide mantos
- Epithermal veins (in some cases)

This conceptual framework allows examination of the mineralization, alteration, intrusion types, host rock and other characteristics of a given deposit and determining where it lies within the spectrum. Examination of the composition, geometry, and controls on intrusion emplacement, if possible, is essential to determining district zoning and level of exposure. Perhaps most importantly, understanding of the host rock tectono-stratigraphy can allow rapid determination of the potential for more mineralization in the host section at depth or laterally in the known favorable beds, or in previously unconsidered host units.

Structural fabrics are the dominant control variable on mineralization in CRDs, as they control intrusion emplacement and channel ore fluids into favorable host strata. Most CRDs lie in fold-thrust belts on major structural domes, arches, anticlines, synclines or homoclines, and most districts have structural grains controlled by faulting and fracturing related to regional deformation (Megaw et al. 1988). Orebodies are often elongate and parallel district-wide structural trends but may not be restricted to a given structure over great lengths.

Intrusive stocks commonly occur beneath or adjacent to the most proximal portions of CRD systems, although in many cases they do not crop out. Where intrusions are exposed, they are generally less than 5 km2 in areal extent. These stocks are generally polyphase with compositions grading from early diorite to late granite. Texturally, these intrusions range from equigranular to porphyritic and massive to highly fractured

depending on age and proximity to paleosurface. The central stocks may be barren, contain porphyry copper or molybdenum systems, or have marginal zones with porphyry copper or molybdenum affinities (Megaw, 1998). In many systems, the early phases of the intrusion have associated skarnoid or barren skarn, whereas skarn and ore mineralization are related to later, more highly differentiated phases (Meinert, 1995 and 1999; Graf, 1997; Megaw and others, 1998).

Dikes and sills characterize the intermediate reaches of CRDs and there is often evidence for multiple dyke/sill emplacement events (Megaw 1990). These intrusions may be compositionally homogeneous (Megaw 1990) or there may be compositional evolution between dyke/sill phases (Graf 1997). Textures range from porphyritic to aphanitic, locally with narrow gradations between textural domains (Megaw 1990). Chimney and replacement veins are the most common orebody types associated with these intrusions, although mantos locally occur along sill contact.

The distal zones of CRDs are characterized by massive sulfide bodies lacking an associated intrusion. These commonly have the form of high angle to vertical slab-like replacement veins or elongate pipe-like chimneys or low angle to horizontal tabular or elongate tongue-shaped mantos, generally crudely stratabound. Mantos may be developed entirely within selected beds or groups of carbonate beds, or may occur with one or more non-reactive, relatively impermeable sedimentary or intrusive rock contacts.



Figure 8-3 Spectrum of Carbonate Replacement Deposits (Megaw, 2001)

Development of carbonate rock alteration in CRDs, like mineralization, is highly variable in type and in scale. The major alteration types are:

1. Skarnoid or hornfels: These are typically very fine-grained, mineralogically simple, calc-silicate and silicate assemblages formed through thermal metamorphism without significant addition of outside components. Skarnoid typically forms from a limestone or shaly limestone precursor, whereas hornfels forms from shale or limy shale precursors. Hornfels and skarnoid commonly develop in the thermal aureole around the largest volume (often early) intrusive phase and may aid in ground preparation for later metasomatic events. Hornfels mineralogy may be zoned with respect to the thermal center, commonly with pyroxenes proximal and biotite more distal. Skarnoid and hornfels often contain abundant fine-grained pyrite or pyrrhotite, but seldom significant amounts of ore-metal sulfides unless it has been overprinted by subsequent hydrothermal events.

2. Skarn: Skarns are fine to very coarse-grained, often mineralogically complex, calcsilicate or calcic-iron silicate assemblages formed through metasomatism with significant addition of outside components. Endoskarn is skarn formed at the expense of intrusive rock, exoskarn is skarn formed at the expense of wallrocks to the intrusion - most commonly carbonates. Skarn commonly develops around lesser volume, more fluid-rich intrusive phases and may overprint hornfels or skarnoid to varying degrees. Anhydrous talc-silicate minerals (dominantly pyroxenes and garnets) characterize the early "prograde" skarn phase generated during rising temperatures related to magma emplacement. Hydrous talc-silicate minerals (dominantly amphiboles, chlorites, and clays) formed at the expense of predecessor prograde minerals characterize the later "retrograde" skarn assemblage. Retrograding occurs as temperatures drop and variable amounts of magmatic fluids and groundwater invade the skarn zone. Skarns are said to be mineralized when they contain sulfide minerals of economic interest. Said sulfides may be co-deposited with the talc-silicates, but more commonly are introduced along structures that cut the skarn, replacing skarn minerals and unaltered wallrocks. Complex mineralized skarn systems typically show multiple intrusive phases and a repetition of sulfides replacing talc-silicates presumably reflecting successive intrusive and hydrothermal events. In some systems, different compositions of skarn and sulfides characterize each phase (Megaw and others, 1998).

3. Marbleization and Recrystallization: These are present in virtually all CRD systems and range from narrow zones around mineralization to zones hundreds of meters wide (Titley & Megaw 1985; Megaw et al. 1988).

4. Silicification or Jasperoid development: These consist of fine-grained silica replacements of carbonate rocks, with or without appreciable amounts of metals, and are very common in the peripheries of some CRD systems (Titley & Megaw 1985; Megaw et al. 1988; Megaw 1990).

8.2 Porphyry Cu±Mo±Au Deposits

Porphyry copper deposits are large, low grade, intrusion related deposits which provide the major portion of the world's copper and molybdenum and to a lesser degree gold. The deposits are formed by a shallow magma chamber of hydrous, intermediate composition at depths of less than five kilometers. When the magma crystallizes, fluids are released; the fluids' movement upwards through overlying rocks results in hydrothermal alteration and deposition of sulphide minerals both as disseminations and as stockwork mineralization. There is a clear spatial and genetic association between the intrusion and the alteration zones at a regional and local scale.

The defining characteristics that distinguish porphyry deposits are:

- Large size
- Widespread alteration
- Structurally controlled ore minerals superimposed on pre-existing host rocks
- Distinctive metal associations
- Spatial, temporal, and genetic relationships to porphyritic intrusions

These deposits in British Columbia typically occur in the Intermontane Belt, which is host to the Quesnellia, Cache Creek, and Stikinia Terranes, and based on the composition of the host rocks comprising three specific types: Alkalic, Transitional, and Calc-Alkalic.

The Glover Stock is an intrusion of Eocene age emplacement (circa 51-52 Ma by U-Pb zircon dating; Ray et al., 2002). It is inferred to be emplaced between at a relatively shallow 1.1 to 1.9 kilometer depth as supported by field structural relationships and fluid inclusion work (Ray et al., 2002; Dunne and Ray, 2002) and less than five kilometers (Megaw, 2001). The stock is a multiphase composite intrusive complex and most of its rocks are weakly to strongly feldspar hornblende biotite porphyritic. Compositionally it ranges from mafic diorite-monzodiorite to leucocratic monzonite-quartz monzonite (Ray et al., 2002).

The Glover Stock shows many features prospective to host porphyry-style mineralization. Molybdenite±chalcopyrite-bearing veinlets are associated with several generations of veins containing quartz, K-feldspar, sericite, pyrite, and tourmaline (Ray et al., 2002). Alteration assemblages include pervasive albitic or potassic (K-feldspar, sericite, and biotite), silicic, pyritic, and argillic. A fluid inclusion study supports a combination of highly saline and dilute fluids that show a transition from high-pressure lithostatic conditions during porphyry emplacement to lower pressure hydrostatic conditions during vein formation (Megaw, 2001). Such a transition may be indicative of a long-lived shallow emplacement. 'Pebble' dykes logged in drill core are similar to breccia dykes seen in major porphyry systems. These breccias are interpreted to record violent volatile release events coincident with the transition from lithostatic to hydrostatic conditions (Megaw, 1990; Frontier, 1999; Jones and Gonzalez-Partida, 2001).

Porphyry-related alteration styles include:

• Tourmaline-rich greisen along numerous structures cutting the biotite diorite in LD2001-30.

- Potassic alteration consisting of secondary biotite selvages on mineralized veinlets secondary euhedral and/or "shreddy" biotite affecting primary biotite and hornblende and secondary K-feldspar flooding.
- Weak to pervasive sericitic alteration of intrusion
- Widespread chloritized and epidotized hornblende and feldspar
- Mineralization of the intrusions consists of crosscutting veinlets including:
- Quartz-K-feldspar-pyrite veinlets
- Quartz-K-spar-pyrite-chalcopyrite veinlets
- Quartz-K-spar-pyrite-molybdenite veinlets
- Hornblende replaced by specularite replaced by magnetite with interstitial chalcopyrite.
- Open sigmoidal cavities

8.3 Comments on Section 8

The current mineral resource estimate is for the Canyon Creek Skarn Zone, regarded as a skarn hosted carbonate replacement deposit and the exploration programs have been planned on this basis.

9.0 Exploration

Historic exploration work on the Property as outlined in Section 6 has been described in previous Technical Reports (Simpson, 2010 & Simpson 2018).

Sun Metals has carried out three exploration programs between 2018 and the end of 2020.

9.1 Topographic Survey & Imagery

On June 23rd, 2018, McElhanney Consulting Services Ltd. ("McElhanney") of Vancouver, BC performed a Light Detection and Ranging survey (LiDAR) coupled with an aerial photo acquisition over 88.3 km2 of the Stardust Property. LiDAR data was collected using the Optech Galaxy scanner mounted in a twin-engine Piper Navaho.

Raw data was processed by McElhanney and included the extraction of 1-meter contours and d igital elevation model (DEM) bare earth hill-shade images.

9.2 Geological Mapping and Prospecting

9.2.1 2018 Field Mapping and Prospecting

In 2018, a significant effort was made to compile, and field validate historic geology maps and outcrop locations. An updated Property geology map is presented in Figure 7-3. Because of limited exposure in many locations, relationships between various rock types were often difficult to determine. In these areas, locations of outcrops were noted and lithologies were checked against historic maps to check the validity. Special attention was given to the identification of carbonate strata since it is necessary for Carbonate Replacement Deposit ("CRD") mineralization.

9.3 Geochemical Sampling

In 2018, 2804 soil samples were collected over eight separate grids (Figure 9-1). The soil sample grids were designed to test potential targets previously identified by Aurora Geoscience in 2012 and Sun Metals in 2017 based historic geochemical and geophysical programs. Grids were orientated to be perpendicular to the strike of local stratigraphy and sampling locations were specified prior to field collection. Sample and line spacing were either 50 or 100 meters apart depending on the specific grid. Alternating lines within a grid were offset by either 50 or 100 meters depending on the specific grid. Sample locations were field located using a handheld GPS. Sampling targeted B and C Horizon soils. Sample depth, soil horizon, and soil colour data were recorded for each sample. Detailed soil sampling procedures are presented in Section 11.

The 2804 soil samples taken in 2018 were integrated into a historic database of 6264 samples, making a total database of 9068 samples.

The 2018 soils sampling and prospecting program demonstrated that much of the historical work is accurate and supports the idea that soil sampling is a good method for direct targeting in this region. This was illustrated by the discovery of a new manto in the GD zone that is seen in drill holes DDH18-SD-415 and DDH18-SD-417. Additionally, the results reaffirm that the zone with most compelling surface geochemistry is south of the glover intrusive complex where the different manto zones crop-out.



Figure 9-1 2018 Geochemical Sampling Grids

A total of 77 rock samples were collected during the 2018 exploration program. Location, source, source size, and field descriptions including rock type and visible mineralization were noted for each rock sample. Detailed rock sampling procedures are presented in Section 11.

9.4 Geophysics

9.4.1 2018 Airborne Geophysics

From June 27th to July 17th, 2018, Geotech Ltd. ("Geotech") of Aurora, Ontario carried out a helicopter-borne geophysical survey. Principal geophysical sensors included a versatile time domain electromagnetic (VTEM[™]plus) system and a horizontal magnetic gradiometer with two caesium sensors. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 1128 line-kilometres of geophysical data were acquired during the survey.

Sun Metals tested 4 different VTEM anomalies with 5 diamond drill holes. All the conductors were identified with the exception of one, Anomaly C.

Anomaly A was tested by DDH18-SD-412 which intersected 7.65m of massive sulphide with pyrite – pyrrhotite ± chalcopyrite. This massive sulphide body is enough to explain the VTEM anomaly observed, however, the Maxwell modelled plate and intersection are approximately 30m off-set with the sulphide intersection being lower that anticipated. No further testing is recommended.

Anomaly B was tested by two different holes, DDH18-SD-425 and DDH-SD-426. The EM anomaly is not explained by anything seen in DDH18-SD-425. But, in DDH18-SD-426 the drill intersected a short interval of massive to semi-massive sulphide that could explain the EM anomaly observed. No further testing is recommended in this area as the host rock is not prospective, however, it encouraging to see base metal mineralization in west on the Property. Future work should focus on identifying covered carbonate stratigraphy (likely to the south) for future targeting.

Anomaly C (the strongest conductor identified in the 2018 VTEM survey) has not been adequality explained by DDH18-SD-416 and DDH18-SD-418. This is significant because this anomaly could represent the feeder zone to the 4b mantos zone. Further work is needed to constrain the Maxell modelling and DDH-SD-416 & 418 should be re-logged to try and identify a possible conductor that was missed. One possibility is, the feeder is a shaped more like a chimney compared to the modeled plate shape and that is why the drill missed. It is suggested to do a ground EM survey in this area during the 2019 survey to help with further constraining a target.

Anomaly F is coincident with the Hanging Wall Skarn Zone. The modelled Maxell plate fits well with the skarn alteration and sulphides logged. No significant assays results were received, and mineralization has been closed of in the area. No further work is recommended.

9.4.2 2018 Borehole Geophysics

SJ Geophysics Ltd. ("SJ") of Delta, BC completed a Volterra bore hole electromagnetic and magnetic ("BHEM") survey on diamond drill hole DDH18-SD-421 during September 27th to September 30th, 2018. in3D Geoscience Inc. ("in3D") of Vancouver, BC completed data post processing of the collected by SJ. Preliminary modelling suggests mineralization intersected in DDH18-SD-421 dips to the west and shows greater coupling to the south.

9.4.3 2019 EM Ground Survey

SJ Geophysics Ltd. ("SJ") of Delta, BC completed Volterra fixed-loop surface electromagnetic ("EM") surveys during June 13th to September 3rd, 2019. The survey consisted of 31 lines spaced 100 meters apart for a total of 71.85 line-kilometers surveyed. in3D of Vancouver, BC completed post processing of data.

Results from the surface EM survey showed good correlation between anomalous EM response and known zones of near surface mineralization. The survey was not effective at identifying deeper mineralization.

9.4.4 Magnetotelluric Survey

SJ of Delta, BC completed a Volterra surface magnetotelluric ("MT") survey from September 5th to September 7th, 2019. The survey consisted of two near orthogonal 3 km lines. in3D of Vancouver, BC completed post processing of data.

The MT survey results did not correlate well with known zones of near surface mineralization or mapped lithologies, nor did it identify significant geophysical anomalies at depth.

9.4.5 2019 Borehole Geophysics

SJ of Delta, BC completed Volterra BHEM surveys on 17 diamond drill holes during June 21st to December 4th, 2019. in3D of Vancouver, BC completed post processing of data.

Results from the BHEM survey showed particularly good correlation between strongly anomalous EM response and increased logged sulphide abundance in diamond drill core. The surveys were also proven to be effective at detecting lateral sulphide mineralization, proximal to surveyed drill holes.

9.4.6 2020 Borehole Geophysics

SJ of Delta, BC completed Volterra BHEM surveys on 2 diamond drill holes during September 24th to October 1st, 2020.

9.5 Comments on Section 9

Interpretation of the exploration data including drill core, airborne and ground geophysics, borehole geophysics, geochemical sampling, and imagery is sufficiently detailed to support additional exploration.

10.0 Drilling

Historic drilling on the Property as outlined in Section 6 has been described and in previous Technical Reports (Simpson, 2010 & Simpson 2017).

Sun Metals has completed 3 drilling programs between 2018 and the end of 2020. The vast majority of this drilling has been located in the Canyon Creek Skarn zone (Zone 4).

10.1 Historic Drilling

Prior to 1991, drill records for the Property are missing or incomplete. Written accounts indicate that at least 16 holes were completed between 1966 and 1980 by Takla Silver Mines, Zapata Granby, and Noranda. Locations for these holes are uncertain or approximate and they have not used in the Mineral Resource estimation.

Statistics for the drilling completed over the entire Property since 1991 are presented in Table 10-1.

Year	Operator	Drill Holes	Drilling (m)
1991	Alpha Gold	11	988.20
1992	Alpha Gold	30	1,520.00
1997	Teck/Alpha	16	3,062.80
1998	Teck/Alpha	14	1,105.30
1999	Alpha Gold	18	3,050.00
2000	Alpha Gold	29	4,680.00
2001	Alpha Gold	18	5,609.00
2002	Alpha Gold	19	7,790.40
2003	Alpha Gold	42	7,908.00
2004	Alpha Gold	21	6,010.00
2005	Alpha Gold	17	5,152.90
2006	Alpha Gold	56	9,909.20
2007	Alpha Gold	34	8,898.00
2008	Alpha Gold	5	2,140.00
2009	Alpha Gold	17	6,366.92
2010	Alpha Gold	14	3,986.70
2017	Lorraine Copper	3	343.50
2018	Sun Metals	23	6,877.20
2019	Sun Metals	28	14,024.20
2020	Sun Metals	16	11,975.40

Table 10-1 Drilling Summary by Year (1991-2020)

Year	Operator	Drill Holes	Drilling (m)	
	Total	431	11,975.40	

10.2 2018 Drilling

The 2018 diamond drill program began on August 3rd and was completed on September 27th. Drilling was conducted by Matrix Diamond Drilling of Kamloops, BC using two Zinex A5 skid mounted drills. A total of 23 bore holes were drilled from 15 sites, for a sum of 6877.2 meters. All core drilled was NQ diameter. Drill site locations are shown in Table 10-2 and Figure 10-1.

A total of 1.1 kilometers of new road was constructed to connect new drill pads to existing roads. Minor repairs of existing roads were also carried out. Road construction and repair was carried out by Gleyzay Holdings ltd. using various excavators and bulldozers.

Hole ID	UTM East	UTM North	Elevation (m)	Azimuth (º)	Dip (º)	Length (m)
DDH18-SD-406	346728	6161707	1408	65	-50	208.2
DDH18-SD-407	346728	6161707	1408	65	-60	225.9
DDH18-SD-408	346759	6161720	1404	65	-50	154.5
DDH18-SD-409	346705	6161794	1382	61	-50	175.8
DDH18-SD-410	346705	6161794	1382	60	-65	186.2
DDH18-SD-411	346849	6161847	1361	79	-60	374.3
DDH18-SD-Abandoned	347353	6161755	1313	70	-50	39.62
DDH18-SD-412	347349	6161753	1307	70	-53	282.5
DDH18-SD-413	346854	6162159	1359	102	-64	432.2
DDH18-SD-414	347348	6161753	1306	80	-70	272.4
DDH18-SD-415	347532	6161650	1358	80	-50	297.8
DDH18-SD-416	346855	6162158	1359	102	-70	463.0
DDH18-SD-417	347634	6161529	1372	80	-50	114.9
DDH18-SD-418	346905	6161482	1463	70	-50	282.8
DDH18-SD-419	346905	6161482	1463	70	-70	337.4
DDH18-SD-420	345996	6162579	1588	90	-55	502.3
DDH18-SD-421	346766	6162123	1362	73	-68	717.5
DDH18-SD-422	346893	6162248	1391	76	-50	307.2
DDH18-SD-423	346891	6162239	1390	76	-65	347.8

Table 10-2 2018 Drill Hole Locations

Hole ID	UTM East	UTM North	Elevation (m)	Azimuth (º)	Dip (º)	Length (m)
DDH18-SD-424	346879	6162282	1397	76	-58	341.4
DDH18-SD-425	346185	6161881	1405	253	-50	244.1
DDH18-SD-426	346185	6161880	1405	231	-49	234.4
DDH18-SD-427	346878	6162282	1397	70	-66	335.0

Drilling targeted copper-gold-silver-zinc-lead mineralization at the Canyon Creek Skarn, Glover Stock, and GD Zones as well as VTEM geophysical targets identified as Anomalies A, B, and C.

Drilling results from the 2018 season show similar grade and width when compared to historical drilling with the expectation of the DDH18-SD-421 which encountered a much longer massive sulfide intercept than previous drilling. This intercept has been termed the '421 Zone'.

Three different holes were drilled in the western part of the Property and encountered thick sections of stratigraphy that is interpreted to be above the prospective carbonate package. This suggests that the geology is plunging to the north and potential for covered carbonate stratigraphy closer to surface in this corridor increases to the south.

A list of significant intercepts is shown in Table 10-3.



Figure 10-1 2018 Drill Hole Locations

Hole	From	То	Interval	Copper (%)	Gold (g/t)	Silver (g/t)	Zinc (%)	Lead (%)
DDH18-SD-411	174.70	189.10	14.40	1.32	1.03	22.9	2.12	-
incl	178.20	183.90	5.70	1.57	1.38	33.1	5.20	-
DDH18-SD-411	226.75	228.90	2.15	3.81	0.75	498.4	23.31	3.71
DDH18-SD-412	42.75	50.40	7.65	0.03	1.31	62.3	0.78	0.45
DDH18-SD-413	232.50	238.00	5.50	1.72	0.93	29.1	0.01	-
DDH18-SD-413	245.00	246.00	1.00	0.02	2.52	11.1	0.09	0.07
DDH18-SD-414	63.30	63.90	0.60	0.05	0.59	382.8	21.22	3.60
DDH18-SD-415	34.60	34.90	0.30	0.01	4.23	3.2	0.04	-
DDH18-SD-415	44.60	46.80	2.20	0.28	5.25	16.4	3.79	0.21
DDH18-SD-415	55.90	60.50	4.60	0.09	4.17	34.5	1.60	0.09
DDH18-SD-416	281.70	282.70	1.00	1.70	1.25	27.2	0.01	-
DDH18-SD-417	35.70	39.00	3.30	0.01	0.21	3.9	1.35	0.04
DDH18-SD-417	50.50	57.80	7.30	0.04	0.48	7.7	7.42	0.06
DDH18-SD-418	218.80	220.20	1.40	0.03	0.88	9.5	4.60	0.02
DDH18-SD-418	224.90	225.60	0.70	0.09	0.08	6.7	25.67	-
DDH18-SD-418	233.10	234.80	1.70	0.05	4.37	15.4	4.39	0.12
DDH18-SD-418	242.80	243.20	0.40	0.03	0.11	7.6	11.79	0.01
DDH18-SD-418	249.10	252.20	3.10	0.10	5.05	55.3	5.23	0.18
DDH18-SD-421	433.80	435.00	1.20	1.07	0.16	17.4	0.01	-
DDH18-SD-421	506.60	507.30	0.70	1.29	1.45	22.3	0.02	-
DDH18-SD-421	517.00	617.00	100.00	2.51	3.03	52.5	0.41	-
incl	539.80	617.00	77.20	3.11	3.74	64.9	0.53	-
incl	539.80	576.30	36.50	3.89	4.47	84.6	1.06	-
incl	587.90	617.00	29.10	3.35	4.30	65.7	0.07	-
DDH18-SD-424	74.50	76.00	1.50	1.67	6.70	27.0	0.01	-
DDH18-SD-424	282.70	283.30	0.60	10.00	5.17	265.3	0.08	-
DDH18-SD-425	50.80	51.35	0.55	0.15	0.58	54.1	6.23	0.43
DDH18-SD-426	143.50	144.90	1.40	0.37	1.90	25.3	3.08	0.05
DDH18-SD-427	81.20	81.80	0.60	1.12	1.96	16.1	0.01	-
DDH18-SD-427	145.50	147.20	1.70	1.01	1.63	11.8	0.01	-

Table 10-3 Significant Intercepts - 2018 Drill Program

10.3 2019 Drilling

The 2019 diamond drill program began on May 23rd and was completed on December 15th. Drilling was conducted by Matrix Diamond Drilling of Kamloops, BC primarily using two Zinex A5 skid mounted drills, with a third A5 drill mobilizing in November. Drilling targeted copper-gold-silver-zinc mineralized skarn at the 421 Zone. A total of 28 bore holes were drilled from 7 sites, for a sum of 14,024.2 meters. TECH Directional Services of Sudbury, Ontario provided directional drilling and bore hole surveying services

utilizing the DeviDrill Directional Core Barrel system. Use of the directional drilling system allowed for deep targets to be hit with a high degree of precision. Core drilled was NQ diameter except in sections drilled using the DeviDrill system where AQ diameter core is recovered. Drill site locations are shown in Table 10-4 and Figure 10-2.

0.8 kilometers of new road was constructed to connect new drill pads to existing roads. Minor repairs of existing roads were also carried out. Road construction and repair was carried out by Gleyzay Holdings Ltd. of Takla Landing, BC using a Caterpillar 330 excavator.

Hole ID	UTM East	UTM North	Elevation (m)	Azimuth (º)	Dip (º)	Cut-off Depth (m)	Length EOH (m)
DDH19-SD-428D	346766	6162123	1362	76	-68	434.3	725.2
DDH19-SD-429M	346684	6162084	1368	80	-67.5	n/a	725.3
DDH19-SD-430D	346766	6162123	1362	76	-68	418.8	710.2
DDH19-SD-431M	346765	6162123	1362	76	-67	n/a	662.2
DDH19-SD-432D	346684	6162084	1368	80	-67.5	308.2	755.3
DDH19-SD-433D	346684	6162084	1368	80	-67.5	362.7	415.3
DDH19-SD-434D	346684	6162084	1368	80	-67.5	387.4	760.72
DDH19-SD-435D	346765	6162123	1362	76	-67	219.1	673.4
DDH19-SD-436D	346765	6162123	1362	76	-67	253.6	677.2
DDH19-SD-437M	346760	6162156	1368	75	-73	n/a	627.4
DDH19-SD-438D	346765	6162123	1362	76	-67	338.2	638.2
DDH19-SD-439D	346760	6162156	1368	75	-73	178.6	797.0
DDH19-SD-440M	346739	6162215	1380	80	-76	n/a	794.2
DDH19-SD-441M	346760	6162156	1368	80	-78	n/a	746.2
DDH19-SD-442D	346739	6162215	1380	80	-76	249.4	767.2
DDH19-SD-443D	346760	6162156	1368	80	-78	290.1	770.2
DDH19-SD-444D	346739	6162215	1380	80	-76	328.5	811.35
DDH19-SD-445D	346739	6162215	1380	80	-76	314.5	806.2
DDH19-SD-446M	346730	6162253	1386	73	-75	n/a	810.7
DDH19-SD-447D	346739	6162215	1380	80	-76	761.5	884.2
DDH19-SD-448M	346674	6162312	1405	76	-73.5	n/a	905.2
DDH19-SD-449D	346730	6162253	1386	73	-75	415.8	860.3
DDH19-SD-450D	346674	6162312	1405	76	-73.5	527.5	639.2
DDH19-SD-451D	346730	6162253	1368	73	-75	223.8	899.6
DDH19-SD-452D	346674	6162312	1405	76	-73.5	316.0	929.2
DDH19-SD-453M	346687	6162096	1368	94	-65	n/a	669.8
DDH19-SD-454D	346730	6162253	1368	73	-75	444.4	962.6
DDH19-SD-455D	346674	6162312	1405	76	-73.5	440.2	813.2

Table 10-4 2019 Drill Hole Locations



Figure 10-2 2019 Drill Hole Locations

Drilling results from the 2019 season confirmed the presence of a large, mineralized skarn system at depth in the 421 Zone. Seventeen diamond drill holes intersected significant copper-gold-silver-zinc mineralization. These results expanded the zone in all directions from mineralization previously intersecting in DHH18-SD-421.

Mineralization is hosted in skarn alteration within a pre mineral parasitic anticline fold hinge of a broad anticline along the contact of overlying siliciclastic sedimentary rocks and underlying carbonates. The trend of the fold hinge is interpreted to be plunging down at $20^{\circ} - 30^{\circ}$ to the north-northwest. Intensity and thickness of skarn replacement appears to be increasing to the north and down plunge, this implies the source of the fluids in the system are to the north and/or below the 421 Zone. Additionally, the decrease in thickness of mineralized intercepts on sections 6162275N and 6162325N suggests an east – west trending fault(s) may down drop to the north offsetting mineralization.

DDH19-SD-453M is the most southerly test of the 421 Zone and intersected strong copper-gold-silver mineralization. This indicates mineralization remains open in the south as well as both up and down dip in this area.

Results from DDH19-SD-452D show that high grade copper-gold-silver mineralization is present and open in this northerly part of the system.

A list of significant intercepts is shown in Table 10-5.

Hole	From (m)	To (m)	Interval (m)	Copper (%)	Gold (g/t)	Silver (g/t)	Zinc (%)
DDH19-SD-428D	493.45	635.8	142.35	1.22	1.28	21.8	0.41
incl.	562.8	595.0	32.2	2.47	2.37	47.4	1.61
incl.	604.95	619.05	14.1	3.45	4.12	57.9	0.44
DDH19-SD-429M	564.0	654.05	90.05	1.08	1.4	21.6	0.22
incl.	586.5	593.0	6.5	4.61	7.05	60.2	1.68
incl.	649.45	654.05	4.6	2.96	5.31	131.8	1.65
DDH19-SD-430D	490.6	512.6	22.0	1.53	1.02	24.6	0.03
DDH19-SD-430D	546.0	653.0	107.0	1.64	1.77	28.6	0.03
incl.	572.2	630.3	58.1	2.49	2.61	44.3	0.04
DDH19-SD-432D	680.15	691.95	11.8	0.61	0.54	11.1	0.01
DDH19-SD-436D	502.6	548.15	45.55	1.44	1.18	27	0.04
incl.	542.3	548.15	5.85	5.13	3.78	91	0.18
DDH19-SD-436D	598.4	623.25	24.85	3.13	4.85	93.5	0.28
incl.	609.2	618.2	9.0	6.04	9.13	183.7	0.6
DDH19-SD-437M	537.6	624.0	86.4	1.65	1.56	28.8	0.28
incl.	585.7	607.0	21.3	3.13	2.14	51.4	1.08
DDH19-SD-438D	564.4	572.9	8.5	3.09	3.47	72	0.08
DDH19-SD-438D	594.0	597.05	3.05	1.08	1.26	21.8	0.02
DDH19-SD-439D	637.0	657.5	20.5	1.17	0.96	20.4	0.01
DDH19-SD-439D	714.5	724.45	9.95	0.78	0.7	97.1	0.28
DDH19-SD-440M	582.0	591.0	9.0	1.26	1.91	32.8	0.01
DDH19-SD-440M	708.9	724.8	15.9	2.38	2.68	66.6	0.1
DDH19-SD-441M	609.25	650.8	41.55	2.33	2.73	44.3	0.07
incl.	609.25	620.3	11.05	3.35	3.88	60.7	0.14
incl.	639.5	650.8	11.3	3.94	4.58	79.2	0.11
DDH19-SD-442D	669.75	720.7	50.95	0.64	0.67	10.6	0.01
incl.	669.75	693.2	23.45	0.92	0.92	14.4	0.01

Table 10-5 Significant Intercepts - 2019 Drill Program
Hole	From (m)	To (m)	Interval (m)	Copper (%)	Gold (g/t)	Silver (g/t)	Zinc (%)
DDH19-SD-443D	678.3	695.3	17.0	1.17	1.05	19.2	0.01
DDH19-SD-444D	735.0	738.2	3.2	1.65	1.3	29.4	0.01
DDH19-SD-444D	762.0	772.95	10.95	3.19	3.59	58.1	0.07
DDH19-SD-451D	807.0	810.7	3.7	1.64	1.36	25.8	0.01
DDH19-SD-452D	866.0	869.0	3.0	3.25	4.32	70.1	0.05
DDH19-SD-453M	540.7	567.0	26.3	1.45	1.48	22.2	0.01
incl.	553.8	557.4	3.6	3.98	3.45	66.6	0.02
DDH19-SD-453M	594.0	601.2	7.2	2.1	1.41	33.4	0.01

10.4 2020 Drilling

The 2020 diamond drill program began on June 26th and was completed on September 21st. Drilling was conducted by Matrix Diamond Drilling of Kamloops, BC using three Zinex A5 skid mounted drills. Drilling targeted copper-gold-silver-zinc mineralized skarn at the Canyon Creek, East, and 421 Zones. A total of 17 bore holes were drilled from 10 sites, for a sum of 11,975.4 meters. TECH Directional Services of Sudbury, Ontario provided directional drilling and bore hole surveying services utilizing the DeviDrill Directional Core Barrel system. Core drilled was NQ diameter except in sections drilled using the DeviDrill system where AQ diameter core is recovered. Drill site locations are shown in Table 10-6 and Figure 10-3. A list of significant intercepts is presented in Table 10-7

0.1 kilometers of new road was constructed to connect new drill pads to existing roads. Minor repairs of existing roads were also carried out. Road construction and repair was carried out by Gleyzay Holdings Ltd. of Takla Landing, BC using a Caterpillar 330 excavator.

Hole ID	UTM East	UTM North	Elevation (m)	Azimuth (⁰)	Dip (⁰)	Cut-off Depth (m)	Length EOH (m)
DDH19-SD-455D	346676	6162311	1405	76	-73.5	440.2	1089.2
DDH20-SD-456M	346646	6162071	1366	82.5	-64	n/a	692.3
DDH20-SD-457M	346688	6162097	1365	81	-66	n/a	664.4
DDH20-SD-458M	346661	6162117	1370	80	-73.5	n/a	1037.6
DDH20-SD-459D	346646	6162071	1366	82.5	-64	289.4	741.0
DDH20-SD-460D	346688	6162097	1365	81	-66	324.0	710.0
DDH20-SD-461M	346646	6162071	1366	91	-59	n/a	647.0

Table 10-6 2020 Drill Hole Locations

Hole ID	UTM East	UTM North	Elevation (m)	Azimuth (º)	Dip (º)	Cut-off Depth (m)	Length EOH (m)
DDH20-SD-462	346941	6162267	1404	60	-66	n/a	803.5
DDH20-SD-463	346587	6161806	1383	60	-66	n/a	893.3
DDH20-SD-464D	346646	6162071	1366	81	-64	194.0	707.0
DDH20-SD-465	347051	6162299	1430	60	-63	n/a	855.5
DDH20-SD-466	346826	6161916	1360	52	-60	n/a	496.6
DDH20-SD-467	346559	6161841	1381	53	-61	n/a	815.3
DDH20-SD-468	346587	6161805	1383	76	-61	n/a	832.8
DDH20-SD-469	347051	6162299	1430	85	-69	n/a	992.5
DDH20-SD-470	346752	6162148	1365	64	-61	n/a	806.2
DDH20-SD-471	346587	6161805	1383	58	-61	n/a	812.0



Figure 10-3 2020 Drill Hole Locations

Table 10-7 Significant Intercepts - 2020 Drill Program

Hole ID	From (m)	To (m)	Interval (m)	Copper (%)	Gold (g/t)	Silver (g/t)	Zinc (%)
DDH19-SD-455D	903.8	905.8	2.0	1.05	1.26	26.5	0.02
DDH20-SD-456M	635.3	654.9	19.6	0.59	0.55	13.3	0.02
incl.	635.3	638.2	2.9	2.15	1.78	49.2	0.04
DDH20-SD-457M	505.7	549.7	44.0	1.57	1.08	28.2	0.01
incl.	535.8	549.7	13.9	3.05	2.12	53.6	0.01
DDH20-SD-459D	675.0	679.8	4.8	0.92	0.81	16.2	0.01
DDH20-SD-460D	588.0	628.4	40.4	1.74	1.41	26.6	0.01
incl.	588.0	604.0	16.0	3.12	2.55	48.2	0.01
DDH20-SD-461M	493.4	498.45	5.05	0.90	0.74	11.3	0.02

Hole ID	From (m)	To (m)	Interval (m)	Copper (%)	Gold (g/t)	Silver (g/t)	Zinc (%)
DDH20-SD-463	823.8	833.4	9.6	0.58	0.36	11.0	0.01
DDH20-SD-464D	499.0	506.3	7.3	1.18	1.07	14.4	0.02
DDH20-SD-464D	614.25	618.7	4.45	5.58	5.99	190.5	0.12
DDH20-SD-466	373.35	390.8	17.45	1.37	1.70	39.7	0.03
incl.	384.35	389.85	5.5	3.02	3.83	87.2	0.07
DDH20-SD-467	775.85	779.2	3.35	0.78	0.85	20.3	0.03
DDH20-SD-468	614.0	635.0	21.0	0.45	0.28	4.9	0.01
DDH20-SD-468	657.1	658.85	1.75	1.28	0.60	13.5	0.01
DDH20-SD-469	236.75	247.2	10.45	0.53	0.44	40.2	0.02
incl.	238.65	244.05	5.4	0.88	0.58	66.0	0.03

The 2020 drilling combined with Sun Metals previous drilling in 2017-2019, as well as historic drilling on the Property was used to re-interpret the geological model and mineralized domains. The structural framework that controls mineralization is currently interpreted to be a series of parasitic folds and thrust faults formed where faults and associated fault propagation folds create the architecture and plumbing system for the skarn alteration, fluid flow, and base metal mineral deposition. Zone thickening is seen at the intersection lineation between the faults and certain stratigraphic horizons. Dilatational offset within the structures creates northerly plunging ore chutes within the larger mineralized structure. The most prospective stratigraphic horizon for hosting the high-grade zones is the carbonate unit that is deposited stratigraphically below the clastic sediment unit and above the limestone clast tuff unit.

10.5 Core Recovery

Core recovery for the Sun Metals drill programs was good to excellent with an overall average of 95% and a median value 98%. Areas of poor or no recovery normally occurred in fault zones and small karst cavities.

10.6 Drill Hole Location Surveys

During the Sun Metals drill programs, drill hole collars were surveyed using a Real-Time Kinematic and Differential GPS system. Elevations were derived from the LiDAR survey data described in Section 9.1.

10.7 Downhole Surveys

During the Sun Metals drill programs, downhole surveys were generally taken at intervals between 10 and 30 m, although a number of holes used 3 m intervals. The average spacing was 20 m.

Downhole survey instruments used were a Reflex EZ-GYRO and an Axis C-Gyro. The C-Gyro was used for directional drilling by TECH Directional Services.

10.8 Sample Length/True Thickness

Due to the steeply dipping orientation of the mineralized zones and the limitations of surface drilling, none of the drill intercepts approximate the true thickness. True thickness must be calculated for each intercept based on the angle of the drill hole to the specified zone.

10.9 Comments on Section 10

Drilling methods and drill hole design are suitable for construction of a Mineral Resource model for the Canyon Creek Skarn Zone.

Fault zones and small karst cavities have been intersected during the drill programs resulting in loss of recovery, but nothing that could materially impact the accuracy and reliability of the results.

True thickness must be calculated for each intercept based on the angle of the drill hole to the specified zone.

11.0 Sample Preparation, Analyses, and Security

11.1 Sampling Methods

11.1.1 Soil Samples

Soil samples were collected with a tree planting shovel or soil auger and placed in a kraft paper bag labelled with a sample number and containing the corresponding prenumbered analytical tag provided by BV. In instances where field duplicate samples were taken, the sample was divided by hand and placed in a separate kraft bag with unique sample number for analysis. Kraft bags were folded shut and placed in a carboard box for shipping. Sampling targeted B and C Horizon soils. Sample locations were recorded using a handheld GPS and field marked with flagging tape labelled with the sample number.

11.1.2 Rock Samples

Rock samples were collected by taking selected pieces of rock from outcrop, subcrop, and float using a rock hammer. All samples were placed in a poly bag labelled with the sample number and containing the corresponding pre-numbered analytical tag provided by Bureau Veritas. Poly bags were sealed using a nylon cable tie and placed in rice bags for shipping. Sample locations were recorded using a handheld GPS, and field marked with flagging tape and an aluminum tag labelled with the sample number.

11.1.3 Drill Core

Drill core sample intervals were laid out and recorded by the logging geologist on site based on lithology and mineralization noted. Sample locations and associated sample numbers were marked on the core using a red lumber crayon. Pre-numbered three-part analytical tags provided by BV were stapled into the core boxes at the end of each sample.

Drill core was cut using an electric powered rock saw. Samples were cut in half lengthwise. One half was returned to its original location in the core box. The other half was placed in a poly sample bag pre-labelled with the sample number. Two sections of the analytical tag were placed in the pre-labelled polyethylene (poly) bag with the corresponding sample number. One section of the analytical tag remained stapled to the core box. In instances where field duplicate samples were taken, the sampled half core was re-sawn lengthwise to produce two quarter core samples. Each quarter core sample was placed in a separate poly bag with unique sample number for analysis. Poly sample bags were sealed using a stapler and placed in rice bags for shipping. Rice bags were sealed using numbered locking security ties.

11.2 Density Determinations

Specific gravity measurements were taken on 9,159 core samples from the 2018, 2019 and 2020 drill programs using the water immersion method. The measurements were carried out by Sun Metals geotechnical personnel on-site using a digital scale (Figure 12-5).

11.3 Analytical and Test Laboratories

All core and geochemical samples from 2017 were analyzed at Bureau Veritas Minerals Laboratory in Vancouver ("BV"), an ISO:9001 Certified lab. BV is independent of the Company and Sun Metals.

11.4 Sample Preparation and Analysis

Analytical methods used by BV are presented in Table 11-1.

Procedure	Lab Code	Description
Soil Preparation	SS80	Dry at 60°C
		Sieve to -180 µm (80 mesh)
Soil Analysis	AQ200	0.5 gram sample
		Aqua regia digestion
		ICP-MS analysis
Drill Core/Rock	PRP70-	
Preparation	250	Crush to ≥70% passing 2mm
		Pulverize 250 g to ≥85% passing 75 μm (200 mesh)
Drill Core/Rock		
Analysis	MA270	0.5 gram sample
		4 Acid digestion
		ICP-ES/ICP-MS analysis
Gold Fire Assay	FA330	30 gram sample
		Fire assay fusion
		ICP-ES analysis
Overlimit Gold/Silver	FA530	Automatic for any samples >10 ppm Au or >100 ppm Ag
		30 gram sample
		Fire assay fusion
		Gravimetric finish
Overlimit Copper	GC820	Automatic for any samples >10,000 ppm Cu

Table 11-1 Analytical Methods - BV

Procedure	Lab Code	Description
		Copper Assay by Classical Titration
Overlimit Zinc	GC816	Automatic for any samples >10,000 ppm Zn
		Zinc Assay by Classical Titration
Overlimit Lead	GC817	Automatic for any samples >10,000 ppm Pb
		Lead Assay by Classical Titration

Soil samples were dried at 60°C and sieved to 180 microns (80 mesh). Each sample was analyzed for 36 elements using modified aqua regia digestion (1:1:1 HNO3:HCI:H2O) and ICP-MS finish.

Rock and drill core samples were crushed to \geq 70% passing 2 millimeters and pulverized to \geq 85% passing 75 microns (200 mesh). Each sample was analyzed for 41 elements using multi acid digestion with ICP-ES and ICP-MS finish. Fire assay fusion decomposition with ICP-ES analysis was also completed on each sample to determine gold-platinum-palladium content. Samples containing gold, silver, copper, zinc, or lead above the detection limit of these techniques were automatically reanalyzed. Samples containing >10 ppm gold or >100 ppm silver were reanalyzed by fire assay fusion with a gravimetric finish. Samples containing >10,000 ppm copper, zinc, or lead were reanalyzed by titration.

11.5 Quality Assurance and Quality Control

11.5.1 Drill Core QAQC

Diamond drill core samples had standard and blank reference material inserted into the sampling series at regular intervals. The certified ranges for the blank and standards used are summarized in Table 11-2.

Field duplicates were also taken at regular intervals. In sections of high-grade mineralization, the frequency of insertion of reference material and field duplicates was increased. Additional reference material samples and field duplicates were also added at the discretion of the logging geologist on site. The results indicated no significant problems with the laboratory analysis. A review of BV's QAQC data – duplicate analysis, standards, blanks, and prep washes also indicate no significant problem with the laboratory analysis.

Standard	Au	Ag	Cu	Pb	Zn
CDN-ME-1312	1.27	22.3	0.446	0.273	1.81
CDN-ME-1410	0.542	69	3.8	0.248	3.682
CDN-ME-1708	6.96	53.9	2	0.171	0.484
CDN-BL-10	<0.01				

Table 11-2 Certified Reference Materials

Correlation between field duplicate core samples is generally strong (Figure 11-1 to Figure 11-3). Increased variability is noted in returned gold and silver analytic results <1 ppm. Minor variability is noted in copper results throughout the range of returned results. These inconsistencies are interpreted to be due to the irregular nature of mineralization in skarn and CRD systems and local relative coarseness of commodity bearing minerals in these systems.

Figure 11-1 Log Scatterplot of Field Duplicates for Au





Figure 11-2 Log Scatterplot of Field Duplicates for Ag

Figure 11-3 Log Scatterplot of Field Duplicates for Cu



11.5.2 Soil Sample QAQC

Soil samples had blank reference material inserted into the sample sequence approximately every 20 samples. Field duplicates were taken approximately every 35 samples. The results indicated no problems with the laboratory analysis. A review of BV's QAQC data – duplicate analysis, standards, blanks, and prep washes also indicate no significant problem with the laboratory analysis.

11.5.3 Rock Sample QAQC

All rock samples passed BV's internal reference material and duplicate QAQC protocols. Results from duplicate analysis, standards, blanks, and prep washes indicate no significant problem with the laboratory analysis.

11.6 Sample Security

Drill core was brought from the drill to the core logging facility by either the drillers or the project geologist. On site the core was kept in and around the core logging tent, where it was logged by the geologist and sample intervals laid out.

Rock and drill core samples were placed in labelled rice bags and sealed using numbered locking security ties for shipping. Rice bags were labelled with a unique identification number and list of samples contained within. Soil samples were placed in cardboard boxes labelled with a unique identification number and list of samples contained within and sealed with packing tape for shipping. Each batch of samples shipped to BV was given a unique shipment identification.

Samples were delivered by Sun Metals personnel to Bandstra Transportation Systems Ltd. ("Bandstra") in Prince George, BC. Bandstra personnel complete a certified bill of landing for each sample shipment and maintain a complete chain of custody of samples until delivered to BV.

At all times samples were under the control of Sun Metals personnel until delivered to BV. BV catalogues all received samples and maintains a complete chain of custody of each sample through the analytical process.

For soil samples, sample depth, soil horizon and soil colour and relevant notes were recorded for each sample. Samples were placed in Kraft bags labelled with the grid location, were dried in the Tsayta Lake Lodge core shack and were put in ~12x11" size cardboard boxes and shipped to BV via courier.

Rock samples were placed in poly-bags and taken back to camp, where hand specimens were separated from the original sample. Sampler, location, field description, source and source size, sample type, rock type, mineralisation and alteration were recorded for each sample. Samples were batched in rice bags and sent via courier to BV for assay.

11.7 Databases

Data is collected and stored using a Geospark database. The project manager is responsible for maintenance of the database. Raw datafiles in CSV format provided by the lab are imported directly into the database using a built-in customizable import template. The project manager checks for any QA/QC discrepancies through a reporting function in the database upon import.

11.8 Comments on Section 11

GeoSim is of the opinion that the adequacy of sample preparation, security and analytical procedures are sufficiently reliable to support the mineral resource estimation and that sample preparation, analysis, and security are generally performed in accordance with exploration best practices at the time of collection.

12.0 Data Verification

12.1 Site Visit Verification

The author has visited the Stardust Project site on three occasions with the most recent visit being conducted on September 23, 2020. Previous visits were carried out on June 14, 2010, and September 17, 2017.

During the sites visits, the author visually identified copper-bearing sulphide mineralization in drill core and outcrop. A number of drill sites were checked by GPS and found to be accurate.

12.1.1 Drill Hole Location

Drill holes are surveyed by and RKA DGPS system. The author checked several drill sites by hand-held GPS and they were found to be accurate. Drill sites have been reclaimed and the drill hole position marked with stakes (Figure 12-1).



Figure 12-1 Drill hole collar and marker - site reclamation in progress (Sept 23, 2020)

12.1.2 Drill Core Logging

A permanent core logging facility is on site. It was found to be clean and well maintained. Inclined benches were used to display core for mark-up and logging (Figure 12-2 to Figure 12-3). A dedicated digital camera mount attached to a computer was used for core photography (Figure 12-4).

Specific gravity measurements were taken on drill core using the water immersion method (Figure 12-5).



Figure 12-2 Core Logging Facility (Sept 23, 2020)

Figure 12-3 Core Markup for splitting (Sept 23, 2020)





Figure 12-4 Core Photography Station (Sept 23, 2020)

Figure 12-5 SG Measurement Station - Water Immersion Method (Sept 23, 2020)



12.1.3 Validation of Sampling and Core Storage Facilities

The core storage facility is located beside the core shack. Core boxes are marked with metal tags and stacked on pallets (Figure 12-6).

A separate room attached to the core shack is used for sawing and bagging core samples and insertion of certified reference standards and blanks (Figure 12-7).



Figure 12-6 Core Storage Area (Sept 23, 2020)



Figure 12-7 Core Sawing Room (Sept 23, 2020)

12.1.4 Independent Sampling

During the author's site visit on June 14, 2010, several core samples were collected and submitted for analysis. Results of the sample from hole LD200913 were consistent with the initial values obtained from the assay interval of 2.82 g/t Au 62.1 g/t Ag and 3.13% Cu (Table 12-1). The limonitic material from near the top of hole LD200513 was not previously sampled.

Hole	Depth (m)	Au g/t	Ag g/t	Cu %	Description
LD200913	159	4.488	95	4.733	
LD200513	31-32	0.054	3	0.050	Leached limonitic zone
Outcrop		1.302	44	2.311	Roadcut in N CCS Area

Table 12-1 Independent sample results

The author has also visually identified mineralization in drill core consistent with reported analytical results on more recent site visits and does not consider further independent sampling necessary.

12.2 Database Validation

The author independently audited the sample database for location accuracy, down hole survey errors, interval errors and missing sample intervals. The author also reviewed the sample QA/QC results.

12.3 Comments on Section 12

Based on the site visit observations, the QP concludes that drilling, logging, and sampling of drill core during the drilling and exploration programs carried out by Northwest Copper and previous operators have been conducted in a manner appropriate to the style of mineralization present on the Property.

The author is of the opinion that the analytical and database quality are adequate for the purposes of the estimation of Mineral Resources and the Classification of mineral resources.

13.0 Mineral Processing and Metallurgical Testing

In 2021, Base Metallurgical Laboratories of Kamloops, B.C. ("BML") completed a brief scoping level metallurgical study using material collected from the Stardust Project (Lang & Angove, 2021). Samples were received in two shipments; an initial shipment of split drill core material was received January 27, 2020, with a second shipment received August 7, 2020. Testing commenced following the second shipment.

The feed assay summary for each composite tested is summarized in the following table:

Comp	Cu	Au	Ag	Fe	S
Method	FAAS	FAAS	FAAS	FAAS	LECO
Units	%	g/t	g/t	%	%
NHG Comp	3.94	4.56	86	16.1	7.65
MG Comp	2.13	2.36	39	15.4	6.52
LG Comp	1.11	1.30	21	14.6	2.32

Table 13-1 Feed assay summary

Composites were prepared by combining the received intervals according to a provided recipe composting plan that would create composites identified as LG, MG and NHG Composite. Once combined, each composite was stage crushed to minus 3.35mm before blending and splitting into 2kg test charges. Duplicate head samples were removed from replicate head charges for feed assay determination.

13.1 Head Assaying

Feed chemical analysis was completed in duplicate for each composite. Analysis included fire assay for Au. Cu, Fe and Ag were determined by aqua-regia digestion with an AA finish, S was determined by Leco and a multi-element ICP scan was also conducted. A summary of analysis by composite and method is provided in Table 13-2. The Au test average for the NHG Comp was 4.23 g/t gold.

Comp					Element				
Comp	Au	Ag	Cu	Fe	S	As	Со	Sb	Bi
Method	FAAS	FAAS	FAAS	FAAS	LECO	ICP	ICP	ICP	ICP
Units	g/t	g/t	%	%	%	ppm	ppm	ppm	ppm
NHG Comp Hd 1	3.63	86	4.02	16.3	7.69				
NHG Comp Hd 2	5.48	86	3.85	15.9	7.61				
Average	4.56	86	3.94	16.1	7.65	99	66	15	2
LG Comp Hd 1	1.70	21	1.11	14.6	2.31				
LG Comp Hd 2	0.91	20	1.11	14.5	2.32				
Average	1.30	21	1.11	14.6	2.32	42	23	7	12
MG Comp Hd 1	1.76	39	2.12	15.7	6.56				
MG Comp Hd 2	2.96	39	2.13	15.0	6.47				
Average	2.36	39	2.13	15.4	6.52	74	97	19	15

Table 13-2 Chemical Analysis Summary

13.2 Metallurgical Testing

A scoping level metallurgical study was undertaken to evaluate the flotation response of three composites prepared to represent a gradient of feed grades. Testing optimized conditions using the NHG Composite; a series of 3 rougher kinetic flotation tests evaluated the sensitivity of primary grind before optimizing the cleaner circuit with a further 5 tests. A single cleaner test was performed for each of the LG and MG composites applying established conditions used for the NHG Composite.

The final flowsheet used for testing included gravity concentration of gold by Centrifugal Gold Concentration (CGC) using a laboratory Knelson, followed by cleaning using a Mozley Table at 150 μ m. The combined Knelson and Mozley tails were advanced to 10 minutes of rougher flotation, the rougher concentrate was reground to a target K80 of 40 to 50 μ m and cleaned, requiring 2 to 3 stages of dilution cleaning.

13.2.1 Gravity Performance

Based on early information on gold occurrences within the orebody and core samples, initial tests did not utilized gravity. However, as testing progressed gravity evaluation was completed using the industry accepted combined technology of Knelson-Mozley gravity separation, targeting a low weight gravity concentrate. Gravity feed was prepared by grinding individual composite samples in a laboratory rod mill generally as 2-kg test charges to a target size K80 of 150µm. Ground samples were pumped at a rate of 30 to 40 kg/h through a laboratory size Knelson MD-3 concentrator, while applying 3.5 L/min of fluidizing wash water. The Knelson was stopped, the concentrate removed and cleaned on the Mozley C-800 Table targeting a final gravity mass recovery of 0.06 to 0.07 wt.%.

The final concentrate was assayed by fire assay to extinction; gravity tailings were combined and advanced to further testing. Gravity gold recovery ranged by composite, the MG and NHG composites each recovered 24% gold and the LG Comp recovered 42% gold to a Mozley Concentrate which assayed between 560 to just under 3,000 g/t gold.

13.2.2 Flotation Optimization

Limited optimization testing was included within the study, however suitable results were achieved using favored conditions. Testing evaluated effect of primary grind, effect of regrind prior to cleaning and incremental gold recovery by including gravity.

Testing utilized a 2kg sample for each test which was ground in a laboratory mild steel rod mill with stainless steel rods. Samples were ground at a density of 65% solids before discharging to a standard laboratory flotation cell. The ground pulp was conditioned in a Denver D12 cell (~4.5L) and adjusted to approximately 35% solids. Rougher flotation was completed using the Denver D12 with rougher concentrates collected at kinetic increments, filtered, and dried prior to assay. Cleaner tests were reground in a laboratory regrind mild steel rod mill with stainless rods. The discharged pulp was repulped in a 2.5L Denver flotation cell prior to cleaning. Cleaning tests utilized 3 stages of cleaning and a 1st cleaner scavenger. Each product was assayed for Cu, Au, Ag and S.

The sensitivity to primary grind size evaluated three grind sizes using the NHG Comp, testing nominal K80 sizes of 75, 100 and 150 μ m. Copper demonstrated little effect for the grind sizes tested, however gold was more sensitive trending with improvement at finer grind sizes with close to 90% recovery at 75 μ m compared to 60 to 70% at the 150 and 100 μ m grinds, respectively.

As testing advanced to cleaning tests the 75 µm primary grind size was selected.

A series of five batch cleaner tests were completed using the NHG Composite. Testing evaluated effect of regrind size with three tests, a final two tests evaluated cleaner performance at coarser grinds with and without gravity. Key observations were:

- Improved final copper concentrate grade with finer regrind sizes suggesting a regrind in the 35 μ m size is helpful and required. A finer regrind may also assist in reducing cleaning stage requirements.
- Gold stage recovery greatly improved as regrind size is reduced.

The effect of operating with a gravity circuit on combined gravity and flotation gold recovery during batch cleaning was evaluated. Two tests were carried out to compare the impact of operating with a coarser primary grind K80 of $150\mu m$, regrinding to

nominal 40 μ m and the incremental benefit to combined gold recovery with (C-08) and without (C-07) upfront gravity.

Results indicated that by including upfront gravity for gold recovery, the net effect allows the primary grind to be coarsened from a K80 of 75 to 150μ m (C6 vs. C8) with minimal impact on net gold recovery (93 and 92%, respectively for C6 and C8) when holding Cu concentrate grade at about 26% copper. Comparatively, operating at 150 μ m without gravity, gold recovery drops to 64% at 26% Cu grade.

A single test was devoted to benchmarking the LG and MG Composites. These results are compared to C8 for the NHG Comp, all tests included gravity and were completed at a primary grind K80 of 150 μ m with a target 40 μ m K80 regrind. A summary of results is provided by Table 13-3.

Test	Droduct	wt.	Ass	say - pe	rcent o	rg/t	Dis	stributio	n - perc	ent
ID	FIOUUCI	%	Cu	Au	Ag	S	Cu	Au	Ag	S
C8	Grav Conc	0.048		2,975				34.2		
NHG Comp	Cu 3 CC + Grav	12.3	30.5	28.4	550	33.6	94.1	83.5	81.5	54.6
	Cu 2 CC + Grav	12.8	29.7	27.9	538	33.0	95.6	85.6	83.2	56.0
Prim: 150 µm	Cu 1 CC + Grav	14.1	27.5	27.0	503	31.7	97.9	91.5	85.8	59.3
Rg'd: 40 µm	Cu 1CC & SC + Grav	15.0	26.2	25.9	482	30.6	98.6	93.0	87.1	60.7
	Cu RC & Grav	25.6	15.44	15.7	297	28.46	99.4	96.2	91.9	96.5
Grav: Yes	Cu Ro Tail	74.4	0.03	0.21	9.00	0.35	0.6	3.8	8.1	3.5
	Cu Ro Conc	100.0	3.97	4.17	83	7.54	100	100	100	100
C10	Grav Conc	0.061		564				24.0		
MGComp	Cu 3 CC + Grav	7.4	27.2	16.2	389	37.2	89.8	83.1	78.3	42.6
	Cu 2 CC + Grav	8.0	25.5	16.0	368	38.0	91.5	89.0	80.2	47.2
Prim: 150 µm	Cu 1 CC + Grav	8.8	23.7	15.2	345	38.6	93.1	92.5	82.7	52.7
Rg'd: 40 µm	Cu 1CC & SC + Grav	9.6	21.8	14.0	321	39.3	94.2	93.7	84.6	58.9
	Cu RC & Grav	16.1	13.30	8.6	201	36.66	95.9	95.9	88.5	91.7
Grav: Yes	Cu Ro Tail	83.9	0.11	0.07	5.00	0.64	4.1	4.1	11.5	8.3
	Cu Ro Conc	100.0	2.23	1.44	37	6.42	100	100	100	100
C9	Grav Conc	0.071		907				42.0		
LG Comp	Cu 3 CC + Grav	3.6	27.9	37.3	398	37.8	90.5	87.5	71.4	56.3
	Cu 2 CC + Grav	3.9	26.3	35.6	382	38.6	91.7	90.0	73.8	61.9
Prim: 150 µm	Cu 1 CC + Grav	4.2	24.4	33.3	361	38.9	92.7	91.8	76.0	68.0
Rg'd: 40 µm	Cu 1CC & SC + Grav	4.7	22.2	30.5	338	39.0	94.4	93.9	79.5	76.2
	Cu RC & Grav	6.7	16.09	22.0	259	35.23	96.6	95.7	86.0	97.1
Grav: Yes	Cu Ro Tail	93.3	0.04	0.07	3.00	0.07	3.4	4.3	14.0	2.9
	Cu Ro Conc	100.0	1.11	1.53	20	2.41	100	100	100	100

Table 13-3 Benchmark Grade Composites

A general improvement in performance is gained with increased head grades for copper and gold; however, this diminishes for the LG and MG composites. Gold recovery is constant across all ranges of feed grades tested, with a common tailings grade of 0.07 g/t gold for the LG and MG composites but elevated to 0.22 g/t gold in the NHG Composite suggesting the tailing grade may fluctuate by gold feed grade.

13.3 Conclusion & Recommendations

The final proposed flowsheet is based on the NHG Comp and includes an initial centrifugal gravity separation stage, for enhanced gold recovery, followed by conventional flotation. Adequate copper and gold rougher recovery at a primary grind size of 150 μ m followed by regrinding to 50 μ m and three stages of cleaning were used during testing (two stages of cleaning likely sufficient) producing a marketable copper concentrate with combined gravity and flotation recoveries of over 98% copper and 90% gold (average for all composites tested was 90% gold and 94% copper).

Gravity recovery of gold ranged from 24 to 42% and copper flotation recovery of 92 to 98%, for the samples tested under open circuit conditions.

Copper has little sensitivity to the grind sizes tested of 75 to 150μ m; however, gold is impacted with coarser grinds. By including upfront gravity for gold recovery, the primary grind size can be increased with minimal to no impact on net gold recovery and should be considered for future studies.

The effect of feed grades for Cu and Au has a small influence on performance.

Future studies should consider inclusion of comminution testing, locked cycle tests on main rock types, variability testing and detailed concentrate analysis to identify any potential deleterious elements that might impact marketability of the final concentrates. It is also recommended that a wider range of feed grades and ore types should also be considered to better define parameters which may impact processability.

13.4 Comments on Section 13

The testwork conducted is suitable for preliminary process flowsheet selection and samples are representative of the mineralized material and suitable for generating recovery estimates for the mineral resource estimate.

14.0 Mineral Resource Estimates

This mineral resource estimate is an update to that previously prepared for the Property for Sun Metals in 2017. The mineral resource estimate was prepared by Ronald G. Simpson P. Geo, a Qualified Person of GeoSim.

14.1 Key Assumptions and Basis of Estimate

The database for the Canyon Creek Skarn Zone contains 206 drill holes representing 74,253 m of drilling. Fifty-eight of these holes (38,329 m) have been completed between 2018 and 2020 by Sun Metals. Grade estimation is based on 186 drill holes and 3,124 composites of nominal 2.0 m lengths.

Mineral resources were estimated for gold, silver, and copper. Significant grades of Zinc have been encountered but the distribution is highly irregular and would not likely justify the additional cost of extraction.

14.2 Geological Models

The mineralized skarn zones were initially modeled in Leapfrog Geo software by Company geologists. Final clipping of the zones was carried out using Surpac Vision software to define the extents of the individual zones that displayed reasonable prospects for economic extraction.

Out of the initial 11 zones and 5 sub-zones (splays), 6 were selected that contained sufficient sampling information and grades to qualify as potential mineral resources. These zones were assigned their initial integer codes with a "10" prefix, so they are not consecutive (Figure 14-1). These mineral zones collectively extend approximately 1200 m along strike and have been intersected from surface down to 900 m in depth.

Note: In the press release dated May 17, 2021, Zone 102 is referred to as "Zone 2". The codes have been modified to avoid confusion with historic mineral zone names on the Property.



Figure 14-1 Mineral Zone Wireframes – Plan View



Figure 14-2 Mineral Zone Wireframes – Looking West

14.3 Exploratory Data Analysis

For this modeling exercise it was decided to use the 'best fit' method of compositing. This procedure produces samples of variable length, but of equal length within a contiguous drill hole zone, ensuring the composite length is as close as possible to the nominated composite length. In this case, the nominated length was set at 2 m with a tolerance of 50% meaning that composite widths for a given zone intercept could range from 1 to 3 metres. This also has the advantage of avoiding partial composites at the beginning and end of the zone intercepts.

The composite intervals were extracted by determining the drill hole intercepts within the wireframe models of each zone. If part of the interval was not sampled, then the values were assumed to be '0' and the composite grade was diluted. Statistics of the composites within the zone models are presented in Table 14-1.

	Au g/t	Ag g/t	Cu %
n	3124	3124	3124
Min	0.000	0.0	0.000
Max	20.681	542.8	10.733
Mean	0.596	10.9	0.499
Median	0.149	2.6	0.136
Std Dev	1.320	25.0	0.983
COV	2.213	2.3	1.969

Table 14-1 Composite Statistics

14.4 Grade Capping and Outlier Restriction

Grade distribution in the composited sample data was examined to determine if grade capping or special treatment of high outliers was warranted. A decile analyses was performed on the composites within the zone constraints and log probability plots examined (Figure 14-3 to Figure 14-5).

Since Zone 102 contained just over half of the total composites and more consistent high grades, it was analyzed separately. The other 5 zones were analyzed collectively. Cap grades are summarized in Table 14-2 and statistics of capped composites in Table 14-3.



Figure 14-3 CPP Charts and Capping Thresholds - Au







Figure 14-5 CPP Charts and Capping Thresholds - Cu

Table 14-2 Grade Caps

	Zone 102 Zones 103	
Cap Au g/t	10	6
Cap Ag g/t	150	140
Cap Cu %	7.5	5

Table 14-3 Capped Composite Statistics

	Au g/t	Ag g/t	Cu %
n	3124	3124	3124
Min	0.000	0.0	0.000
Max	13.641	150.0	7.500
Mean	0.586	10.7	0.496
Median	0.149	2.6	0.136
Std Dev	1.222	22.3	0.954
COV	2.087	2.1	1.925

14.5 Density Assignment

The drilling database includes 9,325 specific gravity measurements from drill core collected between 1997 and 2020. The vast bulk of this data (98%) was collected between 2018 and 2020 from the 421 zone which is part of Zone 102. In order to evaluate a reasonable bulk density for tonnage calculations, a block model estimate was

run using 1631 SG data points within Zone 102 with a search range of 50m. The method used was IDW to the second power (ID^2). A minimum of 3 and maximum of 12 samples were used to estimate a block. The mean and median SG values of blocks within 5m of a sample and above a potentially economic cut-off grade were then calculated. The median value of 3.42 was selected.

14.6 Variography

Semi-variograms were constructed using composite data from Zone 102 which had the most drill intercepts. Due to the thin nature of the other mineral zones, there were insufficient sample pairs available to model reasonable variograms. Directional semi-variograms for Cu, Au and Ag constructed in the plane of the number 2 zone showed nested spherical structures with ranges of 31m for Cu, 36 for Au and 41.5 m for Ag Table 14-4. There was no clear anisotropy evident in the plane of the mineralized structure.

Table 14-4	Variogram	Models
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Element	Nugget	Sill	Range	Sill	Range
	со	c1	a1	c2	a2
Au	0.18	0.43	9.9	0.39	36
Ag	0.26	0.42	8.5	0.32	41.5
Cu	0.22	0.34	9.9	0.44	31

14.7 Estimation/Interpolation Methods

A block model with block dimensions of $0.5 \times 3.0 \times 2.5$ m was created using Geovia-Surpac© software. The narrow width in the x direction was chosen in order to investigate model economics using a column processing function to impose minimum mining widths. Model extents are shown in Table 14-7.

Direction	Min	Мах	Dist (m)	size (m)
x	346650	347460	810	0.5
У	6161550	6162900	1350	3.0
z	250	1500	1250	2.5

Table 14-5 Block Model Extents

Inverse-distance cubed weighting to the third power (ID3) interpolation was carried out within the zone wireframes in a single pass using a maximum search distance of 100 m in the plane of the zones. A minimum of 3 and maximum of 12 composites were used for grade estimation. Anisotropic interpolation was used with each block being assigned a dip and dip azimuth parallel to a trend surface based on the zone geometry. These

values were used as input to define the search ellipse for each block. The major and semi-major axes were the same dimension and the ratio to the minor axis was 3:1.

A Nearest-Neighbour model was also estimated to assist in model validation.

Block model grade distribution is illustrated in Figure 14-6 to Figure 14-8.



Figure 14-6 Block model Au grades



Figure 14-7 Block model Ag grades



Figure 14-8 Block model Cu grades

Grade distribution in the 421 Zone area of Zone 102 is presented in Figure 14-9 and Figure 14-10 as cross sections at 6162125 North.



Figure 14-9 Section 6162125N - Au and Ag Grades



Figure 14-10 Section 6162125N - Cu Grades

Grade distribution on Section 6162050 through Zones 102, 103, 105, and 106 is illustrated in Figure 14-11 and Figure 14-12.


Figure 14-11 Section 6162050N - Au and Ag Grades



Figure 14-12 Section 6162050N - Cu Grades

Grade distribution on Section 6162705 through Zones 102 and 110 is illustrated in Figure 14-13. This section contained no significant Cu grades (greater than 0.25%).



Figure 14-13 Section 6162705N - Au and Ag Grades

14.8 Block Model Validation

Model verification was initially carried out by visual comparison of blocks and composite grades in plan and section views. The estimated block grades showed reasonable correlation with adjacent composite grades.

A comparison of global mean values shows a reasonably close relationship with composites and block model values estimated using the nearest neighbour and ID3 interpolation methods (Table 14-6).

Item	Au	Ag	Cu
Composites	0.65	11.4	0.51
Capped Composites	0.59	10.7	0.50
Declustered Capped Composites	0.54	9.6	0.42
IDW Grade	0.52	9.2	0.41
NN Grade	0.57	9.9	0.45

Table 14-6 Global Mean Grade Comparison

14.9 Classification of Mineral Resources

Resource classifications used in this study conform to the CIM Definition Standards for Mineral Resources and Mineral Reserves (CIM, 2014).

Classified blocks were restricted to a minimum mining width of 2.5 m using a column processing procedure to differentiate potential economic material from waste. Blocks were further classified based on drill spacing. Blocks falling within a drill spacing of 30 m within Zones 2, 3, and 6 were initially assigned to the Indicated category. All other estimated blocks within a maximum search distance of 100 m were assigned to the Inferred category. Blocks were reclassified to eliminate isolated blocks and clusters and to eliminate small portions of Indicated resources within Inferred resources and vice versa.



Figure 14-14 Section 6162125N Block Classification

Figure 14-15 Perspective View of Estimated and Classified Blocks





Figure 14-16 Longitudinal Section showing Block Classification

14.10 Reasonable Prospects of Economic Extraction

Reasonable prospects for economic extraction were determined by applying a minimum mining width of 2.5 m and excluding isolated blocks and clusters of blocks that would likely not be mineable. The base case cut-off of US\$65/t was determined based on metal prices of US \$3.25/lb copper, US \$1,600/oz gold and US \$20/oz silver, underground mining cost of US \$45/t, processing cost of US \$15/t and G&A cost of US \$5/t. Recoveries used in calculation of the base case cut-off were based on recent metallurgical test results and were assumed to be 94% for gold and copper and 86% for silver. Block tonnes were estimated using a density of 3.4 g/cm for mineralized material.

Assumptions	Value
Gold Price (US\$ per oz)	\$1,200
Silver Price (US\$ per oz)	\$20
Copper Price (US\$/lb)	\$3.25
Gold Recovery	94%
Silver Recovery	86%
Copper Recovery	94%
Underground Mining Cost (US\$ per tonne	
milled)	\$45
Processing (US\$ per tonne milled)	\$15
G&A Cost (US\$ per tonne milled)	\$5
Total Operating Cost (US\$ per tonne milled)	\$65
Cut-off Grade (US\$/t)	\$65

Table 14-7 Cost Assumptions used in Cut-off Determination

Mineral resources were estimated for gold, silver, and copper. Significant grades of Zinc have been encountered but the distribution is highly irregular and would not likely justify the additional cost of extraction.

14.11 Mineral Resource Statement

The updated Stardust mineral resource estimate for the Canyon Creek Skarn Zone is presented in Table 14-8. It is based on a cut-off of US \$65/tonne and 2.5 metre minimum mining width.

Table 14-8	Stardust Mineral	Resource Est	imate – Canyo	n Creek Skarn Zone

Tonnos	Tonnos	Grades				
Class	(000)	%Cu	g/t Au	g/t Ag	CuEq	
Indicated	1,963	1.31	1.44	27.1	2.59	
Inferred	5,843	0.86	1.17	20.0	1.88	

Notes:

1. CIM Definition standards (2014) were used for reporting the mineral resources.

2. Mineral resources are not mineral reserves and do not have demonstrated economic viability.

3. Mineral resource estimate prepared by Ronald G. Simpson of GeoSim Services Inc. with an effective date of May 17, 2021.

4. Reasonable prospects for economic extraction were determined by applying a minimum mining width of 2.5 m. and excluding isolated blocks and clusters of blocks that would likely not be mineable.

5. The base case cut-off of US\$65/t was determined based on metal prices of \$1,600/oz gold. \$20/oz silver and \$3.25/lb copper, underground mining cost of US\$45/t, processing cost of US\$15/t and G&A cost of US\$5/t. Recoveries based on recent metallurgical test results were assumed to be 94% for gold and copper and 86% for silver.

6. Block tonnes were estimated using a density of 3.4 g/cm3 for mineralized material.

7. Copper Equivalent was calculated using the metal price assumptions stated above: CuEq = Cu + Au * 0.718 + Ag * 0.009.

8. Six separate mineral domains models were used to constrain the estimate. Minimum width used for the wireframe models was 1.5 m.

9. For grade estimation, 2.0-meter composites were created within the zone boundaries using the best-fit method.

- 10. Capping values on composites were used to limit the impact of outliers. For Zone 102, gold was capped at 15 g/t, silver at 140 g/t and copper at 7.5%. For all other zones, gold was capped at 6 g/t, silver at 140 g/t and copper at 5%.
- 11. Grades were estimated using the inverse distance cubed method. Dynamic anisotropy was applied using trend surfaces from the vein models. A minimum of 3 and maximum of 12 composites were required for block grade estimation.
- 12. Blocks were classified based on drill spacing. Blocks falling within a drill spacing of 30m within Zones 2, 3, and 6 were initially assigned to the Indicated category. All other estimated blocks within a maximum search distance of 100 m were assigned to the Inferred category. Blocks were reclassified to eliminate isolated Indicated resources within inferred resources.
- 13. Totals may not sum due to rounding.

The mineral resource breakdown by zone is presented in Table 14-9 and Table 14-10.

Zone	Tonnos	Grades			
	(000)	%Cu	g/t Au	g/t Ag	CuEq
102	1,441	1.42	1.48	26	2.71
103	344	1.02	1.60	38	2.51
106	135	0.95	0.87	11	1.68
110	43	1.27	0.48	31	1.89
Total	1,963	1.31	1.44	27	2.59

Table 14-9 Indicated Mineral Resources by Zone

Table 14-10 Inferred Mineral Resources by Zone

	-	Grades			
Zone	(000)	%Cu	g/t Au	g/t Ag	CuEq
102	2,623	0.78	1.23	18	1.82
103	1,305	0.92	1.44	34	2.26
105	346	0.71	1.01	20	1.61
106	1,094	1.15	0.77	12	1.81
110	406	0.52	1.09	13	1.42
1x11	70	1.05	1.11	17	2.00
Total	5,843	0.86	1.17	20	1.88

14.12 Grade Sensitivity Analysis

The mineral resource sensitivity to increases in cut-off value are presented in Table 14-11and Table 14-12.

The results show that the resource estimate is moderately sensitive to changes in cut-off grade. The reader is cautioned that these figures should not be misconstrued as a mineral resource statement apart from the official base case scenario at \$ 65/tonne. The results shown above the base-case cut-off grade meet reasonable prospects of economic extraction.

	Tonnos	Grades				
COG \$/t	COG	%Cu	g/t Au	g/t Ag	CuEq	
65	1,962,888	1.314	1.439	27.1	2.59	
85	1,603,223	1.481	1.624	30.2	2.92	
105	1,309,183	1.649	1.815	33.2	3.25	
125	1,061,374	1.825	2.024	36.2	3.60	

Table 14-11 Resource Sensitivity - Indicated Class

Table 14-12 Resource Sensitivity - Inferred Class

COG \$/t Tonnes > COG	Tonnos	Grades				
	%Cu	g/t Au	g/t Ag	CuEq		
65	5,843,160	0.860	1.166	20.0	1.88	
85	4,317,343	0.973	1.349	22.6	2.15	
105	3,091,762	1.103	1.536	24.9	2.43	
125	2,158,409	1.242	1.727	27.6	2.73	

14.13 Factors That May Affect the Mineral Resource Estimate

The mineral resource estimate is based on limited information and sampling gathered through appropriate techniques diamond drill core holes. The estimate was prepared using industry standard techniques and has been validated for bias and acceptable grade-tonnage characteristics.

Areas of uncertainty that may materially impact the Mineral Resource estimate include:

- Commodity price assumptions.
- Assumptions that all required permits will be forthcoming.
- Metallurgical recoveries
- Mining and process cost assumptions
- Ability to meet and maintain permitting and environmental license conditions and the ability to maintain the social license to operate.

There are no other known factors or issues that materially affect the estimate other than normal risks faced by mining projects in the province of British Columbia in terms of environmental, permitting, taxation, socio economic, marketing, and political. GeoSim is not aware of any legal or title issues that would materially affect the Mineral Resource estimate.

14.14 Comment on Section 14

The QP has estimated and classified the mineral resources in a manner consistent with the 2014 CIM Definition Standards. An inferred mineral resource has a lower level of confidence than that applying to an indicated mineral resource and must not be converted to a mineral reserve. It is reasonably expected that most of the Inferred mineral resources could be upgraded to indicated mineral resources with continued exploration.

15.0 Mineral Reserves Statement

This section is not relevant to this Technical Report as no mineral reserves have been estimated.

16.0 Adjacent Properties

This section is not relevant to this Technical Report.

17.0 Other Relevant Data and Information

There are no other data or information relevant to the Stardust Project that have not been presented in this Technical Report.

18.0 Interpretation and Conclusions

Geosim has prepared a mineral resource estimate for the Stardust Project. The following observations and conclusions were drawn:

- The Canyon Creek zone is a skarn-hosted mineral occurrence hosted by Permian Cache Creek group sediments in proximity to the Glover stock. The presently defined Canyon Creek Skarn mineralized zones extend approximately 1200 m along strike and have been intersected from surface down to 900 m in depth.
- The adequacy of sample preparation, security and analytical procedures are sufficiently reliable to support an Indicated and Inferred mineral resource estimation and that sample preparation, analysis, and security are generally performed in accordance with exploration best practices at the time of collection.
- The mineral resource estimate is based on analytical data from 206 drill holes representing 80,700 m of drilling. Fifty-eight of these holes (38,329 m) were completed in the most recent drill programs carried out in 2018, 2019 and 2020. Block grade estimation is based on samples from 186 of these drill holes.
- Statistical analysis of gold grade distribution indicates that cutting or capping of high grades is warranted.
- There is significant potential for expanding the current resource and for discovering additional mineral deposits on the Property and extensions to known mineral showings.

Areas of uncertainty that may materially impact the Project's potential economic viability or continued viability include:

- Commodity price assumptions
- Assumptions that all required permits will be forthcoming.
- Metallurgical recoveries
- Mining and process cost assumptions
- Ability to meet and maintain permitting and environmental license conditions and the ability to maintain the social license to operate.

There are no other known factors or issues that materially affect the project other than normal risks faced by mining projects the province of British Colombia in terms of environmental, permitting, taxation, socio economic, marketing, and political factors.

Geosim is not aware of any known legal or title issues that would materially affect the Project's potential economic viability.

19.0 Recommendations

The results of the recent exploration programs clearly demonstrate that additional exploration is warranted. The program should continue to focus on expanding the Canyon Creek Skarn zone as well as testing for additional skarn lenses along the siliciclastic sedimentary – carbonate contact. Infill drilling should be carried out to upgrade Inferred resources to Measured or Indicated. Advanced metallurgical testing should also be carried out. Specific recommendations for a first phase program include:

- Resource expansion drilling in order to potentially expand the mineral resources within the Canyon Creek Skarn Zone.
- Infill drilling to potentially upgrade inferred mineral resources to measured or indicated.
- Further metallurgical testing including comminution testing, locked cycle tests on main rock types, variability testing and detailed concentrate analysis to identify any potential deleterious elements that might impact marketability of the final concentrates.

A second phase of work would consist of a Preliminary Economic Assessment (PEA) once the first phase drilling is complete. The second phase work program would be contingent on the results of the first phase drill program.

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CERTIFICATE OF QUALIFIED PERSON

Ronald G. Simpson, P.Geo.

This certificate applies to NI 43-101 Technical Report titled "**Stardust Project, Updated Mineral Resource Estimate, NI43-101 Technical Report**" (the "Technical Report") prepared for Northwest Copper Corp. (the "Company") with an effective date of May 17, 2021.

I, Ronald G. Simpson, P.Geo., do hereby certify that:

- I employed as a Professional Geoscientist with: GeoSim Services Inc. 807 Geddes Road. Roberts Creek, BC, Canada VON 2W6
- 2. I graduated with a Bachelor of Science in Geology from the University of British Columbia, May 1975.
- 3. I am a Professional Geoscientist (19513) in good standing with the Association of Professional Engineers and Geoscientists of British Columbia
- 4. I have practiced my profession continuously for 46 years. I have been directly involved in mineral exploration, mine geology and resource estimation with practical experience from feasibility studies. I have past experience with and authored technical reports on Carbonate Replacement Deposits located in Canada and Mexico.
- 5. I have read the definition of "Qualified Person" set out in the National Instrument 43-101 *Standards of Disclosure for Mineral Projects* ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
- 6. I am independent of the Company as described in Section 1.5 of NI 43-101.
- 7. I am responsible for all sections of the Technical Report.
- 8. I visited the Property on June 14, 2010, on October 19, 2017, and on September 23, 2020.
- 9. I have authored the following previous technical reports on the Property:
 - Technical Report, Canyon Creek Copper-Gold Deposit, Lustdust Property, Omineca Mining Division, British Columbia, Canada" with effective data of June 23, 2010.
 - Stardust Project NI43-101 Technical Report, Omineca Mining Division, British Columbia, Canada" with effective data of January 8, 2018.
- 10. I have read NI 43-101, Form 43-101F1 and the Technical Report has been prepared in compliance with this NI 43-101.
- 11. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report, and the parts that I am responsible for, contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated: July 2, 2021

Ronald G. Simpson, P.Geo.

