# National Instrument 43-101 Technical Report: Updated Mineral Resource Estimate for the South Mountain Project Owyhee County, Idaho USA

**Report Date: June 15, 2021**
**Effective Date: April 20, 2021**

***Prepared for:***


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**IMPORTANT NOTICE**

This report was prepared as a National Instrument 43-101 Technical Report for BeMetals Corp. ("BMET") by Hard Rock Consulting, LLC ("HRC"). The quality of information, conclusions, and estimates contained herein is consistent with the scope of HRC's services based on i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended for use by BMET subject to the terms and conditions of their contract with HRC, which permits BMET to file this report with Canadian Securities Regulatory Authorities pursuant to National Instrument 43-101, Standards of Disclosure for Mineral Projects. HRC accepts that the TSX Venture Exchange may rely on this document as support for the announced mineral resource update, included in news release dated 4th May, 2021. Except for the purposes legislated under provincial securities law, any other use of this report by any third party is at that party's sole risk.

# CERTIFICATES OF QUALIFIED PERSONS

I, Richard A. Schwering, P.G., SME-RM, do hereby certify that:

1. I am currently employed as Principal Resource Geologist by:

   Hard Rock Consulting, LLC
   7114 W. Jefferson Ave., Ste. 313
   Lakewood, Colorado 80235 U.S.A.

2. I am a graduate of the University of Colorado, Boulder with a Bachelor of Arts in Geology, in 2009 and have practiced my profession continuously since 2013.

3. I am a Registered member of the Society of Mining and Metallurgy and Exploration (No. 4223152RM) and a Licensed Professional Geologist in the State of Wyoming (PG-4086)

4. I have worked as a Geologist for 11 years and as a Resource Geologist for a total of 7 years since my graduation from university; as an employee of a junior exploration company, as an independent consultant, and as an employee of various consulting firms with experience in structurally controlled precious and base metal deposits.

5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

6. I am responsible for preparation of the current report titled "National Instrument 43-101 Technical Report, Updated Mineral Resource Estimate for the South Mountain Project, Owyhee County, Idaho, USA", dated June 15, 2021, with an effective date of April 20, 2021, with specific responsibility for Sections 1, 10 through 12, and 14 of this report.

7. I personally inspected the South Mountain Project on May 6, 2021, and previously participated in preparation of the NI 43-101 Technical Report filed in May of 2019.

8. As of the date of this certificate and as of the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information required to be disclosed to make the report not misleading.

9. I am independent of the issuer, vendor, and property applying all of the tests in section 1.5 of NI 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1 and submit that this Technical Report has been prepared in accordance with that instrument and form.

Dated this 15th day of June 2021.

Richard A. Schwering

Signature of Qualified Person

Richard A. Schwering; SME-RM
Printed name of Qualified Person

# CERTIFICATE OF QUALIFIED PERSONS

I, Jennifer J. Brown, P.G., do hereby certify that:

1. I am currently employed as Principal Geologist by:

   Hard Rock Consulting, LLC
   7114 W. Jefferson Ave., Ste. 308
   Lakewood, Colorado 80235 U.S.A.

2. I am a graduate of the University of Montana and received a Bachelor of Arts degree in Geology in 1996.

3. I am a:
   - Licensed Professional Geologist in the State of Wyoming (PG-3719)
   - Registered Professional Geologist in the State of Idaho (PGL-1414)
   - Registered Member in good standing of the Society for Mining, Metallurgy, and Exploration, Inc. (4168244RM)

4. I have worked as a geologist for a total of 25 years since graduation from the University of Montana, as an employee of various engineering and consulting firms and the U.S.D.A. Forest Service. I have more than 10 collective years of experience directly related to mining and or economic and saleable minerals exploration and resource development, including geotechnical exploration, geologic analysis and interpretation, resource evaluation, and technical reporting.

5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.

6. I personally inspected the South Mountain Project on April 2 through 4, 2018, and participated in the subsequent preparation of a NI 43-101 Technical Report filed in May of 2019.

7. I am responsible for the preparation of the current report titled “National Instrument 43-101 Technical Report: Updated Mineral Resource Estimate for the South Mountain Project, Owyhee County, Idaho USA,” dated June 15, 2021 with an effective date of April 20, 2021, and I take specific responsibility for Sections 2 through 8 and 15 through 19 of this report.

8. As of the date of this certificate and as of the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information required to be disclosed to make the report not misleading.

9. I am independent of the vendor, property, and BeMetals Corp. applying all tests specified in section 1.5 of NI 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1 and submit that this Technical Report has been prepared in accordance with that instrument and form.

Dated this 15th day of June 2021.

“Signed” Jennifer J. (J.J.) Brown

JJBrown

Jennifer J. (J.J.) Brown, SME-RM
Printed name of Qualified Person

# CERTIFICATE OF QUALIFIED PERSONS

I, Jeffery W. Choquette, P.E., do hereby certify that:

1. I am currently employed as Principal Engineer by:

   Hard Rock Consulting, LLC
   7114 W. Jefferson Ave., Ste. 308
   Lakewood, Colorado 80235 U.S.A.

2. I am a graduate of Montana College of Mineral Science and Technology and received a Bachelor of Science degree in Mining Engineering in 1995

3. I am a:

   - Registered Professional Engineer in the State of Montana (No. 12265)
   - QP Member in Mining and Ore Reserves in good standing of the Mining and Metallurgical Society of America (No. 01425QP)

4. I have 25-plus years of domestic and international experience in project development, resource and reserve modeling, mine operations, mine engineering, project evaluation, and financial analysis. I have worked for mining and exploration companies for fifteen years and as a consulting engineer for seven years. I have been involved in industrial minerals, base metals and precious metal mining projects in the United States, Canada, Mexico and South America.

5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

6. I was previously involved with the South Mountain Project during preparation of the NI 43-101 Technical Report filed in May of 2019.

7. I am responsible for preparation of the current report titled "National Instrument 43-101 Technical Report: Updated Mineral Resource Estimate for the South Mountain Project, Owyhee County, Idaho, USA," dated June 15, 2021, with an effective date of April 20, 2021, and I take specific responsibility for Section 13 of this report.

8. As of the date of this certificate and as of the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information required to be disclosed to make the report not misleading.

9. I am independent of the vendor, property, and BeMetals Corp. applying all tests specified in section 1.5 of NI 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1 and submit that this Technical Report has been prepared in accordance with that instrument and form.

Dated this 15th day of June 2021.

"Signed" Jeffery W. Choquette

Jeffery W. Choquette, P.E.
Printed name of Qualified Person

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# List of Acronyms and Abbreviations

| | |
|---|---|
| µm | micrometer |
| Ag | Silver |
| AgCl | Silver Chloride |
| AMAG | Airborne magnetic data |
| AMSL | Above mean seal level |
| ARAD | Airborne radiometric data |
| Au | Gold |
| Au2Bi | Maldonite |
| BDL | Below detection limit |
| BMET | BeMetals Corp. |
| CEP | Cumulative Frequency Plot |
| CIM | Canadian Institute of Mining, Metallurgy & Petroleum |
| CPG | Construction General Permit |
| CRD | Carbonate-replacement Deposits |
| CRIRSCO | Committee of Mineral Reserves International Reporting Standards |
| Cu | Copper |
| CUP | Conditional Use Permit |
| CuSO4-5H2O | Copper Sulfate Pentahydrate |
| CxCu | Cold extractable copper |
| CxHM | Cold extractable total heavy metals |
| DMEA | Defense Minerals Exploration Administration |
| EDA | Exploratory Data Analysis |
| EPA | Environmental Protection Agency |
| Fe | Iron |
| ft | Feet |
| GRAV | Gravity data |
| HRC | Hard Rock Consulting LLC |
| IBMG | Idaho Bureau of Mines and Geology |
| ID | Inverse Distance |
| IDEQ | Idaho Department of Environmental Quality |
| JORC | Australasian Joint Ore Reserves Committee |
| K | Potassium |
| K-Ar | Potassium-argon radiometric dating |
| Kqd | cretaceous age quartz dioritic rocks |
| Kwhr | Kilowatt per hour |
| LXY | Laxey marble unit |
| m | meters |
| MRE | Mineral Resource Estimate |
| MSGP | Multi-Sector General Permit |
| my | Million years |
| NA2S2O5 | Sodium Metabisulfite |
| NAA | No Action Assurance |
| NI 43-101 | National Instrument 43-101 |
| NN | Nearest Neighbor |
| NPDES | National Pollutant Discharge Elimination System |
| NSR | Net Smelter Return |
| NURE | National Uranium Resource Evaluation |
| OGT | Owyhee Gold Territory, LLC |
| OK | Ordinary Krige |

| | |
|---|---|
| opt | Ounces per ton |
| OVB | Overburden boundary |
| oz/t | ounces per ton |
| PA | Preliminary Assessment |
| Pb | Lead |
| PEA | Preliminary Economic Assessment |
| ppm | Parts per million |
| QA/QC | Quality assurance and quality control |
| RES | Residual |
| RM | Registered member |
| SCHL | Footwall schist |
| SCHU | Hanging wall schist |
| SME | Society for Mining, Metallurgy, and Exploration |
| SMM | South Mountain Mines |
| SMMI | South Mountain Mines, Inc. |
| SMSZ | South Mountain Structural Zone |
| SWPPP | Storm Water Pollution Prevention Plan |
| t | ton |
| TH | Thorium |
| THMG | Thunder Mountain Gold, Inc. |
| TMRI | Thunder Mountain Resources, Inc. |
| tpd | tons per day |
| U | Uranium |
| US$ | U.S. dollars |
| USGS | United States Geological Survey |
| Zn | Zinc |
| Zn(CN)2 | Zinc Cyanide |
| ZnAgEq | Zinc Silver Equivalent |

# 1. EXECUTIVE SUMMARY

## 1.1 Introduction

BeMetals Corp. ("BMET") has retained Hard Rock Consulting, LLC ("HRC") to prepare an updated mineral resource estimate and subsequent technical report for the South Mountain Project (the "Project"), a past-producing base and precious metal property located in Owyhee County, Idaho, USA.

BMET is the Issuer of this report, which presents the results of the updated mineral resource estimate and associated work completed by HRC. This report is intended to fulfill the reporting Standards of Disclosure for Mineral Projects according to Canadian National Instrument 43-101 ("NI 43-101") and was prepared in accordance with the requirements and guidelines set forth in Companion Policy 43-101CP and Form 43-101F1 (June 2011). The mineral resource estimate presented herein is classified according to Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Definition Standards for Mineral Resources and Mineral Reserves, prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council on November 29, 2019. The mineral resource estimate reported herein is based on all available technical data and information as of April 20, 2021, which is the effective date of the report in full.

## 1.2 Property Description and Ownership

The South Mountain Project is located in southwestern Idaho, in Owyhee County approximately 70 air miles southwest of Boise, Idaho, and approximately 24 miles southeast of Jordan Valley, Oregon. The Project is situated wholly within the State of Idaho at approximately 42°44'41.65"N latitude and 116°55'13.48"W longitude.

BMET, through an existing Option Agreement, can acquire SMMI by issuing 10 million common shares of BMET to THMG (completed in 2019); purchasing 2.5 million shares of common stock of THMG at US$0.10 per share by way of private placement (completed in 2019); incurring cash payments of US$1.1 million over a period of two years (BMET has paid $850,000 to date under the Agreement), with an additional final value payment consisting of cash, common shares, or a combination of both. The final payment can be the greater of either US$10 million or 20% of the after-tax net present value of the South Mountain Project as calculated in a Preliminary Economic Assessment study report, if conducted in subsequent phases of work, which would be undertaken by an agreed independent author. The final value payment can be decreased by US$850,000 to account for certain cash payments previously made and the value of the 10 million common shares issued by BMET, as described above, as well as certain liabilities of SMMI to be assumed on acquisition of SMMI. The final value payment is also capped at a maximum of 50% of the market capitalization of BMET as of the completion date of the acquisition of SMMI if applicable.

The Project area is comprised of 17 patented and 21 unpatented contiguous mining claims covering a total of approximately 616 acres, and an additional 489 acres of leased private land. Included within the Project is a 360-acre millsite not contiguous with the mining claims, purchased by THMG in 2013, that is also governed by the Option Agreement. The millsite sits approximately 6.8 road miles from the existing workings, with access provided by a newly constructed, 1.2-mile haul road between the millsite and Owyhee County South Mountain Road.

The private land lease agreements include, among others, a mining lease with option to purchase dated November 13, 2016 between OGT and SMMI. The claims and leased lands comprising the Project are subject to a 5% net returns royalty in favor of OGT, which is capped at $5M and certain other leased land covering approximately 489 acres are subject to a 3% net smelter returns royalty plus an annual per-acre rental fee. There are no other royalties or encumbrances associated with the patented or unpatented claims. The unpatented claims require annual holding fees of $155 per claim to be paid to the Bureau of Land Management and the patented claims are subject to property taxes levied by Owyhee County.

## 1.3 Geology and Mineralization

The South Mountain mining district is situated within a roof pendant of marble, quartzite, and schist, in an igneous complex which has been the site of intrusive and extrusive activity since Cretaceous time. These igneous rocks, and those of the nearby Owyhee Mountains, are separated from similar rocks of the Idaho batholith by the volcanic rocks of the Snake River Plain. Uplift of South Mountain and subsequent erosion has resulted in a broad range, elongated to the northwest, cored by the pre-Cretaceous metasediments and Cretaceous to Tertiary plutonic rocks. Bimodal (basaltic and rhyolitic) volcanic rocks of two distinct ages, Eocene-Oligocene and Miocene-Pliocene are the dominant rock types exposed in the region.

Metasedimentary rocks, which host the skarn and carbonate replacement deposit ("CRD") style of mineralization at South Mountain, are common in and on the margin of the Idaho batholith and occur as pendants or inclusions in the Owyhee region. These metasedimentary rocks consist of a roof pendant of interbedded schist, quartzite, and limestone and marble (undifferentiated and Laxey Marble) and may be either Mesozoic or Paleozoic in age. The marble is the host rock to the massive sulfide (skarn) and replacement vein mineralized zones at South Mountain and comprises approximately one-quarter of the metasedimentary assemblage. The metasediments are approximately 1,800 feet thick and appear to have undergone at least two episodes of folding deformation. A variety of dikes ranging in age from Eocene to Oligocene are also present on South Mountain. The dikes range in composition from mafic fine-grained basalts to leucocratic pegmatites.

Historic production at South Mountain has largely come from the high-grade massive sulfide bodies, which comprise the primary mineral resource of the Project. These occurrences are localized almost entirely to the Laxey marble, and specifically those portions of the marble that have been altered to hedenbergite-rich, Pb/Zn skarn. The mineralized zones in the skarn occur as pipe-like bodies which plunge 40-50 degrees southwest, and rake approximately 50 degrees within the marble bed. Mineralization is at least partially controlled by northeast trending structures and is persistent with depth. The high-grade massive sulfide zones remain open at depth and along strike.

## 1.4 Status of Exploration

SMMI, funded by BMET, completed underground drilling campaigns in 2019 and 2020. These programs included 21 NQ diameter core drillholes totaling 7,475 ft (2,280 metres), and 31 NQ diameter core drillholes totaling 8,907 ft (2,715 metres), respectively. The 2019 and 2020 drilling campaigns were successful in extending the DMEA and Texas East and West zones down dip. In addition to the drilling, over 300 ft of rehab and additional drifting was completed to access the stations targeting the Texas zones.

Prior to 2019, THMG drilled 27 holes for a total of 16,600 ft. Twenty of the holes are diamond core holes, and the remaining seven are RC. Other exploration (and development) activities carried out by THMG since 2008 include:

- Adjoining property evaluation and acquisition;
- Title work for the patented claims and private land parcels;
- Surveying the claim boundaries;
- Rehabilitation of the Laxey and Sonneman Drifts, some to production standards;
- Surveying Laxey and Sonneman drifts, cross cuts, and drill stations;
- Channel sampling the ribs in the massive sulfide zones on the Sonneman level;
- Geologic mapping and geochemical sampling specific to an intrusive gold breccia target; and,
- A ground magnetics survey as well as compiling and reprocessing public domain geophysical surveys.

## 1.5 Mineral Resource Estimate

Mr. Richard Schwering, P.G., of HRC is responsible for the mineral resource estimate presented herein (Table 1-1). Mr. Schwering is a Qualified Person as defined by NI43-101 and is independent of SMMI, THMG, and BMET. HRC estimated the mineral resources based on drillhole and channel sample data constrained by geologic boundaries using an Ordinary Kriging algorithm. The geologic model and mineral resource estimate were developed using Leapfrog Geo® Software version 6.0.5. The metals of interest at the Project are zinc, silver, gold, copper, and lead. Primary units used for the resource calculations are U.S. customary, with the exception of gold and silver grades which were estimated in ppm, and all costs are reported in US dollars unless otherwise specified. For convenience, the resource results are also reported in metric units.

Based on the thorough understanding of the geology at the South Mountain Project, in conjunction realistically assumed and justifiable technical and economic conditions, the QP considers the mineral resource to demonstrate reasonable prospects for eventual economic extraction. The cut-off is calculated as a Net Smelter Return (NSR) based on the following assumptions: an approximate 10% (in line with industry best practice) increase from consensus long term forecast information from major banking firms for each metal, assumed mining cost of $70/ton, process costs of $25/ton, general and administrative $7.50/ton, recovered and payable, and smelting costs for each metal by metallurgical domain.

HRC cautions that mineral resources that are not mineral reserves do not have demonstrated economic viability, such as diluting materials and allowances for losses that may occur when material is mined or extracted, nor modifying factors including but not restricted to mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors. HRC knows of no existing environmental, permitting, legal, title, taxation, socio-economic, or other relevant factors that might materially affect the mineral resource estimate.

The geologic model was constructed using drillhole and channel sample lithology within the database, in conjunction with an underground geologic map, drillhole cross sections, and interpretations by SMMI staff and consultants. Leapfrog Geo® version 6.0.5 was used to create the model. The overall geologic model is constrained within 500 ft for drillholes and channel samples within the area of mineralization, and it includes five discrete geological units. The mineral resource statement is presented in Table 1-1 in U.S. customary units by metallurgical domain and in total. The mineral resource statement is restated in metric units in Table 1-2 in.

**Table 1-1 Mineral Resource Statement for the South Mountain Project, April 20, 2021, in U.S. Customary**

| Ore Type | Classification | *NSR Resource* | | *Contained Metal* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mass | NSR | Zinc | | Silver | | Gold | | Copper | | Lead | | Zinc Equivalent | |
| | | thousand sh. ton | $/sh. ton | % | thousand lb. | t. oz/sh. ton | thousand t. oz | t. oz/sh. ton | thousand t. oz | % | thousand lb. | % | thousand lb. | % | thousand lb. |
| Massive Sulfide | Measured | 53.8 | 312.8 | 11.45 | 12,300 | 3.67 | 197 | 0.069 | 3.7 | 0.46 | 500 | 0.79 | 900 | 20.21 | 21,800 |
| | Indicated | 118.9 | 345.89 | 11.36 | 27,000 | 4.77 | 568 | 0.077 | 9.1 | 0.53 | 1,300 | 1.36 | 3,200 | 22.14 | 52,700 |
| | Measured + Indicated | 172.8 | 335.58 | 11.39 | 39,300 | 4.43 | 765 | 0.074 | 12.9 | 0.51 | 1,800 | 1.18 | 4,100 | 21.54 | 74,400 |
| | Inferred | 777.2 | 280.69 | 8.09 | 125,700 | 5.9 | 4,586 | 0.043 | 33.7 | 0.74 | 11,500 | 1.04 | 16,100 | 18.34 | 285,100 |
| Skarn | Measured | 10.6 | 215.79 | 1.25 | 300 | 5.46 | 58 | 0.023 | 0.2 | 1.26 | 300 | 0.3 | 100 | 18.23 | 3,900 |
| | Indicated | 23.5 | 147.32 | 0.49 | 200 | 3.78 | 89 | 0.005 | 0.1 | 1.2 | 600 | 0.07 | 0 | 12.63 | 5,900 |
| | Measured + Indicated | 34.1 | 168.64 | 0.72 | 500 | 4.3 | 147 | 0.011 | 0.4 | 1.21 | 800 | 0.14 | 100 | 14.38 | 9,800 |
| | Inferred | 56.5 | 175.32 | 1.34 | 1,500 | 3.19 | 181 | 0.006 | 0.3 | 1.66 | 1,900 | 0.04 | 100 | 14.92 | 16,900 |
| Total | Measured | 64.5 | 296.84 | 9.77 | 12,600 | 3.96 | 255 | 0.062 | 4 | 0.59 | 800 | 0.71 | 900 | 19.88 | 25,600 |
| | Indicated | 142.4 | 313.18 | 9.57 | 27,200 | 4.61 | 656 | 0.065 | 9.2 | 0.64 | 1,800 | 1.15 | 3,300 | 20.57 | 58,600 |
| | Measured + Indicated | 206.9 | 308.09 | 9.63 | 39,800 | 4.41 | 912 | 0.064 | 13.2 | 0.63 | 2,600 | 1.01 | 4,200 | 20.36 | 84,200 |
| | Inferred | 833.7 | 273.55 | 7.63 | 127,300 | 5.72 | 4,766 | 0.041 | 34 | 0.81 | 13,400 | 0.97 | 16,200 | 18.1 | 302,000 |

1. The effective date of the mineral resource estimate is April 20th, 2021. The QP for the estimate, Richard A. Schwering, P.G., SME-RM, of HRC, is independent of SMMI, THMG, and BMET.
2. Mineral resources are not mineral reserves and do not have demonstrated economic viability, such as diluting materials and allowances for losses that may occur when material is mined or extracted, or modifying factors including but not restricted to mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors. Inferred mineral resources may not be converted to mineral reserves. It is reasonably expected, though not guaranteed, that the majority of Inferred mineral resources could be upgraded to Indicated mineral resources with continued exploration.
3. The mineral resource is reported at an underground mining cut-off of $102.5 U.S. Net Smelter Return ("NSR") within coherent wireframe models. The NSR calculation and cut-off is based on the following assumptions: an Au price of $1,750/oz, Ag price of $23.00/oz, Pb price of $1.02/lb., Zn price of $1.20/lb. and Cu price of $3.40/lb.; Massive sulfide ore type metallurgical recoveries and payables of 52.25% for Au, 71.25% for Ag, 71.40% for Zn, 66.50% for Pb, and 49.00% for Cu and a total smelter cost of $33.29; Skarn ore type metallurgical recoveries and payables of 71.25% for Au, 80.75% for Ag, 51.00% for Zn, 47.50% for Pb, and 87.70% for Cu and a smelter cost of $7.24; assumed mining cost of $70/ton, process costs of $25/ton, and general and administrative costs of $7.5/ton. Based on the stated prices and recoveries the NSR formula is calculated as follows; NSR = (Ag grade * Ag price * Ag Recovery and Payable) + (Au grade * Au price * Au Recovery and Payable) + (Pb grade * 20 * Pb Price * Pb Recovery and Payable) + (Cu grade * 20 * Cu Price * Cu Recovery and Payable) + (Zn grade * 20 * Zn Price * Zn Recovery and Payable) – (smelter charges) for each ore type. The zinc equivalent grades were calculated as Zn Grade + (((Pb Price * Pb Recovery and Payable) / (Zn Price*Zn Recovery and Payable)) * Pb Grade) + (((Cu Price * Cu Recovery and Payable) / (Zn Price * Zn Recovery and Payable)) * Cu Grade) + (((Ag Price * Ag Recovery and Payable) / (Zn Price * 20 * Zn Recovery and Payable)) * Ag Grade) + (((Au Price * Au Recovery and Payable) / (Zn Price * 20 * Zn Recovery and Payable)) * Au Grade).
4. Rounding may result in apparent differences when summing tons, grade and contained metal content. Tonnage and grade measurements are in U.S. Customary units.

**Table 1-2 Mineral Resource Estimate South Mountain Project, April 20, 2021, in Metric Units**

| Ore Type | Classification | *NSR Resource* | | *Contained Metal* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mass | NSR | Zinc | | Silver | | Gold | | Copper | | Lead | | Zinc Equivalent | |
| | | kt | $U.S./tonne | % | t | ppm | kg | ppm | g | % | t | % | t | % | t |
| Massive Sulfide | Measured | 48.85 | 344.81 | 11.45 | 5,600 | 126 | 6,100 | 2.38 | 116,200 | 0.46 | 200 | 0.79 | 400 | 20.21 | 9,900 |
| | Indicated | 107.9 | 381.28 | 11.36 | 12,300 | 164 | 17,700 | 2.63 | 283,500 | 0.53 | 600 | 1.36 | 1,500 | 22.14 | 23,900 |
| | Measured + Indicated | 156.75 | 369.92 | 11.39 | 17,800 | 152 | 23,800 | 2.55 | 399,700 | 0.51 | 800 | 1.18 | 1,900 | 21.54 | 33,800 |
| | Inferred | 705.03 | 309.41 | 8.09 | 57,000 | 202 | 142,600 | 1.49 | 1,049,000 | 0.74 | 5,200 | 1.04 | 7,300 | 18.34 | 129,300 |
| Skarn | Measured | 9.62 | 237.87 | 1.25 | 100 | 187 | 1,800 | 0.78 | 7,500 | 1.26 | 100 | 0.3 | 0 | 18.23 | 1,800 |
| | Indicated | 21.28 | 162.39 | 0.49 | 100 | 130 | 2,800 | 0.17 | 3,700 | 1.2 | 300 | 0.07 | 0 | 12.63 | 2,700 |
| | Measured + Indicated | 30.9 | 185.9 | 0.72 | 200 | 148 | 4,600 | 0.36 | 11,200 | 1.21 | 400 | 0.14 | 0 | 14.38 | 4,400 |
| | Inferred | 51.26 | 193.26 | 1.34 | 700 | 110 | 5,600 | 0.19 | 9,900 | 1.66 | 900 | 0.04 | 0 | 14.92 | 7,600 |
| Total | Measured | 58.47 | 327.21 | 9.77 | 5,700 | 136 | 7,900 | 2.12 | 123,700 | 0.59 | 300 | 0.71 | 400 | 19.88 | 11,600 |
| | Indicated | 129.18 | 345.23 | 9.57 | 12,400 | 158 | 20,400 | 2.22 | 287,300 | 0.64 | 800 | 1.15 | 1,500 | 20.57 | 26,600 |
| | Measured + Indicated | 187.65 | 339.61 | 9.63 | 18,100 | 151 | 28,400 | 2.19 | 411,000 | 0.63 | 1,200 | 1.01 | 1,900 | 20.36 | 38,200 |
| | Inferred | 756.3 | 301.54 | 7.63 | 57,700 | 196 | 148,200 | 1.4 | 1,058,900 | 0.81 | 6,100 | 0.97 | 7,300 | 18.1 | 137,000 |

1. The effective date of the mineral resource estimate is April 20th, 2021. The QP for the estimate, Richard A. Schwering, P.G., SME-RM, of HRC, is independent of SMMI, THMG, and BMET.
2. Mineral resources are not mineral reserves and do not have demonstrated economic viability, such as diluting materials and allowances for losses that may occur when material is mined or extracted, or modifying factors including but not restricted to mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors. Inferred mineral resources may not be converted to mineral reserves. It is reasonably expected, though not guaranteed, that the majority of Inferred mineral resources could be upgraded to Indicated mineral resources with continued exploration.
3. The mineral resource is reported at an underground mining cut-off of $102.5 U.S. Net Smelter Return ("NSR") within coherent wireframe models. The NSR calculation and cut-off is based on the following assumptions: an Au price of $1,750/oz, Ag price of $23.00/oz, Pb price of $1.02/lb., Zn price of $1.20/lb. and Cu price of $3.40/lb.; Massive sulfide ore type metallurgical recoveries and payables of 52.25% for Au, 71.25% for Ag, 71.40% for Zn, 66.50% for Pb, and 49.00% for Cu and a total smelter cost of $33.29; Skarn ore type metallurgical recoveries and payables of 71.25% for Au, 80.75% for Ag, 51.00% for Zn, 47.50% for Pb, and 87.70% for Cu and a smelter cost of $7.24; assumed mining cost of $70/ton, process costs of $25/ton, and general and administrative costs of $7.5/ton. Based on the stated prices and recoveries the NSR formula is calculated as follows; NSR = (Ag grade * Ag price * Ag Recovery and Payable) + (Au grade * Au price * Au Recovery and Payable) + (Pb grade * 20 * Pb Price * Pb Recovery and Payable) + (Cu grade * 20 * Cu Price * Cu Recovery and Payable) + (Zn grade * 20 * Zn Price * Zn Recovery and Payable) – (smelter charges) for each ore type. The zinc equivalent grades were calculated as Zn Grade + (((Pb Price * Pb Recovery and Payable) / (Zn Price*Zn Recovery and Payable)) * Pb Grade) + (((Cu Price * Cu Recovery and Payable) / (Zn Price * Zn Recovery and Payable)) * Cu Grade) + (((Ag Price * Ag Recovery and Payable) / (Zn Price * 20 * Zn Recovery and Payable)) * Ag Grade) + (((Au Price * Au Recovery and Payable) / (Zn Price * 20 * Zn Recovery and Payable)) * Au Grade).
4. Rounding may result in apparent differences when summing tons, grade and contained metal content. Tonnage and grade measurements are in U.S. customary units and converted to metric.

## 1.6 Conclusions

HRC concludes that the geology of the South Mountain Project is well understood, and that the appropriate deposit model is being applied for exploration. The conceptual geologic model is sound, and in conjunction with drilling results, indicates that mineralization is essentially open in all directions. Significant potential exists to increase the known mineral resource with additional drilling, as well as to upgrade existing mineral resource classifications with infill drilling. HRC finds the current mineral resource at the South Mountain Project more than sufficient to warrant continued evaluation of the Project.

HRC finds the sample preparation, analytical procedures, and security measures presently employed at the South Mountain Project to be reasonable and adequate to ensure the validity and integrity of the data derived from sampling programs to date. Based on the results of the site investigation and data validation efforts, HRC considers the drilling and sampling data, as contained in the current Project database, to be accurate and suitable for use in estimating mineral resources.

The South Mountain Project is not subject to any known environmental liabilities. Existing surface rights are sufficient for all presently planned development and operations. The Project is largely located on and surrounded by private land surface, and as such the permitting and environmental aspects of the Project are quite simple and straightforward. Based on permits in hand and associated work completed to date, in conjunction with the long and successful history of mineral exploration throughout the district, no barriers to proposed or future plans for exploration and development at the Project are anticipated.

## 1.7 Recommendations

### 1.7.1 General Recommendations

The QA/QC program instituted during the BMET drilling followed HRC's recommendations from the 2019 technical report, meets industry standards, and represents a substantial improvement from previous drilling on the property. HRC recommends the following procedures continue to be followed for future work:

- The formal, written procedures for data collection and handling should be developed and made available to all Project field personnel. These should include procedures and protocols for field work, geological mapping and logging, database construction, sample chain of custody, and documentation trail. These procedures should also include detailed and specific QA/QC procedures for analytical work, including acceptance/rejection criteria for batches of samples.
- A detailed review of field practices and sample collection procedures should be performed on regular basis, to ensure that the correct procedures and protocols are being followed.
- Review and evaluation of laboratory work should be an on-going process, including occasional visits to the laboratories involved.
- For drill hole samples, the control samples sent to a second (check) laboratory should be from pulp duplicates in all cases and should include one blank, two sample pulps, and one standard for every 40-sample batch.

The QP recommends that SMMI continue a routine, internal mechanical audit procedure to check for overlaps, gaps, total drill hole length inconsistencies, non-numeric assay values, and negative numbers. The internal mechanical audit should be carried out after any significant update to the database, and the results of each audit, including any corrective actions taken, should be documented and stored for future use in database validation.

#### 1.7.2 Metallurgical

Additional selective flotation testing should be completed on all massive sulfide zones, geared toward optimizing the zinc flotation circuit with emphasis on pyrrhotite and pyrite rejection. Sphalerite reagent optimization is required, and some concentrate cleaning work is recommended. The removal of pyrrhotite from the final zinc concentrate by low intensity magnetic separation may be warranted. Test work to evaluate producing a separate copper concentrate from the bulk lead/copper concentrate should be investigated. BMET is currently completing first pass visual geo-metallurgical characterization of the deposit from drill core logging for updating of the historical DMEA Zone test work and initial test of Texas Zone material.

#### 1.7.3 Drilling

HRC recommends that SMMI develop a plan, if practical, to orient drilling directions to closer intersect at true thickness angles. Development of exploration drifts from current workings to provide new drill stations, drilling from surface, and/or incorporating wedges should also be considered.

#### 1.7.4 Work Plan and Budget

At this time, HRC recommends a single-phase work plan which includes preparation of a Preliminary Economic Assessment and all associated mineralogical and metallurgical testwork, environmental studies, and permitting activity, etc. The work plan also includes a limited amount of additional exploration in the form of surface geological mapping and geochemical sampling. Estimated costs for the recommended scope of work are summarized in Table 18-1.

**Table 1-3 Recommended Scope of Work for the South Mountain Project**

| Item | Estimated Costs |
|---|---|
| PEA Study, Including Mineralogical and Metallurgical Test Work, and Associated Sampling | $ 451,500 |
| Baseline Environmental Sampling and Data Collection, Including Labor and Analytical | $ 464,500 |
| Land and Permitting Work | $24,000 |
| Surface Geological Mapping and Geochemistry | $50,000 |
| Administration and Overhead | $399,160 |
| **TOTAL** | **$1,389,160** |

# 2. INTRODUCTION

## 2.1 Issuer and Terms of Reference

BeMetals Corp. ("BMET") has retained Hard Rock Consulting, LLC ("HRC") to prepare an updated mineral resource estimate and subsequent technical report for the South Mountain Project (the "Project"), a past-producing base and precious metal property located in Owyhee County, Idaho, USA.

South Mountain Mines Inc. ("SMMI") is the owner of a 75% equity interest in Owyhee Gold Territory LLC ("OGT"), the owner of the South Mountain Project, and a mining lease with option to purchase the South Mountain Project granted by OGT to SMMI and the remaining 25% equity interest in OGT. Thunder Mountain Resources Inc. ("TMRI") is the legal and beneficial owner of all issued and outstanding shares of SMMI. Thunder Mountain Gold Inc. ("THMG") is the legal and beneficial owner of all of the issued and outstanding shares of TMRI.

In accordance with the terms of the option agreement dated February 27, 2019 (the "Option Agreement") between BMET, BMET USA Corp., ("BMET USA") a wholly owned subsidiary of BMET, THMG, TMRI and SMMI, THMG has agreed to grant to BMET USA an option to acquire all of the issued and outstanding shares of SMMI.

BMET is the Issuer of this report, which presents the results of the updated mineral resource estimate and all associated work completed by HRC. This report is intended to fulfill the reporting Standards of Disclosure for Mineral Projects according to Canadian National Instrument 43-101 ("NI 43-101") and was prepared in accordance with the requirements and guidelines set forth in Companion Policy 43-101CP and Form 43-101F1 (June 2011). The mineral resource estimate presented herein is classified according to Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Definition Standards for Mineral Resources and Mineral Reserves, prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council on November 29, 2019. The mineral resource estimate reported herein is based on all available technical data and information as of April 20, 2021, which is the effective date of the report in full.

## 2.2 Sources of Information

A portion of the background information and technical data presented in this report was obtained from the following documents:

HRC, 2019. *NI 43-101 Technical Report: Updated Mineral Resource Estimate for the South Mountain Project, Owyhee County, Idaho USA*; NI 43-101 Technical Report prepared for BeMetals Corp., May 6, 2019.

Kleinfelder West, Inc., 2008. *Resource Data Evaluation, South Mountain Property, South Mountain Mining District, Owyhee County, Idaho*; internal report prepared for Thunder Mountain Resources, May 14, 2008.

Northwest Groundwater & Geology, 2010. *NI 43-101 Technical Report, South Mountain Project, Owyhee County, Idaho*; prepared for Thunder Mountain Gold, Inc., March 23, 2010.

Sillitoe, R.H., 2019. *Comments on Geology and Exploration of the South Mountain Polymetallic Project, Idaho*; internal report prepared for BeMetals and Thunder Mountain Gold, Inc., September 2019.

Sillitoe, R.H., 2020. *Comments on Recent Drill Core from the South Mountain Polymetallic Project, Idaho*; internal report prepared for BeMetals and Thunder Mountain Gold, Inc., January 2020.

Forbush, T., 2019. *Core Handling and Data Collection Procedures, South Mountain Mine, Idaho: 2019*; internal report prepared for South Mountain Mines, Inc. July 2020

The information contained in current report Sections 4 through 8 was largely presented in, and in some cases, is excerpted directly from, the reports listed above. HRC has reviewed this material and associated supporting documentation in detail, and finds the information presented herein to be factual and appropriate with respect to guidance provided by NI 43-101 and Form NI 43-101F1.

Additional information was requested from and provided by SMMI. In preparing Sections 9 through 13 of this report, the authors have, in part, sourced information from historical documents including exploration reports, technical papers, sample descriptions, assay results, computer data, maps and drill logs generated by previous operators and associated third party consultants. Historical documents and data sources used during the preparation of this report are cited in the text, as appropriate, and are summarized in current report Section 19.

## 2.3 Qualified Persons and Personal Inspection

This report is endorsed by the following Qualified Persons, as defined by NI 43-101: Ms. J.J. Brown, P.G., Mr. Jeffrey Choquette, P.E., and Mr. Richard Schwering, all of HRC.

Ms. Brown has 25 years of professional experience as a consulting geologist and has contributed to numerous mineral resource projects, including more than twenty gold, silver, and polymetallic resources throughout the southwestern United States and South America over the past five years. Ms. Brown is specifically responsible for report Sections 2 through 8 and 15 through 19.

Mr. Choquette is a professional mining engineer with more than 25 years of domestic and international experience in mine operations, mine engineering, project evaluation and financial analysis. Mr. Choquette has been involved in industrial minerals, base metals and precious metal mining projects around the world and is responsible for current report Section 13.

Mr. Schwering has 10 years of combined experience in mineral exploration and geologic consulting, including a variety of project work specifically related to structurally controlled gold and silver resources and reserves. Mr. Schwering is specifically responsible for report Sections 1, 9 through 12, and 14.

HRC's J.J. Brown conducted an on-site inspection of the South Mountain Project on April 2 through 4, 2018. While on site, Ms. Brown conducted general site and geologic field reconnaissance, including inspection of on-site facilities and examination of underground bedrock exposures and drill collar locations in the Sonneman drift. Ms. Brown also examined select core intervals from historic and recent drilling, obtained a variety of duplicate samples for independent check sampling, and reviewed with THMG geology staff the conceptual geologic model, data entry and document management protocols, and drilling and sampling procedures and the associated quality assurance and quality control ("QA/QC") methods presently employed.

HRC's Richard Schwering conducted an on-site investigation of the South Mountain Project and Jordan Valley field office on May 5$^{th}$ through 7$^{th}$, 2021, accompanied by SMMI staff Rocky Chase – Project Manager; SMMI staff Eric Jones and Jim Collord; and Tyson Forbush SMMI Project Geologist. While on site, Mr. Schwering conducted general geologic field reconnaissance, including inspection of on-site facilities and examination of underground bedrock exposures on the Sonneman level, and examined select core intervals from recent drilling.

## 2.4 Units of Measure

Unless otherwise stated, all measurements reported herein are U.S customary units and currencies are expressed constant 2021 US dollars ("US$"). Gold and silver values are reported in parts per million ("ppm") or in Troy ounces per ton ("oz/t"). Tonnage is reported as short tons ("t"), unless otherwise specified. Lead, zinc, and copper values are reported in weight percent (%).

# 3. RELIANCE ON OTHER EXPERTS

HRC has fully relied upon and disclaims responsibility for information provided by THMG regarding property ownership, mineral tenure, and permitting and environmental aspects of the South Mountain Project. Property title and mineral tenure, as presented in current report Section 4, was provided through personal communication with Mr. Jim Collord, Vice President and COO of THMG, along with Mr. Eric Jones, CEO of THMG, on April 2 and 3, 2017, and again on May 6, 2021, and in written format via the following documents:

- *Stock Sale Agreement between Thunder Mountain Resources, Inc., South Mountain Mines, Inc., Willmington Trust Company, Roger Millilken, the Ora K. Smith Trust, and the Roger Milliken Trust*; effective May 31, 2007.
- *Mineral Title and Title History Report of South Mountain Inc. Property in Owyhee County, Idaho*; prepared by Carol T. Davis of Land Records Research Company for Thunder Mountain Resources, Inc., August 9, 2007.
- *Option Agreement made between BeMetals Corp. and BeMetals USA Corp. and Thunder Mountain Gold, Inc. and Thunder Mountain Resources, Inc. and South Mountain Mines, Inc.*; effective February 27, 2019.

A portion of the environmental and permitting information presented Section 4 is taken from the following documents:

- *Owyhee Gold Trust Conditional Use Permit Application for the South Mountain Mine in Owyhee County, Idaho;* prepared by Centra Consulting, Inc. for Owyhee Gold Trust, LLC, August 2013.
- *Resource Data Evaluation, South Mountain Property, South Mountain Mining District, Owyhee County, Idaho*; prepared by Kleinfelder West, Inc. for Thunder Mountain Resources, May 14, 2008.

Additional information regarding environmental and permitting aspects of the South Mountain Project was provided via personal communication with THMG staff on May 6, 2021.

# 4. PROPERTY DESCRIPTION AND LOCATION

## 4.1 Project Location and Ownership

The South Mountain Project is located in southwestern Idaho's Owyhee County, approximately 70 air miles southwest of Boise, Idaho, and approximately 24 miles southeast of Jordan Valley, Oregon. The Project is situated entirely within the State of Idaho at approximately 42°44'41.65"N latitude and 116°55'13.48"W longitude (Figure 4-1). Map coverage of the Project area is provided by the Cliff, Idaho, and the Flint Creek, Idaho, 7.5- and 15-minute U.S.G.S. topographic quadrangles, respectively.

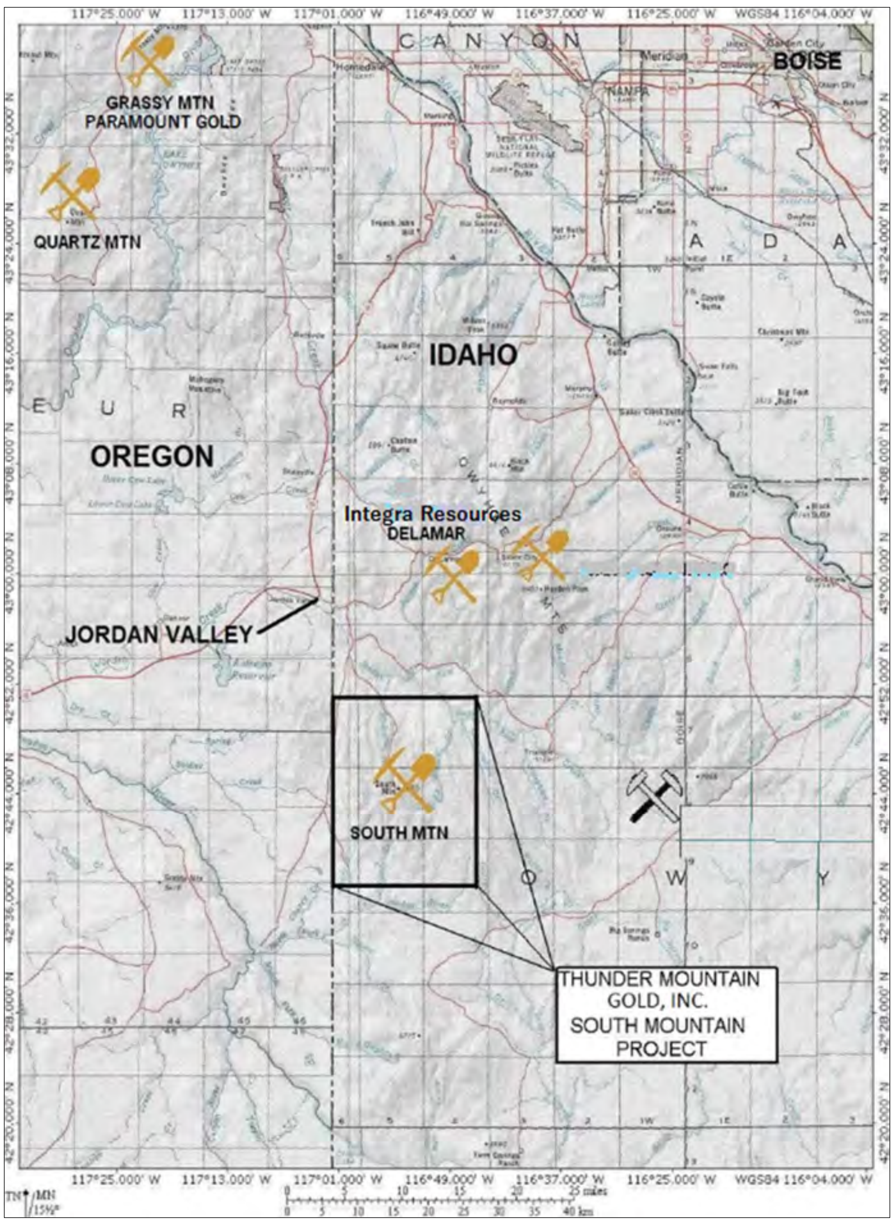



**Figure 4-1 South Mountain Project Location**

SMMI is the owner of a 75% equity interest in Owyhee Gold Territory LLC ("OGT"), the owner of the South Mountain Project, and holds the mining lease with option to purchase the South Mountain Project issued by OGT to SMMI. The remaining 25% equity interest in OGT is held by a private investment group as security for a Royalty (described below), with no management or decision-making authority. TMRI is the legal and beneficial owner of all issued and outstanding shares of SMMI. THMG is the legal and beneficial owner of all of the issued and outstanding shares of TMRI.

In accordance with the terms of the option agreement dated February 27, 2019 (the "Option Agreement") between BMET, BMET USA, THMG, TMRI and SMMI, THMG has agreed to grant to BMET USA an option to acquire all of the issued and outstanding shares of SMMI. SMMI currently holds a 75% interest in the Project and also has the right to acquire the remaining 25% subject to a 5% Net Returns Royalty capped at US$5 million on or before November 3, 2026.

In order to complete the Acquisition and exercise the Option, BMET is required to:

1. Made an initial cash payment of US$100,000 upon THMG delivering voting support agreements from shareholders controlling over 50% of outstanding THMG shares (completed).
2. Upon satisfaction of certain conditions precedent, including receipt of TSX Venture Exchange acceptance and all requisite THMG shareholder approvals:
    a. Purchase 2.5 million shares of common stock of THMG at US$0.10 per share by way of private placement (completed); and
    b. Issue 10 million common shares of BMET to THMG (completed).
3. Make four cash payments of US$250,000 each on or before the 6, 12, 18- and 24- month anniversary dates, respectively, from when THMG has satisfied certain conditions precedent and items 1 and 2 above have been completed.
4. Complete a Preliminary Economic Assessment ("PEA") for the Project in potential subsequent phases of work within a two-year period, or an agreed extension under certain circumstances.
5. Make a final value payment to Thunder Mountain consisting of cash, common shares of BMET, or a combination of both at the discretion of BMET. The final payment will be the greater of either US$10 million or 20% of the after-tax net present value of the Property as calculated in a PEA study completed by an agreed independent author. The final payment will be decreased by US$850,000 to account for certain cash payments previously made under items 1 and 2 above, the value of the 10 million BMET shares issued under item 2 above, as well as certain liabilities of SMMI to be assumed on Acquisition. The final value payment shall be capped at a maximum of 50% of the market capitalization of BMETs' as of the completion date of the Acquisition.

Pursuant to the Option Agreement, BMET has two years to complete the Acquisition (subject to extension in certain circumstances). BMET is the operator of the Project and is solely funding the exploration work potentially leading to the completion of a PEA of the South Mountain Project.

The South Mountain Project area is comprised of 17 patented and 21 unpatented contiguous mining claims covering a total of approximately 616 acres, and an additional 489 acres of leased private land (Figure 4-2, Table 4-1). Included within the Project, and also governed by the Option Agreement, is a 360-acre millsite not contiguous with the mining claims, purchased by THMG in 2013. The millsite sits approximately 6.8 road miles from the existing workings, with access provided by a newly constructed, 1.2-mile haul road between the millsite and Owyhee County South Mountain Road (Figure 4-3). Patented and unpatented claim details are summarized in Tables 4-2 and 4-3. Annual payments for leased private land surface are summarized in Table 4-4.

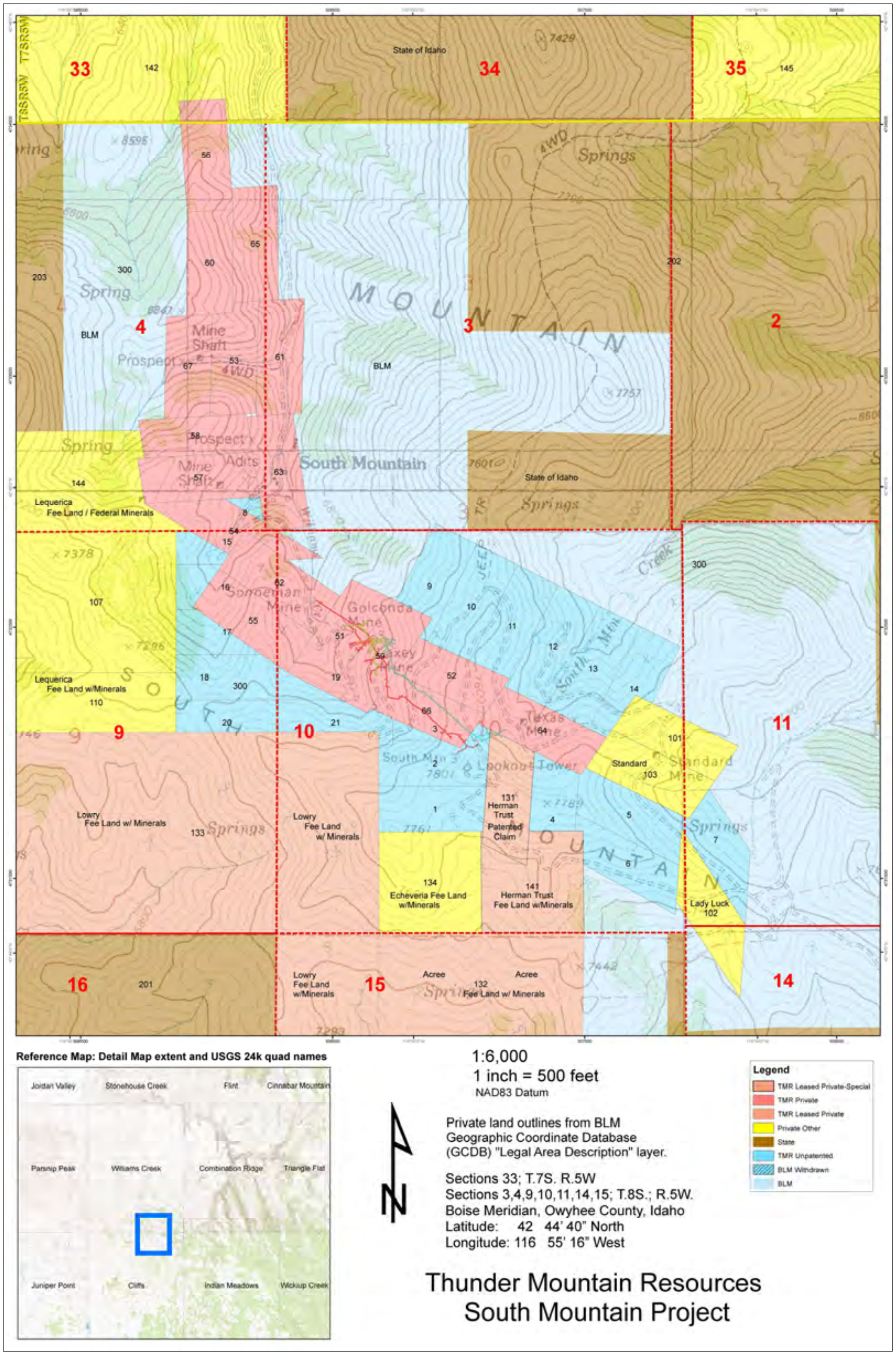



**Figure 4-2 South Mountain Project Claim Areas**

**Table 4-1 Legend Explanation for Figure 4-2**

| Parcel No. | Acreage | Land Type |
|---|---|---|
| 51-67 (Red) | 326 | Patented Claims |
| 1-21 (Blue) | 290 | Unpatented Claims |
| 133 (Pink) | 376 | Leased: Lowry |
| 132 (Pink) | 113 | Leased: Acree |
| 131, 141 (Pink) | 56 | Leased: Herman (In Negotiation) |

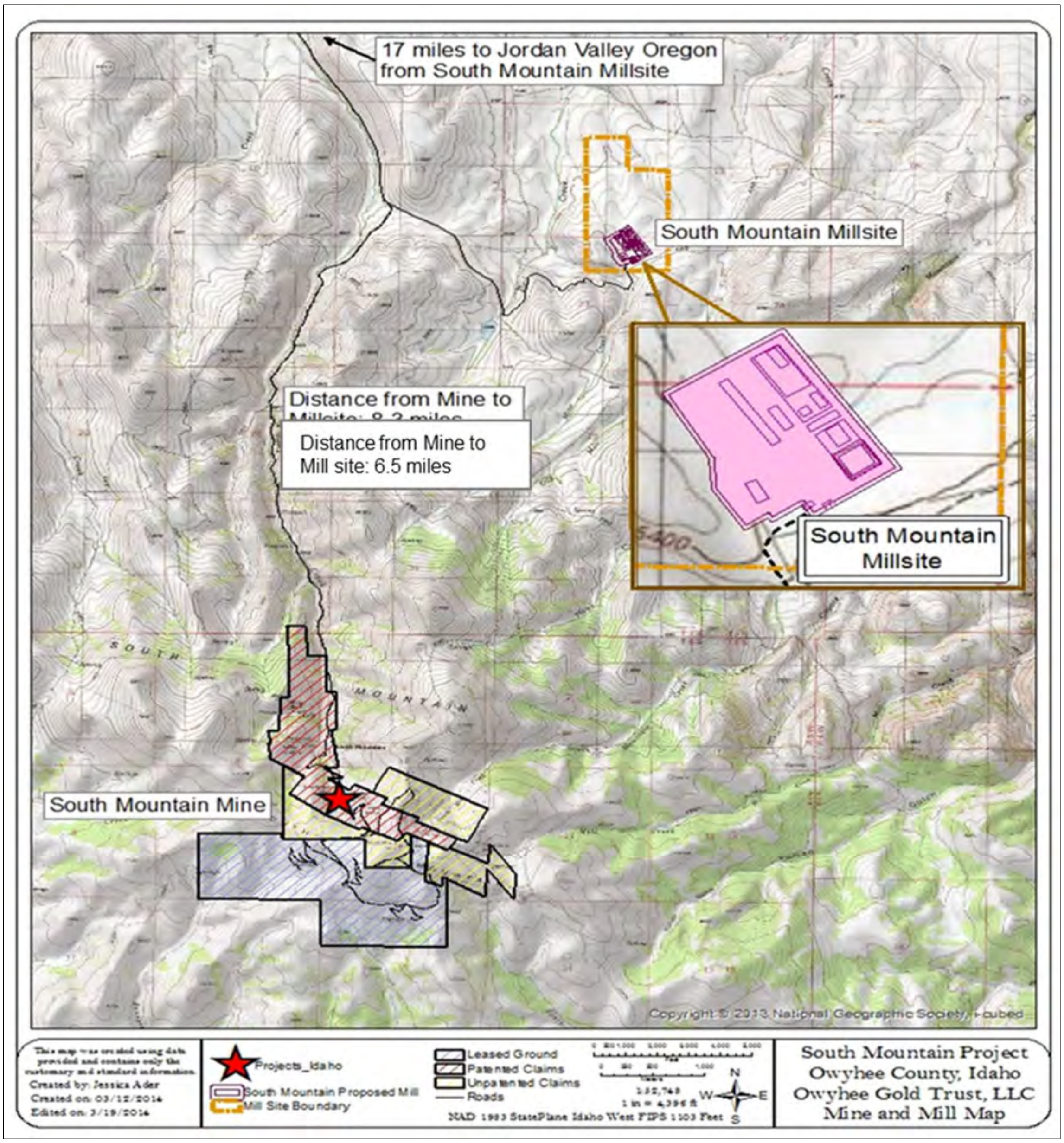



**Figure 4-3 South Mountain Project, Millsite Location**

**Table 4-2 South Mountain Project, Patented Claims**

| Name | Mineral Survey | Patent No. | Survey Date | Ownership |
|---|---|---|---|---|
| Illinois | 1446 | 32995 | 17-Sep-00 | OGT* (leased to SMMI) |
| Michigan | 1446 | 32995 | 17-Sep-00 | OGT* (leased to SMMI) |
| New York | 1446 | 32995 | 17-Sep-00 | OGT* (leased to SMMI) |
| Tennessee | 1446 | 32995 | 17-Sep-00 | OGT* (leased to SMMI) |
| Oregon | 1446 | 32995 | 17-Sep-00 | OGT* (leased to SMMI) |
| Massachusetts | 1446 | 32995 | 17-Sep-00 | OGT* (leased to SMMI) |
| Washington | 1446 | 32995 | 17-Sep-00 | OGT* (leased to SMMI) |
| Maine | 1446 | 32995 | 17-Sep-00 | OGT* (leased to SMMI) |
| Idaho | 1446 | 32995 | 17-Sep-00 | OGT* (leased to SMMI) |
| Vermont | 1446 | 32995 | 17-Sep-00 | OGT* (leased to SMMI) |
| Texas | 1447 | 32996 | 17-Sep-00 | OGT* (leased to SMMI) |
| Florida | 1447 | 32996 | 17-Sep-00 | OGT* (leased to SMMI) |
| Alabama | 1447 | 32996 | 17-Sep-00 | OGT* (leased to SMMI) |
| Virginia | 1447 | 32996 | 17-Sep-00 | OGT* (leased to SMMI) |
| Mississippi | 1447 | 32996 | 17-Sep-00 | OGT* (leased to SMMI) |
| Queen | 3400 | 1237144 | 27-Oct-64 | OGT* (leased to SMMI) |
| Kentucky | 3400 | 1237144 | 27-Oct-64 | OGT* (leased to SMMI) |

**The BLM serial register pages for the unpatented claims list TMRI as the current claimant, but the unpatented claims were deeded from TMRI to OGT pursuant to a Quitclaim Deed dated October 31, 2013, recorded in Owyhee County, Idaho on October 31, 2013, as Instrument No. 282464.*

**Table 4-3 South Mountain Project, Unpatented Claims**

| Claim Name | Owyhee County Instrument No. | BLM: IMC Serial No. | Ownership |
|---|---|---|---|
| **SM-1** | 262582 | 192661 | OGT* (leased to SMMI) |
| **SM-2** | 262578 | 192662 | OGT* (leased to SMMI) |
| **SM-3** | 262581 | 192666 | OGT* (leased to SMMI) |
| **SM-4** | 262579 | 192665 | OGT* (leased to SMMI) |
| **SM-5** | 262580 | 192669 | OGT* (leased to SMMI) |
| **SM-6** | 262577 | 192664 | OGT* (leased to SMMI) |
| **SM-7** | 262576 | 192663 | OGT* (leased to SMMI) |
| **SM-8** | 262575 | 192670 | OGT* (leased to SMMI) |
| **SM-9** | 262574 | 192671 | OGT* (leased to SMMI) |
| **SM-10** | 262573 | 192668 | OGT* (leased to SMMI) |
| **SM-11** | 262572 | 192672 | OGT* (leased to SMMI) |
| **SM-12** | 262571 | 192667 | OGT* (leased to SMMI) |
| **SM-13** | 262570 | 192673 | OGT* (leased to SMMI) |
| **SM-14** | 262569 | 192674 | OGT* (leased to SMMI) |
| **SM-15** | 266241 | 196559 | OGT* (leased to SMMI) |
| **SM-16** | 266242 | 196560 | OGT* (leased to SMMI) |
| **SM-17** | 266243 | 196561 | OGT* (leased to SMMI) |
| **SM-18** | 266244 | 196562 | OGT* (leased to SMMI) |
| **SM-19** | 266245 | 196563 | OGT* (leased to SMMI) |
| **SM-20** | 266246 | 196564 | OGT* (leased to SMMI) |
| **SM-21** | 266247 | 196565 | OGT* (leased to SMMI) |

**The BLM serial register pages for the unpatented claims list TMRI as the current claimant, but the unpatented claims were deeded from TMRI to OGT pursuant to a Quitclaim Deed dated October 31, 2013, recorded in Owyhee County, Idaho on October 31, 2013, as Instrument No. 282464.*

**Table 4-4 South Mountain Project, Annual Lease Expenses**

| Owner | Agreement | Amount | Acres | Current Annual Lease Payments |
|---|---|---|---|---|
| Lowry | Oct. 10, 2008 | $20/acre | 376 | $ 7,520 per year |
| | | $30/acre staring 7th year | | $ 11, 280 per year |
| Acree | June 20, 2008 | $20/acre | 113 | $ 2,260 per year |
| | | $30/acre staring 7th year | | $ 3,390 per year |
| *OGT LLC (THMG through SMM) | Nov. 6, 2016 | $5,000 per year, with a capped $5M Net Returns Royalty, payable at 5% NPI from Mining | 1,465 | $5,000 per year |
| Herman | Nov. 23, 2009 | $30/acre through 2026 | 56 | In Negotiation |

The private land lease agreements include, among others, a mining lease with option to purchase dated November 13, 2016 between OGT and SMMI. The claims and leased lands comprising the Project are subject to a 5% net returns royalty in favor of OGT, which is capped at $5M and certain other leased land covering approximately 489 acres are subject to a 3% net smelter returns royalty plus an annual per-acre rental fee. The Herman Lease, which is under dispute, has no associated impact on the overall property or recommended work plan, as no activities are presently proposed within this lease area. There are no other royalties or encumbrances associated with the patented or unpatented claims. The unpatented claims require annual holding fees of $155 per claim to be paid to the Bureau of Land Management and the patented claims are subject to property taxes levied by Owyhee County.

The Laxey, Golconda and Sonneman level workings and the Texas shaft are the original historic workings of the South Mountain Project and are located within the present-day patented claim block. SMMI's exploration efforts to date have largely focused on targeting the down-dip extensions of the past producing, massive sulfide mineralized zones. The general location of the existing workings and exploration target area are shown on Figure 4-4.

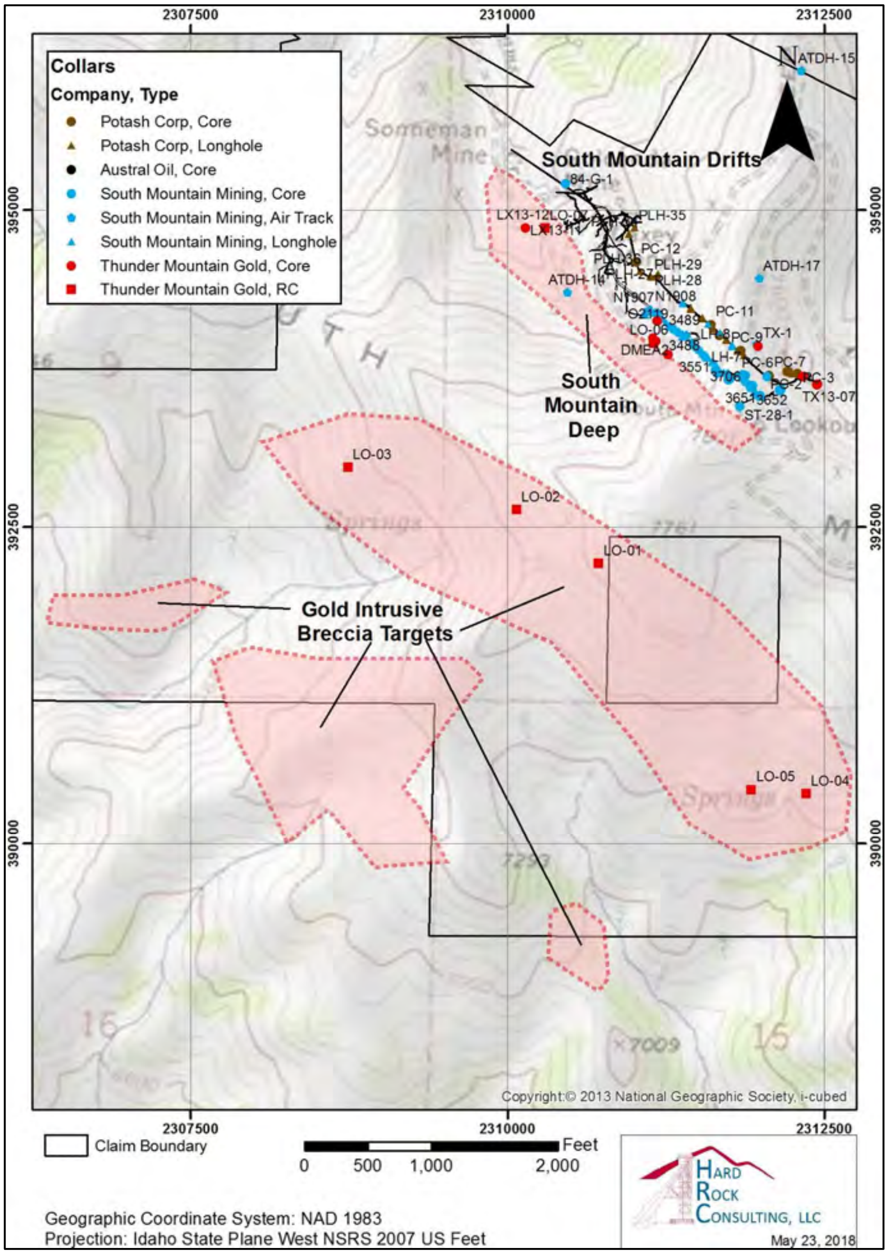



**Figure 4-4 South Mountain Mine Workings and Exploration Targets**

## 4.2 Permitting and Environmental Liabilities

The South Mountain Project is largely located on and surrounded by private land surface. Future agreements with individual private landowners, along with the existing easements and right of ways, may be necessary to establish infrastructure such as roads and power lines. The private land setting greatly simplifies and streamlines the permitting and approval process since the Project does not require oversight from a federal land management agency (e.g., United States Bureau of Land Management or the United States Forest Service), which in turn would have required an Environmental Impact Statement under the federal National Environmental Policy Act.

In 2013, THMG completed two Conditional Use Permit ("CUP") applications, one for the mine site and one for the mill site, thru Owyhee Gold Trust, LLC. Both CUPs were submitted to and approved by Owyhee County in 2013, and the two-year time frame for completion of work under each was extended by the County for an additional four years beginning in 2016. Both the mine and the mill site are located on private land surface, and as such require no other permit authorization for surface disturbance.

Also in 2013, THMG filed for and received an Army Corps of Engineers (DA) Nationwide Permit (NWP) No. 14: Linear Transportation Projects, which allowed THMG to place 660 feet of 48-inch galvanized culvert through the Sonneman waste rock dump in order to segregate historic and future mined rock from direct contact with Williams Creek to ensure compliance with the NPDES Stormwater Permit, described immediately below.

In 2012, EPA "acknowledge[d] receipt of a complete Notice of Intent form seeking coverage under EPA's [NPDES] Construction General Permit (CGP), activated on Thursday, May 17, 2012." In accordance with this NPDES Permit, THMG developed a site wide Storm Water Pollution Prevention Plan (SWPPP) under guidance of the EPA NPDES Form 3510-9 and per EPA IDR120000 and EPA Tracking Number IDR12AX72. An independent consultant was hired to carry out this planning for the Company.

The IDEQ completed a Preliminary Assessment ("PA") at the Sonneman mine in July 2002 that included a property description and mitigation/exposure pathways and potential targets. Based on the findings of the PA, the U.S. Environmental Protection Agency ("EPA") recommended further action and IDEQ initiated an EPA-funded study. The extensive study and report (IDEQ, 2005) were completed in March 2005 under contract with Region 10 of the EPA. The 2005 IDEQ study identified two areas of concern for risks to human health and the environment at the site: 1) the ore and waste stockpiles hear the Sonneman adit, and; 2) the BLM tailings facility lower in the Williams Creek drainage. The report included recommendations on methods for reclaiming both of these areas. In 2006, South Mountain Mines completed the reclamation activities on the ore and waste stockpiles pursuant to the recommendations contained in the IDEQ report. The work was done by South Mountain Mines personnel with design and construction oversight by LFR, Inc.

In 2007, the BLM contracted with North Wind Environmental (North Wind) to design a reclamation program for the estimated 16-17,000 tons of tailings situated solely on BLM land below the Sonneman mine portal and waste rock dump area. North Wind completed the outlined reclamation work in October 2007 by providing diversion ditches for a small side-drainage to Williams Creek, shaping and capping with both synthetic HOPE plastic and soil and fencing the area to exclude livestock access. The reclaimed area was also seeded then covered with straw mat material to minimize erosion.

As part of their due diligence in 2007, THMG conducted water sampling at the mine portals and various other locations along Williams Creek. They also contracted with Enviroscientists, Inc. of Reno, Nevada, to conduct an environmental data review and site assessment. Based on the completed state and federal site work and environmental evaluations, THMG determined that environmental liabilities associated with the Project are minimal, and therefore an acceptable risk, given the history of state and federal and environmental evaluations and remediations in and around the site. There are no current applicable federal or state environmental orders regarding the site.

THMG also completed water quality sampling programs on a quarterly basis from 2012 through 2014, during that phase of exploration and pre-development work. Several sample stations were established along the stream from the area below the Sonneman waste rock dump and historic tailings repository. This baseline sampling has continued through and into the current exploration program through the fourth quarter of 2020. No significant variations in quality, trends or concerns were noted in the sampling.

The South Mountain Project is not subject to any other known environmental liabilities, and HRC knows of no other significant factors or risks which might impact BMET's access, title, or right or ability to perform work on the property.

### 4.2.1 Current Permitting Status

In 2020, THMG directed their independent consultant, WEC, to update the existing site wide Storm Water Pollution Prevention Plan (SWPPP) under guidance of the EPA NPDES Stormwater Discharges from Industrial Activities-EPA's 2015 Multi-Sector General Permit (MSGP).

On June 3, 2020, at 11:59 p.m., the 2015 MSGP Program expired, and EPA did not reissue a new permit prior to its expiration. Therefore, the 2015 MSGP has been administratively continued in accordance with the Administrative Procedure Act and 40 CFR 122.6 and remains in force and effect for discharges that were covered prior to the 2015 MSGP's expiration.

WEC is in the process of submitting an NOI to EPA to obtain general permit coverage under the MSGP. However, there will likely be no permits issued until EPA promulgates and approves the MSGP program that expired in 2020. Such facilities may follow conditions outlined in EPA's No Action Assurance (NAA) memorandum for new facilities that commence discharging stormwater on or after June 4, 2020.

It is estimated that Idaho DEQ will assume regulatory compliance of this program and take over the NPDES program beginning in July of 2021. At that time, the THMG may have to file an NOI again with the state of Idaho.

The current site conditions related to underground water and the mine portal are as follows:

1. As mentioned above, Williams Creek has been placed in a 660 feet of 48-inch galvanized culvert through the Sonneman waste rock dump, starting above the mine workings, and continuing below the workings, in order to protect Williams Creek, and to ensure compliance with the National Pollutant Discharge Elimination System (NPDES/IPDES) Stormwater Permit.
2. There is no direct or open surface channel that routes water from underground tunnels or drifts, out of the mine and into Williams Creek. All water underground is considered meteoric and finds its way down through and below mine infrastructure. There is no way in which to determine if or how this water supplements the flow in Williams Creek.
3. The surface water sampling baseline data that has been collected for about 10 years shows no upstream or downstream influence from constituent analysis on Williams Creek.
4. Even though Williams Creek is routed through a 48-inch culvert for 660 feet to protect the water, it still crosses over and through the host rock and mineralized zones that are part of the system of mineralization at the Sonneman.

#### *4.2.1.1 Water Management – Mining Operations*

If mining operations in the future require dewatering in the mining areas, then an IPDES Permit would be required for point source discharges from the mining operation to "waters of the United States." Likely point discharges would include treated mine drainage, treated net precipitation from the tailings storage facility, and any other discernible or discrete point source associated with mining and processing at the site. In addition, the project would be subject to performance standards for new sources for its respective industrial source category. The Project would have to demonstrate that it is applying the best available control technology to meet applicable water quality standards. The permit application must be submitted at least 180 days prior to the approved discharge.

#### *4.2.1.2 Air Quality*

Scoping has been conducted by management, and several independent contractors have been invited to submit proposals for air quality baseline monitoring and permitting. Permits to construct and then later to operate are expected to be required for both the mine and mill and would be submitted with information developed from further mine and mill planning to include engineering studies and equipment lists.

#### *4.2.1.3 Owyhee County Conditional Use Permits*

In November 2019, South Mountain Mines, Inc./Owyhee Gold Trust filed an application with the Owyhee County Planning and Zoning Commission requesting a second four-year time extension for previously approved conditional use permit 213-13. That permit was originally issued in 2013 to Owyhee Gold Trust LLC, granting approval to establish an industrial milling operation on approximately 360 acres of land located in an agricultural zone. The first four-year time extension was applied for and granted in 2015. The subject parcels are located in the NE¼ of Section 23, the SW¼ of the NE¼, and the SE¼ of Section 14 Township 7 South, Range 5 West, Boise Meridian, Owyhee County, Idaho. Following a duly noticed hearing on December 11, 2019, the Commission granted the time extension of four (4) years, subject to the special conditions set forth in the original approved conditional use permit. SMMI keeps the County up to date and informed with annual presentations to the Owyhee County Commissioners.

# 5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

## 5.1 Access and Climate

Primary access to the South Mountain Project is provided by Interstate 84 West out of Boise, roughly 22 miles to Nampa, Idaho, and then south on U.S. Highway 95 for 63 miles to Jordan Valley, Oregon. The mine is located approximately 24 miles southeast of Jordan Valley via 7 miles of paved road and 17 miles of improved and unimproved gravel and dirt roads. Access throughout the claim block, including to old workings and drill pads, is provided by an assortment of secondary dirt roads and jeep trails requiring four-wheel-drive or all-terrain vehicles. The primary access road to and through the Project area also provides public and BLM access to the South Mountain Lookout, one of two remaining active BLM lookouts in the state of Idaho.

The climate in the vicinity of the Project area is semi-arid, with long snowy winters and short, cool, dry summers. Average annual temperatures range from 20°F to 81°F. Precipitation occurs largely as spring rainstorms and winter snowfall. Total annual precipitation averages 20 to 40 inches, and largely occurs as winter and late spring snowfall. Exploration and development can be carried out year-round, with routine plowing of the access road required during the winter months.

## 5.2 Local Resources and Infrastructure

The community nearest to the Project is Jordan Valley, Oregon, roughly 24 miles to the northwest of the Project area. Jordan Valley hosts a regional population of about 450 and offers limited standard municipal amenities. The nearest major supply center is the city of Nampa, roughly 100 miles northeast of the Project area. Commercial air and rail service are both available in Nampa, which is served by the Nampa Municipal Airport and Union Pacific's Northwest Corridor rail line. Ample skilled and unskilled labor can be found in Nampa and the greater Boise-Nampa metropolitan area.

Existing surface rights are sufficient for all presently proposed development and operations activities. Existing infrastructure within the Project area includes six cabin-style bunkhouses (circa 1975) and a small number of other historic wooden structures, as well as a large fabric-sided equipment maintenance and storage facility situated near the entrance to the Sonneman adit. Drill core and various supplies and equipment are stored on-site in a series of locked, Connex-style storage containers located along the main access road just above the bunkhouse cabins.

Electrical power is currently supplied by portable diesel generators. A three-phase power line could be established by upgrading of about 15 miles of existing two-phase line, with construction of an additional 4.5 miles of new line from the county road to the mine site. Line power from Idaho Power's distribution line to the mill site would require roughly one mile of new line construction and another 17 miles of existing line upgrades, along with some transformer and line upgrades near Jordan Valley, Oregon.

Potable water is available within the Project area from a number of existing groundwater springs. Water for milling operations is expected to be provided by an onsite well, though a pipeline could potentially be engineered to carry water to the mill from mine workings, providing water for milling operations as well as a means for dewatering the mine.

## 5.3 Physiography

South Mountain is a broad, dome-shaped uplift associated with the Owyhee Mountain Range just to the north. The Project area is topographically separated from the main Owyhee range by a broad, northwest-trending valley, and the local terrain is generally steep, with elevations ranging from 5,000 ft AMSL in the valley bottoms to roughly 7,800 ft at the summit of South Mountain.

Surface waters drain radially to the north and northeast of South Mountain via Williams Creek and South Mountain Creek, respectively, and to the east via Mill Creek, south via Buck Creek, West Fork Creek and Juniper Creek, and southwest and west via Soldier Creek and Lone Tree Creek, respectively. Local vegetation varies with elevation, aspect, and proximity to water. The lower elevations are generally covered by sparse sagebrush and grasses, with a mixed forest of Douglas fir and Aspen at the higher elevations, and sub-alpine meadow flora near the mountain summit.

# 6. HISTORY

## 6.1 Historical Ownership

Mineralization in the form of gold-bearing quartz veins was first discovered at South Mountain in 1868, with subsequent mining activity leading to the discovery of the oxidized silver-lead veins.

The South Mountain Consolidated Mining and Smelting Company purchased the principal mines in the district, including the earliest workings of the South Mountain Project, in 1874. The company constructed a smelting furnace for processing crude ore, but the lack of a market for the ore caused the company to fail, and the district to be largely abandoned, in 1875. No further development occurred in the district from 1875 to 1906. In 1906, the American Standard Mining Company shipped 14 tons of ore prior to shut down.

The Exploration Company of California completed development of the Sonneman, Golconda, and Laxey levels of the South Mountain mine in 1929 through 1931, concentrating primarily on the Laxey ore zone. In 1940 through 1946, the International Smelting and Refining Co. (Anaconda) began metal production from the Laxey ore zone. Approximately 53,635 tons of ore were direct shipped to a smelter in Tooele, Utah during this time.

The Texas shaft was active from 1950 to 1955 under the South Mountain Mines ("SMM") partnership. The partnership constructed a single-stage (copper-lead circuit) flotation mill capable of handling 150 tons per day, and reportedly extracted 6,703 tons of ore. The Defense Minerals Exploration Administration ("DMEA") evaluated the property for its strategic zinc potential during this same time frame.

In 1956, the property was leased for two years to the Potash Company of America, which operated sporadically until 1968, when the 17 patented claims, which comprise the patented claim block of the present-day South Mountain Project, were purchased by W.A. Bowes, Inc.

The W.A. Bowes Company developed the property from 1977 until the early 1980's when it was purchased by an east coast investment group who formed South Mountain Mining, Inc. Following purchase of the property, W.A. Bowes remained as managing operator. The property was acquired by Thunder Mountain Resources, Inc., a wholly owned subsidiary of THMG, in September 2007 following due diligence work on the title, environmental considerations, and geology.

## 6.2 Historic Exploration and Development

Early underground exploration and mine development produced the original workings of the Sonneman, Laxey, and Golconda levels and the Texas shaft. By 1875, the district was largely abandoned due to failure of the principal mining company and the lack of a market for the ore. No further exploration or development occurred in the district through the early 1900's.

The Exploration Company of California completed exploration and development of the Sonneman, Golconda, and Laxey levels in the early 1930's, concentrating primarily on the Laxey ore zone. In 1940 and continuing through 1946, the International Smelting and Refining Co. (Anaconda) began metal production from the Laxey ore zone as part of the strategic materials effort for World War II. During this same timeframe, the

Defense Minerals Exploration Administration (DMEA) evaluated the Project for its strategic zinc potential, overseeing mining and exploration of the Project both during and for some time after the War. The Texas shaft was reactivated by the South Mountain Mines Partnership in 1950 and was worked for a period of roughly 5 years.

In 1975 and 1976 the Idaho Bureau of Mines and Geology ("IBMG") conducted a geology and geochemical reconnaissance over a 450-square mile area which included the South Mountain Mining District. The purpose of the IBMG survey was to evaluate the greater region for potential mineralized zones. 583 stream sediment samples were collected and analyzed at the Idaho Bureau of Mines and Geology analytical laboratory, University of Idaho. The samples were analyzed for zinc, nickel, lead, silver, and copper by atomic absorption spectroscopy. Bennett (1976) reports that cold extractable copper ("CxCu") and cold extractable total heavy metals ("CxHM") were analyzed using Colorimetry analysis. No values were found which were exceedingly high for any element, though the study did note high values of zinc and copper concentrated south of South Mountain.

The IBMG reports that regional air magnetic and gravity surveys were completed over the project area (Bennett, 1976). Due to the regional nature of the geophysical surveys, there is nothing significant to report regarding the South Mountain project.

W.A. Bowes managed the Project from 1977 until the mid-1980's, conducting geophysical, soil and rock chip sampling and analysis programs. Bowes (1985) reports that geophysical surveys have been conducted in the vicinity of South Mountain since 1968, consisting primarily of reconnaissance VLF surveys utilizing EM-16 instruments. In 1978, Phoenix Geophysics, Inc., Denver, Colorado, contracted IP and Resistivity surveys. Twelve preliminary lines delineated two anomalous IP zones coinciding with the Laxey marble, and another marble unit to the north. The initial survey was followed up with additional surveys oriented within the anomalous zones. The EM response from these ore zones was generally weaker than expected from sulfide zones in other deposits. In 1982 a VLF survey was run, and again the EM response was poor. The VLF delineated apparent structural boundaries with east-west, northwest, and northeast trends.

After acquisition of the Project by an eastern money interest in the mid-1970s, South Mountain Mining ("SMM") was incorporated and proceeded to conduct expansive exploration in the form of tunneling and underground and surface drilling. SMM personnel have verbalized to THMG personnel that approximately $6 million was spent at the Property by them during this period, culminating in preparation of an internal feasibility study.

SMM collected 60 channel samples in the Sonneman drift (Figure 6-1) to delineate mineralization in the DMEA and Texas zones. Orientations for these samples are either along the length of the drift, which is approximately along strike of the deposit, or across the drift. Significant results for the channel sampling program are presented in Table 6-1.

**Table 6-1 Significant Intervals from SMM Channel Sampling**

| ID | From | To | Length | Ag (opt) | Ag (ppm) | Zn % | Au (opt) | Au (ppm) | Cu % | Pb % |
|---|---|---|---|---|---|---|---|---|---|---|
| **CH_2151** | 0.0 | 6.0 | 6.0 | 10.01 | 342.8 | 13.47 | 0.190 | 6.507 | 0.28 | 4.16 |
| **CH_2152** | 0.0 | 6.0 | 6.0 | 6.05 | 207.2 | 17.79 | 0.590 | 20.205 | 0.22 | 3.08 |
| **CH_2153** | 0.0 | 8.4 | 8.4 | 10.34 | 354.1 | 11.48 | 0.160 | 5.479 | 0.13 | 5.11 |
| **CH_2154** | 0.0 | 11.5 | 11.5 | 29.08 | 995.9 | 15.97 | 0.270 | 9.247 | 0.34 | 15.14 |
| **CH_2155** | 0.0 | 14.0 | 14.0 | 16.30 | 558.2 | 15.69 | 0.330 | 11.301 | 0.20 | 8.62 |
| **CH_2156** | 0.0 | 17.0 | 17.0 | 5.88 | 201.4 | 15.90 | 0.310 | 10.616 | 0.23 | 2.02 |
| **CH_2157** | 0.0 | 16.0 | 16.0 | 1.57 | 53.8 | 16.45 | 0.210 | 7.192 | 0.09 | 0.37 |
| **CH_2158** | 0.0 | 9.6 | 9.6 | 2.75 | 94.2 | 16.97 | 0.170 | 5.822 | 0.12 | 1.02 |
| **CH_2159** | 0.0 | 9.0 | 9.0 | 2.00 | 68.5 | 15.40 | 0.130 | 4.452 | 0.10 | 0.79 |
| **CH_2160** | 0.0 | 6.6 | 6.6 | 6.60 | 226.0 | 15.16 | 0.120 | 4.110 | 0.23 | 4.51 |
| **CH_2161** | 0.0 | 4.2 | 4.2 | 1.92 | 65.8 | 11.10 | 0.060 | 2.055 | 0.17 | 1.00 |
| **CH_2162** | 0.0 | 6.0 | 6.0 | 1.48 | 50.7 | 12.88 | 0.100 | 3.425 | 0.06 | 0.68 |
| **CH_2164** | 0.0 | 6.0 | 6.0 | 2.40 | 82.2 | 16.20 | 0.060 | 2.055 | 0.08 | 0.65 |
| **CH_2165** | 0.0 | 6.4 | 6.4 | 3.56 | 121.9 | 12.48 | 0.060 | 2.055 | 0.09 | 0.95 |
| **CH_2167** | 0.0 | 7.5 | 7.5 | 17.08 | 584.9 | 0.19 | 0.020 | 0.685 | 0.67 | 0.41 |
| **CH_2168** | 0.0 | 5.0 | 5.0 | 15.69 | 537.3 | 0.20 | 0.010 | 0.342 | 2.83 | 0.23 |
| **CH_2169** | 0.0 | 5.0 | 5.0 | 6.76 | 231.5 | 0.40 | 0.010 | 0.342 | 1.08 | 0.35 |
| **CH_2171** | 0.0 | 3.8 | 3.8 | 6.61 | 226.4 | 0.29 | 0.020 | 0.685 | 0.96 | 2.39 |
| **CH_2172** | 0.0 | 2.0 | 2.0 | 36.29 | 1242.8 | 6.20 | 0.150 | 5.137 | 1.57 | 5.82 |
| **CH_2173** | 0.0 | 1.0 | 1.0 | 60.41 | 2068.8 | 13.00 | 0.350 | 11.986 | 0.19 | 11.52 |
| **CH_2175** | 0.0 | 2.0 | 2.0 | 6.08 | 208.2 | 6.31 | 0.000 | 0.000 | 1.73 | 2.49 |
| **CH_2176** | 0.0 | 5.0 | 5.0 | 19.94 | 682.9 | 30.93 | 0.550 | 18.836 | 1.94 | 2.90 |
| **CH_2177** | 0.0 | 2.0 | 2.0 | 4.78 | 163.7 | 16.67 | 0.040 | 1.370 | 0.16 | 2.70 |
| **CH_2178** | 0.0 | 5.0 | 5.0 | 2.66 | 91.1 | 14.89 | 0.060 | 2.055 | 0.18 | 1.12 |
| **CH_2180** | 0.0 | 5.0 | 5.0 | 12.31 | 421.6 | 12.63 | 0.200 | 6.849 | 0.19 | 8.20 |
| **CH_3469_3481** | 0.0 | 65.0 | 65.0 | 3.90 | 133.6 | 24.56 | 0.260 | 8.904 | 0.34 | 0.84 |
| **CH_3482_3486** | 0.0 | 25.0 | 25.0 | 3.83 | 131.2 | 12.14 | 0.190 | 6.507 | 0.83 | 0.63 |
| **CH_3490_3534** | 0.0 | 55.0 | 55.0 | 6.21 | 212.7 | 9.02 | 0.170 | 5.822 | 0.94 | 0.46 |
| **CH_3554_3563** | 15.0 | 40.0 | 25.0 | 27.22 | 932.2 | 12.19 | 0.000 | 0.000 | 2.76 | 0.89 |
| **CH_3571_3573** | 0.0 | 5.0 | 5.0 | 9.47 | 324.3 | 11.57 | 0.040 | 1.370 | 3.12 | 0.38 |
| **CH_3600_3605** | 5.0 | 15.0 | 10.0 | 5.83 | 199.7 | 1.28 | 0.050 | 1.712 | 3.60 | 0.00 |
| **CH_3653** | 0.0 | 3.0 | 3.0 | 14.33 | 490.8 | 0.11 | 0.010 | 0.342 | 0.30 | 0.81 |
| **CH_3654** | 0.0 | 6.0 | 6.0 | 13.08 | 447.9 | 0.36 | 0.010 | 0.342 | 1.53 | 1.72 |
| **CH_3655** | 0.0 | 3.5 | 3.5 | 28.34 | 970.5 | 4.60 | 0.010 | 0.342 | 0.47 | 7.27 |
| **CH_3656** | 0.0 | 5.0 | 5.0 | 27.97 | 957.9 | 3.54 | 0.010 | 0.342 | 4.59 | 0.61 |
| **CH_3657** | 0.0 | 7.0 | 7.0 | 5.59 | 191.4 | 0.00 | 0.020 | 0.685 | 0.59 | 0.12 |
| **CH_3658** | 0.0 | 6.0 | 6.0 | 14.44 | 494.5 | 0.14 | 0.010 | 0.342 | 3.81 | 0.22 |
| **CH_3659** | 0.0 | 6.0 | 6.0 | 15.20 | 520.5 | 0.11 | 0.000 | 0.000 | 5.91 | 0.14 |
| **CH_3660** | 0.0 | 6.0 | 6.0 | 13.14 | 450.0 | 0.07 | 0.000 | 0.000 | 3.91 | 0.78 |
| **CH_3661** | 0.0 | 4.5 | 4.5 | 22.40 | 767.1 | 3.97 | 0.050 | 1.712 | 1.10 | 4.48 |
| **CH_3662** | 0.0 | 2.8 | 2.8 | 77.77 | 2663.4 | 3.22 | 0.290 | 9.932 | 0.07 | 19.27 |
| **CH_3663** | 0.0 | 2.0 | 2.0 | 26.14 | 895.2 | 0.26 | 0.520 | 17.808 | 5.34 | 0.39 |
| **CH_3664** | 0.0 | 2.0 | 2.0 | 5.47 | 187.3 | 0.29 | 0.220 | 7.534 | 0.13 | 0.29 |
| **CH_3721_3646** | 85.0 | 100.0 | 15.0 | 5.80 | 198.6 | 0.04 | 0.170 | 5.822 | 2.35 | 0.01 |
| **3721_3656** | 170.0 | 195.0 | 25.0 | 3.79 | 129.8 | 0.04 | 0.000 | 0.000 | 0.50 | 0.03 |

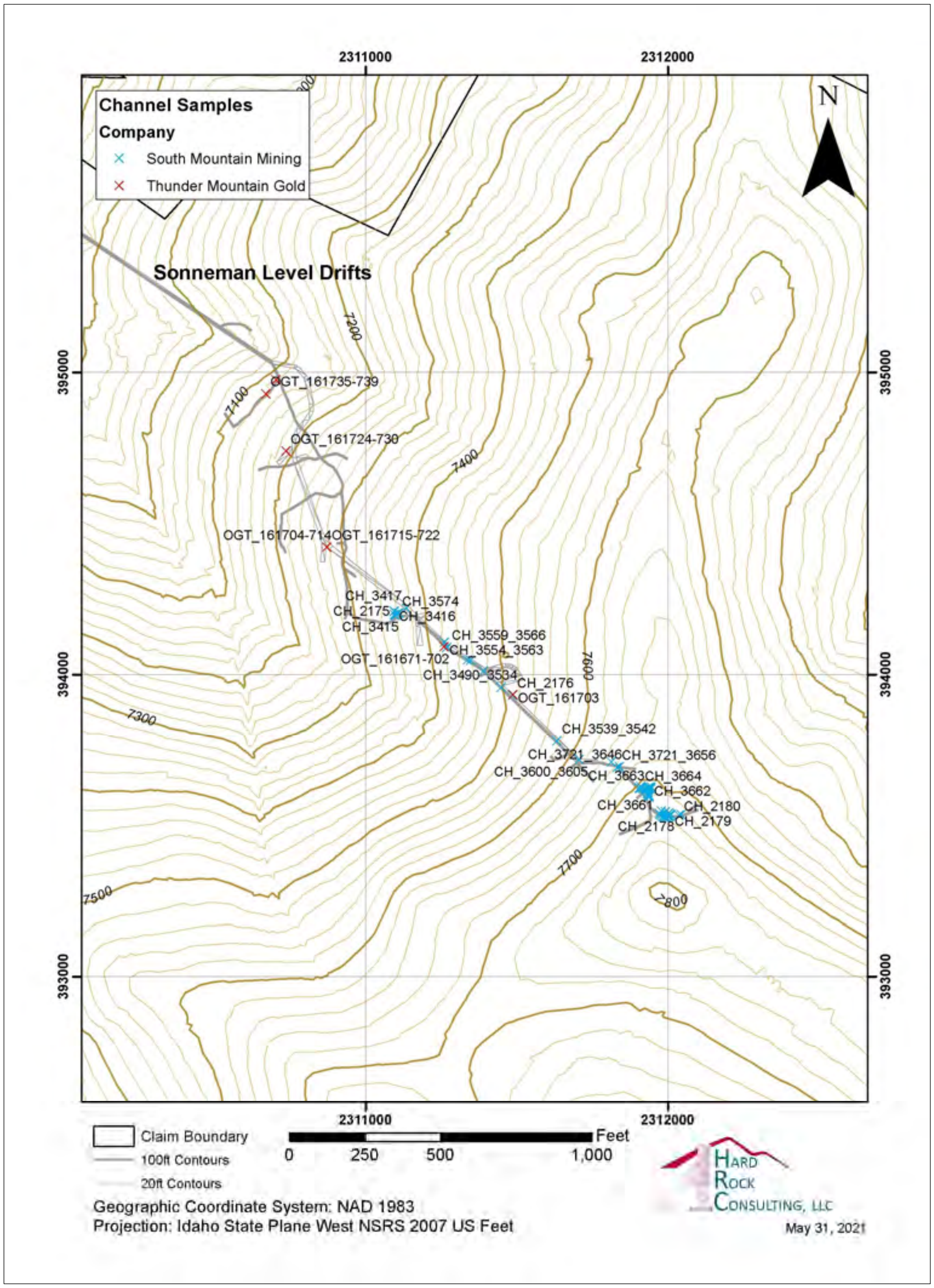



**Figure 6-1 Plan View of SMM and THMG Channel Samples Along the Sonneman Drift**

## 6.3 Historic Estimates

The mineral resource estimate described in the following paragraphs pre-dates current NI 43-101 reporting requirements and associated CIM definition standards. The historic estimate does not present mineral resources categorized according to Sections 1.2 and 1.3 of NI 43-101, and as such is considered relevant from a historical perspective only. The authors caution that a qualified person has not done sufficient work to validate the historical estimate, and BMET is not treating the historical estimate as current mineral resources or reserves. BMET does not intend to imply that the historic estimate validates or corroborates the mineral resource estimate presented in Section 14 of this report. The mineral resource estimate presented in Section 14 of this report supersedes all previous mineral resource estimates reported for the South Mountain Project.

'Ore reserves' for the South Mountain Project are reported by Bowes (1985) an internal report prepared for W.A. Bowes, Inc. The following discussion is excerpted directly from that report, entitled "*The South Mountain Property, Owyhee County, Idaho*" and dated May 1985:

> *Ore reserves for the South Mountain mine were calculated by Tim Hall, geologist for the mine during development work from 1981 through 1982. A tonnage factor of 10 was used in calculations. This value was determined through use in previous mining operations on the property. The horizontal areas for ore zones were determined from calculations on irregular shaped block dimensions. In the case of drill indicated zones, the area of influence of the length of intercept was used in order to determine area.*
>
> *The tonnages represent zones projected below the Sonneman level 100 feet, above the Laxey level 100-200 feet, and between levels (a maximum of 286 feet). These ore zones could be projected safely below the Sonneman 300 feet, in that the Laxey ore zone has been stoped to this level. In the same manner, the ore zones exposed on the Laxey level could be extrapolated to the surface (600-800 feet above).*
>
> *A total of 469, 890 tons have been blocked out, with (weighted) average grades of 0.05 oz/T gold, 7.53 oz/T silver, 0.94% copper, 1.40% lead, and 9.77% zinc (Table 6-1).*

**Table 6-2 South Mountain Reserve Estimate (Bowes, 1985)**

SOUTH MOUNTAIN RESERVES 4-19-85 TIM HALL GEOLOGIST

| PRICES | $/UNIT | Au | Ag | Cu | Pb | Zn |
|---|---|---|---|---|---|---|
| | | 325.00 | 6.60 | 0.67 | 0.18 | 0.47 |

SONN & BELOW

| ZONE | | TONS | AU | AG | CU | PB | ZN | $/T ore |
|---|---|---|---|---|---|---|---|---|
| TEXAS | △ | 7000 | 0.20 | 7.74 | 0.17 | 3.82 | 15.23 | 275.28 |
| TEXAS B | | 840 | 0.12 | 8.54 | 0.17 | 5.45 | 14.65 | 254.97 |
| SUBTEX A | | 2130 | 0.02 | 12.00 | 1.38 | 0.84 | 0.27 | 108.13 |
| SUBTEX B | | 550 | 0.17 | 45.04 | 0.68 | 9.67 | 6.29 | 455.56 |
| S-25 | | 2850 | 0.01 | 4.60 | 1.85 | 0.00 | 1.10 | 67.78 |
| DMEA 3 | | 2890 | 0.14 | 7.61 | 0.86 | 0.87 | 14.47 | 246.40 |
| Q 23 | | 4710 | 0.05 | 4.16 | 0.79 | 0.45 | 26.81 | 306.95 |
| Q 23A | | 1160 | 0.02 | 1.81 | 0.55 | 0.15 | 5.77 | 80.59 |
| DMEA 2 | | 31620 | 0.14 | 3.43 | 0.28 | 0.39 | 17.74 | 240.05 |
| DMEA 2A | | 7230 | 0.01 | 1.82 | 0.11 | 0.37 | 4.10 | 56.61 |
| DMEA 1 | | 4930 | 0.01 | 6.13 | 2.47 | 0.45 | 10.23 | 174.59 |
| O 21A | | 2300 | 0.01 | 3.13 | 1.05 | 0.08 | 10.51 | 137.06 |
| O 21B | | 3310 | 0.01 | 3.13 | 1.05 | 0.08 | 10.51 | 137.06 |
| ANDERSON | | 1800 | 0.04 | 11.96 | 1.20 | 3.82 | 13.00 | 243.97 |
| WEIGHTED | | 73320 | 0.10 | 4.90 | 0.64 | 0.92 | 13.97 | 206.42 |
| ARITH. | | | 0.07 | 8.65 | 0.90 | 1.89 | 10.76 | 198.93 |

SONN-LAXEY

| ZONE | | TONS | AU | AG | CU | PB | ZN | $/T ore |
|---|---|---|---|---|---|---|---|---|
| TEX (S+) | □ | 10150 | 0.20 | 7.74 | 0.17 | 3.82 | 15.23 | 275.28 |
| TEX (L-) | □ | 24896 | 0.04 | 8.95 | 1.23 | 0.83 | 10.17 | 185.84 |
| TEX A | △ | 1218 | 0.12 | 8.54 | 0.17 | 5.45 | 14.65 | 254.97 |
| SUBTEX A | △ | 3088 | 0.02 | 12.00 | 1.38 | 0.84 | 0.27 | 108.13 |
| SUBTEX B | △ | 797 | 0.17 | 45.04 | 0.68 | 9.67 | 6.29 | 455.56 |
| DMEA 5 | △ | 8151 | 0.01 | 4.60 | 1.85 | 0.00 | 1.10 | 67.78 |
| DMEA 3 | □ | 8265 | 0.14 | 7.61 | 0.86 | 0.87 | 14.47 | 246.40 |
| Q 23 | □ | 13470 | 0.07 | 4.16 | 0.79 | 0.45 | 26.81 | 314.43 |
| Q 23A | △ | 3320 | 0.02 | 1.81 | 0.55 | 0.15 | 5.77 | 80.59 |
| DMEA 2** | □ | 45955 | 0.14 | 3.46 | 0.33 | 0.38 | 17.86 | 240.92 |
| DMEA 2A | △ | 10193 | 0.01 | 1.82 | 0.11 | 0.37 | 4.10 | 56.61 |
| DMEA 1 | □ | 14013 | 0.01 | 6.13 | 2.47 | 0.45 | 10.23 | 174.59 |
| O 21A | △ | 2300 | 0.01 | 3.13 | 1.05 | 0.08 | 10.51 | 174.59 |
| O 21B | △ | 3310 | 0.01 | 3.13 | 1.05 | 0.08 | 10.51 | 137.06 |
| ANDERSON | □ | 3348 | 0.04 | 11.96 | 1.20 | 3.82 | 13.00 | 243.97 |
| WEIGHTED | | 152474 | 0.08 | 5.70 | 0.87 | 0.86 | 13.44 | 204.63 |
| ARITH. | | | 0.07 | 8.67 | 0.93 | 1.82 | 10.73 | 198.61 |

LAXEY & BELOW (not to Sonneman)

| ZONE | | TONS | AU | AG | CU | PB | ZN | $/T ore |
|---|---|---|---|---|---|---|---|---|
| TEXAS a | △ | 6390 | 0.02 | 2.72 | 0.38 | 0.00 | 6.95 | 93.57 |
| b | | 9250 | 0.01 | 0.57 | 0.18 | 0.00 | 3.06 | 39.49 |
| c | | 4110 | 0.02 | 2.95 | 1.25 | 0.00 | 0.00 | 41.10 |
| DMEA 5 | | 21155 | 0.01 | 3.98 | 1.30 | 0.10 | 2.76 | 73.89 |
| DMEA 4a | | 3741 | 0.01 | 3.59 | 2.03 | 0.50 | 5.26 | 105.39 |
| DMEA 4b | | 2682 | 0.02 | 10.95 | 2.14 | 0.96 | 9.59 | 201.05 |
| PLH 14 | | 3600 | 0.01 | 0.80 | 0.28 | 0.00 | 3.47 | 44.90 |
| PLH 27 | | 7366 | 0.02 | 3.70 | 0.57 | 0.06 | 3.70 | 71.93 |
| PLH 36 | | 8265 | 0.03 | 3.34 | 0.15 | 0.21 | 4.25 | 72.89 |
| PLH 36a | | 2349 | 0.04 | 8.35 | 0.34 | 1.20 | 6.90 | 140.87 |
| PLH 32 | | 7047 | 0.02 | 4.80 | 0.11 | 0.00 | 2.98 | 68.32 |
| PLH 34 | | 1620 | 0.02 | 4.25 | 0.13 | 0.00 | 11.20 | 140.60 |
| WEIGHTED | | 77575 | 0.02 | 3.61 | 0.75 | 0.15 | 3.95 | 76.86 |
| ARITH. | | | 0.02 | 4.17 | 0.74 | 0.25 | 5.01 | 91.17 |

LAXEY & ABOVE

| ZONE | | TONS | AU | AG | CU | PB | ZN | $/T ore |
|---|---|---|---|---|---|---|---|---|
| NW-SUB TX | □ | 14062 | 0.09 | 6.59 | 1.59 | 0.36 | 1.75 | 111.80 |
| TEX HW | □ | 14175 | 0.02 | 12.00 | 1.00 | 1.50 | 15.00 | 245.50 |
| TEX Zn | □ ○ | 5434 | 0.02 | 6.58 | 0.95 | 0.21 | 17.76 | 230.36 |
| A | △ | 6390 | 0.02 | 2.72 | 0.38 | 0.00 | 6.95 | 93.57 |
| B | △ | 9250 | 0.01 | 0.57 | 0.18 | 0.00 | 3.06 | 39.49 |
| C | △ | 4110 | 0.02 | 2.95 | 1.25 | 0.00 | 0.00 | 41.10 |
| DMEA 5 | △ | 29180 | 0.01 | 3.98 | 1.30 | 0.10 | 2.76 | 73.89 |
| DMEA 4A | △ | 5160 | 0.01 | 3.59 | 2.03 | 0.50 | 5.26 | 105.39 |
| DMEA 4B | | 3700 | 0.02 | 10.95 | 2.14 | 0.96 | 9.59 | 201.05 |
| DMEA 3 | | 7360 | 0.02 | 6.05 | 2.60 | 0.20 | 11.90 | 193.85 |
| PLH 14 | | 3600 | 0.01 | 0.80 | 0.28 | 0.00 | 3.49 | 45.09 |
| DMEA 2 | | 1700 | 0.02 | 4.57 | 1.93 | 0.20 | 21.90 | 269.10 |
| DMEA 1 | | 7000 | 0.01 | 5.47 | 1.64 | 1.22 | 10.13 | 160.94 |
| ANDERSON | | 14960 | 0.04 | 11.96 | 1.20 | 3.30 | 13.00 | 242.10 |
| PLH 27 | | 10160 | 0.02 | 3.70 | 0.57 | 0.06 | 3.70 | 71.93 |
| PLH 36 | | 11400 | 0.03 | 3.34 | 0.15 | 0.21 | 4.25 | 72.89 |
| PLH 36A | | 3240 | 0.04 | 8.35 | 0.34 | 1.20 | 6.90 | 140.87 |
| PLH 32 | | 9720 | 0.01 | 2.01 | 0.07 | 0.00 | 2.98 | 46.44 |
| PLH 32A | | 4300 | 0.02 | 4.80 | 0.11 | 0.00 | 4.76 | 85.05 |
| PLH 34 | | 1620 | 0.02 | 4.25 | 0.13 | 0.00 | 11.20 | 140.60 |
| WEIGHTED | | 166521 | 0.02 | 5.59 | 1.02 | 0.62 | 6.78 | 124.53 |
| ARITH. | | | 0.02 | 5.26 | 0.99 | 0.50 | 7.82 | 130.55 |
| WT SM RES | | 469890 | 0.05 | 5.19 | 0.87 | 0.67 | 9.59 | 154.56 |
| ARTH SM R | | | 0.05 | 7.53 | 0.94 | 1.40 | 9.77 | 176.03 |

TABLE 4

ORE RESERVES- SOUTH MTN. MINE- APRIL 19, 1985 METAL PRICES

CLASSIFICATION SYMBOLS:

△ POSSIBLE □ PROBABLE ○ PROVEN

HRC is not aware of any other historic mineral resource estimates for the South Mountain Project with sufficient supporting detail or documentation to warrant inclusion in this report.

## 6.4 Historic Production

Mineable quantities of precious and base metals, predominantly silver, zinc, lead, copper and gold, were discovered in the South Mountain mining district in the late 1800's. During the early years, high grade silver was mined from the oxidized portion of lead-silver replacement veins in the marble, though there are no production records for this early period, but a small smelter operated at the site.

Since the early 1900's, and primarily during World War II, approximately 8,000 feet of underground workings have been completed, the majority of which occur on two primary levels, the Sonneman Level (5,000 feet long at 6,850 feet above mean sea level (AMSL), and the Laxey Level (2,000 feet long at 7,145 feet AMSL). Available smelter records for the War period indicate that 53,635 tons of raw ore were direct shipped to a smelter in Tooele, Utah containing approximately 15.59 million pounds zinc, 2.56 million pounds lead, 1.49 million pounds copper, 566,440 ounces of silver and 3,118 ounces of gold.

Mining activity on the property continued during the early 1950s, and sporadically through 1968. A single-stage flotation mill was financed by the DMEA and constructed onsite in 1951, reportedly processing 6,700 tons of ore grade material. No records indicating grades and specific quantities of metal are available for the onsite mill. However, available smelter records for offsite concentrate shipments during this period indicate approximately 1,800 tons were sold containing approximately 144,426 pounds zinc, 194,550 pounds lead, 118,500 pounds copper, 33,850 ounces of silver and 41 ounces of gold. Although the available mill records show 6,700 tons were processed, the tailings from the flotation mill are estimated at approximately 17,000 tons. This would indicate that production from the mill was likely two to three times greater than recorded.

Available smelter records indicate that approximately 53,642 tons of ore have been mined to date. Historical smelter records indicate zinc values averaging 14.5%, lead 2.4%, copper 1.4%, silver at 10.6 opt, and gold at 0.058 opt (Table 6-4).

## Table 6-3 Historic Production Summary Based on Available Smelter Receipts

| Mine Area | Tons | Metal | Grade | Total Metal | Unit Value | Value 8.13 Prices |
|---|---|---|---|---|---|---|
| **Laxey Ore Shoot** | 51,000 | Gold | 0.06 | 3,060 | $ 1,300.00 | $ 3,978,000.00 |
| | | Silver | 10 | 510,000 | $ 16.50 | $ 8,415,000.00 |
| | | Copper | 0.7% | 714,000 | $ 3.00 | $ 2,142,000.00 |
| | | Lead | 2.3% | 2,346,000 | $ 1.10 | $ 2,580,600.00 |
| | | Zinc | 15.0% | 15,300,000 | $ 1.40 | $ 21,420,000.00 |
| **Texas Ore Shoot** | | | | | | |
| Hardwick Sub Lease 1941 | 857 | Gold | 0.02 | 17 | $ 1,300.00 | $ 22,282.00 |
| | | Silver | 26.36 | 22,591 | $ 16.50 | $ 372,743.58 |
| | | Copper | 4.9% | 83,129 | $ 3.00 | $ 249,387.00 |
| | | Lead | 1.3% | 21,768 | $ 1.10 | $ 23,944.58 |
| | | Zinc | 9.4% | 160,773 | $ 1.40 | $ 225,082.48 |
| Anderson / Texas Shaft 1950 | 462 | Gold | 0.01 | 5 | $ 1,300.00 | $ 6,006.00 |
| | | Silver | 25.16 | 11,624 | $ 16.50 | $ 191,794.68 |
| | | Copper | 5.2% | 48,418 | $ 3.00 | $ 145,252.80 |
| | | Lead | N/A | | $ 1.00 | $ - |
| | | Zinc | N/A | | $ 1.40 | $ - |
| Purdy sub-lease/Texas shaft 1953-54 | 522 | Gold | 0.039 | 20 | $ 1,300.00 | $ 26,465.40 |
| | | Silver | 23.78 | 12,413 | $ 16.50 | $ 204,817.14 |
| | | Copper | 3.1% | 32,782 | $ 3.00 | $ 98,344.80 |
| | | Lead | 4.3% | 44,892 | $ 1.10 | $ 49,381.20 |
| | | Zinc | N/A | | $ 1.10 | $ - |
| Texas, Laxey hanging wall zone 1953 | 357 | Gold | 0.021 | 7 | $ 1,300.00 | $ 9,746.10 |
| | | Silver | 18.86 | 6,733 | $ 16.50 | $ 111,094.83 |
| | | Copper | 2.9% | 20,492 | $ 3.00 | $ 61,475.40 |
| | | Lead | 1.7% | 12,138 | $ 1.10 | $ 13,351.80 |
| | | Zinc | N/A | | $ 1.40 | $ - |
| **Ore shoot crosscut, Laxey Level 1951** | 120 | Gold | 0.04 | 5 | $ 1,300.00 | $ 6,240.00 |
| | | Silver | 11.96 | 1,435 | $ 16.50 | $ 23,680.80 |
| | | Copper | 1.2% | 2,880 | $ 3.00 | $ 8,640.00 |
| | | Lead | 3.3% | 7,920 | $ 1.10 | $ 8,712.00 |
| | | Zinc | 13.0% | 31,200 | $ 1.40 | $ 43,680.00 |
| **250-360 Ore Shoots, Laxey 1952** | 324 | Gold | 0.01 | 3 | $ 1,300.00 | $ 4,212.00 |
| | | Silver | 5.07 | 1,643 | $ 16.50 | $ 27,104.22 |
| | | Copper | 2.2% | 13,932 | $ 3.00 | $ 41,796.00 |
| | | Lead | 20.0% | 129,600 | $ 1.10 | $ 142,560.00 |
| | | Zinc | 15.6% | 101,088 | $ 1.40 | $ 141,523.20 |
| **Totals** | | | | | | |
| Total tons | 53,642 | | | | | |
| Gold | 0.058 | | | 3,118 | | |
| Silver | 10.6 | | | 566,439 | | |
| Copper | 1.4% | | | 1,485,188 | | |
| Lead | 2.4% | | | 2,562,318 | | |
| Zinc | 14.5% | | | 15,593,061 | | |
| | | | | | Total | $ 40,794,918.01 |
| | | | | | Value per Ton / Current Metal Prices | $ 760.50 |

* Summary by Bowes based on smelter settlement sheets.

# 7. GEOLOGICAL SETTING AND MINERALIZATION

A portion of the text presented in this section is modified and/or excerpted directly from the M.S. thesis papers prepared by Freeman (1982) and Beaver (1986) and internal reports on the Project by Sillitoe (2019, 2020). The author has reviewed this information and available supporting documentation in detail, and finds the descriptions and interpretations presented herein to be reasonable and suitable for use in this report.

## 7.1 Regional Geology

The South Mountain mining district is situated within a roof pendant of marble, quartzite, and schist, in an igneous complex which has been the site of intrusive and extrusive activity since Cretaceous time. These igneous rocks, and those of the nearby Owyhee Mountains, are separated from similar rocks of the Idaho batholith by the volcanic rocks of the Snake River Plain. Uplift of South Mountain and subsequent erosion has resulted in a broad range, elongated to the northwest, cored by the pre-Cretaceous metasediments and Cretaceous to Tertiary plutonic rocks. Bimodal (basaltic and rhyolitic) volcanic rocks of two distinct ages, Eocene-Oligocene and Miocene-Pliocene are the dominant rock types exposed in the region.

Metasedimentary rocks, which host the carbonate replacement deposits at South Mountain, are common in and on the margin of the Idaho batholith (Lund & Snee, 1985) and occur as pendants or inclusions in the Owyhee region (Pansze, 1975). The age of the metasediments at South Mountain is not presently well defined. Sorenson (1927) suggests that the metasedimentary units are Paleozoic in age, while Beaver (1986) presents a compelling argument that they are part of an allochthonous terrane accreted during the Mesozoic.

The igneous rocks of South Mountain and the Owyhee Mountains generally range in composition from granodiorite to quartz monzonite (Pansze, 1975; Bennett, 1976). However, at South Mountain compositions are more variable, ranging from quartz diorite to granitic pegmatite (Freeman, 1982). K-Ar age dates for the igneous rocks are 87±3 my for the quartz diorite of South Mountain (Armstrong, 1975), 62.1±1.2 my for the granodiorite of the Owyhee Mountains (Pansze, 1975), and 45.2±1.3 my for granodiorite from South Mountain (Armstrong, 1976). Taubeneck (1971) and Ekren et al. (1982) concur that plutonic rocks of the Owyhee Mountains and South Mountain are related to the Idaho batholith, which is also a multiple intrusive complex in which emplacement spans the Jurassic to Eocene, with the majority of the formation during the Cretaceous.

Tertiary flows and tuffs are prevalent in the South Mountain area as well as throughout southern Idaho and northern Oregon and Nevada. The oldest exposed volcanic rocks are Eocene silicic flows and tuffs, totaling 500 to 1000 m in thickness, that are probably related to Challis volcanism (Ekren et al., 1982). The Oligocene Upper Salmon Creek andesite and basalt flows (up to 1160 m thick), found northeast of the study area, are chemically distinct from overlying Miocene volcanics (Ekren et al., 1982).

Extensive sheets of Miocene-Pliocene volcanic rocks unconformably overlie the Oligocene flows and Cretaceous granodiorites (Ekren et al., 1982). This assemblage consists of 1600 m of Miocene basalt, latite, and quartz latite, and 600 to 1000 m of rhyolite tuffs ranging in age from 16 to 10 my (Ekren and others, 1982). The oldest basalt of this sequence surrounds South Mountain. Major eruptive centers for the Miocene rhyolite have been identified in the Juniper Mountain and Bruneau-Jarbridge areas (Ekren et al., 1982).

Smaller, local eruptive centers are common, with Delamar and its associated volcanic-hosted epithermal gold deposits (located 30 km north of South Mountain) as an example (Pansze, 1975). Overlying the rhyolite is 300 m of olivine basalt and interbedded sedimentary rocks correlated with the Banbury Basalts of the Snake River Plain by Ekren and others (1982).

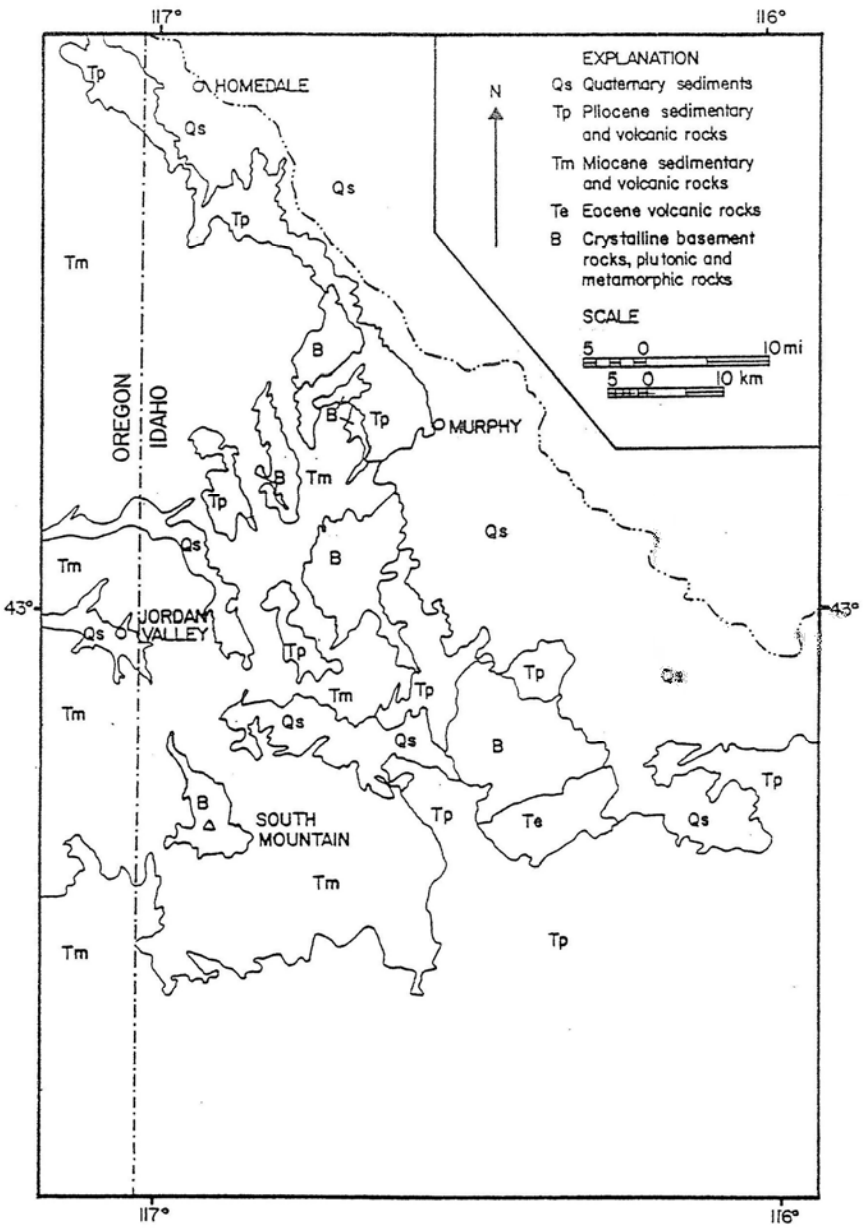



**Figure 7-1 Regional Geologic Setting of the South Mountain Project (Freeman, 1982)**

## 7.2 Local and Property Geology

### 7.2.1 Lithology

Rock types within the Project area are comprised of an isolated exposure of metasedimentary and intrusive rock, surrounded by younger upper-Tertiary volcanic and sedimentary units of the Owyhee volcanic field (Figure 7-2). Uplift and subsequent exposure of the older metasedimentary rocks is a result of extensional block faulting and doming. Multiple thin flows of Miocene basalt ramp onto the lower slopes of South Mountain surrounding the intrusive and metasedimentary rocks. Locally, the flows may contain thin interbeds of basaltic and rhyolitic lithic tuffs which may have been locally derived (Ekren et. al, 1981, Freeman, 1982). The accumulated basalt flows range up to 1,640 feet thick.

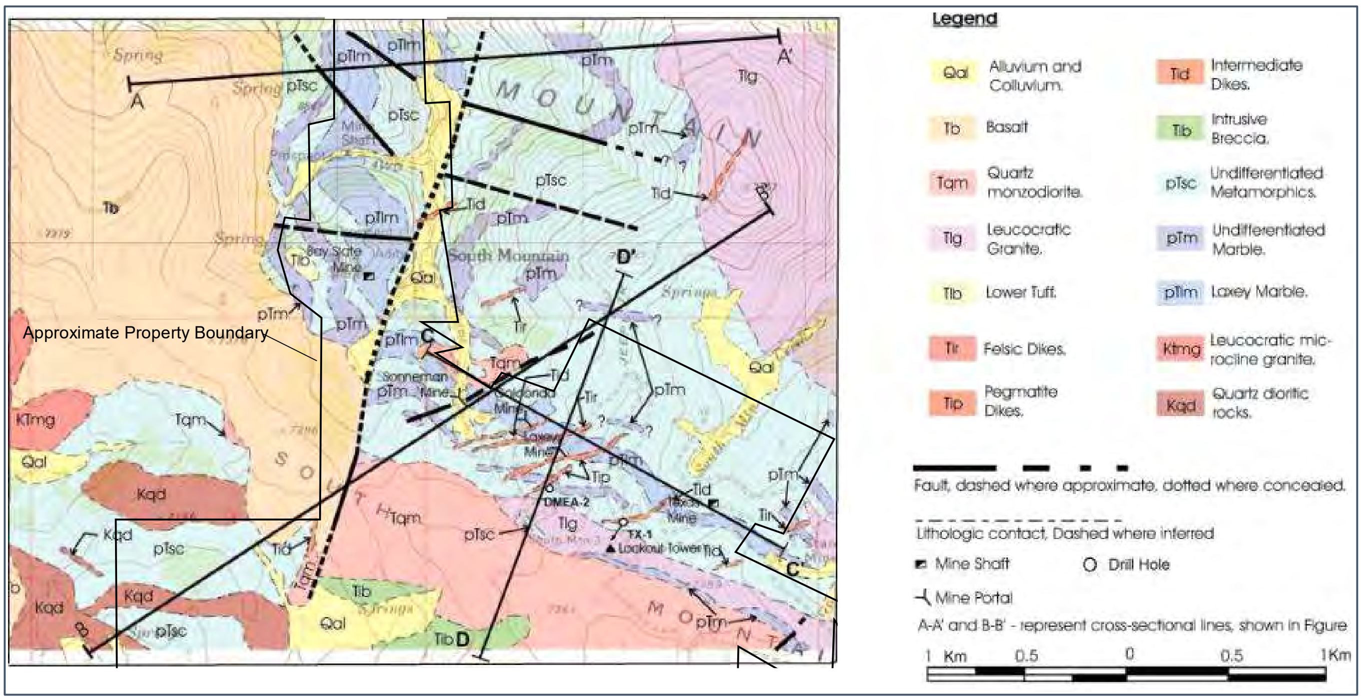



**Figure 7-2 Geologic Map of the South Mountain Project Area**

According to Freeman (1982), there are five major plutonic map units in the South Mountain area. The granitic intrusive rocks range in composition from biotite-hornblende quartz diorite to biotite-muscovite granodiorite, microcline granite, leucocratic granite and quartz monzonite (Ekren et. al, 1981, Freeman, 1982). The intrusive rocks at South Mountain are believed to be a satellite pluton to the Idaho Batholith and are radiometrically-dated from Cretaceous to Eocene in age (Bennett and Galbraith, 1975). An intrusive complex of gabbro and hornblendite locally intruded by quartz diorite is mapped on the southern and eastern aspects of South Mountain. The gabbroic complex is Cretaceous in age and according to Taubeneck (1971) are common in satellites of the Idaho Batholith.

The metasedimentary rocks consist of a roof pendant of interbedded schist, quartzite, and limestone and marble (undifferentiated and Laxey Marble) and may be either Mesozoic or Paleozoic in age (Ekren et. al, 1981). The marble is the host rock to the skarn and replacement vein mineralized bodies at South Mountain and comprise approximately one-quarter of the metasedimentary assemblage (Ekren et. al, 1981, Bowes, 1985). The metasediments are approximately 1,800 feet thick and appear to have undergone at least two episodes of folding deformation. A variety of dikes ranging in age from Eocene to Oligocene are present on South Mountain. The dikes range in composition from mafic, fine-grained basalts to leucocratic pegmatite and aphanitic rhyolite.

### 7.2.2 Structure

The northeast trend and compositional variation of the dikes suggest concentration from several intrusive/extrusive episodes within a structurally active zone (Bowes, 1985). The depth and lateral extent of the dikes is unknown. Structural elements identified in the South Mountain area include at least two episodes of deformational folding of the metamorphic rocks, and north-northwest trending, high-angle normal and reverse faults of minor regional displacement (Freeman, 1982). The faulting cross-cuts Miocene volcanics and is likely associated with faulting and extension of the Western Snake River plain located to the north-northeast. One large northeast trending fault runs through the South Mountain property and is informally named the Golconda Structure. This structure physiographically separates exposures of the two types of mineralization observed at the property. The generalized geologic and structural setting of the Project is presented in cross section in Figure 7-3.

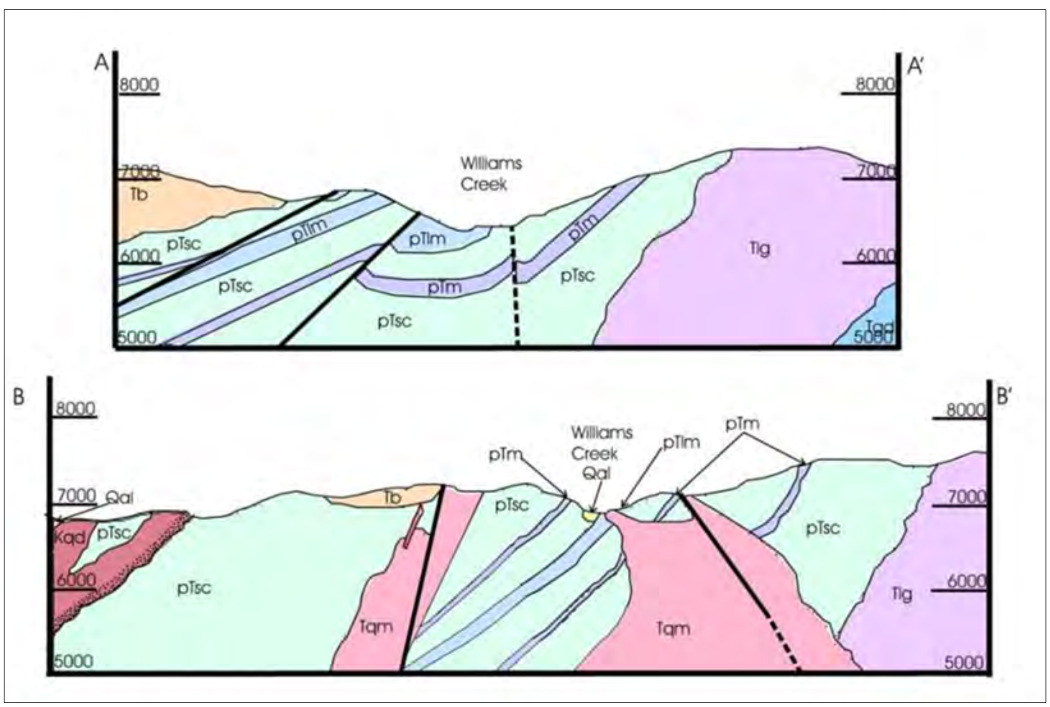



**Figure 7-3 Schematic Cross Sections of the South Mountain Project Area (section lines on Figure 7-2)**

## 7.3 Mineralization

Historically, two styles of mineralization were identified and have been worked by mines on the South Mountain Project: Pb-Ag replacement vein or fissure vein deposits, and skarn-hosted, Zn-rich, polymetallic massive sulfide bodies.

The Pb-Ag veins were the first target of mining activity within the Project area. These veins proved to be amenable to early-day mining practices as the oxidized portions consisting of argentiferous lead carbonate were easily smelted. The oxidized portions of the veins are relatively shallow, on the order of 70 to 80 ft (Bowes, 1985). The unoxidized components of these veins include the sulfides pyrrhotite, arsenopyrite, sphalerite, galena, chalcopyrite, and pyrite. The sulfide minerals occur within quartz, calcite, and chlorite gangue.

The Pb-Ag veins range in width from narrow stringers to 8 feet wide, and follow a predominate northeast trend with steep, southwesterly to vertical dips. The veins are open-space fillings along previous existing structures, and evidence can also be seen of localized replacement along adjacent bedding planes and fracture surfaces.

The primary source of historic production at South Mountain is a series of irregular, pipe-like, massive sulphide, carbonate replacement bodies, which are accompanied by much larger volumes of pre-mineral calcic skarn within the Laxey marble (Figure 7-4) and manto-style mineralization in the Texas Zone. The skarn and massive sulphide bodies plunge ~50° southwest, parallel to the bedding and coincident tectonic fabric, and appear to be controlled by northeast-striking fractures along which aphanitic rhyolite dikes are commonly localized. The aphanitic rhyolite dykes are pervasively kaolinised but do not contain obvious sulphide mineralization.

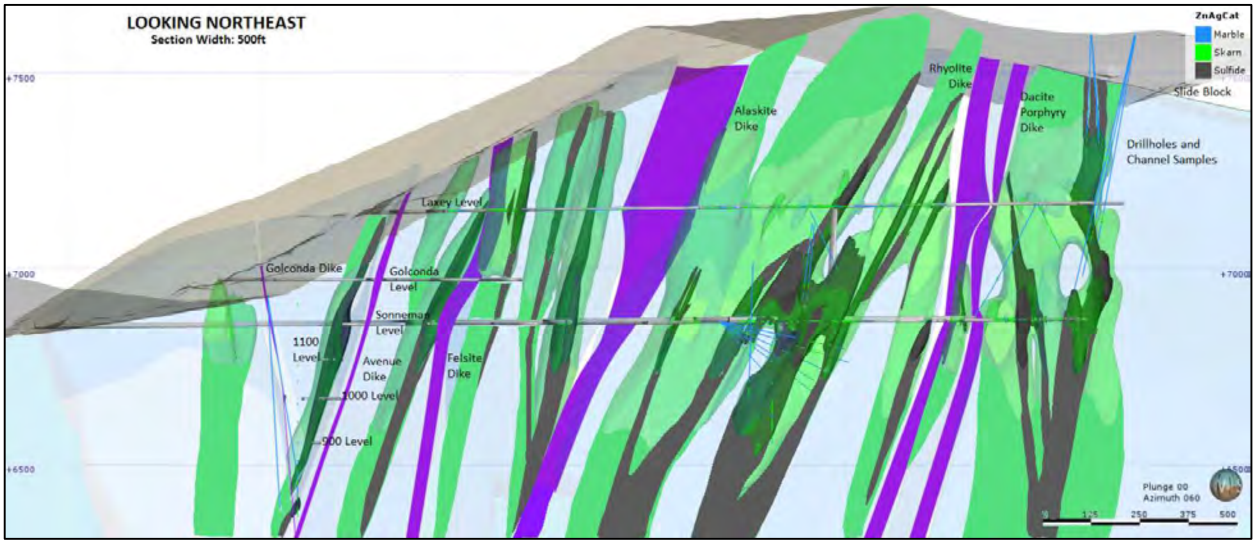



**Figure 7-4 Schematic Long Section of South Mountain Skarn Deposits**

The skarn is dominated by massive, bladed aggregates of prograde hedenbergitic clinopyroxene, which is locally converted to mosaics of andraditic garnet and, in the form of irregular pods, to calcite, ilvaite ± quartz. Probable rhodonite was noted as a minor mineral in the skarn, much of which is sulphide free.

The massive sulphide is coarse-grained and preferentially formed by replacement of marble (Figure 7-5). Oxidised massive sulphide bodies in the western portion of the Project area appear to lack skarn development but do possess accompanying jasperoid produced by silicification of the marble. Early sulphide minerals consist of arsenopyrite and subordinate pyrite, which are post-dated first by pyrrhotite and then by iron-rich sphalerite, chalcopyrite, galena and minor tennantite-tetrahedrite. Small amounts of iron-rich chlorite accompany both the sulphides and late calcite veinlets. The high silver values at South Mountain are present in solid solution in galena and tennantite-tetrahedrite whereas at least some of the locally high-grade gold values appear to occur in association with the early arsenopyrite.

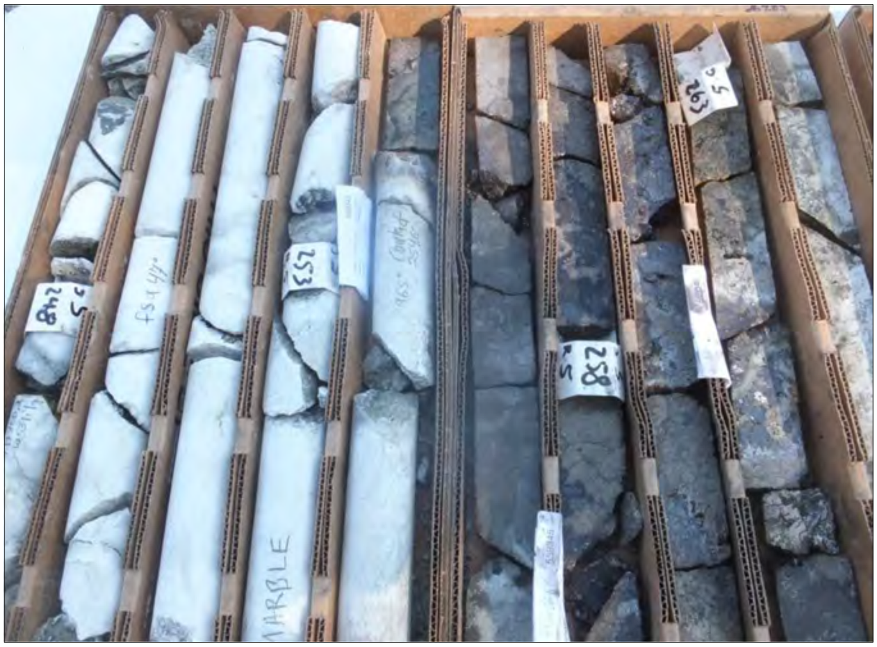


**Figure 7-5 Massive sulphide replacing Laxey Marble, SM19-003, 248-263 ft (Sillitoe, 2019)**

The DMEA massive sulphide zone at South Mountain preferentially replaced Laxey marble alongside the hedenbergite skarn. Massive sulphide development is localized along the skarn-marble contact, particularly where the contact is intersected by northeast trending fractures, and appears to be bounded, especially against marble, by 0.5- to 5-inch-wide replacement front or selvage of crystalline quartz intergrown with coarse euhedral arsenopyrite. Minor amounts of apatite and scheelite have also been identified in the quartz. Prismatic quartz crystals line cavities in the selvages, which provide the permeability for deep but extremely localized supergene sulphide oxidation. The quartz and arsenopyrite clearly pre-date the massive sulphide, as evidenced by partial replacement of arsenopyrite by pyrrhotite and cross-cutting pyrrhotite veinlets (Figure 7-6). Elevated gold values accompany the quartz and arsenopyrite, probably hosted by the latter mineral, but also extend into the outermost few feet of the massive sulphide (Sillitoe, 2019).

**Figure 7-6 Quartz and arsenopyrite (silvery gray) cut by pyrrhotite (dark veinlet, upper right), SM19-014, 468 ft (Sillitoe, 2019)**

Quartz and intergrown arsenopyrite occur as vein-like zones in partly garnet-replaced marble (SM-19-014) and as blebs within massive sulphide (SM-19-003; Figure 7-7). These quartz-arsenopyrite occurrences are consistently gold-bearing and may represent an early stage of retrograde mineralization partially replaced by massive sulphide. The massive sulphide itself is comprised of intergrowths of fine-grained pyrrhotite and pyrite and coarser-grained iron-rich sphalerite and galena. Chalcopyrite is a subordinate sulphide species in the massive sulphide (Sillitoe, 2019). Elevated silver values are contributed by the galena as well as by minor amounts of tennantite-tetrahedrite.

**Figure 7-7 Quartz-arsenopyrite (right) in contact with massive sulphide (left), SM19-003, 209 ft (Sillitoe, 2019)**

The massive sulphide bodies have weathered to limonitic gossan (Figure 7-8) to uncertain but relatively shallow depths. The gossan, containing locally identifiable cerussite, malachite, chlorargyrite (AgCl) and other oxidized species, was smelted locally in the 1870s for its silver and gold contents (Sillitoe, 2019).

**Figure 7-8 Gossan after Massive Sulphide Replacing Laxey Marble, Bay State Workings (Sillitoe, 2019)**

# 8. DEPOSIT TYPES

The primary deposit being explored at South Mountain is now classified as a Carbonate Replacement Deposit ("CRD"). The mineralized zones are largely within the Laxey marble (Sillitoe, 2019).

The CRD deposit classification commonly provides for both massive sulphide and skarn hosted mineralization. Skarns are coarse-grained metamorphic rocks composed of calcium-iron-magnesium-manganese-aluminum silicate minerals that form by replacement of carbonate-bearing rocks (in most cases) during contact or regional metamorphism and metasomatism. Skarn deposits are relatively high-temperature mineral deposits related to magmatic hydrothermal activity associated with granitoid plutons in orogenic tectonic settings; skarns generally form where a granitoid pluton has intruded sedimentary strata that include limestone or other carbonate-rich rocks. The processes that lead to formation of all types of skarn deposits include: (1) isocheimal contact metamorphism during pluton emplacement, (2) prograde metasomatic skarn formation as the pluton cools and an ore fluid develops, and (3) retrograde alteration of earlier-formed mineral assemblages. Deposition of ore minerals accompanies stages 2 and 3.

CRD deposits are typically zoned mineralogically with respect to pluton contacts, original lithology of host rocks, and (or) fluid pathways. Later petrogenetic stages may partly or completely obliterate earlier stages of skarn development. CRD deposits commonly are also associated with many other types of magmatic-hydrothermal deposits in mineral districts.

Each class of skarn deposit has a characteristic, though not necessarily unique, size, grade, tectonic setting, granitoid association, and mineralogy (Einaudi and Burt, 1982; Einaudi and others, 1981; Meinert, 1984). Not surprisingly, therefore, the various classes of skarn deposits have different geochemical signatures and oxidation/sulfidation states. Most economic skarns present as exoskarn, which forms in carbonate rock that hosts a mineralizing intrusion. These deposits consist of base- and precious-metal minerals in calcsilicate rocks. Pb/Zn skarns are composed of sphalerite and galena in calc-silicate rocks that may represent contact metasomatism by nearby granitoid intrusions or they may form hundreds of meters from intrusions inferred to be sources of metasomatizing fluids.

As aptly described by Beaver (1985) and others, Pb/Zn skarn and Pb-Ag veins in the South Mountain mining district are hosted by the Laxey marble, which is part of a roof pendant of pre-Cretaceous age metasediments. The igneous complex surrounding the roof pendant is predominantly granodiorite (K-Ar dated at 45.2 to 51.9 my) and is probably an outlier of the Idaho batholith. The Sonneman stock portion of the complex is the likely source of mineralizing fluids. There is a strong structural control upon skarn and ore zones; ore zones are subparallel to Fl and F2 fold axes. This may be a result of increased permeability in tensional fold hinges. Known mineralization is bounded and formed along two prominent N to NE trending faults.

The South Mountain CRD is potentially zoned relative to the N to NE trending faults. In pyroxene, Mg decreases and Mn increases away from the fault zones. Locally, Cu, Pb, Zn and Ag in sulfide minerals are also zoned relative to faults. This metal zonation may be due to fluid flow and evolution away from "feeder-faults" and into the Laxey marble. The skarn consists predominantly of hedenbergitic pyroxene and minor late andraditic garnet. Retrograde alteration of skarn includes manganiferous ilvaite and sub- calcic amphibole.

Fluid inclusion studies indicate that skarn formed from relatively hot, complex saline brines. Homogenization temperatures in pyroxene average 3540 C and, based upon a 0.9 kb pressure determined from sphalerite geobarometry, the temperature of pyroxene skarn formation was about 430° C. Both skarn mineral compositions and fluid inclusion homogenization temperatures indicate a possible minor vertical temperature gradient, assumed to result from fluid flow patterns.

Distal Pb-Ag veins and replacement bodies mined in the late 1800's may be the vertical and lateral equivalent to the main CRD system. Thus, numerous surface exposures of Pb-Ag veins at South Mountain could indicate the potential for significant Zn-Pb-Ag mineralization at depth.

## 8.1 Additional Considerations

While historically the primary massive sulphide bodies at the South Mountain Project have been classified as skarn deposits, Sillitoe (2019) postulates that all massive sulphide bodies at South Mountain may be generally classified as CRD's, because they largely replace marble irrespective of whether or not prograde skarn is present. In this regard, South Mountain is reminiscent of the major Naica zinc-lead-silver CRD in Chihuahua state, Mexico, where most of the massive sulphide developed at the expense of marble alongside bodies of largely barren calcic skarn (Sillitoe, 2019).

CRDs can occur alongside proximal skarn orebodies that abut intrusive stocks (e.g., Bingham district, Utah), in association with dikes and sills that presumably overlie concealed stocks (e.g., Naica and Santa Eulalia, Mexico) or can completely lack intrusions, which, nonetheless, are assumed to exist at depth (e.g., El Mochito, Honduras and Olympias, Greece). South Mountain mineralization is likely genetically related to the aphanitic rhyolite dykes, which appear texturally and compositionally similar to the minor intrusions at Naica and Santa Eulalia (Sillitoe, 2019).

CRDs typically comprise an interconnected array of chimneys and mantos, the former localized by steep faults and fractures and the latter by receptive, commonly shallowly dipping carbonate horizons. Mineralization at South Mountain differs from typical chimney-manto deposits in that the pipe-like massive sulphide bodies, in effect chimneys, are parallel to rather than perpendicular to bedding. The 50°-dipping, malachite-impregnated gossan exposed at the top of the Texas shaft is notably bedding parallel (Figure 8-1) and, hence, manto- rather than pipe-like in form (Sillitoe, 2019).

**Figure 8-1 Malachite-Impregnated Gossan after Massive Sulphide Manto, Texas Shaft (Sillitoe, 2019)**

# 9. EXPLORATION

## 9.1 BMET Exploration

Other than drilling, no other types of exploration have yet been carried out at the South Mountain Project by or on behalf of BMET.

## 9.2 Exploration Conducted by Previous Operators

### 9.2.1 THMG Exploration and Pre-development Work

Other than drilling, exploration (and development) activities carried out by THMG between 2008 and 2018, prior to BMET's involvement, include:

- Adjoining property evaluation and acquisition
- Title work for the patented claims and private land parcels
- Surveying the claim boundaries,
- Rehabilitation of the Laxey and Sonneman drifts, most to a production level (12 ft by 12 ft),
- As-built survey of the Laxey and Sonneman drifts,
- Channel sampling of the Sonneman drift at the intersections of massive sulfide mineralization,
- Geologic mapping and geochemical sampling specific to an intrusive breccia target, and
- A ground magnetics survey as well as compiling and reprocessing public domain geophysical surveys.

The procedures, parameters, and general results of each of the exploration efforts listed above are summarized in the following paragraphs.

#### *9.2.1.1 Surveying*

A priority portion of the patented claims and the leased ground were surveyed during the 2008 field season. Twenty-one new unpatented claims were added to the property holdings. The surveyed locations for claim corners and leased land boundaries from past surveys were checked and validated by Wittman (2010).

#### *9.2.1.2 Rehabilitation and Surveying of the Laxey and Sonneman Adits and Drifts*

The Sonneman portal and existing workings were rehabilitated during 2008. The portal improvements included addition of a lockable steel door system on the Laxey and Sonneman portals. Other activities during the 2008 field season included a survey of the Laxey underground workings to the point that the surveys by SMM could be confirmed. This was essential to develop drill targets to test downdip extensions of the mineralized massive sulfide zones exposed in the underground workings (Wittman, 2010).

#### *9.2.1.3 Channel Sampling of the Sonneman Drift*

THMG collected seven channel samples in the Sonneman Drift (Figure 6-1) to delineate mineralization in various parts on the Sonneman level. Orientations for these samples are either from the rib along the length of the drift, which is approximately along strike of the deposit, or from the ribs of the cross-cuts adjacent to the drift. Significant results for the channel sampling program are presented in Table 9-1.

**Table 9-1 Significant THMG Channel Sample Intervals– Sonneman Drift**

| ID | From | To | Length | Ag (opt) | Ag (ppm) | Zn % | Au (opt) | Au (ppm) | Cu % | Pb % |
|---|---|---|---|---|---|---|---|---|---|---|
| OGT_161671-702 | 30.0 | 160.0 | 130.0 | 4.11 | 140.8 | 16.76 | 0.090 | 3.08 | 0.78 | 0.38 |
| OGT_161671-702 | 209.2 | 230.2 | 21.0 | 3.14 | 107.5 | 14.02 | 0.260 | 8.90 | 0.31 | 0.37 |
| OGT_161671-702 | 270.2 | 275.0 | 4.8 | 3.21 | 109.9 | 13.80 | 0.240 | 8.22 | 0.14 | 1.10 |
| OGT_161704-714 | 30.4 | 53.4 | 23.0 | 7.18 | 245.9 | 14.69 | 0.010 | 0.34 | 1.17 | 0.65 |
| OGT_161715-722 | 14.5 | 29.6 | 15.1 | 8.24 | 282.2 | 14.04 | 0.010 | 0.34 | 2.30 | 0.59 |
| OGT_161735-739 | 0.0 | 40.0 | 40.0 | 13.97 | 478.4 | 16.44 | 0.020 | 0.68 | 0.70 | 0.86 |
| OGT_161724-730 | 0.0 | 40.0 | 40.0 | 5.80 | 198.6 | 5.63 | 0.000 | 0.00 | 0.28 | 2.83 |

#### 9.2.1.4 Geologic Mapping

Geological mapping during 2009 outlined a gold-bearing, multilithic intrusive breccia on the south side of South Mountain. Outcrops of intrusive breccia have been mapped along and area approximately 5,000 feet by 1,500 feet and cuts the mixed metasediments and granitic rocks at the site. The breccia contains angular and rounded lithic rock fragments that include schists, quartzites, carbonates, and granitic rock contained in a silica-rich, granitic matrix. Small quartz veinlets cut the breccia were exposed in rock outcroppings. Five (5) polished thin sections and one (1) polished section from the South Mountain project were sent to LTL Petrographics (Dr. Lawrence Larson) in Sparks, Nevada for petrographic analysis. Samples collected from the intrusive breccia analyzed by Dr. Larson confirm the rocks have been potassically altered with the formation of variable amounts of K-spar and secondary biotite (Wittman, 2010).

#### 9.2.1.5 Geochemical Sampling

Approximately three miles of access roads and drill sites were constructed in 2010 during exploration of the gold breccia. A campaign of road cut sampling was undertaken on the new roads as they were completed. Three sets of samples were obtained along the cut bank of the road. Channel samples were taken on 25-foot, 50-foot or 100-foot intervals, depending upon the nature of the material cut by the road with the shorter spaced intervals being taken in areas of bedrock. A total of 197 samples were collected and sent to ALS Chemex labs in Elko, Nevada. A majority of the samples contained anomalous gold values and in addition to confirming the three anomalies identified by soils sampling, the road cuts added a fourth target that yielded a 350-foot-long zone that averaged 378 parts per billion gold (0.011 ounce per ton). Follow up sampling on a road immediately adjacent to this zone yielded a 100-foot sample interval that ran 5.91 parts per million gold (0.173 ounce per ton).

Rock chip samples collected by THMG staff from the intrusive breccia and the surrounding rocks resulted in gold values ranging from 490 ppb ppm to 8,810 ppb. Additional rock chip samples were collected by Kinross geologists in 2009 during an evaluation of the property. Kinross collected rock chip samples from the breccia at South Mountain that produced gold values closely matching the rock chip geochemical values collected by

THMG staff. The locations of the rock chip samples collected by THMG are plotted on the map shown in Figure 9-1. The gold values of the rock chip samples collected by THMG are shown on Figure 9-2. The gold values increase in rock chip samples collected from along the contact of the intrusive breccias. Figure 9-3 shows a comparison of the rock chip samples collected by THMG and by the Kinross staff (Wittman, 2010).

A soil sample program was conducted in the area of the intrusive breccia on South Mountain by THMG staff and contract geologist Dennis Lance. Soil samples collected from a 2008 orientation sample grid over the breccia zone resulted in gold values ranging up to 310 ppb. During the 2009 field season, an expanded soil grid was completed over the breccia zone. Figure 9-4 shows the location and results for gold in soil samples collected from South Mountain. The soil samples were collected from a grid oriented west-northwest with a sample spacing of 100 feet along the lines. The soils were collected from the c-soil horizon and sieved to 80 mesh. Gold values in the soil samples ranged up to 701 ppb. Copper in soils collected from the South Mountain sample grid is shown in Figure 9-5. Molybdenum in soil samples is shown in Figure 9-6 (Wittman, 2010).

Also in 2010, Newmont Mining Corp. submitted two bulk samples for gold characterization and modal mineralogy. The samples comprised approximately 1.5 kilograms of -10-mesh rejects from ALS Chemex. Gold characterization was done by examination of gravity concentrates optically and by SEM/MLA. Bulk modal mineralogy was determined by semiquantitative XRD, while trace mineralogy was determined by SEM/MLA. The samples were labeled GXE-18093 (Porphyry) and GXE-18097 (Skarn). The following discussion is excerpted from Newmont (2010):

> "Gold in the porphyry sample (GXE-18093) appears to mostly occur as fine liberated grains. Five liberated grains with average diameter of 76 microns were found, with the coarsest grain having an average diameter of 91 microns. The only gold occurrence in the porphyry sample found by MLA was maldonite ($Au_2Bi$), which was completely encapsulated in K-feldspar. The porphyry sample comprises 45% plagioclase, 32% quartz, 10% K-feldspar, 9% amphibole, 4% chlorite, and 0.5% biotite. Trace minerals recognized optically and quantified by MLA included ilmenite (0.48%) and pyrrhotite (0.29%) indicating a probable reduced magma.
>
> The skarn sample (GXE-18097) is similar to what is seen at the Phoenix mine with 55% pyrrhotite, 14% pyrite, 11% sphalerite, 5% pyroxene, 5% calcite, and 0.5% galena. Trace minerals of note found optically and quantified by MLA include arsenopyrite (0.41%) and chalcopyrite (0.25%). No liberated gold was found optically, but MLA found 7 electrum grains with average diameter of 18 microns and 14 silver rich electrum grains with average diameter of 10 microns. SEM/EDS spot analyses of 4 electrum grains had an average of 62.7% Au and 37.3% Ag. Spot analyses of 3 silver rich electrum grains had an average of 63.2% Ag and 36.8% Au. This is also similar to Phoenix. Electrum is mostly associated with pyrite and arsenopyrite with 36.5% of electrum grain boundaries shared with pyrite, 25.2% with arsenopyrite, 17.6% with silver-rich electrum, and 20.7% of electrum grain boundaries are free (touching epoxy). For silver rich electrum, 15.4% of the grain boundaries are shared with sphalerite, 15.4% with arsenopyrite, 12.8% with electrum, 11.7% with rutile, 8.6% with pyrrhotite, 3.7% with iron oxide, 1.3% with pyrite, and 31.2% of silver rich electrum grains are free (touching epoxy)."

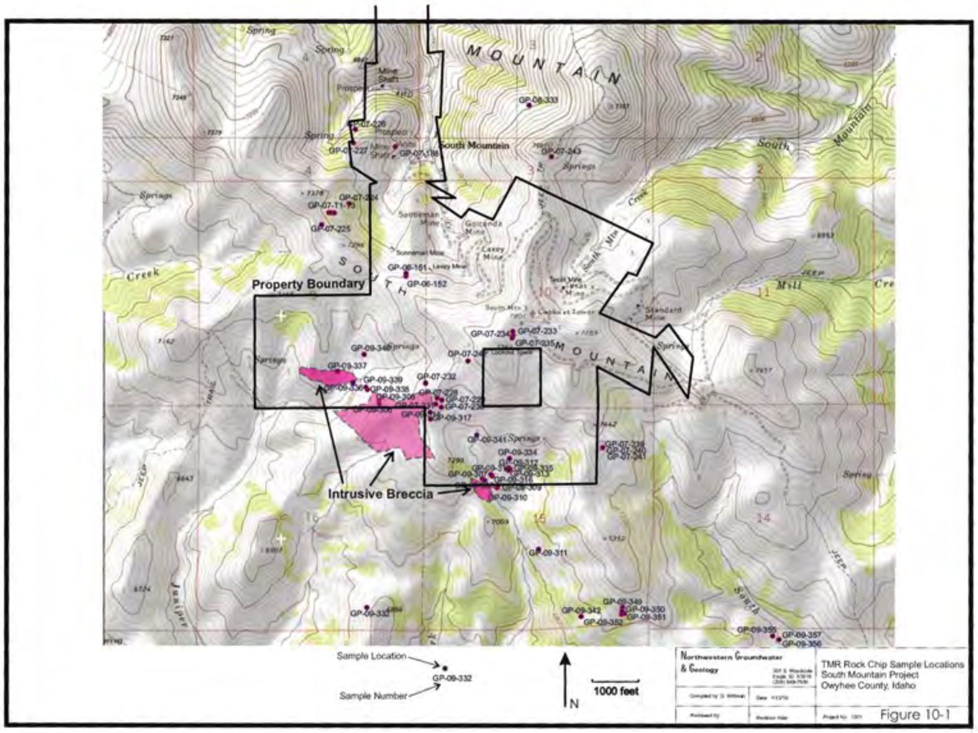



**Figure 9-1 Rock Chip Sample Locations (Wittman, 2010)**

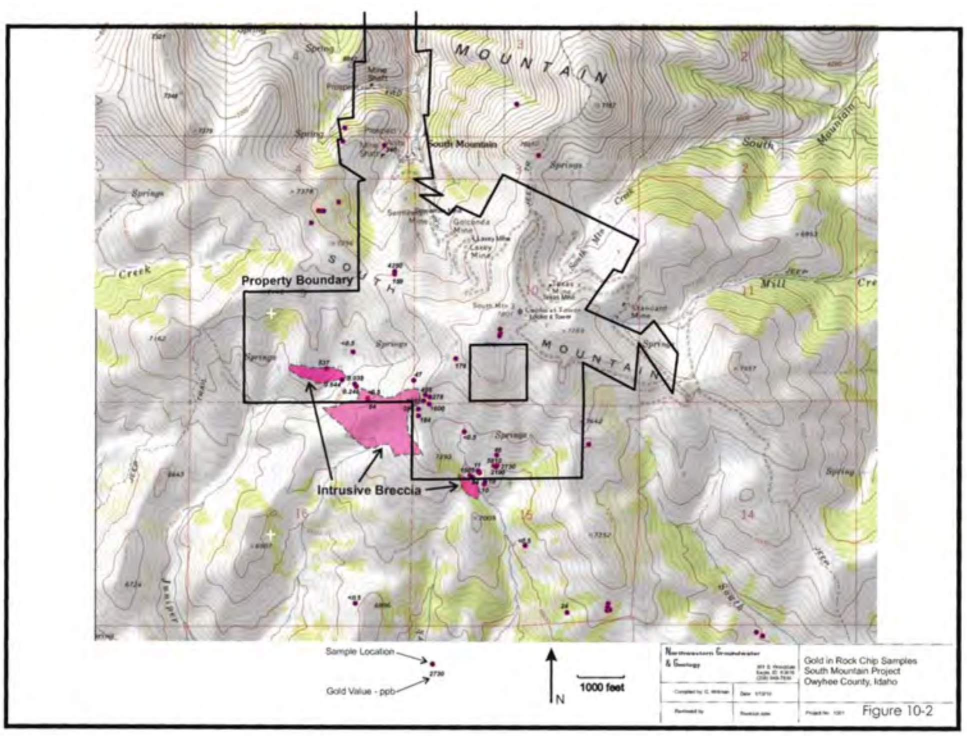



**Figure 9-2 Rock Chip Sample Gold Values (Wittman, 2010)**

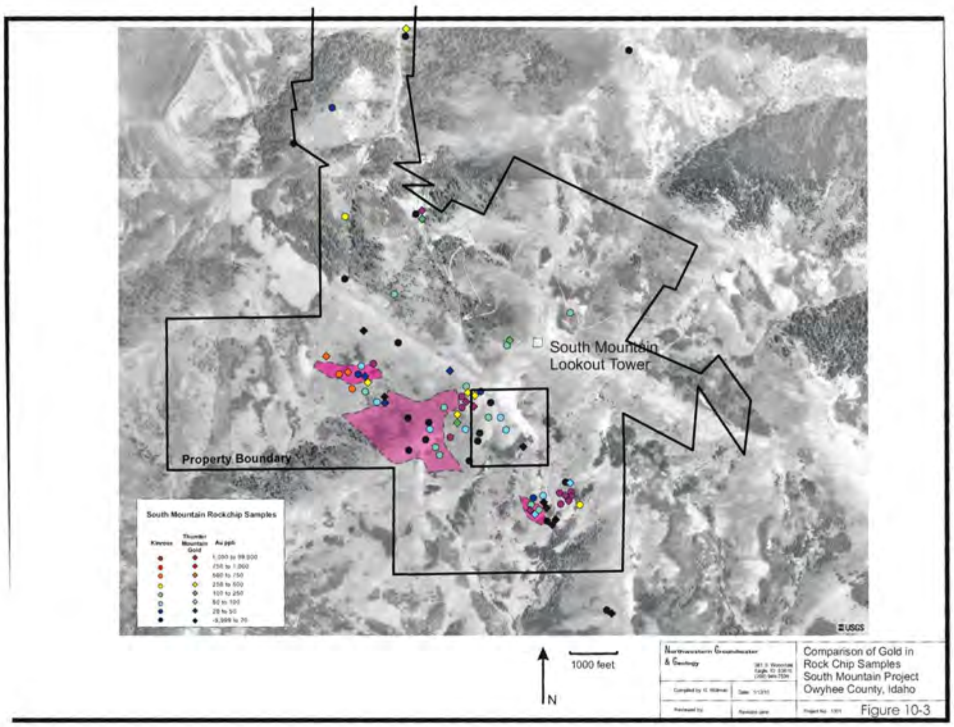



**Figure 9-3 Comparison between THMG and Kinross of Gold in Rock Chip Samples (Wittman, 2010)**

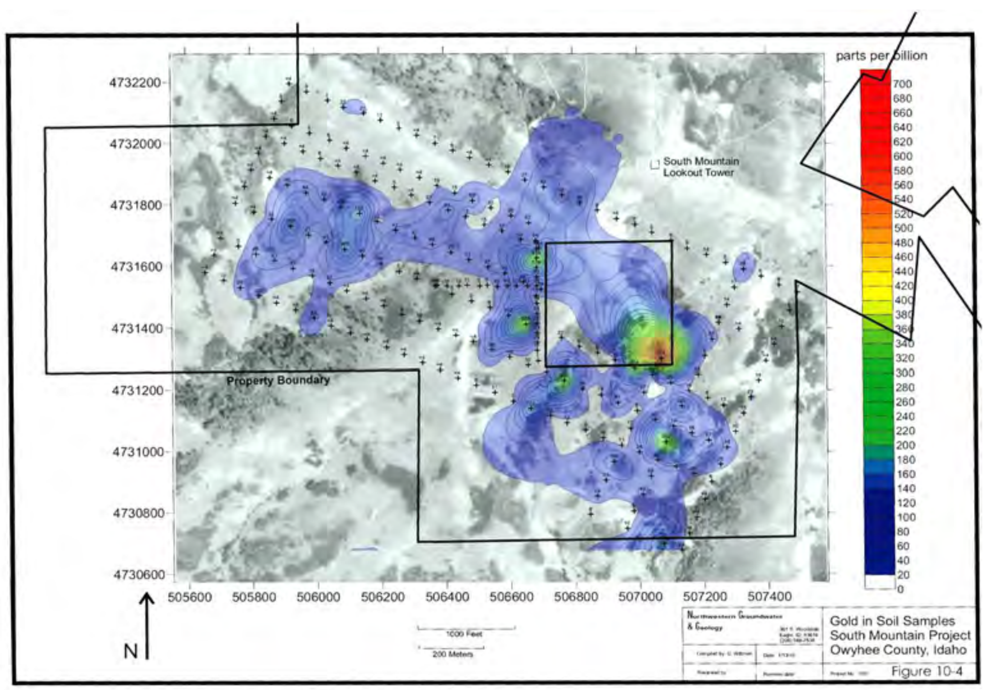



**Figure 9-4 Gold Soil Sample Results (Wittman, 2010)**

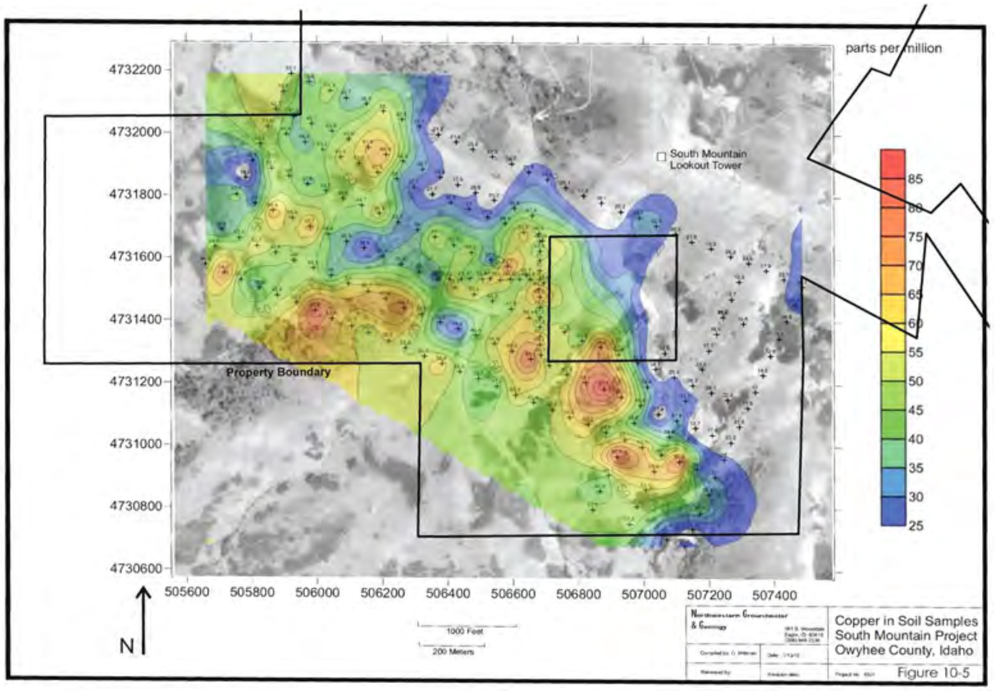



**Figure 9-5 Copper Soil Sample Results (Wittman, 2010)**

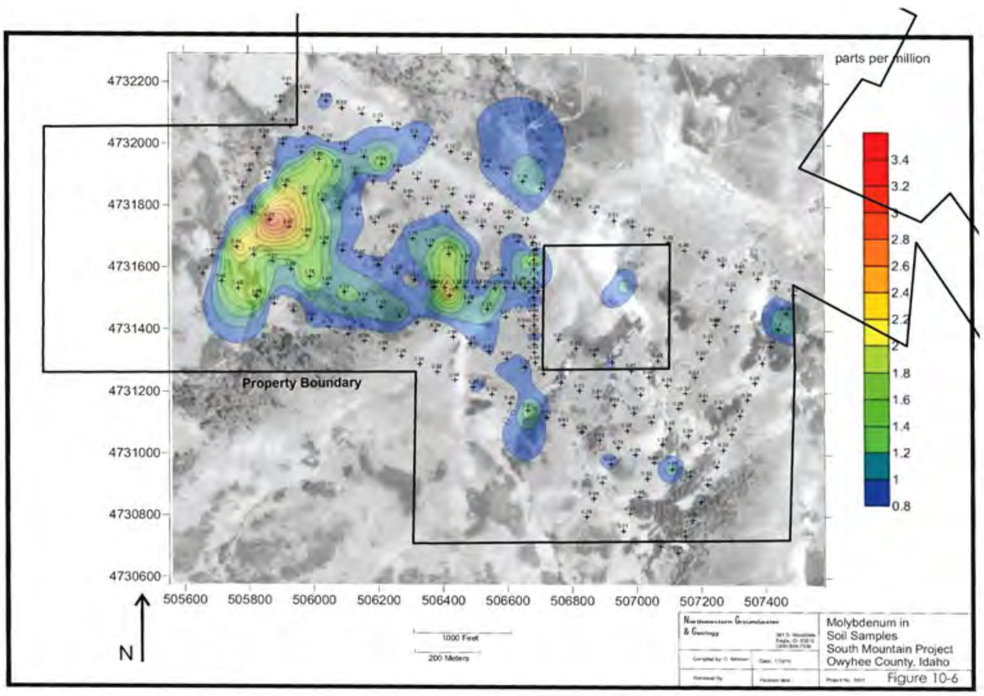



**Figure 9-6 Molybdenum Soil Sample Results (Wittman, 2010)**

#### *9.2.1.6 Geophysics*

In 2010, J.L. Wright Geophysics compiled several geophysical datasets:

- Airborne magnetic data ("AMAG");
- Airborne radiometric data ("ARAD"); and
- The gravity data ("GRAV").

The AMAG data originate from the USGS nation-wide magnetic grid and were re-gridded at 500m from the original one-kilometer grid spacing and low pass filtered with a nine-point Gaussian filter. The total field data were pole reduced with an USGS algorithm. ARAD data originate from the National Uranium Resource Evaluation ("NURE") data set acquired in the late 1970's with a line spacing of five kilometers. The data were gridded at 500m, and low pass filtered with a nine-point Gaussian filter. Five (5) products are provided: equivalent potassium (K / %), uranium (U / ppm), thorium (TH / ppm) and two rations TH/K and U/K (Wright, 2010). GRAV data originate from the USGS nation-wide gravity grid and were re-gridded at 500m from the original one-kilometer grid spacing and low pass filtered with a nine-point Gaussian filter. The Bouguer gravity were further recursively filtered with a Gaussian filter to produce a regional, which subtracted from the original Bouguer grid yielded a residual (RES) gravity product (Wright, 2010).

The gravity data indicate the property to be located at an intersection of two large scale structural features. Density variations, responsible for the gravity anomalies, are inferred to be related to large scale basement rock changes. Two intrusions of differing composition / age also occur at the intersection, as well as the known mineralization. An arcuate shaped structure, termed the South Mountain Structural Zone (SMSZ), correlates directly with known mineralization on a district scale. The zone facets the Kqd intrusion and extends a considerable distance to the northwest and east-southeast beyond the property. The close spatial relationship between the SMSZ, intrusions and basement structures suggest some form of kinematic connection.

In July 2013, a ground magnetic survey was completed over a portion of the South Mountain property by MaGee Geophysical Services LLC. Objective was to delineate structures and lithologies proximal to known gold and base metal mineralization. A total of about 93.7-line kilometers of magnetic data were acquired on 100m and north-south lines and 200m east-west tie lines. Measurements of the total magnetic intensity were taken in the continuous mode at two-second intervals.

# 10. DRILLING

Drillhole exploration and blasting was conducted intermittently on the Project from the 1960's through 2014 by various operators. Figures 10-1 and 10-2 show the collar locations on a large regional scale, and a property scale respectively. Appendix A summarizes drillhole collar coordinate locations and other relevant information.

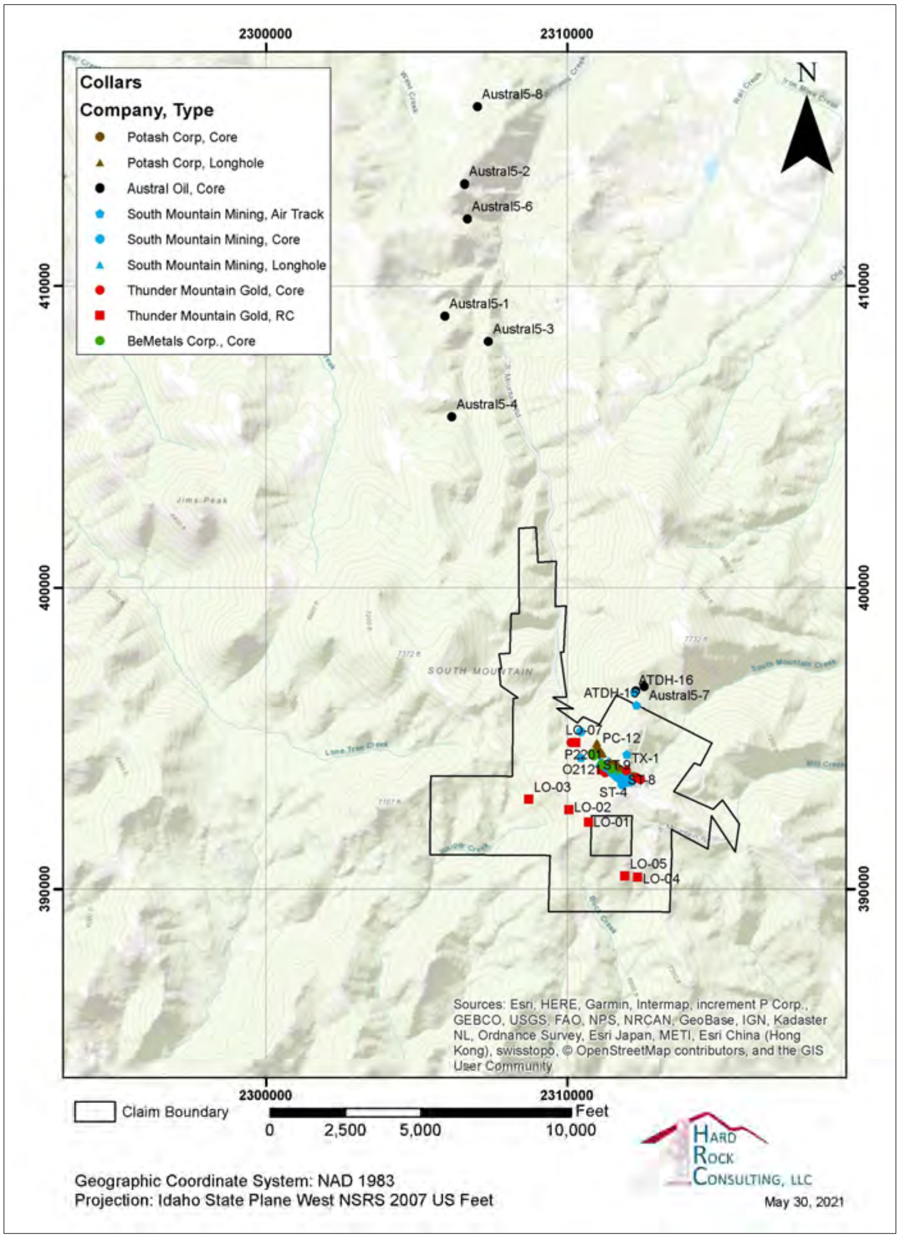



**Figure 10-1 Drill Collar Locations, Regional**

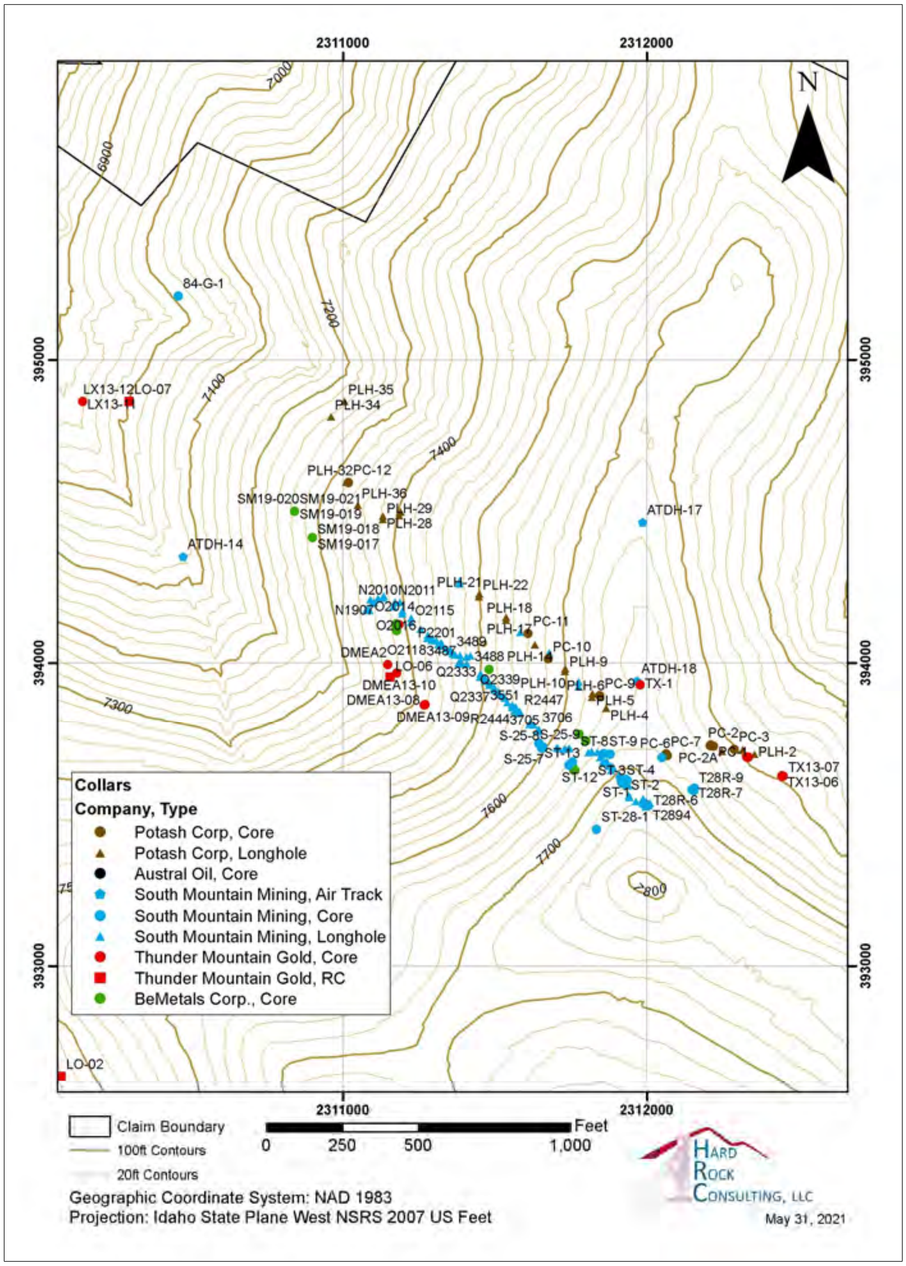



**Figure 10-2  Drill Collar Locations, Local**

## 10.1 Drilling Exploration Conducted on behalf of BMET

In 2019 and 2020, SMMI completed a total of 52 NQ diameter core drillholes totaling 16,382 ft. Drillhole totals and footages by year are summarized in Table 10-6. The drilling was conducted underground in the Sonneman level and was largely designed to extend the mineralization in the MB4, DMEA and Texas Zones down-dip. Due to the location of the Sonneman level and the geometry of the deposit, drilling directions are restricted, and intercepts are often of an apparent width nature. Drilling oriented to true thickness would require either drilling from surface with lengths in excess of 1,200 feet, or potentially the future developing exploration drifts from the Sonneman level in order to gain elevation from the mineralization.

**Table 10-1 BeMetals Corp. Drilling Summary**

| Year | Drilling Contractor | Type | Count | Total Depth |
|---|---|---|---|---|
| **2019** | KB Drilling | NQ Core | 21 | 7,475 |
| **2020** | Boart Longyear | NQ Core | 31 | 8,907 |
| **Total** | | | **52** | **16,382** |

The 2019 drilling was completed by KB Drilling using a Hagby OnRam 1000 drill retrofitted with a 125HP motor, rig number KBUG-1. The drilling was started at the beginning of August and continued into early November. Drillholes were surveyed down hole using a DeviFlex non-magnetic multi-shot tool. The average drillhole length was 356 ft with a maximum length of 899.4 ft. The average recovery was 96% with an average and median RQD of 68% and 72% respectively. When insignificant lithologies and intervals with logged structure are removed average and median RQD is 70% and 74%. The drilling targeted three zones from several drill stations located in the Sonneman Level, the MB4 Zone, the DMEA Zone, and the Texas Zone. Significant intercepts from the 2019 drilling are presented in Table 10-2.

The drilling targeting the MB4 zone was oriented to extend the target down-dip. Two drillholes were oriented at an azimuth of 235 and 240 with inclinations oriented down of 44.08 and 21.9. Three other drillholes from a different station were oriented at an azimuth 205 degrees and angled down between 40 and 50 degrees. The MB4 zone is currently understood to be a cigar shaped massive sulfide pipe with mineralized skarn of similar shape surrounding it. None of the drillholes were successful in intersecting the massive sulfides; however, two drillholes intersected significant intercepts of mineralized skarn, as summarized in Table 10-7. The drillholes are oriented oblique to the target and the lengths reported do not represent the true thickness of the skarn.

Drilling targeting the DMEA was oriented to extend the zone both up- and down-dip. The four up-dip drillholes were collared from a single station and oriented between 313- and 50-degrees azimuth. The inclinations ranged from 29 to 68 degrees up. Fourteen drillholes attempted to extend the DMEA zone down dip from a single station. Drillholes were predominately oriented between 152- and 240-degrees azimuth and inclined between 21 and 82 degrees from horizontal. The drilling in both directions was successful in extending known mineralization within the DMEA massive sulfide and mineralized skarns. Unlike the MB4 zone, the DMEA zone massive sulfide presents as a more sheet-like, manto-shaped geometry, rather than cigar shaped. Both the up-dip and down-dip drilling is oblique to the target and the lengths reported do not represent the true thickness.

Three drillholes targeted the Texas zone. Approximately 250 ft of additional underground drifting was completed to gain access to the station where the drillholes were collared. The drilling was oriented from a single station between 110- and 150-degrees azimuth and inclined between 18 degrees up and 14 degrees down. The drilling is oblique target, and only one drillhole was successful in intersecting significant mineralization. The interval lengths do not represent the true thickness of the target.

**Table 10-2 Significant Intercepts from the 2019 Drilling**

| Hole ID | Target | From | To | Length | Ag (opt) | Ag (ppm) | Zn (%) | Au (opt) | Au (ppm) | Cu (%) | Pb (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SM19-002 | DMEA Down Dip | 153.8 | 188.3 | 34.5 | 6.59 | 226 | 17.80 | 0.070 | 2.41 | 0.18 | 1.59 |
| SM19-002 | DMEA Down Dip | 222.6 | 235.0 | 12.4 | 4.25 | 145 | 5.45 | 0.245 | 8.39 | 0.15 | 0.58 |
| SM19-002 | DMEA Down Dip | 281.6 | 316.3 | 34.7 | 3.58 | 123 | 11.42 | 0.129 | 4.43 | 0.52 | 0.36 |
| SM19-003 | DMEA Down Dip | 167.9 | 247.2 | 79.3 | 7.80 | 267 | 11.12 | 0.100 | 3.44 | 0.29 | 3.75 |
| SM19-003 | DMEA Down Dip | 254.6 | 266.6 | 12.0 | 9.66 | 331 | 9.74 | 0.057 | 1.94 | 0.34 | 1.11 |
| SM19-005 | DMEA Down Dip | 246.5 | 283.4 | 36.9 | 3.75 | 128 | 7.97 | 0.035 | 1.20 | 0.24 | 0.91 |
| SM19-006 | DMEA Up Dip | 91.9 | 143.4 | 51.5 | 4.29 | 147 | 21.27 | 0.235 | 8.04 | 0.30 | 0.77 |
| SM19-007 | DMEA Up Dip | 88.5 | 128.5 | 40.0 | 3.58 | 123 | 18.16 | 0.129 | 4.41 | 0.16 | 1.55 |
| SM19-010 | Texas Zone | 80.1 | 103.8 | 23.7 | 4.53 | 155 | 4.37 | 0.004 | 0.13 | 2.07 | 0.03 |
| SM19-010 | Texas Zone | 174.3 | 207.2 | 33.0 | 3.96 | 136 | 0.39 | 0.002 | 0.07 | 1.76 | 0.01 |
| SM19-014 | DMEA Down Dip | 345.5 | 395.0 | 49.5 | 3.71 | 127 | 9.59 | 0.044 | 1.50 | 0.28 | 0.69 |
| SM19-014 | DMEA Down Dip | 453.0 | 472.1 | 19.1 | 2.24 | 77 | 4.88 | 0.074 | 2.55 | 0.12 | 0.21 |
| SM19-014 | DMEA Down Dip | 509.1 | 521.5 | 12.4 | 4.25 | 146 | 14.49 | 0.011 | 0.37 | 0.48 | 0.25 |
| SM19-014 | DMEA Down Dip | 605.0 | 621.9 | 16.9 | 2.33 | 80 | 0.28 | 0.061 | 2.08 | 0.06 | 0.15 |
| SM19-014 | DMEA Down Dip | 822.4 | 849.6 | 27.2 | 5.22 | 179 | 8.11 | 0.014 | 0.48 | 1.73 | 0.57 |
| SM19-014 | DMEA Down Dip | 873.8 | 879.8 | 6.0 | 4.64 | 159 | 1.32 | 0.075 | 2.56 | 0.11 | 0.56 |
| SM19-016 | DMEA Down Dip | 368.6 | 433.3 | 64.7 | 0.25 | 8 | 0.07 | 0.044 | 1.52 | 0.00 | 0.01 |
| SM19-016 | DMEA Down Dip | 448.0 | 481.1 | 33.1 | 4.42 | 151 | 3.15 | 0.049 | 1.68 | 0.22 | 0.66 |
| SM19-016 | DMEA Down Dip | 519.3 | 536.7 | 17.5 | 1.37 | 47 | 0.59 | 0.053 | 1.81 | 0.04 | 0.11 |
| SM19-016 | DMEA Down Dip | 604.3 | 618.9 | 14.7 | 14.08 | 482 | 5.04 | 0.125 | 4.27 | 0.43 | 5.80 |
| SM19-016 | DMEA Down Dip | 745.8 | 757.3 | 11.5 | 3.98 | 136 | 8.85 | 0.005 | 0.17 | 1.67 | 1.25 |
| SM19-017 | MB4 | 4.5 | 17.2 | 12.7 | 9.17 | 314 | 12.90 | 0.008 | 0.26 | 1.08 | 0.88 |
| SM19-017 | MB4 | 53.6 | 79.0 | 25.5 | 2.67 | 91 | 10.23 | 0.002 | 0.07 | 0.55 | 0.36 |
| SM19-018 | MB4 | 0.0 | 61.1 | 61.1 | 2.14 | 73 | 5.15 | 0.003 | 0.11 | 0.41 | 0.02 |

The 2020 drilling was contracted through Boart Longyear, beginning in late September and continuing into early December. The drillholes were surveyed down-hole using GyroMaster non-magnetic multi-shot tool. The average drillhole length was 287 ft with a maximum length of 1,070 ft. The average recovery was 94% with an average and median RQD of 64% and 70%. The 2020 drilling intersected more structural zones than the 2020 drilling resulting in a lower RQD. When insignificant lithologies and structural intervals are removed, average and median RQD is 71% and 75% respectively. The drilling targeted two zones from two drill stations located in the Sonneman Level, the DMEA Zone, and the Texas Zone. Significant intercepts from the 2020 drilling are presented in Table 10-3.

Six drillholes targeting the DMEA zone were oriented to extend the target down dip. The drillholes were oriented between 150- and 230-degrees azimuth and had inclinations ranging from 35 and 61 degrees down. One drillhole, SM20-022, was oriented 83 degrees azimuth and inclined up 20 degrees targeting the DMEA zone proximal to the Sonneman level. The drilling is oriented oblique to the DMEA mineralization and interval length do not represent the true thickness.

The remaining 24 drillholes were targeting the Texas zone in order to better define the Texas West, which is lower in zinc, higher in copper, and has less massive sulfides, and Texas East mineralization which is more similar to the rest of the Project. Approximately 80 ft of additional rehab and drifting was completed to gain access to the station where the drillholes were collared. Drillholes were oriented between 0- and 170-degrees azimuth and inclined between 15 degrees up and 80 degrees down. The drilling is oblique to the target and reported mineralized intercepts do not represent the true thickness of mineralization.

**Table 10-3 Significant Intercepts from the 2020 Drilling**

| Hole ID | Target | From | To | Length | Ag (opt) | Ag (ppm) | Zn (%) | Au (opt) | Au (ppm) | Cu (%) | Pb (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SM20-022 | DMEA Up Dip | 153.7 | 186.3 | 32.6 | 1.97 | 67 | 3.64 | 0.002 | 0.08 | 0.64 | 0.06 |
| SM20-023 | DMEA Down Dip | 210.9 | 227.4 | 16.5 | 4.48 | 154 | 8.13 | 0.013 | 0.44 | 1.24 | 0.51 |
| SM20-023 | DMEA Down Dip | 227.4 | 275.5 | 48.1 | 2.65 | 91 | 8.81 | 0.076 | 2.62 | 0.18 | 0.46 |
| SM20-023 | DMEA Down Dip | 292.1 | 319.0 | 26.9 | 5.16 | 177 | 7.02 | 0.017 | 0.60 | 1.35 | 0.25 |
| SM20-024 | DMEA Down Dip | 275.2 | 335.9 | 60.7 | 4.09 | 140 | 4.50 | 0.068 | 2.35 | 0.19 | 0.64 |
| SM20-025 | DMEA Down Dip | 282.6 | 327.3 | 44.8 | 3.50 | 120 | 3.40 | 0.096 | 3.28 | 0.33 | 0.22 |
| SM20-025 | DMEA Down Dip | 382.5 | 406.1 | 23.6 | 2.17 | 74 | 2.50 | 0.036 | 1.25 | 0.09 | 0.22 |
| SM20-025 | DMEA Down Dip | 579.8 | 643.7 | 63.9 | 5.07 | 173 | 0.36 | 0.063 | 2.17 | 0.12 | 0.43 |
| SM20-028 | Texas West | 199.0 | 234.6 | 35.6 | 7.52 | 258 | 0.13 | 0.007 | 0.25 | 2.52 | 0.10 |
| SM20-029 | Texas East | 202.2 | 206.6 | 4.4 | 6.71 | 230 | 19.65 | 0.111 | 3.81 | 0.25 | 3.95 |
| SM20-030 | Texas West | 54.9 | 82.1 | 27.2 | 3.66 | 125 | 0.26 | 0.003 | 0.10 | 1.13 | 0.02 |
| SM20-031 | Texas West | 136.1 | 140.6 | 4.5 | 8.98 | 307 | 2.21 | 0.012 | 0.40 | 1.57 | 1.09 |
| SM20-032 | Texas West | 63.1 | 80.3 | 17.2 | 2.48 | 85 | 0.03 | 0.001 | 0.04 | 0.87 | 0.02 |
| SM20-033 | Texas West | 110.8 | 119.5 | 8.7 | 7.19 | 246 | 0.15 | 0.011 | 0.36 | 2.70 | 0.04 |
| SM20-034 | Texas West | 104.5 | 149.2 | 44.7 | 3.17 | 109 | 0.58 | 0.002 | 0.07 | 1.07 | 0.04 |
| SM20-034 | Texas West | 190.2 | 199.0 | 8.8 | 2.74 | 94 | 2.19 | 0.034 | 1.14 | 0.06 | 0.66 |
| SM20-036 | Texas West | 112.4 | 143.7 | 31.3 | 9.25 | 317 | 2.15 | 0.007 | 0.25 | 0.99 | 0.39 |
| SM20-037 | Texas West | 110.8 | 135.5 | 24.8 | 3.22 | 110 | 0.08 | 0.007 | 0.25 | 1.04 | 0.02 |
| SM20-037 | Texas West | 139.5 | 142.3 | 2.9 | 4.94 | 169 | 1.75 | 0.178 | 6.10 | 0.10 | 1.19 |
| SM20-037 | Texas West | 162.5 | 167.6 | 5.1 | 10.16 | 348 | 0.07 | 0.009 | 0.29 | 0.91 | 0.29 |
| SM20-038 | Texas West | 106.0 | 131.0 | 25.0 | 8.16 | 279 | 0.55 | 0.021 | 0.74 | 1.63 | 0.86 |
| SM20-039 | Texas East | 215.8 | 236.5 | 20.8 | 4.60 | 158 | 6.96 | 0.100 | 3.42 | 0.23 | 2.08 |
| SM20-041 | Texas West | 63.7 | 73.9 | 10.2 | 5.18 | 177 | 0.04 | 0.002 | 0.09 | 1.29 | 0.07 |
| SM20-041 | Texas West | 104.2 | 109.2 | 5.0 | 4.95 | 170 | 1.99 | 0.069 | 2.37 | 0.44 | 0.91 |
| SM20-042 | Texas West | 59.0 | 65.2 | 6.2 | 3.01 | 103 | 0.03 | 0.002 | 0.08 | 1.92 | 0.01 |
| SM20-042 | Texas West | 78.1 | 84.0 | 5.9 | 3.33 | 114 | 0.10 | 0.002 | 0.08 | 1.06 | 0.03 |
| SM20-043 | Texas West | 131.0 | 154.0 | 23.0 | 5.30 | 182 | 0.29 | 0.007 | 0.22 | 2.84 | 0.01 |
| SM20-043 | Texas East | 185.5 | 200.9 | 15.5 | 4.92 | 169 | 6.19 | 0.060 | 2.07 | 0.39 | 0.71 |
| SM20-044 | Texas West | 57.0 | 81.3 | 24.3 | 3.18 | 109 | 0.09 | 0.002 | 0.08 | 1.43 | 0.02 |
| SM20-047 | Texas West | 55.0 | 68.0 | 13.0 | 2.12 | 73 | 0.03 | 0.002 | 0.05 | 1.19 | 0.00 |
| SM20-049 | Texas West | 106.9 | 120.7 | 13.8 | 2.61 | 89 | 0.18 | 0.002 | 0.07 | 1.82 | 0.01 |
| SM20-049 | Texas West | 147.3 | 151.3 | 4.0 | 4.03 | 138 | 0.07 | 0.004 | 0.14 | 2.42 | 0.01 |
| SM20-050 | Texas East | 151.9 | 159.4 | 7.6 | 4.25 | 146 | 0.10 | 0.005 | 0.18 | 2.90 | 0.01 |
| SM20-050 | Texas East | 162.9 | 190.3 | 27.4 | 5.69 | 195 | 4.17 | 0.118 | 4.05 | 0.54 | 0.78 |

## 10.2 Drilling Conducted by Previous Operators

Historic drilling carried out by previous operators of the South Mountain Project accounts for 228 of the total 280 drillholes included in the Project database. Prior to 2008, the property was drilled by four different companies. Historic drilling at the South Mountain Project is summarized in Table 10-4.

**Table 10-4 Drilling by Previous Operators**

| Year(s) | Company | Drilling Contractor | Type | Count | Total Depth (ft) |
|---|---|---|---|---|---|
| **1960's** | Potash Corp | unknown | Core | 10 | 1,293 |
| **1960's** | Potash Corp | unknown | Longhole | 23 | 2,078 |
| **1971** | Austral Oil | Longyear | Core | 8 | 7,551 |
| **1975-1985** | South Mountain Mining | South Mountain Mining | Longhole | 89 | 3,713 |
| **1975-1985** | South Mountain Mining | South Mountain Mining | Longhole | 6 | 428 |
| **1975-1985** | South Mountain Mining | South Mountain Mining | Longhole | 21 | 672 |
| **1975-1985** | South Mountain Mining | South Mountain Mining | Core EX/AX | 32 | 4,222 |
| **1975-1985** | South Mountain Mining | South Mountain Mining | Core BX | 1 | 375 |
| **1975-1985** | South Mountain Mining | South Mountain Mining | Air Track | 5 | 486 |
| **1984** | South Mountain Mining | South Mountain Mining | Core NC | 1 | 328 |
| **1986** | South Mountain Mining | South Mountain Mining | Core EX/AX | 5 | 542 |
| **2008** | Thunder Mountain Gold | REI | Core HQ | 2 | 2,084 |
| **2010** | Thunder Mountain Gold | Envirotech | RC | 7 | 5,065 |
| **2013** | Thunder Mountain Gold | KB | Core HQ | 12 | 7,589 |
| **2013** | Thunder Mountain Gold | KB | Core NQ | 6 | 1,862 |
| | | | **Totals:** | **228** | **38,288** |

In the 1960's, Potash Corporation drilled 10 core holes of unknown size totaling 1,293 feet and 24 longholes totaling 2,078 feet. All drilling was conducted across the length of the Laxey level in order to test the vertical continuity of mineralization. The drilling was oriented horizontally on either side of the drift across the thickness of the Laxey marble, and significant intercepts are considered generally representative of the true thickness of mineralization. Drilling was terminated when the hanging wall or footwall schist was encountered. Neither core nor longholes were surveyed down-the-hole. HRC knows of no other drilling, sampling, or recovery factors that might materially impact the accuracy of the drilling results. Table 10-5 summarizes significant intercepts from Potash Corporations drilling program.

**Table 10-5 Significant Intercepts from Potash Corporation's Drilling Campaign**

| Hole ID | Type | From | To | Length | Ag (opt) | Ag (ppm) | Zn % | Au (opt) | Au (ppm) | Cu % | Pb % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **PC-1** | Core | 25.0 | 45.0 | 20.0 | 0.6 | 21.6 | 2.95 | 0.010 | 0.342 | 0.20 | 0.00 |
| **PC-12** | Core | 44.7 | 49.0 | 4.3 | 6.0 | 205.5 | 1.67 | 0.010 | 0.342 | 1.29 | 0.00 |
| **PC-2** | Core | 13.0 | 28.0 | 15.0 | 2.9 | 98.3 | 0.03 | 0.020 | 0.685 | 1.03 | 0.00 |
| **PC-2A** | Core | 110.0 | 160.0 | 50.0 | 2.3 | 79.8 | 0.72 | 0.010 | 0.342 | 0.40 | 0.00 |
| **PC-3** | Core | 4.0 | 14.0 | 10.0 | 1.8 | 61.6 | 8.45 | 0.020 | 0.685 | 0.40 | 0.00 |
| **PC-6** | Core | 24.0 | 34.0 | 10.0 | 4.4 | 150.7 | 0 | 0.010 | 0.342 | 0.14 | 0.00 |
| **PC-6** | Core | 92.0 | 134.0 | 42.0 | 1.6 | 56.2 | 0 | 0.010 | 0.342 | 0.37 | 0.00 |
| **PC-7** | Core | 119.6 | 147.0 | 27.4 | 1.5 | 50.0 | 2.52 | 0.010 | 0.342 | 0.18 | 0.00 |
| **PC-9** | Core | 0.0 | 24.6 | 24.6 | 3.0 | 103.1 | 0.22 | 0.010 | 0.342 | 0.78 | 0.00 |
| **PLH-1** | Longhole | 0.0 | 12.0 | 12.0 | 2.6 | 87.3 | 5.45 | 0.020 | 0.685 | 0.36 | 0.00 |
| **PLH-3** | Longhole | 12.0 | 36.0 | 24.0 | 0.7 | 22.3 | 2.33 | 0.020 | 0.685 | 0.15 | 0.00 |
| **PLH-4** | Longhole | 6.0 | 54.0 | 48.0 | 3.2 | 107.9 | 2.66 | 0.010 | 0.342 | 1.53 | 0.00 |
| **PLH-5** | Longhole | 0.0 | 12.0 | 12.0 | 2.1 | 70.2 | 2.4 | 0.010 | 0.342 | 0.86 | 0.00 |
| **PLH-14** | Longhole | 9.0 | 45.0 | 36.0 | 0.8 | 27.4 | 3.48 | 0.010 | 0.342 | 0.29 | 0.00 |
| **PLH-18** | Longhole | 0.0 | 9.0 | 9.0 | 3.2 | 109.6 | 0 | 0.000 | 0.000 | 0.03 | 0.00 |
| **PLH-27** | Longhole | 0.0 | 18.0 | 18.0 | 2.2 | 75.3 | 2.55 | 0.010 | 0.342 | 0.33 | 0.00 |
| **PLH-32** | Longhole | 9.0 | 90.0 | 81.0 | 1.6 | 54.8 | 2.48 | 0.010 | 0.342 | 0.05 | 0.00 |
| **PLH-34** | Longhole | 100.0 | 137.0 | 37.0 | 3.0 | 102.7 | 9.06 | 0.020 | 0.685 | 0.12 | 0.00 |
| **PLH-36** | Longhole | 36.0 | 72.0 | 36.0 | 4.8 | 163.0 | 4.08 | 0.020 | 0.685 | 0.23 | 0.72 |

In 1971, Austral Oil drilled 8 core holes of unknown size totaling 7551 feet north of the Project. The drillholes were oriented at various directions and inclinations and were not surveyed down-the-hole. The Austral hole intervals were logged for geology but were not assayed for metal content.

In the period from 1975 to 1986, SMM drilled a total of 161 holes. Of these holes, 117 were longholes (blastholes) totaling 4,817 feet. Thirty-nine were core holes ranging in size from EX to HQ and totaling 5,467 feet. Only one core hole, SML-1, was surveyed down-the-hole. The remaining 5 holes were shallow air track holes, which were not assayed, totaling 486 feet. Table 10-6 summarizes significant intercepts from the SMM drilling programs. Orientation of the drillholes relative to the mineralized zones is variable, and as such sample lengths do not necessarily reflect the true thickness of mineralization. HRC knows of no other drilling, sampling, or recovery factors that might materially impact the accuracy of the drilling results.

**Table 10-6 Significant Intercepts from South Mountain Mining's Drilling Campaigns**

| Hole ID | Type | From | To | Length | Ag (opt) | Ag (ppm) | Zn % | Au (opt) | Au (ppm) | Cu % | Pb % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **84-G-1** | Core | 215.7 | 219.1 | 3.4 | 3.67 | 125.7 | 1.18 | 0.060 | 2.05 | 0.05 | 0.65 |
| **84-G-1** | Core | 246.0 | 254.0 | 8.0 | 1.04 | 35.6 | 3.38 | 0.040 | 1.37 | 0.03 | 0.17 |
| **S-25-1** | Core | 266.3 | 275.9 | 9.6 | 3.11 | 106.5 | 3.41 | 0.060 | 2.05 | 0.44 | 0.26 |
| **S-25-1** | Core | 293.4 | 303.5 | 10.1 | 5.44 | 186.3 | 6.74 | 0.020 | 0.68 | 2.67 | 0.01 |
| **S-25-5** | Core | 51.8 | 78.9 | 27.1 | 2.78 | 95.2 | 1.40 | 0.000 | 0.00 | 3.01 | 0.05 |
| **S-25-6** | Core | 59.7 | 63.6 | 3.9 | 4.04 | 138.4 | 0.40 | 0.000 | 0.00 | 2.29 | 0.00 |
| **S-25-7** | Core | 46.4 | 60.0 | 13.6 | 1.84 | 63.0 | 1.42 | 0.000 | 0.00 | 1.50 | 0.00 |
| **S-27-1** | Core | 50.0 | 52.6 | 2.6 | 4.35 | 149.0 | 0.35 | 0.010 | 0.34 | 1.70 | 0.02 |
| **S-27-2** | Core | 94.1 | 98.1 | 4.0 | 4.08 | 139.7 | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 |
| **SML-1** | Core | 239.0 | 245.0 | 6.0 | 4.40 | 150.7 | 1.20 | 0.000 | 0.00 | 2.00 | 0.00 |
| **ST-1** | Core | 21.0 | 27.0 | 6.0 | 3.13 | 107.2 | 0.21 | 0.020 | 0.68 | 0.14 | 0.18 |
| **ST-2** | Core | 12.2 | 25.3 | 13.1 | 14.85 | 508.6 | 0.03 | 0.020 | 0.68 | 1.11 | 1.01 |
| **ST-9** | Core | 7.8 | 10.0 | 2.2 | 51.45 | 1762.0 | 0.43 | 0.030 | 1.03 | 0.11 | 1.10 |
| **T28R-7** | Core | 27.1 | 35.2 | 8.1 | 3.56 | 121.9 | 2.90 | 0.150 | 5.14 | 0.20 | 0.56 |
| **T28R-7** | Core | 38.5 | 52.5 | 14.0 | 14.49 | 496.2 | 18.94 | 0.270 | 9.25 | 0.22 | 9.64 |
| **T28R-9** | Core | 27.5 | 38.6 | 11.1 | 2.67 | 91.4 | 2.62 | 0.390 | 13.36 | 0.03 | 0.98 |
| **T29-86-1** | Core | 4.0 | 10.6 | 6.6 | 14.38 | 492.5 | 12.90 | 0.140 | 4.79 | 0.28 | 6.36 |
| **T29-86-2** | Core | 4.4 | 12.6 | 8.2 | 5.86 | 200.7 | 4.62 | 0.160 | 5.48 | 0.15 | 2.36 |
| **T29-86-3** | Core | 4.4 | 15.6 | 11.2 | 10.09 | 345.5 | 13.79 | 0.150 | 5.14 | 0.28 | 4.34 |
| **T29-86-4** | Core | 4.0 | 20.3 | 16.3 | 2.04 | 69.9 | 8.83 | 0.160 | 5.48 | 0.09 | 1.30 |
| **T29-86-5** | Core | 4.0 | 14.7 | 10.7 | 9.92 | 339.7 | 14.63 | 0.160 | 5.48 | 0.23 | 5.21 |
| **T29-86-5** | Core | 65.3 | 72.3 | 7.0 | 10.75 | 368.2 | 2.88 | 0.100 | 3.42 | 0.89 | 1.64 |
| **3487** | Longhole | 0.0 | 16.0 | 16.0 | 3.05 | 104.5 | 10.85 | 0.000 | 0.00 | 0.23 | 0.50 |
| **3489** | Longhole | 0.0 | 24.0 | 24.0 | 4.99 | 170.9 | 26.98 | 0.000 | 0.00 | 0.18 | 0.43 |
| **3634** | Longhole | 0.0 | 20.0 | 20.0 | 3.24 | 111.0 | 0.02 | 0.000 | 0.00 | 0.29 | 0.06 |
| **3635** | Longhole | 4.0 | 16.0 | 12.0 | 2.51 | 86.0 | 1.99 | 0.000 | 0.00 | 1.45 | 0.00 |
| **3636** | Longhole | 0.0 | 30.0 | 30.0 | 2.11 | 72.3 | 0.02 | 0.000 | 0.00 | 0.26 | 0.07 |
| **3637** | Longhole | 0.0 | 8.0 | 8.0 | 9.83 | 336.6 | 0.07 | 0.000 | 0.00 | 4.01 | 0.06 |
| **3637** | Longhole | 20.0 | 40.0 | 20.0 | 8.54 | 292.5 | 0.15 | 0.000 | 0.00 | 1.16 | 0.16 |
| **3640** | Longhole | 0.0 | 12.0 | 12.0 | 17.03 | 583.2 | 0.15 | 0.000 | 0.00 | 7.33 | 0.12 |
| **3641** | Longhole | 0.0 | 12.0 | 12.0 | 3.06 | 104.8 | 0.23 | 0.000 | 0.00 | 1.82 | 0.00 |
| **3643** | Longhole | 0.0 | 24.0 | 24.0 | 5.61 | 192.1 | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 |
| **3651** | Longhole | 16.0 | 40.0 | 24.0 | 2.91 | 99.7 | 0.17 | 0.000 | 0.00 | 0.45 | 0.07 |
| **3652** | Longhole | 20.0 | 44.0 | 24.0 | 2.32 | 79.5 | 0.40 | 0.000 | 0.00 | 0.73 | 0.20 |
| **LH-8** | Longhole | 0.0 | 27.0 | 27.0 | 2.24 | 76.7 | 2.80 | 0.010 | 0.34 | 0.91 | 0.00 |
| **N1902** | Longhole | 8.0 | 20.0 | 12.0 | 5.01 | 171.6 | 3.82 | 0.030 | 1.03 | 0.97 | 0.22 |
| **N1904** | Longhole | 0.0 | 8.0 | 8.0 | 2.16 | 74.0 | 2.18 | 0.000 | 0.00 | 0.52 | 0.27 |
| **N1905** | Longhole | 0.0 | 40.0 | 40.0 | 3.13 | 107.2 | 2.55 | 0.010 | 0.34 | 0.59 | 0.58 |
| **N1906** | Longhole | 0.0 | 24.0 | 24.0 | 1.94 | 66.4 | 2.17 | 0.010 | 0.34 | 0.54 | 0.05 |
| **N1908** | Longhole | 8.0 | 20.0 | 12.0 | 1.45 | 49.7 | 1.91 | 0.000 | 0.00 | 0.32 | 0.00 |
| **O2119** | Longhole | 0.0 | 20.0 | 20.0 | 2.87 | 98.3 | 8.33 | 0.000 | 0.00 | 0.96 | 0.11 |
| **O2120** | Longhole | 4.0 | 12.0 | 8.0 | 5.80 | 198.6 | 1.51 | 0.000 | 0.00 | 0.43 | 0.00 |
| **O2121** | Longhole | 44.0 | 60.0 | 16.0 | 3.62 | 124.0 | 10.70 | 0.000 | 0.00 | 1.15 | 0.06 |
| **P2123** | Longhole | 8.0 | 32.0 | 24.0 | 1.73 | 59.2 | 16.35 | 0.200 | 6.85 | 0.21 | 0.35 |
| **P2201** | Longhole | 8.0 | 20.0 | 12.0 | 3.35 | 114.7 | 25.25 | 0.060 | 2.05 | 0.28 | 0.56 |
| **P2203** | Longhole | 0.0 | 44.0 | 44.0 | 4.33 | 148.3 | 11.63 | 0.090 | 3.08 | 0.28 | 0.43 |
| **P2204** | Longhole | 0.0 | 24.0 | 24.0 | 3.69 | 126.4 | 16.48 | 0.050 | 1.71 | 0.38 | 0.43 |
| **P2224** | Longhole | 0.0 | 52.0 | 52.0 | 2.05 | 70.2 | 13.40 | 0.070 | 2.40 | 0.12 | 0.51 |

| Hole ID | Type | From | To | Length | Ag (opt) | Ag (ppm) | Zn % | Au (opt) | Au (ppm) | Cu % | Pb % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P2225R** | Longhole | 0.0 | 8.0 | 8.0 | 3.10 | 106.2 | 15.85 | 0.090 | 3.08 | 0.16 | 0.17 |
| **P2226** | Longhole | 0.0 | 16.0 | 16.0 | 3.90 | 133.6 | 22.43 | 0.110 | 3.77 | 0.36 | 0.35 |
| **P2227** | Longhole | 0.0 | 60.0 | 60.0 | 4.90 | 167.8 | 12.94 | 0.080 | 2.74 | 0.36 | 0.30 |
| **Q2307** | Longhole | 4.0 | 40.0 | 36.0 | 3.16 | 108.2 | 34.92 | 0.080 | 2.74 | 0.24 | 0.54 |
| **Q2333** | Longhole | 28.0 | 40.0 | 12.0 | 1.57 | 53.8 | 5.62 | 0.020 | 0.68 | 0.07 | 0.15 |
| **Q2335A** | Longhole | 40.0 | 52.0 | 12.0 | 1.64 | 56.2 | 4.96 | 0.000 | 0.00 | 1.01 | 0.00 |
| **Q2335R** | Longhole | 4.0 | 16.0 | 12.0 | 2.12 | 72.6 | 2.26 | 0.040 | 1.37 | 0.47 | 0.12 |
| **S2655** | Longhole | 0.0 | 28.0 | 28.0 | 3.89 | 133.2 | 0.40 | 0.000 | 0.00 | 1.05 | 0.00 |
| **S2656D** | Longhole | 4.0 | 12.0 | 8.0 | 3.21 | 109.9 | 1.24 | 0.010 | 0.34 | 1.22 | 0.00 |
| **S2757** | Longhole | 0.0 | 36.0 | 36.0 | 2.08 | 71.2 | 0.02 | 0.000 | 0.00 | 0.59 | 0.00 |
| **S2757A** | Longhole | 0.0 | 12.0 | 12.0 | 5.58 | 191.1 | 0.61 | 0.010 | 0.34 | 1.00 | 0.02 |
| **S2758** | Longhole | 0.0 | 8.0 | 8.0 | 1.72 | 58.9 | 0.03 | 0.000 | 0.00 | 0.77 | 0.00 |
| **T2759** | Longhole | 4.0 | 24.0 | 20.0 | 2.36 | 80.8 | 1.15 | 0.000 | 0.00 | 1.13 | 0.00 |
| **T2760** | Longhole | 0.0 | 16.0 | 16.0 | 2.50 | 85.6 | 0.04 | 0.000 | 0.00 | 0.75 | 0.00 |
| **T2801** | Longhole | 12.0 | 28.0 | 16.0 | 6.33 | 216.8 | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 |

84-G-1 was a core hole drilled from surface near the Laxey level adit. This core hole was oriented south-southwest and inclined 70 degrees down the dip of the Laxey marble.

SML-1 was a core hole drilled from the Laxey level near the Texas ore zone. This core hole was oriented north-northwest and inclined 50 degrees down the dip and along strike of the Laxey marble.

The S- series core holes were drilled off the Sonneman level in between the DMEA and Texas mineralized zones. Drilling was predominantly oriented along strike of the Laxey marble at various inclinations.

The ST series core holes were drilled off the Sonneman drift in the DMEA and Texas mineralized zones. The drilling was oriented horizontally on either rib of the drift across the thickness of the Laxey marble. Drilling was terminated when the hanging wall or footwall schist was encountered.

The T28 series core holes were drilled off of a raise between the Laxey and Sonneman levels in the Texas massive sulfide zone. The drilling was oriented horizontally, fanning out between 190- and 345-degrees azimuth along strike and across thickness of the Laxey marble. The approximately 125-ft long raise was developed from the Sonneman level in the footwall schist adjacent to the Laxey marble.

The T29 series core holes were drilled off the Sonneman level in the Texas mineralized zone. The drilling was inclined between -40 and -70 degrees in multiple directions along the dip of the Laxey marble.

The 3000 series longholes were drilled off the Sonneman drift in the DMEA and Texas zones. The drilling was oriented horizontally on either rib of the drift across the thickness of the Laxey marble. Drilling was terminated when the hanging wall or footwall schist was encountered.

The LH series longholes were drilled off the Laxey level in the DMEA massive sulfide zone. The drilling was oriented horizontally on either rib of the drift across the thickness of the Laxey marble. Drilling was terminated when the hanging wall or footwall schist was encountered.

The N series, O series, P series, Q series, and R series longholes were drilled off the Sonneman level in the DMEA ore zone. The drilling was oriented horizontally and in multiple directions across the thickness of the Laxey marble. Drilling was terminated when the hanging wall or footwall schist was encountered.

The S series and T series longholes were drilled off the Sonneman level in the Texas ore zone. The drilling was oriented horizontally on either rib of the drift across the thickness of the Laxey marble. Drilling was terminated when the hanging wall or footwall schist was encountered.

The ATDH series vertical air track drillholes are located northeast of the Laxey marble, except ATDH-14, which is southwest of the Laxey marble, and were drilled from surface. No significant results are discussed from these drillholes.

### 10.2.1 THMG Drilling Exploration

Between 2008 and 2018, prior to BMET's involvement, THMG drilled 27 holes for a total of 16,600 ft. Twenty of the holes are diamond core holes, and the remaining seven are RC. THMG drillhole collar locations were surveyed by THMG's Project Manager, Mike Smith, a licensed land surveyor and registered Professional Engineer. The drill collars were located as close to the coordinate as possible with the direction and angle corresponding to the survey. THMG's core drilling is largely oriented perpendicular to the mineralized zones, and as such associated significant intercepts are considered representative of the true thickness of mineralization. Orientation of the RC holes with respect to the mineralized zones is variable, and associated sample lengths do not necessarily represent the true thickness of mineralization. HRC knows of no other drilling, sampling, or recovery factors that might materially impact the accuracy of the drilling results. Table 10-7 summarizes significant intercepts encountered by the drilling.

**Table 10-7 Significant Intercepts from THMG Drilling Campaigns**

| Hole ID | Type | From | To | Length | Ag (opt) | Ag (ppm) | Zn % | Au (opt) | Au (ppm) | Cu % | Pb % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **DMEA2** | Core | 657.0 | 669.5 | 12.5 | 1.65 | 56.5 | 12.2 | 0.070 | 2.40 | 0.18 | 0.31 |
| **DMEA2** | Core | 688.0 | 693.5 | 5.5 | 3.25 | 111.3 | 4.9 | 0.200 | 6.85 | 0.24 | 0.19 |
| **LO-06** | RC | 760.0 | 790.0 | 30.0 | 1.86 | 63.7 | 3.5 | 0.040 | 1.37 | 0.21 | 0.16 |
| **LO-07** | RC | 600.0 | 625.0 | 25.0 | 1.15 | 39.4 | 8.6 | 0.000 | 0.00 | 0.04 | 0.09 |
| **TX13-01** | Core | 295.0 | 326.0 | 31.0 | 4.69 | 160.6 | 4.0 | 0.010 | 0.34 | 0.58 | 0.15 |
| **TX13-02** | Core | 308.0 | 339.0 | 31.0 | 4.55 | 155.8 | 4.3 | 0.020 | 0.68 | 0.29 | 1.46 |
| **TX13-03** | Core | 288.0 | 300.0 | 12.0 | 9.01 | 308.6 | 14.1 | 0.010 | 0.34 | 1.43 | 0.35 |
| **TX13-03** | Core | 318.0 | 339.0 | 21.0 | 5.54 | 189.7 | 7.2 | 0.000 | 0.00 | 0.86 | 0.13 |
| **TX13-05** | Core | 518.0 | 535.0 | 17.0 | 8.06 | 276.0 | 3.5 | 0.000 | 0.00 | 1.81 | 0.20 |
| **TX13-06** | Core | 482.0 | 505.0 | 23.0 | 11.94 | 408.9 | 4.1 | 0.010 | 0.34 | 2.90 | 0.92 |
| **TX13-07** | Core | 506.0 | 516.0 | 10.0 | 3.55 | 121.6 | 0.1 | 0.000 | 0.00 | 0.03 | 0.07 |
| **DMEA13-08** | Core | 503.0 | 518.0 | 15.0 | 4.39 | 150.3 | 21.1 | 0.120 | 4.11 | 0.34 | 0.31 |
| **DMEA13-09** | Core | 503.0 | 518.0 | 15.0 | 2.67 | 91.4 | 20.1 | 0.220 | 7.53 | 0.27 | 0.35 |
| **DMEA13-10** | Core | 496.0 | 522.0 | 26.0 | 3.04 | 104.1 | 2.6 | 0.010 | 0.34 | 0.58 | 0.05 |
| **LX13-11** | Core | 516.0 | 536.0 | 20.0 | 6.56 | 224.7 | 10.9 | 0.010 | 0.34 | 0.11 | 0.27 |
| **DM2UC13-13** | Core | 162.0 | 184.0 | 22.0 | 4.72 | 161.6 | 12.3 | 0.070 | 2.40 | 0.48 | 1.56 |
| **DM2UC13-14** | Core | 163.5 | 256.5 | 93.0 | 12.75 | 436.6 | 13.8 | 0.080 | 2.74 | 0.45 | 7.07 |
| **DM2UC13-14** | Core | 301.0 | 331.0 | 30.0 | 3.17 | 108.6 | 14.5 | 0.140 | 4.79 | 0.29 | 0.67 |
| **DM2UC13-15** | Core | 98.0 | 113.0 | 15.0 | 5.01 | 171.6 | 5.6 | 0.010 | 0.34 | 1.42 | 0.11 |
| **DM2UC13-16** | Core | 85.0 | 111.0 | 26.0 | 5.39 | 184.6 | 3.9 | 0.010 | 0.34 | 1.81 | 0.34 |
| **DM2UC13-17** | Core | 210.0 | 252.0 | 42.0 | 2.98 | 102.1 | 17.9 | 0.130 | 4.45 | 0.18 | 0.47 |
| **DM2UC13-17** | Core | 277.0 | 313.5 | 36.5 | 2.45 | 83.9 | 9.1 | 0.030 | 1.03 | 0.85 | 0.22 |

THMG completed two core holes in 2008, TX-1 and DMEA2. TX-1 was drilled from surface, oriented south-southwest and inclined -60 degrees targeting Texas ore zone mineralization. The drillhole was surveyed down-the-hole with a single shot camera every 100ft. The drillhole did not intersect any mineralization, because the drillhole orientation followed the Laxey marble down dip. DMEA2 was drilled from surface, and oriented vertically. The drillhole was surveyed down-the-hole every 10ft using a Deviflex multishot survey tool. The drillhole intersected DMEA zone mineralization at depth.

In 2010, THMG completed seven RC drillholes with the prefix LO. The drillholes were vertically oriented and not surveyed down-the-hole. LO-01 through LO-05 targeted the intrusive breccia defined by geologic mapping and rock chip samples across a strike length of 4,440ft. These drillholes were assayed for gold only and intersected several low-grade intercepts (Table 10-8). Although these results are encouraging, more drilling is required before a mineral resource can be estimated from these drillholes.

**Table 10-8 Significant Intercepts from THMG Drilling Campaign - Intrusive Breccia**

| Hole ID | Type | From | To | Length | Au (opt) | Au (ppm) |
|---|---|---|---|---|---|---|
| **LO-01** | RC | 290.0 | 355.0 | 65.0 | 0.012 | 0.41 |
| **LO-02** | RC | 675.0 | 685.0 | 10.0 | 0.011 | 0.38 |
| **LO-03** | RC | 45.0 | 80.0 | 35.0 | 0.012 | 0.41 |
| **LO-03** | RC | 145.0 | 205.0 | 60.0 | 0.010 | 0.34 |
| **LO-03** | RC | 235.0 | 280.0 | 45.0 | 0.011 | 0.38 |
| **LO-03** | RC | 460.0 | 470.0 | 10.0 | 0.014 | 0.48 |
| **LO-03** | RC | 570.0 | 580.0 | 10.0 | 0.007 | 0.24 |
| **LO-03** | RC | 680.0 | 690.0 | 10.0 | 0.019 | 0.65 |
| **LO-04** | RC | 25.0 | 35.0 | 10.0 | 0.014 | 0.48 |
| **LO-05** | RC | 290.0 | 345.0 | 55.0 | 0.008 | 0.27 |
| **LO-05** | RC | 400.0 | 410.0 | 10.0 | 0.021 | 0.72 |
| **LO-05** | RC | 470.0 | 485.0 | 15.0 | 0.008 | 0.27 |
| **LO-05** | RC | 600.0 | 610.0 | 10.0 | 0.017 | 0.58 |

The LO-06 and LO-07 tested DMEA and Laxey ore zone mineralization, respectively, at depth below the Sonneman. Both drillholes intersected mineralization, with LO-06 intercepting the DMEA2 sulfide zone downdip of the DMEA2 drill hole by about 110 feet, extending the depth of known mineralization to more than 450 feet below the Sonneman level.

The 2013 drilling program consisted of 12 drillholes targeting three ore zones from surface and surveyed down-the-hole every 10ft using a Deviflex multishot survey tool. TX13-01 through TX13-03 were oriented northeast and inclined between -55 and -65 degrees. They were successful in extending mineralization 220ft above the Laxey level. TX13-04 through TX13-07 targeted Texas ore zone mineralization below the Laxey level. These drillholes were oriented southwest and inclined between -60 and -70 degrees. This drilling orientation is not preferred for intersecting mineralization across the true thickness of the deposit, however, 3 of the 4 drillholes did intersect massive sulfide mineralization associated with the Texas zone. DMEA13-08 through DMEA13-10 targeted DMEA zone mineralization between the Laxey and Sonneman levels. DMEA13-08 and DMEA13-09 were oriented northwest and inclined at -66 degrees. DMEA13-10 was oriented east and inclined at -45 degrees. All three drillholes were successful in intersecting mineralization in the DMEA zone.

LX13-11 and LX13-12 were oriented northeast and inclined at -60 and -75 degrees respectively. These followed up on the results from LO-07 targeting Laxey zone mineralization at depth and were successful. TX13-01 through TX13-07 targeted the Texas zone.

The 2013 drilling also included 6 underground core drillholes with the prefix DM2UC13. They were drilled off the Sonneman level (Muck Bay 5) in order to determine the geometry of the DMEA mineralized zone as it passes through the Sonneman level to the intervals intersected at depth in DMEA2 and LO-06. The drilling was oriented 133 degrees azimuth along strike of the Laxey marble and inclined in a fan from -12 to -47 degrees in 5-degree increments. The drilling was not surveyed down-the-hole. The program was successful in defining the geometry and confirming the grades of the DMEA massive sulfide zone.

# 11. SAMPLE PREPARATION, ANALYSIS AND SECURITY

## 11.1 2008 - 2009 Sample Preparation and Analysis

All rock chip samples reported during the 2008 and 2009 field programs were collected by Mr. Pete Parsley, Vice President of Exploration for THMG, who kept the samples personally secured prior to shipment to the laboratory. Approximately two to seven pounds of rock chips were collected from each sample site. The samples were sealed in cloth sacks with a sample tag bearing THMG's sample designation.

Drill core collected during the 2008 ad 2009 drilling programs was transported to the THMG Garden City, Idaho office for logging and sampling. Sample intervals ranging in length from 1 to 3.7 ft were selected based on changes in lithology and/or mineralogy. The selected sample intervals were split by THMG staff using a diamond saw. One half of each core sample was retained for logging, and the other prepared for shipment to the laboratory for assay.

Sample preparation for all of the THMG rock chip and core samples was completed by ALS Chemex at their preparation facility in Elko, Nevada, and analysis was performed by ALS Chemex in Vancouver, BC. ALS is an ISO/IEC accredited laboratory and conforms with requirements of CAN-P-1579 and CAN-P-4E of the Standards Council of Canada. The samples were analyzed for gold using ALS method codes AA23 and GRA21, and for all other elements using ALS method code ME-MS41.

## 11.2 2010 – 2014 Sample Preparation and Analysis

Samples collected during the 2010 through 2014 field seasons include drill core and channel samples. Drill core and channel samples were collected on-site and transported to the Jordan Valley field office by THMG personnel. Core was logged and split in Jordan Valley, and samples selected for assay were placed in appropriately labeled cloth sacks in preparation for shipment to the laboratory. All samples were delivered to ALS Chemex in either Elko or Reno by THMG staff.

Sample preparation methods carried out by ALS include:

- Log received sample weight;
- Crush entire sample to 70% passing -6 mm;
- Fine crush to 70% passing -2 mm;
- Split sample using riffle splitter;
- Pulverize split to 85% < 75 microns; and,
- Send samples to Laboratory in Vancouver, BC for final analysis.

ALS employed the following analytical procedures for the 2010 – 2014 samples from the South Mountain Project:

- ME-$ICP_{61}$ (four acid digestion-33 element ICP-AES finish)-all samples;
- ME-$OG_{46}$ (four acid digestion-ICP-AES finish) – Cu, Pb, Zn >10,000 ppm;
- AG-$GRA_{21}$(fire assay-gravimetric finish)- Ag,>100 ppm; and,
- AU-$AA_{23}$ (fire assay-AAS finish).

### 11.2.1 QA/QC

THMG submitted blank samples with each set of drillhole samples, and one set of duplicate samples for a single hole with unusually high massive sulfide grades (DM2UC13-14). No standard reference samples were submitted for analysis. A total of 14 blanks were submitted.

#### *11.2.1.1 Blank Sample Analysis*

A total of 14 blanks were submitted as pulps in order to monitor the integrity of laboratory analytical procedures. A blank analysis ≥5 times the laboratory detection limit is considered a blank failure. Detection limits for gold and silver are this 0.005 ppm and 0.5 ppm, respectively. Detection limits for Cu, Pb, and Zn are 1, 2, and 2 ppm respectively. Blank analytical results indicate no failures for gold, a single failure for silver, and a single failure for zinc. Results of blank analysis for both lead and copper indicate either consistent contamination, or, more likely, a blank which isn't actually blank for lead and copper. Blank analytical results are presented in Figures 11-1 through 11-5.

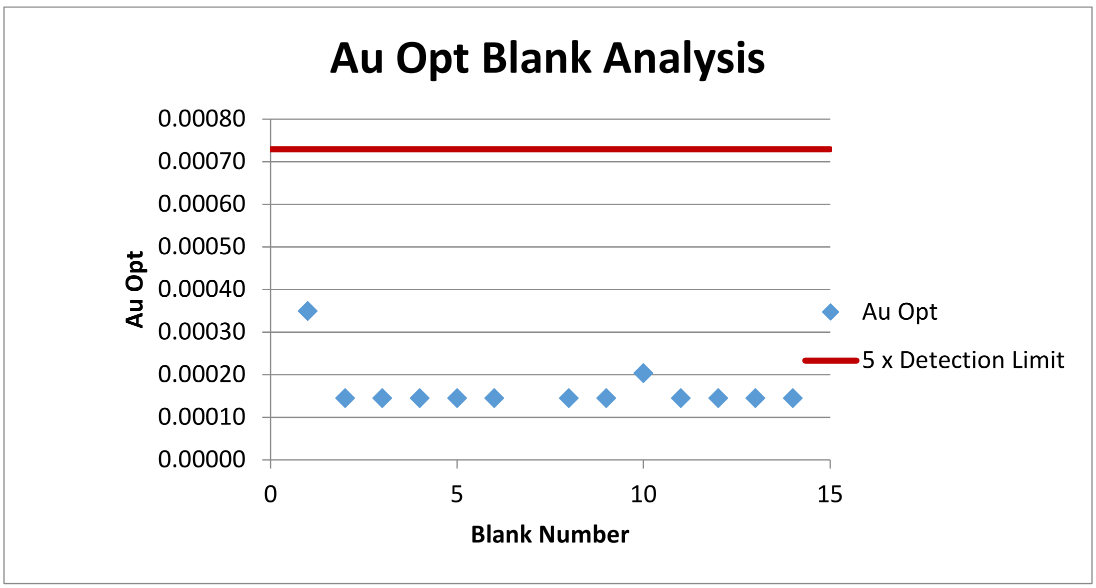



**Figure 11-1 Blank Sample Analytical Results - Au**

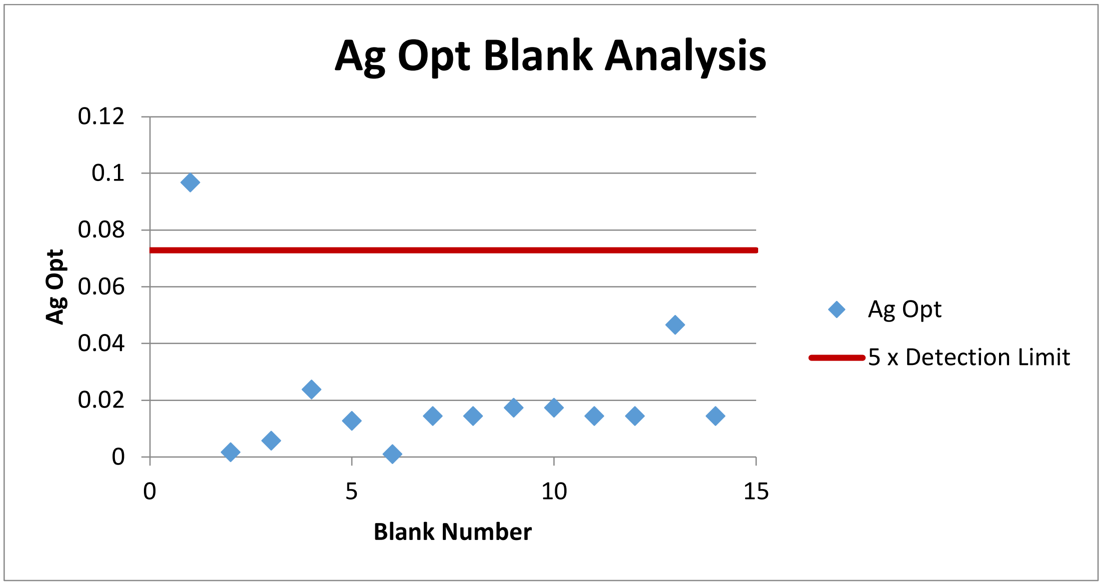



**Figure 11-2 Blank Sample Analytical Results - Ag**

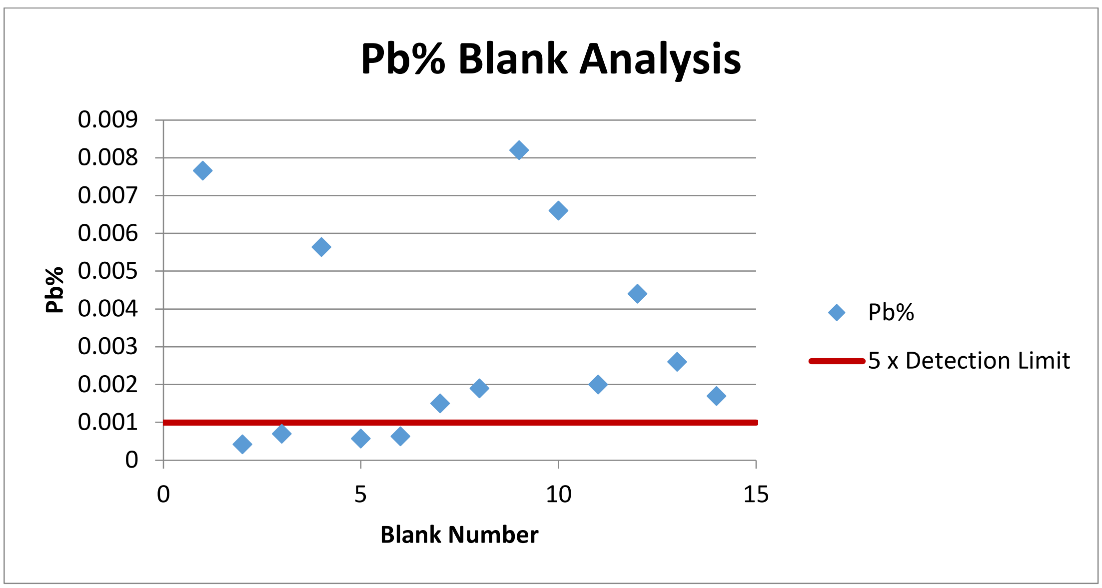



**Figure 11-3 Blank Sample Analytical Results - Pb**

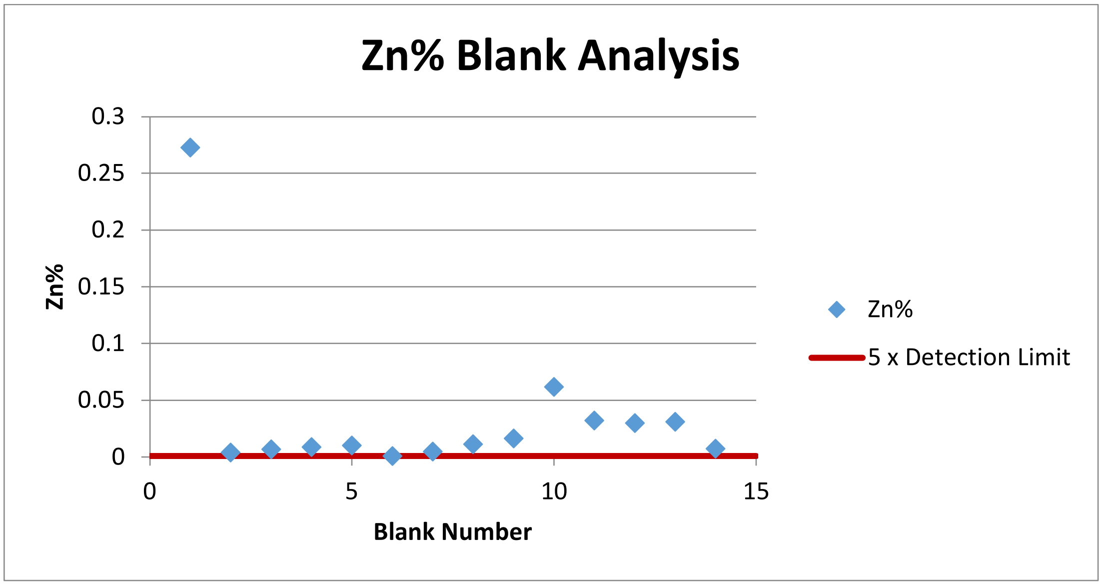



**Figure 11-4 Blank Sample Analytical Results - Zn**

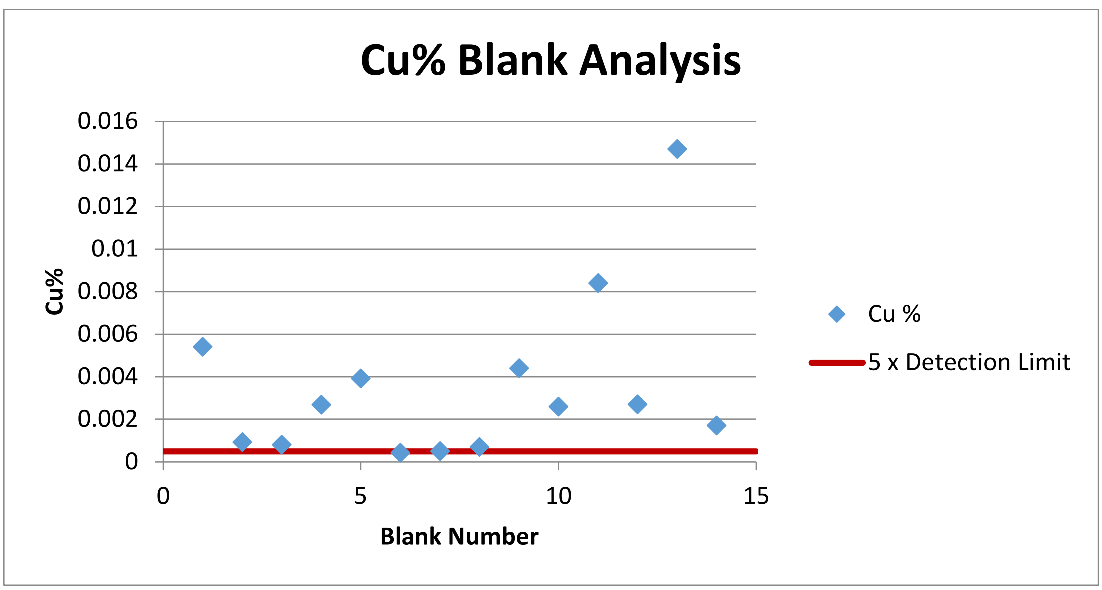



**Figure 11-5 Blank Sample Analytical Results - Cu**

### *11.2.1.2* *Duplicate Sample Analysis*

To date, THMG has not regularly submitted duplicate samples as part of an overall QA/QC program. The results from one exceptionally high-grade hole were questioned, and a set of duplicate assays were obtained from crushed drill core rejects of the original samples for that hole. The following two paragraphs are excerpts from an internal memo that describes this procedure:

*The original ALS Analysis results for Drill hole DM2UC13-14 (ALS #RE 13229714) contained exceptionally high lead assays that ranged up to 20% lead. These results are much higher than any other lead results received in the 2013 drill core program and were a cause for concern. It was surmised that there could have been an analytical error or a decimal point error in the original analysis. Therefore, it was decided to reanalyze the string of eleven high samples using sample material from the original crushed drill core rejects stored at ALS facilities, Reno, Nevada.*

*Reject sample material was collected from sample numbers #261616 to 261626 and subjected to the same sample preparation and analytical procedures as the original samples. This included initial analysis using ME-ICP61 for most elements and Au-AA23 for gold analysis. All over limit base metal results were analyzed by a higher-grade reporting procedure ME-ICP62. All over limit precious metals were analyzed by Au-Ag GRA21 procedures.*

Results of the duplicate analysis are presented in Figures 11-6 through 11-10. The results show that there are no significantly higher values in the original analysis for Pb or any of the other metals of interest. It should be noted that the original assay values were retained in the master drillhole database and are those used for modeling purposes.

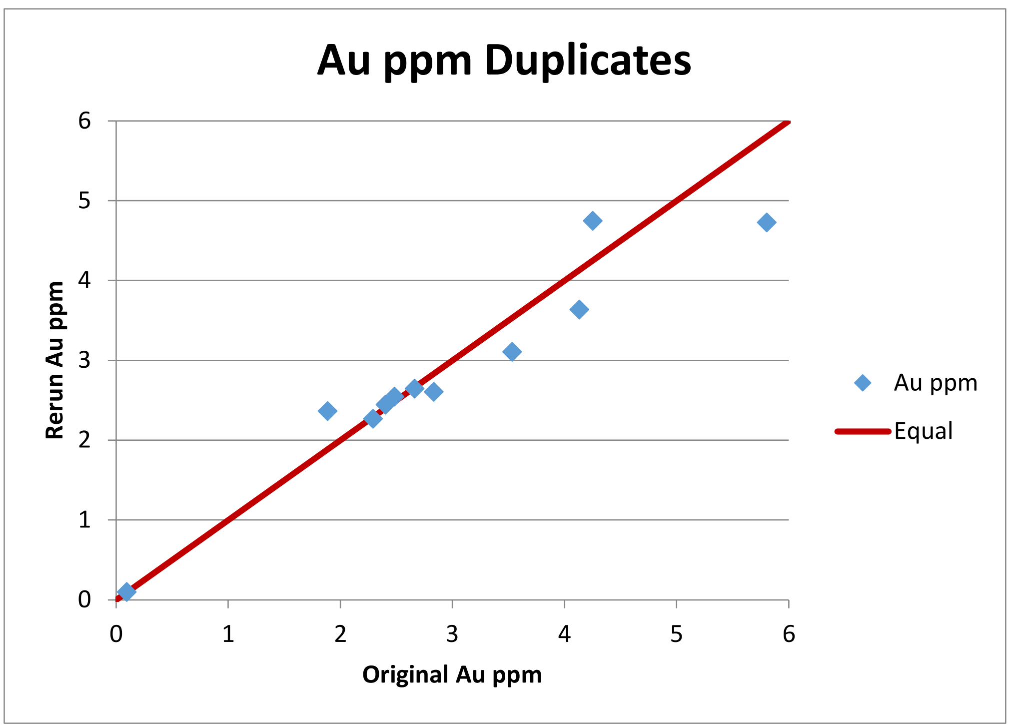



**Figure 11-6 Duplicate Sample Analysis - Au**

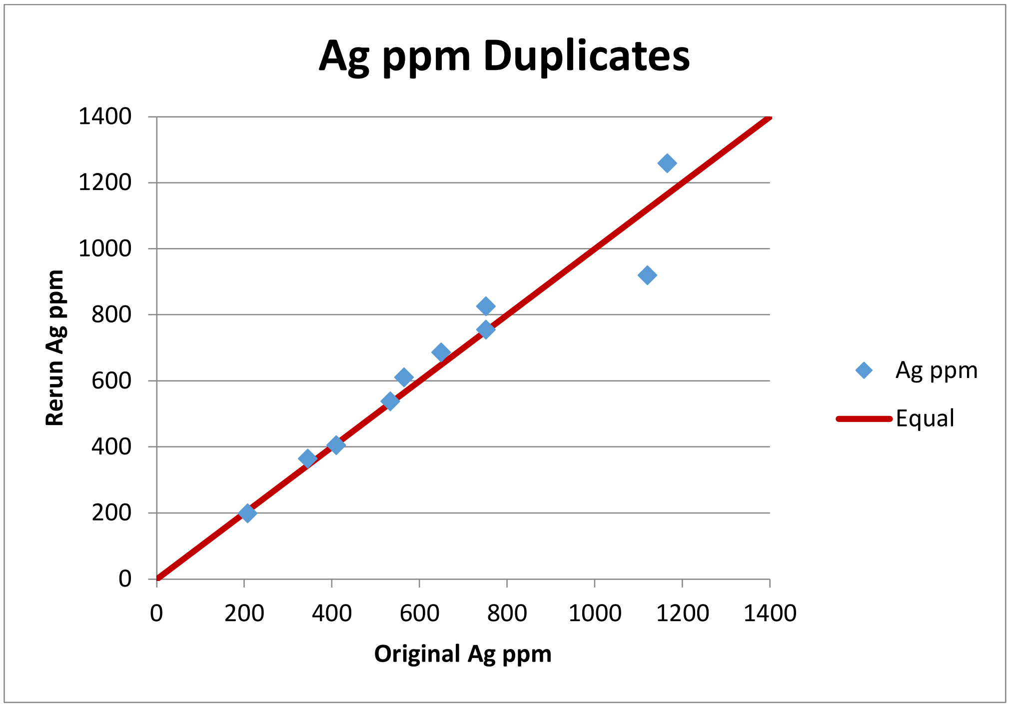



**Figure 11-7 Duplicate Sample Analysis - Ag**

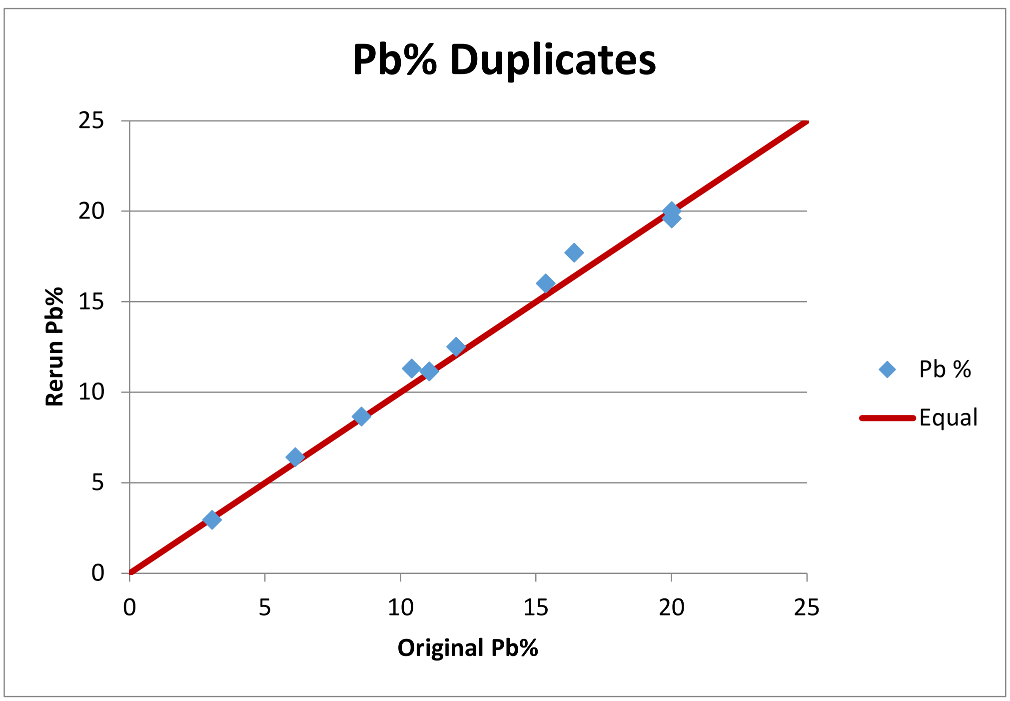



**Figure 11-8 Duplicate Sample Analysis - Pb**

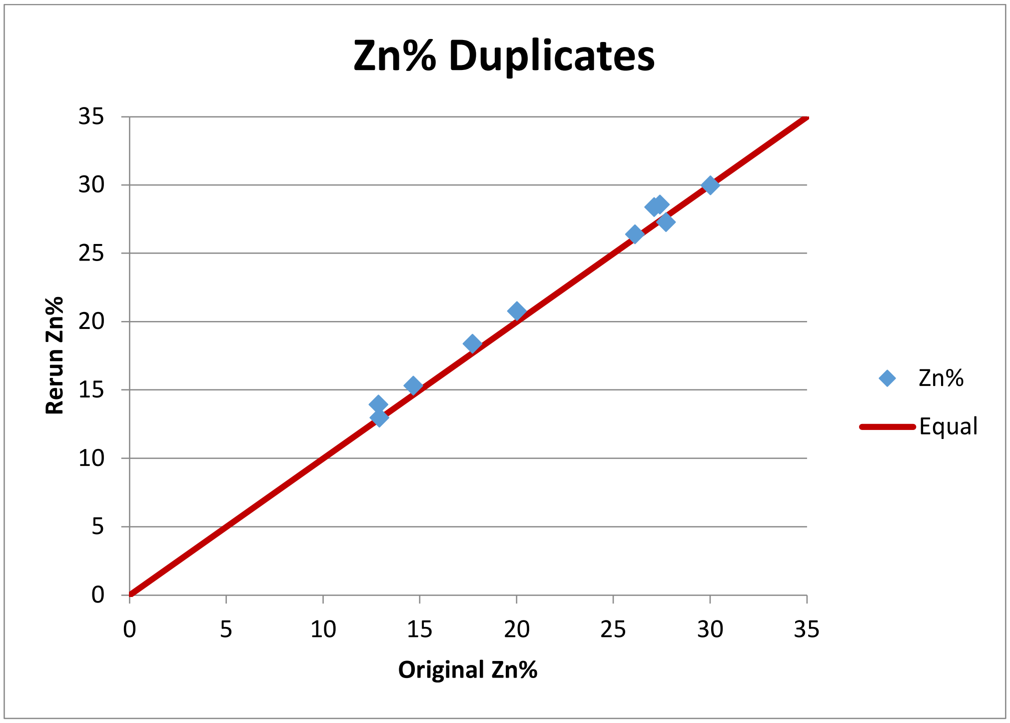



**Figure 11-9 Duplicate Sample Analysis - Zn**

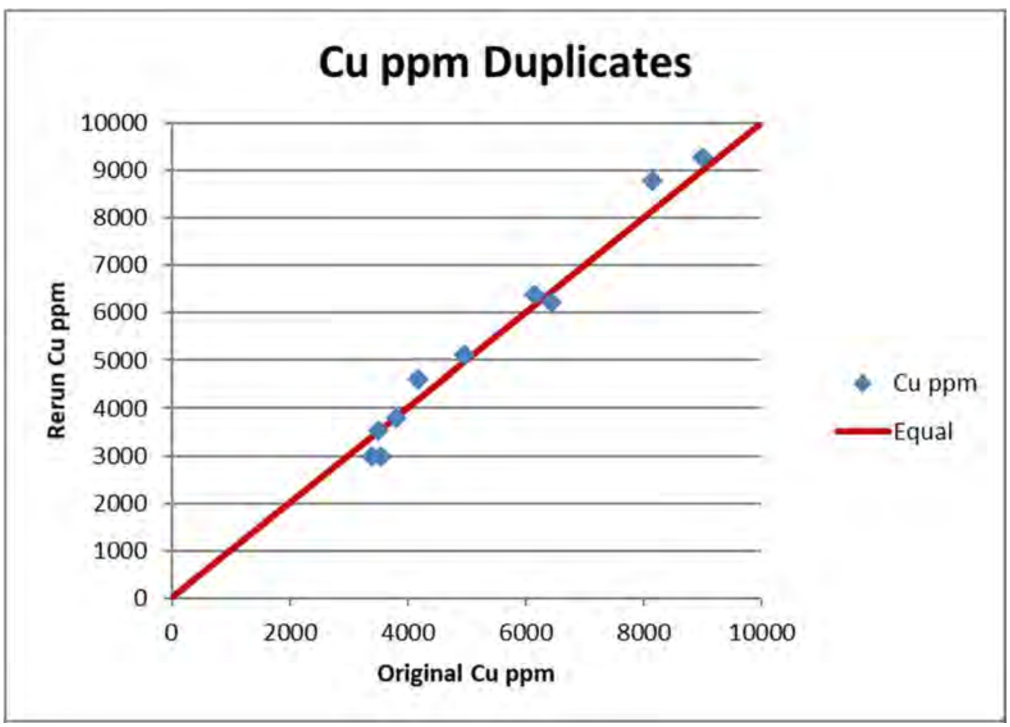



**Figure 11-10 Duplicate Sample Analysis - Cu**

## 11.3 SMMI Sample Preparation and Analysis (2019, 2020)

Drill core was removed from barrel and boxed by the drillers before being delivered to the logging site outside the Sonneman tunnel. There, "boxes are oriented properly and that labels are correct and visible. Box number and footage labels are cleaned, checked for accuracy, and corrected if necessary. The footage for the top and bottom of each box is respectfully measured and written on the top of the box below the start and above the end (Forbush, 2019)". Core is then cleaned with water and scrubbing brushes and broken core is pieced back together. RQD information consistent with industry standards is also collected at the logging site. The core is then logged in detail characterizing lithology, alteration, oxide and carbonate intensities, structures, veining, and mineralization. Sample intervals are then designated with the intention of placing sample breaks between rocks of different chemistry in order to prevent smearing of geochemical data. Sample breaks are placed at:

- Lithologic contacts;
- Alteration intervals;
- Samples do not include void space or caved material; and,
- Sample lengths do not exceed 10 ft and are no less than 0.5 ft.

"The beginning of each sample is marked in the box with a sample tag stapled to the box with the tag number facing upward clearly visible for photographing" (Forbush, 2019). Locations of QA/QC samples are selected while setting sample breaks so that sample numbers are sequential. When a QA/QC sample is to be inserted, its tag is stapled to the core box immediately following the sample tag of the sample for which it is to follow" (Forbush, 2019).

Specific gravity measurements are taken approximately every 100 ft to characterize each rock type. SG measurements are collected using the immersion method, which involves weighing the sample dry and weighing the mass sample again while immersed in liquid. The SG is then determined by the ratio between the two measurements.

The data collected in the above procedures is entered directly into a digital excel spreadsheet. Hard copies of the most critical log data are printed from the "log form" tab. Electronic copies are kept by BeMetals and both electronic and hard copies are in the possession of Thunder Mountain Gold. This redundancy is to ensure against any data loss" (Forbush, 2019).

The core is then photographed using a high-resolution camera on a stable platform. The core is "photographed wet, footages marked, top and bottom of the box labeled" (Forbush, 2019).

Core was cut on site using a Husqvarna (HM-62) masonry saw equipped with a 20 in. continuous rim diamond blade. Cut lines are drawn on the core by the geologist using a red china marker. "Contamination between samples is reduced by not recycling the water, rather continually feeding the saw from a fresh supply. Likewise, after cutting through sulfide rich sections the core cutter is to cut one or two passes through marble rocks to prevent cross contamination between sulfide rich and unaltered intervals. The cutter also washes the sample before placing it back into the core box by letting the water spray from the saw wash away the cuttings slurry. The cutter is to follow cut lines when provided. If the cutter has extensive geologic training, they determine how best to cut the interval into two equally representative halves, often along a vein or foliation axis" (Forbush, 2019).

After cutting, the core is then ready to be sampled. Samplers remove any jewelry containing precious metals and rigorously follow the described methodology below:

- The sampler will match the sample number recorded in the log and on the box with the bag label.
- The right half of the core is removed and placed into the appropriate bag. A rock hammer can be used to break up large segment so they can fit into the bag. For rock types that tend to shatter, the sample is placed on a cardboard tray and gently broken with a hammer. Large pieces are placed in the bag first and fines are poured into the bag. For extremely broken rock, a hand shovel is used, and the sampler ensures equal amounts and equally representative of the recovered material is placed into the bag.
- A brush may be used to clean the station and/or sampling tools between samples to prevent contamination.
- Bag strings are pulled closed and tied around the top of the bag. The bags are then placed in sequential order on the ground or in carts.
- Periodically the sampler is to count their number of prepared samples, to ensure no mistakes have been made, and if so allow them to be corrected. If a mistake has been made the sampler should consult with the supervising geologist immediately.

Upon completion of sampling, final checks are made, core box lids are replaced in preparation for transport to storage, and the station is brushed or swept clean to prevent contamination.

#### 11.3.1 QA/QC

The drilling competed by SMMI in 2019 and again in 2020 included three types of QA/QC samples including blanks, standards, and duplicates into the sampling program. The combined SMMI drilling program totaled 1,491 sampled intervals and 205 recorded QA/QC samples representing approximately 14% of the sampled intervals.

Granusil® was used as blank material for the SMMI drilling program. HRC reviewed the lab results for fifty-six (56) samples by plotting the reported grades online graphs (Figure 11-11). Gold and silver blanks fail if they have a value greater than three times (3x) the minimum detection limit. Gold reported only two (2) failures for a success rate of 97.1%. Silver reported five (5) failures for a success rate of 92.6%. Copper blanks fail if the sample had a grade greater than 0.03%. Copper reported 100% success rate. Lead and Zinc blanks fail if the sample had a grade greater than 0.06%. Zinc reported five (5) failures for a success rate of 92.6%. Lead reported one (1) failure with a success rate of 98.1%. All of the metals had a success rate of greater than 90%.

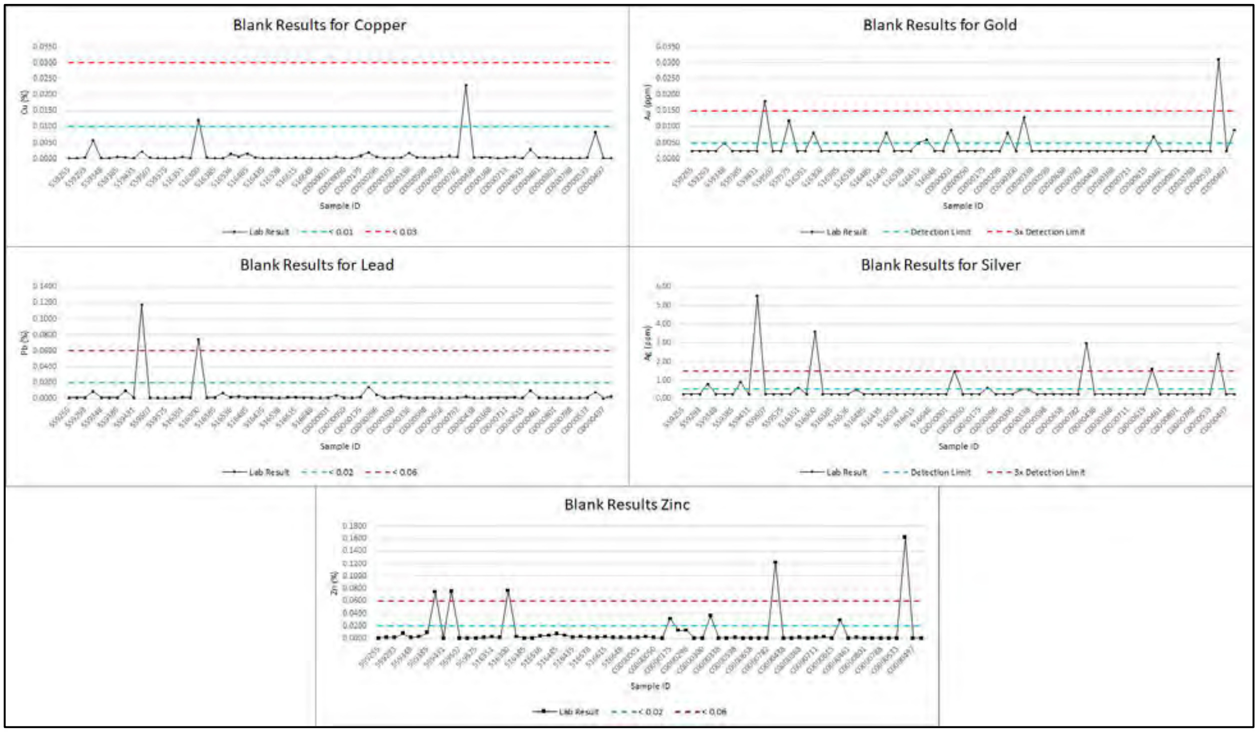



**Figure 11-11 Results from SMMI blank QA/QC samples**

Fifty-nine (59) duplicates were analyzed and reviewed by HRC. The lab results were evaluated by plotting the original grade against the duplicate grade on log scale scatter plots for each metal (Figure 11-12). $R^2$ linear correlation coefficients were calculated as a quantification of similarity between the duplicate and original samples and a normal (X=Y) line was plotted as a visual aide to identify significant deviations. Overall, the duplicate results are in line with the original grades confirming the precision of ALS labs. Only gold had an $R^2$ value less than 0.99 with an $R^2$ value of 0.9684. Examination of Figure 11-12 shows no significant deviations from normal for zinc One copper duplicate shows a significant deviation from the normal line at high grades. One silver duplicate shows a significant deviation from the normal line at low grades. One lead duplicate shows a significant deviation at 0.01%. Gold shows two duplicates with significant deviations between 0.1 and 1.0 ppm.

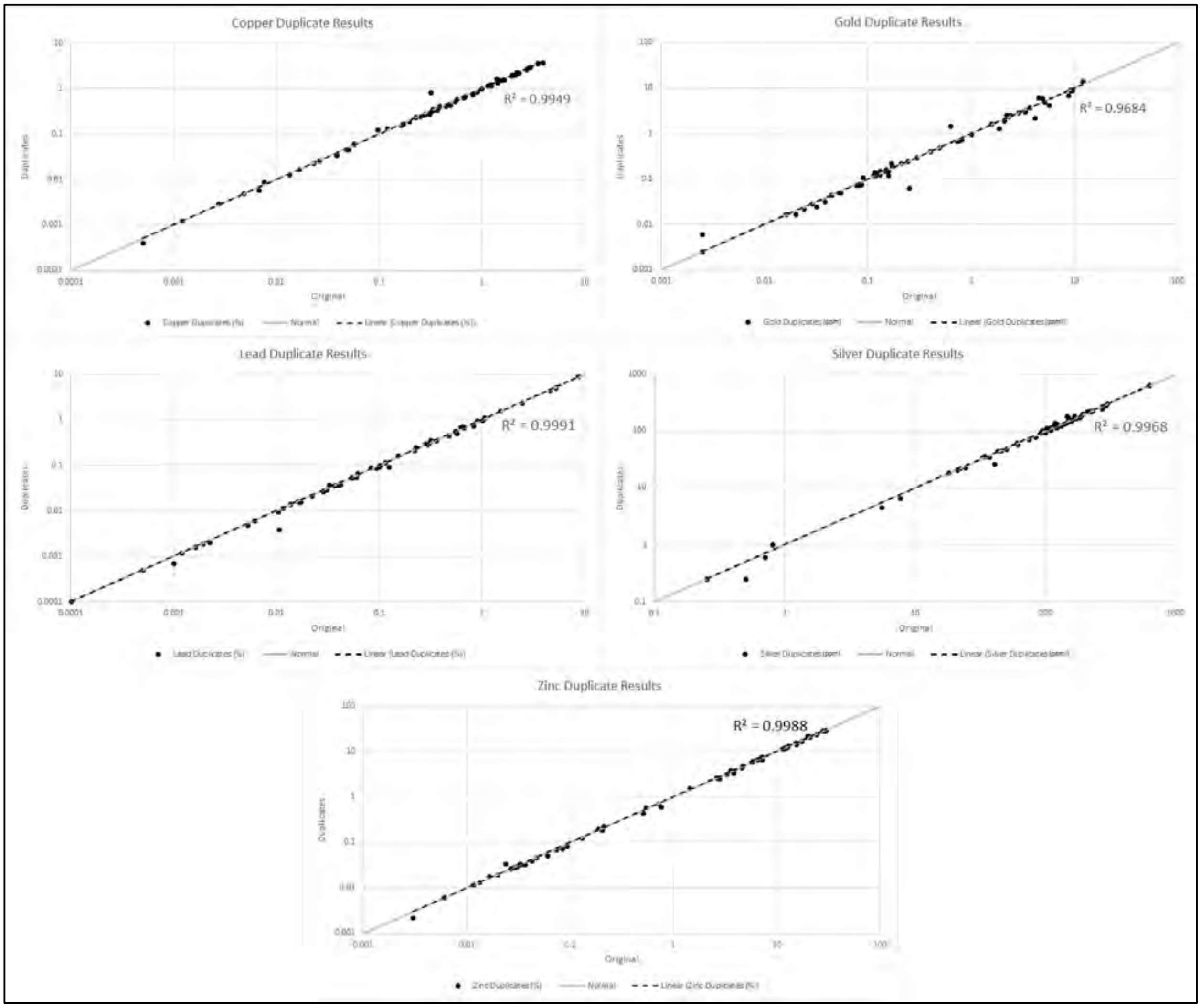



**Figure 11-12 Results from SMMI duplicate QA/QC samples**

Two standards were used during the SMMI sampling, MEG-AG-2 and MEG-CU-1 from Shea Clark Smith / MEG Labs in Reno Nevada. Lab results for MEG-AG-2 were compared against the standard deviation and 95% confidence limits listed for the standard. The analysis of fifty (52) results are plotted on Figure 11-13 for copper, gold, lead, silver and zinc. A sample failed the QA/QC test if the lab result fell outside the 95% confidence limit. All metals had a success rate greater than 90%. Four (4) results were outside the 95% confidence limit for zinc, two (2) results were outside the 95% confidence limit for silver, one (1) result was outside the 95% confidence limit for gold and one (1) result was outside the 95% confidence limit for lead. Review of the plots show a slight low bias for silver and copper, a slight high bias for zinc and gold, and no bias was noted for lead.


**Figure 11-13 Results from SMMI MEG-AG-2 standard QA/QC samples**

Lab results for MEG-CU-1 were compared against the standard deviation and 95% confidence limits listed for the standard. The analysis of twenty-two (22) results are plotted on Figure 11-14 for copper, lead, silver and zinc. An analysis of gold could not be determined since the standard does not report gold values. A sample failed the QA/QC test if the lab result fell outside the 95% confidence limit. Four (4) results were outside the 95% confidence limit for zinc resulting in a success rate of 81.8%. No samples were outside the 95% confidence limit of silver, lead, or copper. Review of the plots show a slight low bias for copper, lead and zinc. A slight high bias was observed in the silver analysis.

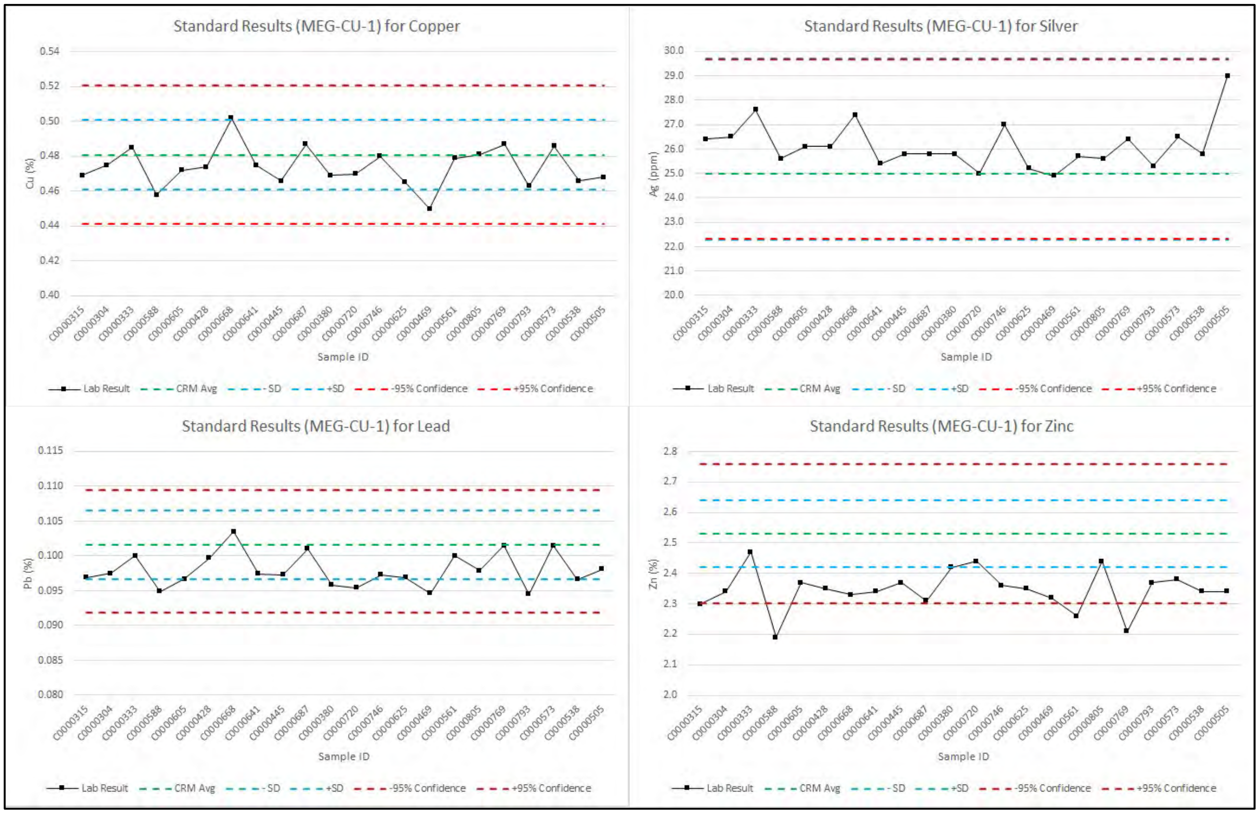



**Figure 11-14 Results from SMMI MEG-CU-1 standard QA/QC samples**

## 11.4 Sample Storage and Security

Drill core, chip trays, and pulp rejects are stored in locked, Connex-style shipping containers located at the Project site. Coarse rejects are temporarily stored in a secure rental storage unit in Elko, Nevada, and are periodically hauled to the mill site for long term storage in the gated, covered storage area. Samples are continuously monitored by THMG personnel from the time of collection through delivery to the lab. THMG employs standard chain of custody procedures, including formal COC documentation, during all phases of sample transport.

## 11.5 Opinion on Adequacy

HRC finds the sample preparation, analytical procedures, and security measures described herein to be reasonable and adequate to ensure the validity and integrity of the data derived from THMG's sampling programs. The QA/QC program instituted during the BMET drilling followed HRC's recommendations from the 2019 technical report, meets industry standards, and represents a substantial improvement from previous drilling on the property. HRC recommends the following procedures continue to be followed for future work:

- The formal, written procedures for data collection and handling should be made available to all SMMI Project field personnel. These should include procedures and protocols for field work, geological mapping and logging, database construction, sample chain of custody, and documentation trail. These procedures should also include detailed and specific QA/QC procedures for analytical work, including acceptance/rejection criteria for batches of samples.

- A detailed review of field practices and sample collection procedures should be performed on regular basis, to ensure that the correct procedures and protocols are being followed.
- Review and evaluation of laboratory work should be an on-going process, including occasional visits to the laboratories involved.
- For drill hole samples, the control samples sent to a second (check) laboratory should be from pulp duplicates in all cases and should include one blank, two sample pulps, and one standard for every 40-sample batch.

# 12. DATA VERIFICATION

Data verification efforts carried out by HRC include:

- Discussions with THMG and SMMI personnel;
- Personal investigation of the Project and field office;
- Mechanical audit of the exploration drillhole database received from THMG;
- Detailed review of additional information obtained from historical reports and internal company reports;
- Validation of the geologic information as compared to the paper logs; and,
- Validation of the assay values contained in the exploration database as compared to assay certificates from records found on file in THMG's Jordan Valley, Oregon field office.

## 12.1 Site Investigation

HRC representatives and QP's J.J. Brown, P.G., and Richard Schwering, P.G., conducted on-site inspections of the South Mountain Project and Jordan Valley field office on April 2 through 4, 2018, and on May 5 through 7, 2021. During both inspections, HRC was accompanied by THMG CEO Eric Jones and Jim Collord, THMG Vice President and COO. While on site, HRC conducted general geologic field reconnaissance, including inspection of on-site facilities and examination of underground bedrock exposures and drill collar locations in Muck Bay 5 on the Sonneman level. HRC also examined select core intervals from historic and recent drilling, obtained a variety of duplicate samples for independent check sampling, and reviewed with THMG geology staff the conceptual geologic model, data entry and document management protocols, and drilling and sampling procedures and the associated quality assurance and quality control ("QA/QC") methods presently employed.

Field observations during the site visit generally confirm previous reports on the geology of the Project area. Bedrock lithologies, alteration types, and significant structural features are all consistent with descriptions provided in existing Project reports, and the author did not see any evidence in the field that might significantly alter or refute the current interpretation of the local geologic setting. A total of 7 specific core intervals from 3 separate drill holes were selected for visual inspection and check sampling based on a preliminary review of the drill hole logs and associated assay values. The samples were selected from low, moderate, and high-grade intervals. In all cases, the core samples accurately reflect the lithologies recorded on the logs and the degree of visible alteration and evidence of mineralization observed was generally consistent with the grade range indicated by the original assay value.

The check samples were bagged, labelled, and further prepared for shipment by HRC during the site visit. Laboratory analysis was completed by ALS in Reno, Nevada using the same sample preparation and analytical procedures as were used for the original samples. A comparison of the check sample assay results against the original assay data shows very good correlation for silver and zinc (Figures 12-1 and 12-2). Copper, lead and gold all show very good correlation at low and moderate grades, with some variation of the higher grades, and one extreme high-grade outlier for gold (Figures 12-3 through 12-5). Extreme high grades are often difficult to reproduce, and some variation is generally expected. Given the similar tenor of the high-grade sample results (all significantly high), the degree of variance displayed here is considered acceptable.

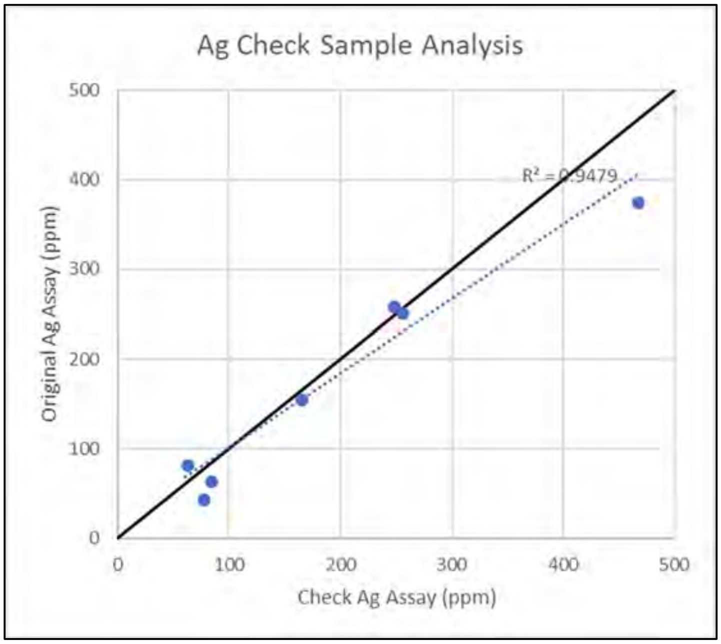



**Figure 12-1 Ag Check Sample Analysis**

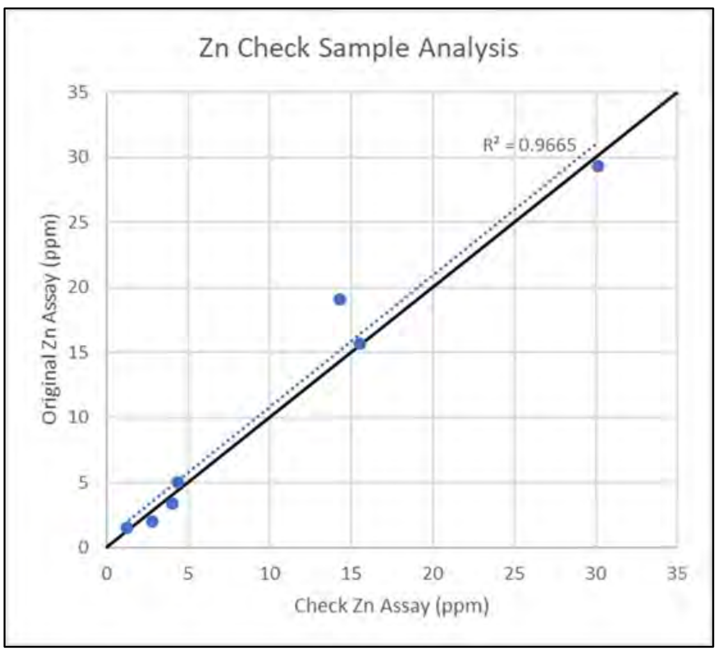



**Figure 12-2 Zn Check Sample Analysis**

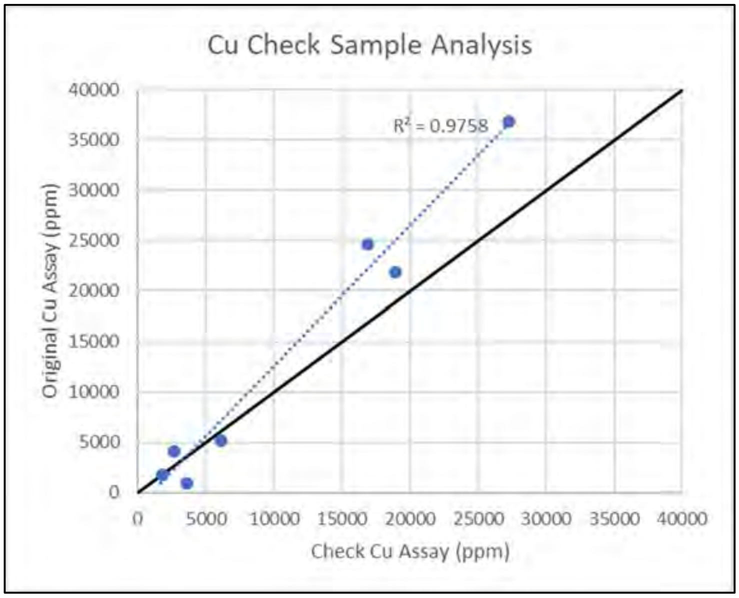



**Figure 12-3 Cu Check Sample Analysis**

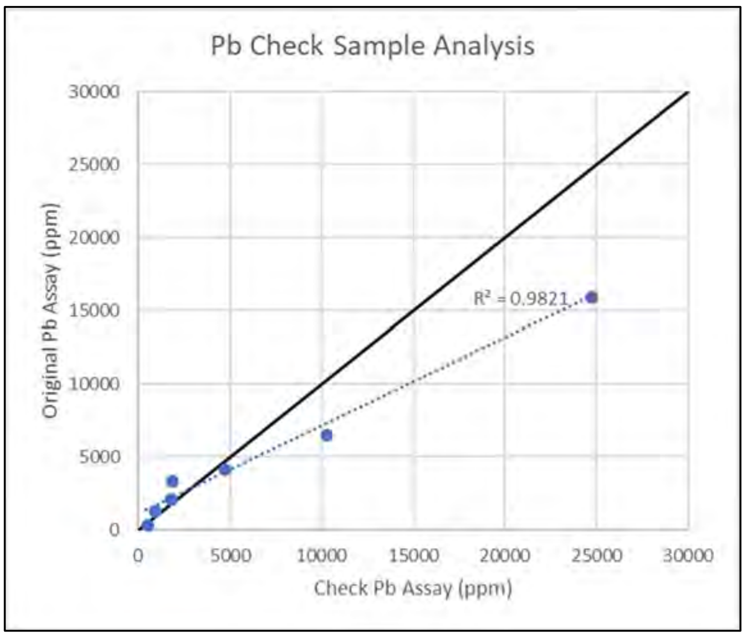



**Figure 12-4 Pb Check Sample Analysis**

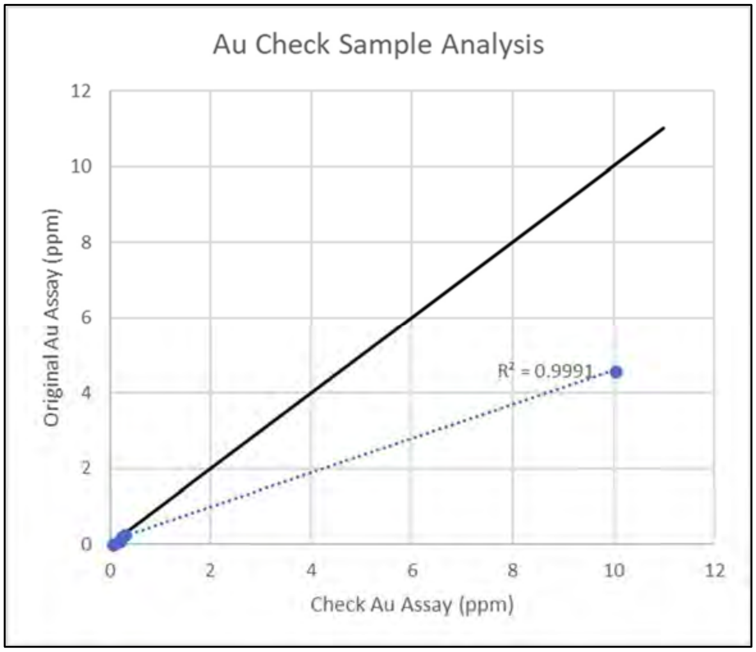



**Figure 12-5 Au Check Sample Analysis**

Bedrock exposures of the geology on the Sonneman level inspected during the 2021 site visit confirm the overall geometry of the deposit. The marble unit, massive sulfides and skarns dip 50-60 degrees to the southwest with a northwesterly plunge. The mineralized units were visually distinct and in exhibited sharp contacts and good continuity. Mr. Schwering reviewed core from two drillholes; SM20-041 and SM20-050; intersecting the Texas zone at the millsite area with Tyson Forbush, SMMI Project Geologist. The logs provided to Mr. Schwering accurately captured what was visually present in the core.

## 12.2 Database Audit

HRC downloaded the current database as a series of .csv text files from the file sharing service Dropbox™ on March 9th, 2021. Revised versions of the database were downloaded on March 11th and the final version of the database was downloaded again on April 16th. The audit of the database was completed by comparing the current database to the 2018 database HRC possesses from the previous mineral resource estimate, by reviewing the assay certificates and QA/QC results from the BMET drilling, and by conducting a mechanical audit of the database using Leapfrog Geo® version 6.0.4. Summaries of the findings are presented below:

### 12.2.1 Collar

The collar table did not have any issues in the mechanical audit. Comparison of the current collar table to the 2018 collar table found OGT channel samples had differing hole ID's and total lengths. The OGT hole IDs were renamed in order to better reflect the continuous channel sample sequences they represented, and hole lengths were adjusted based on the sample length recorded in the assay file. Sixteen (16) collars have differing total depths when compared to the 2018 database. The 2021 database lengths are considered to be more reliable by BMET staff.

#### 12.2.2 Survey

No issues were found in the survey table during the mechanical audit. Twenty-five (25) channel samples with horizontal orientations in the 2018 database were determined to have vertical orientations in the 2021 database. One drillhole in the database was not surveyed downhole because it was abandoned after only 9ft of progress.

#### 12.2.3 Assay

HRC compared the assay intervals as well as copper, gold, lead, silver, and zinc grades in the current assay table to those in the 2018 assay table. Other than the OGT channel samples mentioned in the collar section, there were no discrepancies in the sampled intervals. Minor discrepancies in grade as a result of rounding errors were noted in gold, silver, copper, lead, and zinc values. The assay table received on April $16^{th}$, 2021 will be used to update the geologic model and mineral resource estimate.

HRC compared the original .csv assay certificates from ALS to the assay grades recorded in the assay table for the 2019/2020 drilling and found no errors. Additionally, assay results in the .csv certificates were spot checked against the .pdf certificates and no errors were noted. Three (3) drillholes SM19-008, SM19-007, and SM19-021 were not sampled, presumably due to lack of mineralization indicators.

#### 12.2.4 Lithology

No errors were identified in the mechanical audit. Only one historic hole had differences compared to the 2018 database. The was the result of the drillhole being relogged as preparation for the 2019 drilling. A spot check of the database to paper logs did not show any inconsistencies for the 2019 and 2020 drilling.

#### 12.2.5 Other Tables (Alteration, Mineralization, RQD, SG, Structure, and Veins

These tables only have data for the 2019 and 2020 drilling and could not be compared to the 2018 database. The mechanical audit found two interval overlap errors which were corrected. Otherwise, no issues were noted for these tables.

## 12.3 Adequacy of Data

Based on the results of the site investigations and data validation efforts, HRC considers THMG's drilling and sampling data, as contained in the current Project database, to be reasonably accurate and suitable for use in estimating mineral resources.

# 13. MINERAL PROCESSING AND METALLURGICAL TESTING

Mineralization at the South Mountain Project is polymetallic, consisting of zinc, silver, gold and copper. Mineralogical examination of samples from the deposit indicated that the mineralized zones contain significant sulfide content, with the DMEA zone containing approximately 80% sulfides (mostly pyrrhotite, sphalerite, and pyrite). Analyses of sphalerite in the DMEA zone indicate that this mineral contains approximately 12% Fe. The pyrrhotite was identified as the monoclinic variety and is therefore magnetic.

Two metallurgical test programs have been conducted in the past, one undertaken by Dawson Metallurgical Laboratories in 1987, and one undertaken by FLSmidth's Dawson Metallurgical Laboratories in 2014. The majority of the samples have been from the DMEA zone, which represents the majority of the resource. Additional metallurgical test is ongoing at SGS Lakefield in Canada.

## 13.1 1987 Preliminary Selective Lead-Zinc Flotation Testing

In 1987, Dawson Metallurgical Laboratories, Inc. performed cursory flotation testing to provide data for net smelter evaluation. This work focused on producing a precious metal bearing lead concentrate and a separate zinc concentrate. Approximately 60% of the gold, 78% of the silver and 91 percent of the lead was recovered into a lead cleaner concentrate assaying over 100 ppm Au, 4000 ppm Ag and 54% Pb. Subsequent zinc flotation recovered 86% of the zinc into a 3rd cleaner concentrate that assayed 53% Zn.

Although six different samples were received for the 1987 test work only the larger 300-pound bulk sample was used in the flotation tests. The bulk sample was thoroughly mixed, and 75 pounds was carefully split out and stage crushed to a 20-mesh using a rolls crusher. The other five individual samples were stored as received for possible future testwork. A sample of the minus 20 mesh was split out and submitted for Head assays, the results if the head assay compared to the back calculated head grade from the test work are presents in Table 13-1 below.

**Table 13-1 1987 Bulk Sample Head Assay Results**

| | Au opt | Ag opt | Cu % | Pb % | Zn % | Fe % |
|---|---|---|---|---|---|---|
| **Assayed Head** | 0.190 | 6.10 | 0.50 | 2.30 | 16.35 | 27.90 |
| | 0.190 | 6.39 | 0.57 | 2.49 | 16.90 | N/A |

The bulk sample responded well to selective flotation. A high degree of selectivity was obtained using sodium sulfite and cyanide to depress pyrite, pyrrhotite and sphalerite during the lead flotation. The testing results are summarized below in Table 13-2.

**Table 13-2 1987 Bulk Flotation Results**

| Product | Weight % | Assay | | | | | Distribution % | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Au opt | Ag opt | Cu % | Pb % | Zn % | Au | Ag | Cu | Pb | Zn |
| **Pb Cl Conc** | 4.21 | 2.930 | 118.50 | 7.87 | 53.60 | 4.20 | 61.1 | 77.8 | 57.4 | 91.4 | 1.1 |
| **Zn Cl Conc** | 27.22 | 0.080 | 1.00 | 0.25 | 0.10 | 52.80 | 10.8 | 4.2 | 11.7 | 1.1 | 85.7 |
| **Zn Scav Tails** | 26.97 | 0.010 | 0.20 | 0.04 | 0.05 | 0.30 | 1.3 | 0.8 | 1.9 | 0.6 | 0.5 |

Some trends that observed during the flotation testing by were noted by Dawson Metallurgical Laboratories are presented below.

- Sphalerite is not naturally activated in the mineralized material and may be easily depressed during lead flotation with sodium sulfite and cyanide.
- Pyrite and pyrrhotite are easily depressed during lead flotation with depressants described above.
- Pyrrhotite is activated to some extent by copper sulfate during zinc flotation. This may explain the high iron assays in the final zinc cleaner concentrate.
- Generally, silver follows copper concentrate during flotation.

While most of the gold reports to the lead concentrate, significant amounts of gold report to the zinc tailings along with pyrrhotite and pyrite.

## 13.2 2014 Gravity and Flotation Concentration Test Results

In May of 2014, FLSmidth's Dawson Metallurgical Laboratories completed gravity and flotation concentrate testing on a bulk composite that they prepared from 12 individual samples from the DMEA zone, this composite sample was identified as "DMEA" and included some rib samples from PLH34 taken from the rib on the Laxey drift. Another sample of approximately 150 kilograms of minus 5 cm material identified as "Bulk Composite" was received from Phillips Enterprises. This composite was prepared for test work in a similar manner to the DMEA composite. These samples did not include samples from all of the massive sulfide zones, including Texas and Laxey, identified at South Mountain.

The test work was directed into two areas as described below:

- Production of a precious metal bearing bulk concentrate containing gold, silver, lead and copper for possible feed to a hydrometallurgical facility. Sulfide flotation with and without prior gravity concentration was evaluated. Tests were performed to evaluate co-recovery of zinc into the bulk gravity or bulk flotation concentrate, in addition to recovering zinc in a separate flotation concentrate. Removal of pyrrhotite by magnetic separation was evaluated in these tests.
- Production of a selective lead concentrate containing precious metals by flotation, followed by recovery of zinc into a separate flotation concentrate. These tests were similar to those performed in the 1987 test program.

Head assay results of the composite samples are summarized below in Table 13-3.

**Table 13-3 2014 Bulk Sample Head Assay Results**

| Composite | Assay Basis | Head Assay | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | g/ton | | | Weight % | | | | |
| | | Au | Ag | As | Pb | Cu | Zn | Fe | S= |
| **Bulk** | Direct | 0.80 | 43 | 3515 | 0.30 | 0.09 | 7.57 | 21.6 | 17.4 |
| | Back-Calc | 0.42 | 51 | 3471 | 0.35 | 0.09 | 8.02 | 21.2 | 14.9 |
| **DMEA** | Direct | 6.48 | 252 | 12600 | 1.65 | 0.30 | 9.69 | 39.3 | 28.7 |
| | Back-Calc | 6.78 | 250 | 13218 | 1.67 | 0.33 | 10.29 | 39.3 | 30.6 |

### 13.2.1 Grind Work Index Test Results

As part of the 2014 test work Phillips Enterprises in Golden, Colorado completed Bond ball mill and rod mill work index tests on the bulk composite. The results of the test work are summarized below:

- Bond Ball Mill Work Index @ 106 µm: 10.2 Kwhr/st 11.2 Kwhr/mt
- Bond Rod Mill Work Index @ 1180 µm: 8.4 Kwhr/st 9.3 Kwhr/mt

### 13.2.2 Gravity Test on DMEA Composite

A six-kilogram sample of DMEA composite was subjected to gravity concentration after screening the crushed ore at 100 and 325 Tyler mesh (150 and 45 µm). The purpose of this test was to determine if gravity concentration alone could recover the sulfides at a coarse grind size of 100% passing 35 Tyler mesh (425 µm). Results, summarized below, indicate that 92% of the sulfides were recovered. In this test the plus 100 mesh table concentrate, and tails were screened at 48 and 65 Tyler mesh and assayed separately.

**Table 13-4 Summary of Gravity Separation Test on DMEA Composite**

| Tyler Screen Fraction | Table Product | Distribution, % | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Weight | Au | Ag | Pb | Cu | Zn | As | Fe | S= |
| 35/48 | Con | 23.3 | 20.9 | 20.0 | 20.7 | 20.9 | 25.0 | 26.7 | 26.5 | 27.7 |
| 48/65 | Con | 15.6 | 14.4 | 14.3 | 16.3 | 14.3 | 16.0 | 18.0 | 17.0 | 15.8 |
| 65/100 | Con | 9.7 | 15.0 | 9.6 | 10.5 | 9.2 | 10.0 | 10.1 | 9.9 | 9.9 |
| 100/325 | Con | 32.9 | 33.6 | 37.8 | 38.7 | 35.6 | 34.3 | 32.4 | 34.0 | 35.2 |
| -325 | Con | 3.2 | 8.0 | 6.2 | 4.7 | 5.3 | 4.3 | 5.5 | 2.7 | 3.4 |
| Overall | Con | 84.7 | 92.0 | 88.0 | 90.9 | 85.3 | 89.6 | 92.6 | 90.2 | 92.0 |
| Overall | Tails | 15.3 | 8.0 | 12.0 | 9.1 | 14.7 | 10.4 | 7.4 | 9.8 | 8.0 |

Results indicate that the plus 100 mesh material was not sufficiently liberated to produce a high-grade concentrate. A well-formed galena band is evident in the 100/325 and -325 mesh table tests but is absent in the +100-mesh table test.

Due to these rather inconclusive results the remainder of the test program was focused on selective flotation of precious metals into a lead concentrate followed by subsequent flotation of zinc into a sphalerite concentrate.

### 13.2.3 Selective Lead-Zinc Flotation of DMEA Composite

Approximately 75% of the gold and 70% of the silver were recovered into lead cleaner concentrates at a primary grind of P80 = 81 µm. These concentrates assayed 116 g/t Au, over 4000 g/t Ag, 35% Pb and 5% Cu. Pyrite and pyrrhotite accounted for almost 50% of the weight of these high-grade precious metal concentrates (zinc contents were typically 3% Zn, indicating good selectivity against sphalerite). Sodium metabisulfite ($Na_2S_2O_5$) was used in these tests to minimize pyrite and pyrrhotite flotation. Subsequent sphalerite flotation using copper sulfate activator and PAX recovered approximately 96% of the zinc in the ore, except in test 9 where the zinc recovery decreased to 83%. This decreased recovery was probably due to the use of zinc cyanide complex in the primary grind. This depressant was used to minimize pyrite/pyrrhotite flotation into the lead concentrate. Results are summarized in the following tables.

**Table 13-5 Summary of Lead Flotation Results**

| Test No. | Grind P80 µm | Depressant | | Flot. Product | Weight% | Assay, g/t or wgt% | | | | Distribution, % | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Type | lb/ton | | | Au | Ag | Pb | Cu | Au | Ag | Pb | Cu |
| 6 | 81 | MBS | 0.10 | Cl. Con. | 4.35 | 116.44 | 4023 | 34 | 5.43 | 74.9 | 70 | 86.6 | 69.6 |
| 7 | 81 | MBS | 0.10 | Cl. Con. | 4.48 | 106.8 | 4147 | 34.7 | 5.2 | 71.8 | 71.3 | 88.1 | 65.6 |
| 8 | 97 | MBS | 0.10 | Cl. Con. | 3.47 | 112.7 | 4344 | 37 | 5.25 | 64.1 | 61.3 | 75 | 54.9 |
| 9 | 97 | Zn(CN)2 | 0.01 | Cl. Con. | 3.88 | 116.43 | 4182 | 37.2 | 2.82 | 60.9 | 68.9 | 86.7 | 37.8 |
| 6 | 81 | MBS | 2.00 | Ro. Con | 7.5 | 69.36 | 2590 | 20.91 | 3.43 | 77 | 77.8 | 91.9 | 75.9 |
| 7 | 81 | MBS | 2.00 | Ro. Con | 7.36 | 66.53 | 2710 | 21.92 | 3.39 | 73.5 | 76.5 | 91.5 | 70.3 |
| 8 | 97 | None | 0.00 | Ro. Con | 6.23 | 64.31 | 2684 | 22.06 | 3.19 | 65.5 | 67.9 | 80.2 | 59.8 |
| 9 | 97 | Zn(CN)2 | 0.10 | Ro. Con | 6.46 | 73.78 | 2735 | 23.09 | 2.47 | 64.2 | 75 | 89.6 | 55.2 |

**Table 13-6 Zinc Rougher/Scavenger Flotation Results**

| Test No. | pH | Dosage, lb/ton | | Weight % | Assay, wgt% | | | Distribution, % | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | CuSO4-5H2O | SIPX | | Zn | Fe | As | Zn | Fe | As |
| 6 | 11.5 | 0.30 | 0.100 | 76.2 | 14.5 | 45.5 | 1.62 | 96 | 87.1 | 91.6 |
| 8 | 7-12 | 0.35 | 0.075 | 72.3 | 12.6 | 43.6 | 1.56 | 96.6 | 80.6 | 93.1 |
| 9 | 12 | 0.50 | 0.075 | 33.2 | 19.9 | 30.9 | 0.15 | 82.5 | 30.0 | 5.0 |

### 13.2.4 FL Smidth's Conclusions and Recommendations

Initial test work on the DMEA composite indicates that approximately 75% Au, 70% Ag and 87% Pb may be recovered into a selective precious metals-bearing lead cleaner concentrate assaying 116 gm/ton Au, 4000 gm/ton Ag, 34% Pb and 5.4% Cu. Subsequent zinc flotation recovered 96% Zn into rougher concentrates assaying 15% Zn. Detailed cleaner testing was not performed on the zinc rougher concentrates. The test work has indicated that selective flotation results for the DMEA composite are very similar to those obtained in the 1987 test work.

Elevated levels of arsenic were noted in both concentrates (approximately 0.6% As in the lead concentrate and 1.6% As in the zinc rougher/scavenger concentrate). These elevated arsenic levels may be reduced by more aggressive depression of arsenopyrite during flotation, however, the silver-bearing mineral tennantite, $(Cu, Fe)_{12}As_4S_{13}$, if present in significant amounts, contains significant arsenic that will report with the silver. The additional metallurgical testing, including characterizing and marketing of the concentrates from South Mountain, will address the potential arsenic, cadmium, and iron levels in the different concentrates produced.

Historical gravity concentration work to date has been somewhat inconclusive with relatively low metal recoveries into low grade concentrates. FL Smidth concluded that the selective flotation flow sheet would be much simpler to operate, and any further testing should be focused in this area. Additional selective flotation testing should be directed toward optimizing the zinc flotation circuit with emphasis on pyrrhotite and pyrite rejection. Sphalerite reagent optimization is required, and some concentrate cleaning work is recommended. The removal of pyrrhotite from the final zinc concentrate by low intensity magnetic separation may be warranted.

HRC agrees with these conclusions and recommendations. SMMI is currently completing first pass visual geo-metallurgical characterization of the deposit from drill core logging and material will likely be provided to SGS Lakefield for updating of the historical DMEA Zone test work and initial test of Texas Zone material and additional metallurgical test work is in progress.

# 14. MINERAL RESOURCE ESTIMATE

Mr. Richard Schwering, P.G., SME-RM, of HRC, is responsible for the South Mountain Project mineral resource estimate ("MRE") presented herein. Mr. Schwering is a Qualified Person as defined by NI43-101 and is independent of SMMI, THMG, and BMET. HRC estimated the mineral resources based on drillhole and channel sample data constrained by geologic boundaries using an Ordinary Kriging algorithm. The geologic model and mineral resource estimate were developed using Leapfrog Geo® Software version 6.0.5. The metals of interest at the Project are zinc, silver, gold, copper, and lead. All units are U.S. customary, with the exception of gold and silver grades which were estimated in ppm, and all costs are reported in US Dollars unless otherwise specified.

The mineral resource estimate reported herein was prepared in a manner consistent with the Committee of Mineral Reserves International Reporting Standards ("CRIRSCO"), of which both the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") and Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the "JORC Code") are members. The mineral resources are classified as Measured, Indicated and Inferred in accordance with "CIM Definition Standards for Mineral Resources and Mineral Reserves", prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council on November 29, 2019. Classification of the resources reflects the relative confidence of the grade estimates.

## 14.1 Modifications to Database Prior to Mineral Resource Estimation

Missing intervals, un-assayed intervals, and zero values were replaced with below detection limit ("BDL") for all metals of interest. Missing intervals are defined as intervals not assayed for any of the metals of interest. Missing values are defined as an interval assayed for some metals, but not the being investigated. Zero values were replaced with BDL values in order the purpose of statistical evaluation of the data. Table 14-1 summarizes the number of valid assays, the number of assays replaced with BDL values, and the total number of intervals in the MRE database for each metal. A total of sixteen surface drillholes in the database did not target the South Mountain deposit and were filtered out of the MRE. These drillholes are listed in Table 14-2.

**Table 14-1 Summary of Assay Value Handling by Metal**

| Zinc (%) | Count | Action | Replacement Value | Lead (%) | Count | Action | Replacement Value |
|---|---|---|---|---|---|---|---|
| Valid Assays | 3,128 | | | Valid Assays | 3,092 | | |
| Missing Interval | 481 | Replace | 0.0001 | Missing Interval | 481 | Replace | 0.0001 |
| Missing Value | 746 | Replace | 0.0001 | Missing Value | 782 | Replace | 0.0001 |
| **Total** | **4,355** | | | **Total** | **4,355** | | |
| **Silver (ppm)** | **Count** | **Action** | **Replacement Value** | **Gold (ppm)** | **Count** | **Action** | **Replacement Value** |
| Valid Assays | 3,140 | | | Valid Assays | 3,635 | | |
| Missing Interval | 481 | Replace | 0.02 | Missing Interval | 481 | Replace | 0.001 |
| Missing Value | 725 | Replace | 0.02 | Missing Value | 51 | Replace | 0.001 |
| 0 | 9 | Replace | 0.02 | 0 | 188 | Replace | 0.001 |
| **Total** | **4,355** | | | **Total** | **4,355** | | |
| **Copper (%)** | **Count** | **Action** | **Replacement Value** | | | | |
| Valid Assays | 3,112 | | | | | | |
| Missing Interval | 481 | Replace | 0.0001 | | | | |
| Missing Value | 762 | Replace | 0.0001 | | | | |
| **Total** | **4,355** | | | | | | |

**Table 14-2 List of Drillholes filtered out of the MRE**

| | | | |
|---|---|---|---|
| Austral5-1 | Austral5-5 | ATDH-15 | LO-02 |
| Austral5-2 | Austral5-6 | ATDH-16 | LO-03 |
| Austral5-3 | Austral5-7 | PLH-13 | LO-04 |
| Austral5-4 | Austral5-8 | LO-01 | LO-05 |

## 14.2 Methodology

The geologic model was constructed using drillhole and channel sample lithology within the database, in conjunction with an underground geologic map (Figure 14-1), drillhole cross sections, and interpretations by SMMI staff.

The overall geologic model for the Project is constrained within 500 ft for drillholes and channel samples within the area of mineralization, and includes five discrete geological units:

- An overburden boundary (“OVB”) with a minimum depth of 5ft below the topographic surface;
- Six west-southwest trending post mineralization felsic to intermediate dikes (“DIKE”) steeply dipping north-northwest. And follow structures which offset the older units;
- The Laxey marble unit (“LXY”) is the host rock for mineralization. The unit strikes northwest and dips 55 degrees to the southwest. The Laxey marble extends to the overburden contact, except in the southeast portion where it is terminated by a slide block fault;
- Footwall schist (“SCHL”); and
- Hanging wall schist (“SCHU”).

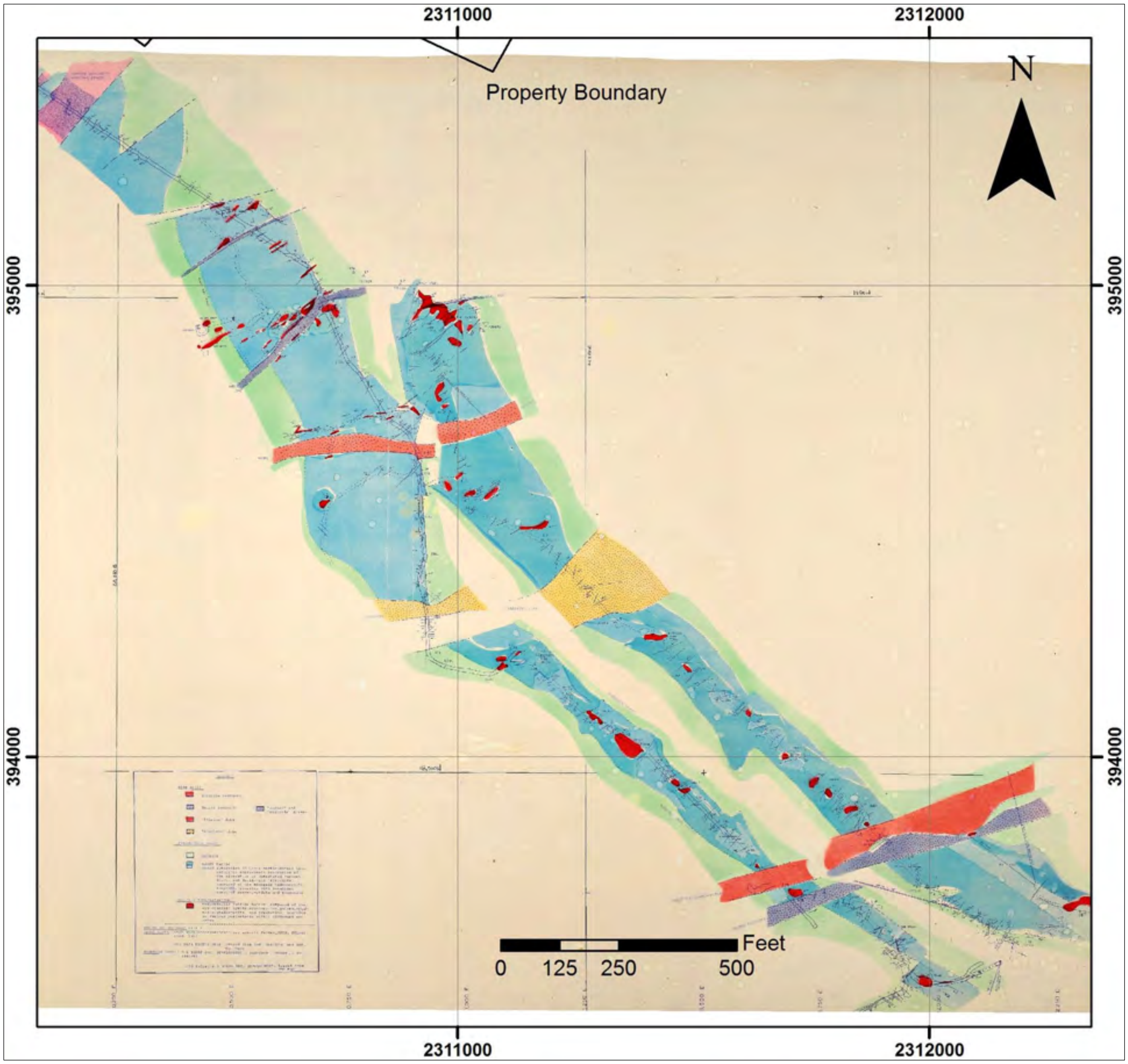



**Figure 14-1 Underground Geologic Map used to Inform the Geologic Model**

Figure 14-2 shows a plan view of the geologic model without the overburden surface and Figure 14-3 shows a northwest to southeast long section of the geologic model.

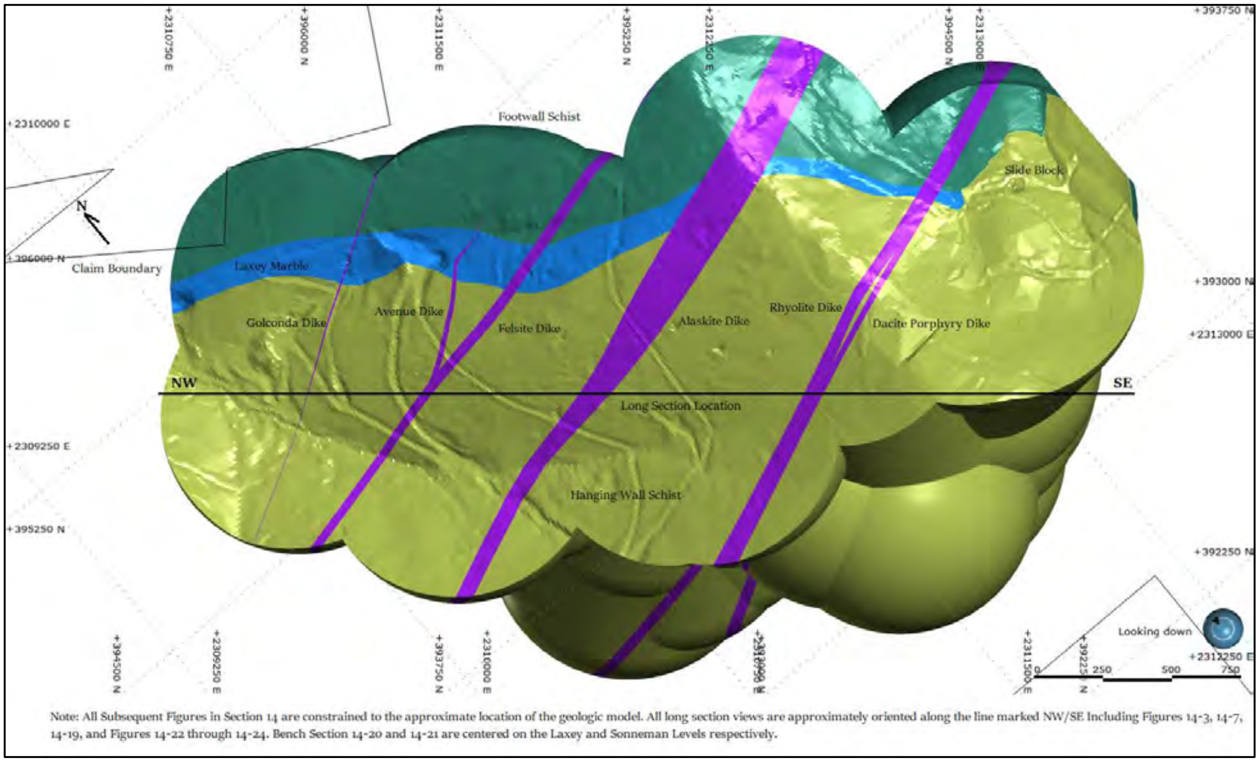



**Figure 14-2 Plan View of the Geologic Model without the Overburden Surface.**

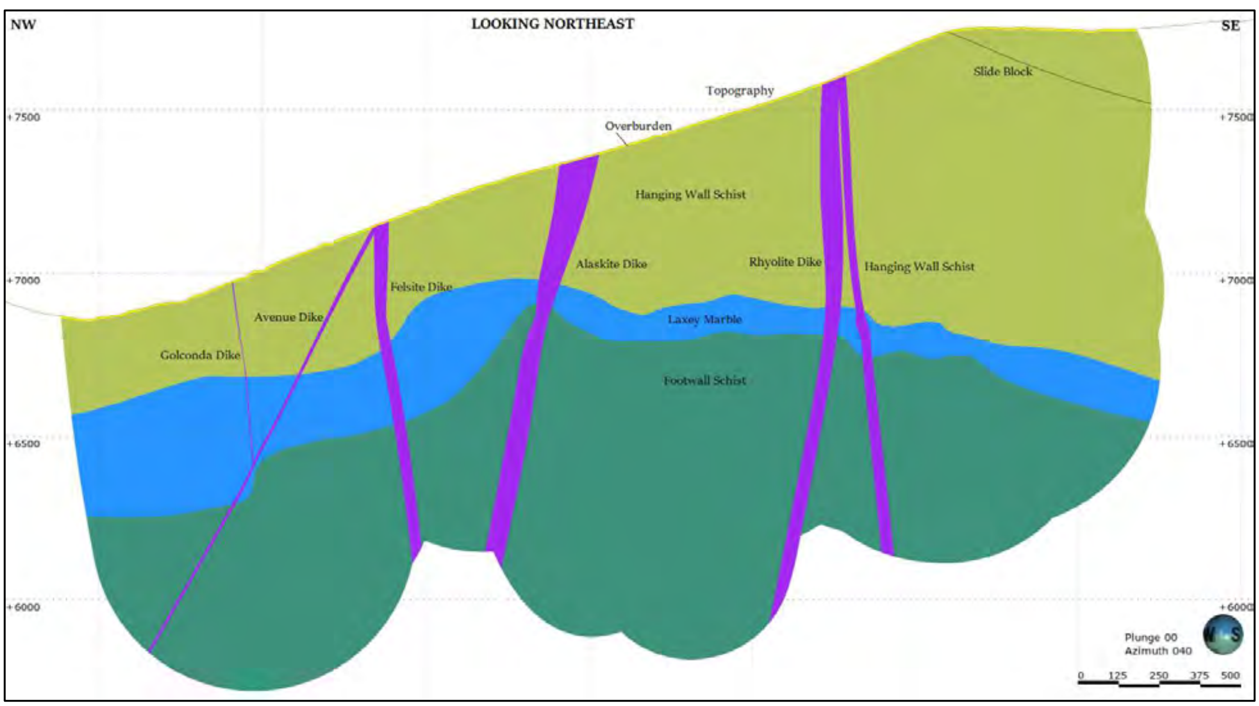



**Figure 14-3 Long Section View of the Geologic Model**

The geologic model was validated by comparing the length of logged geology in the database to the length back tagged to the database from the geologic model as shown in Table 14-3. The table shows good agreement between the logged intervals and the geologic model, with the Laxey marble unit having the highest matching percent. Of note, overburden is not logged in the surface drilling resulting in a zero percent match. The thin layer of overburden is assumed in the model. Reviewing assay grades by geologic model unit (Table 14-4) shows the highest average grade and maximum grade is located in the Laxey marble unit as providing another validation of the model, independent of the geologic logs.

**Table 14-3 Comparison of Logged Interval Length to Back Tagged GM Lengths by Geologic Unit**

| Geologic Unit | Matching Length (ft) | Non-Matching Length (ft) | Total Length (ft) | Matching % |
|---|---|---|---|---|
| OVB | 0.00 | 75.40 | 75.40 | 0.0% |
| DIKE | 588.36 | 94.87 | 683.23 | 86.1% |
| LAXY | 20,403.73 | 2,082.50 | 22,486.23 | 90.7% |
| SCHU | 11,649.31 | 2,687.08 | 14,336.40 | 81.3% |
| SCHL | 3,173.42 | 729.08 | 3,902.50 | 81.3% |
| Total | 35,814.83 | 5,668.93 | 41,483.76 | 86.3% |

**Table 14-4 Descriptive Assay Statistics by Geologic Unit**

| Metal | GM | Count | Length | Mean | Std. Dev. | CV | Minimum | Median | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| Ag (ppm) | Global | 3,888 | 44,848.64 | 20.65 | 84.87 | 4.11 | 0.02 | 0.02 | 3,107.49 |
| | OVB | 17 | 86.57 | 0.02 | 0.00 | 0.00 | 0.02 | 0.02 | 0.02 |
| | DIKE | 61 | 739.86 | 1.99 | 12.19 | 6.14 | 0.02 | 0.02 | 102.86 |
| | LXY | 3,144 | 24,901.99 | 36.66 | 111.12 | 3.03 | 0.02 | 0.03 | 3,107.49 |
| | SCHL | 282 | 4,240.73 | 1.50 | 11.22 | 7.46 | 0.02 | 0.02 | 340.06 |
| | SCHU | 376 | 14,837.34 | 0.38 | 4.77 | 12.52 | 0.02 | 0.02 | 150.87 |
| Au (ppm) | Global | 3,888 | 44,848.64 | 0.224 | 1.29 | 5.75 | 0.001 | 0.001 | 38.300 |
| | OVB | 17 | 86.57 | 0.001 | 0.00 | 0.00 | 0.001 | 0.001 | 0.001 |
| | DIKE | 61 | 739.86 | 0.079 | 0.42 | 5.31 | 0.001 | 0.001 | 3.086 |
| | LXY | 3,144 | 24,901.99 | 0.396 | 1.71 | 4.32 | 0.001 | 0.001 | 38.300 |
| | SCHL | 282 | 4,240.73 | 0.016 | 0.05 | 3.53 | 0.001 | 0.001 | 0.857 |
| | SCHU | 376 | 14,837.34 | 0.005 | 0.02 | 4.99 | 0.001 | 0.001 | 1.125 |
| Cu (%) | Global | 3,888 | 44,848.64 | 0.098 | 0.45 | 4.64 | 0.0001 | 0.0001 | 23.00 |
| | OVB | 17 | 86.57 | 0.000 | 0.00 | 0.00 | 0.0001 | 0.0001 | 0.00 |
| | DIKE | 61 | 739.86 | 0.006 | 0.02 | 3.61 | 0.0001 | 0.0001 | 0.14 |
| | LXY | 3,144 | 24,901.99 | 0.174 | 0.60 | 3.44 | 0.0001 | 0.0005 | 23.00 |
| | SCHL | 282 | 4,240.73 | 0.007 | 0.05 | 7.13 | 0.0001 | 0.0001 | 1.21 |
| | SCHU | 376 | 14,837.34 | 0.001 | 0.01 | 8.96 | 0.0001 | 0.0001 | 0.33 |
| Pb (%) | Global | 3,888 | 44,848.64 | 0.086 | 0.78 | 9.06 | 0.0001 | 0.0001 | 25.60 |
| | OVB | 17 | 86.57 | 0.000 | 0.00 | 0.00 | 0.0001 | 0.0001 | 0.00 |
| | DIKE | 61 | 739.86 | 0.001 | 0.00 | 2.02 | 0.0001 | 0.0001 | 0.01 |
| | LXY | 3,144 | 24,901.99 | 0.155 | 1.04 | 6.74 | 0.0001 | 0.0004 | 25.60 |
| | SCHL | 282 | 4,240.73 | 0.003 | 0.05 | 20.14 | 0.0001 | 0.0001 | 4.41 |
| | SCHU | 376 | 14,837.34 | 0.000 | 0.00 | 4.07 | 0.0001 | 0.0001 | 0.03 |
| Zn (%) | Global | 3,888 | 44,848.64 | 0.791 | 3.61 | 4.56 | 0.0001 | 0.0001 | 46.79 |
| | OVB | 17 | 86.57 | 0.000 | 0.00 | 0.00 | 0.0001 | 0.0001 | 0.00 |
| | DIKE | 61 | 739.86 | 0.108 | 0.93 | 8.59 | 0.0001 | 0.0001 | 8.30 |
| | LXY | 3,144 | 24,901.99 | 1.418 | 4.75 | 3.35 | 0.0001 | 0.0010 | 46.79 |
| | SCHL | 282 | 4,240.73 | 0.011 | 0.16 | 13.97 | 0.0001 | 0.0001 | 10.65 |
| | SCHU | 376 | 14,837.34 | 0.003 | 0.04 | 14.38 | 0.0001 | 0.0001 | 1.30 |

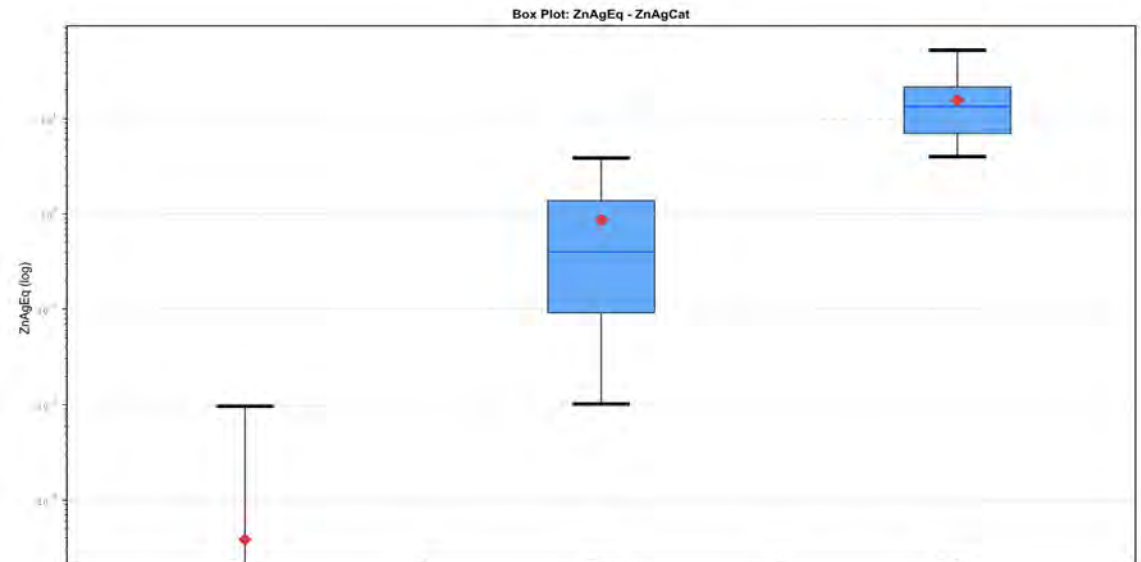
## 14.3 Refined Geologic Model

The Laxey marble unit was refined to the three styles of mineralization observed at the Project. Massive sulfides are the primary host of mineral resources within the Laxey marble unit and are visually distinct in core and in underground exposures. Hedenbergite skarns represent another distinct mineralized unit in the Laxey marble, and contain moderate grades. The remaining Laxey marble unit not modeled as massive sulfides or skarns were modeled as Marble. These three units are the estimation domains for the MRE. Figure 14-4 shows representative core photos of the three modeled units.


**Figure 14-4 Representative core photos of the mineralization types modeled within the Laxey Marble Unit**

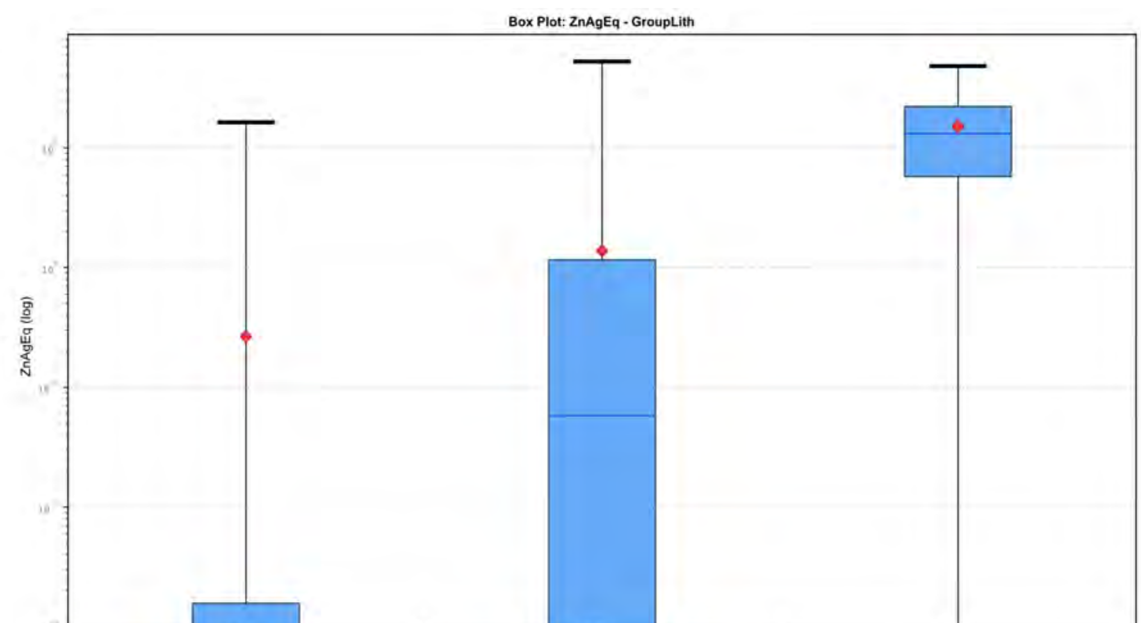
The estimation domains were modeled using two groups of information. HRC elected to use the same lithologies assigned by a zinc-silver equivalent grade for all information prior to the 2019 and 2020 drilling. These were the intervals used to define the estimation domains in the 2019 technical report issued by HRC with the effective date of April 30$^{th}$, 2019. The methodology for these assignments is stated below.

Since lithologic logs were incomplete for all samples, a zinc silver equivalent ("ZnAgEq") was created to more accurately define the massive sulfide and skarn domains. Cut-offs for ZnAgEq were adjusted until mean ZnAgEq grades (Figure 14-5) were similar to the mean grades seen in the lithologies (Figures 14-6). ZnAgEq grades greater than 4.0% were classified as massive sulfides, grades between 4.0% and 0.01% were classified as skarn, and grades below 0.01% were classified as marble. The ZnAgEq categories were used to model the massive sulfide and skarn domains within each Laxey marble domain.




| | Marble | Skarn | Sulfide |
|---|---|---|---|
| Min | 0 | 0.010231 | 4.0001 |
| Q1 | 0 | 0.091446 | 7.0219 |
| Median | 0 | 0.40057 | 13.465 |
| Q3 | 0 | 1.3807 | 21.645 |
| Max | 0.0097306 | 3.871 | 52.5 |
| Mean | 0.00038468 | 0.86739 | 15.666 |
| SD | 0.00099897 | 1.0181 | 10.16 |
| N | 351 | 907 | 464 |

**Figure 14-5 Box Plots of Sample ZnAgEq Grades and Statistics by ZnAgEq Categorization**




| | Marble | Skarn | Sulfides |
|---|---|---|---|
| Min | 0 | 0 | 0 |
| Q1 | 0 | 0 | 5.7467 |
| Median | 0 | 0.0581 | 13.146 |
| Q3 | 0.001571 | 1.1623 | 22.158 |
| Max | 16.313 | 52.5 | 48.086 |
| Mean | 0.26656 | 1.3781 | 15.087 |
| SD | 1.243 | 3.4583 | 11.547 |
| N | 304 | 660 | 284 |

**Figure 14-6 Box Plots of Sample ZnAgEq Grades and Statistics by Grouped Logged Lithologies**



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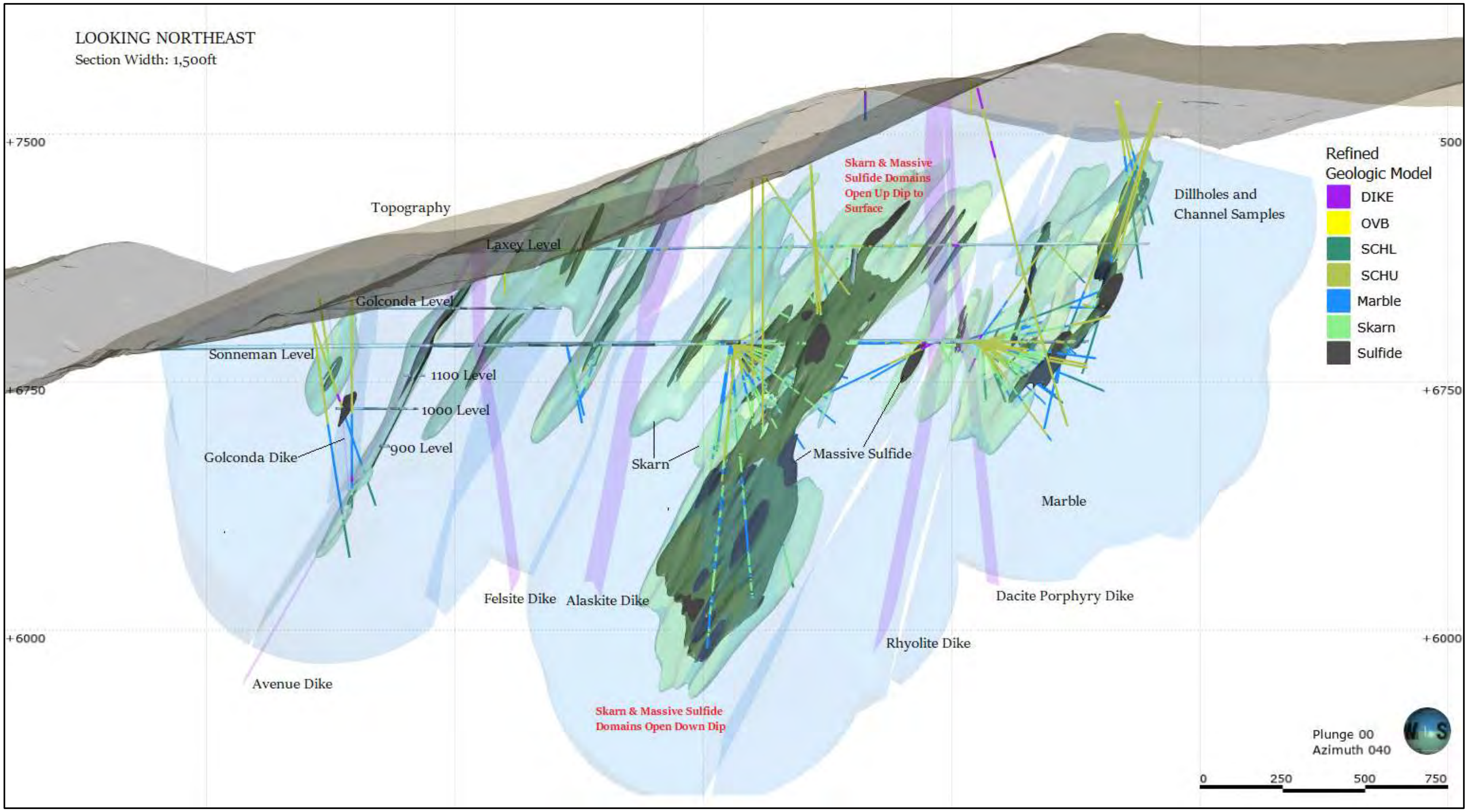
HRC elected to use the logged intervals from the 2019 and 2020 drilling to update the estimation domains. There were three instances where logged massive sulfide lithologies were changed skarn to better reflect model statistics. These three intervals are located in drillhole SM19-014 (605'-621.9') and SM20-025 (579.8'-604' & 633.45'-647'). These intervals were logged as massive sulfide, but hade lower zinc grades than typical of the massive sulfides. HRC reviewed the core photos from these intervals and determined that they were often a mix of marble, massive sulfides and skarns indicating that the drillholes may have skipped off the hanging of the massive sulfide resulting in a dilution of grade.

Polylines were used to guide model surfaces where data was limited. A long section view of the modeled estimation domains is presented in Figure 14-7. These estimation domains represent the maximum extent at which HRC is confident in estimating mineral resources with the current data available. In reality, there is geologic and anecdotal evidence to suggest that the skarn and massive sulfide mineralization continues to the surface and down dip. The deposit remains open along the strike of the Laxey marble and down dip as shown if Figure 7-4.




***Note**: The deposit remains open along strike and down dip in the Laxey marble as shown in Figure 7-4.*

**Figure 14-7 Long Section View of Modeled Estimation Domains.**

## 14.4 Exploratory Data Analysis ("EDA")

The assays were back-tagged to the finalized geologic model. Assay intervals that were split by the wireframe were identified and assigned to the majority lithologic code in order to preserve the original assay length. Four intervals totaling 12.5 feet were assigned to the skarn domain based on assay grades. Table 14-5 summarizes the assay grades by metal within the estimation domains and within the Laxey marble unit in total.

**Table 14-5 Assay Study Statistics by Metal and Domain**

| Metal | Domain | Count | Length | Mean | Std. Dev. | CV | Minimum | Median | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| Ag (ppm) | Laxey Marble Unit | 3,277 | 24,900.50 | 36.64 | 111.07 | 3.03 | 0.02 | 0.03 | 3,107.49 |
| | Marble | 674 | 9,158.12 | 2.57 | 22.77 | 8.87 | 0.02 | 0.02 | 720.00 |
| | Skarn | 1,846 | 12,327.23 | 25.43 | 63.19 | 2.48 | 0.02 | 2.06 | 3,107.49 |
| | Massive Sulfide | 757 | 3,415.15 | 168.48 | 230.72 | 1.37 | 0.02 | 105.57 | 2,666.55 |
| Au (ppm) | Laxey Marble Unit | 3,277 | 24,900.50 | 0.396 | 1.71 | 4.32 | 0.001 | 0.003 | 38.300 |
| | Marble | 674 | 9,158.12 | 0.039 | 0.31 | 8.06 | 0.001 | 0.001 | 13.029 |
| | Skarn | 1,846 | 12,327.23 | 0.136 | 0.62 | 4.57 | 0.001 | 0.010 | 19.544 |
| | Massive Sulfide | 757 | 3,415.15 | 2.293 | 3.93 | 1.72 | 0.001 | 0.686 | 38.300 |
| Cu (%) | Laxey Marble Unit | 3,277 | 24,900.50 | 0.174 | 0.60 | 3.44 | 0.0001 | 0.0005 | 23.00 |
| | Marble | 674 | 9,158.12 | 0.011 | 0.11 | 9.93 | 0.0001 | 0.0001 | 4.00 |
| | Skarn | 1,846 | 12,327.23 | 0.196 | 0.63 | 3.23 | 0.0001 | 0.0022 | 23.00 |
| | Massive Sulfide | 757 | 3,415.15 | 0.534 | 0.97 | 1.82 | 0.0001 | 0.2100 | 10.56 |
| Pb (%) | Laxey Marble Unit | 3,277 | 24,900.50 | 0.155 | 1.04 | 6.75 | 0.0001 | 0.0004 | 25.60 |
| | Marble | 674 | 9,158.12 | 0.015 | 0.34 | 23.25 | 0.0001 | 0.0001 | 16.00 |
| | Skarn | 1,846 | 12,327.23 | 0.028 | 0.21 | 7.46 | 0.0001 | 0.0010 | 9.22 |
| | Massive Sulfide | 757 | 3,415.15 | 0.989 | 2.59 | 2.61 | 0.0001 | 0.2300 | 25.60 |
| Zn (%) | Laxey Marble Unit | 3,277 | 24,900.50 | 1.417 | 4.74 | 3.35 | 0.0001 | 0.0010 | 46.79 |
| | Marble | 674 | 9,158.12 | 0.033 | 0.46 | 13.95 | 0.0001 | 0.0001 | 19.70 |
| | Skarn | 1,846 | 12,327.23 | 0.384 | 1.62 | 4.21 | 0.0001 | 0.0112 | 27.10 |
| | Massive Sulfide | 757 | 3,415.15 | 8.858 | 9.47 | 1.07 | 0.0001 | 5.3900 | 46.79 |

Multiple sample types are incorporated into the database including diamond core drillholes, RC drillholes, channel samples, and long hole samples. HRC reviewed statistics and box plots by sample type for each metal. These plots and statistics are shown in Appendix B. Due to the limited sampling on the Project, HRC incorporated all sample types into the MRE and notes the following:

- Underground channel samples showed slightly higher average grades than other sample types;
- Core and long hole samples were closer to the average grade of the total population; and
- RC samples had lower average grades.

HRC reviewed the relationship between grade and interval length for each metal. Sampled intervals were grouped into 1-ft bins in order to plot the effect of sample length on average grades and to determine the majority sample lengths to inform compositing. These plots are presented in Appendix B. Conclusions from the study show:

- Smaller sample lengths have higher average grades than longer sample lengths; and
- The majority of sample lengths are between 3 feet and 5 feet suggesting a composite study should review 6-, 8- and 10-foot composites.

Contact plots by metal and domain were reviewed to determine boundary estimation methodology and are presented in Appendix B. Review of the contact plots suggested treating the estimation domains as hard boundaries was the most appropriate for the Project and compositing would also be done by domain.

A downhole composite study by metal and domain on 6-, 8- and 10-foot lengths (summarized in Table 14-6) was completed by HRC and found:

- No difference in length weighted average grade;
- Reduction in CV with increasing composite length;
- 6-foot composites split too many samples and was not appropriate; and
- 8-foot and 10-foot composites could be considered.

**Table 14-6 Composite Study Statistics by Metal and Domain**

| Metal | Domain | Composite Length | Count | Length | Mean | CV | Maximum |
|---|---|---|---|---|---|---|---|
| Ag (ppm) | Marble | Assay | 674 | 9,158.12 | 2.57 | 8.87 | 720.00 |
| | | 6 | 1,540 | 9,158.12 | 2.57 | 6.71 | 348.00 |
| | | 8 | 1,161 | 9,158.12 | 2.57 | 6.03 | 230.18 |
| | | 10 | 946 | 9,158.12 | 2.57 | 6.01 | 287.35 |
| | Skarn | Assay | 1,846 | 12,327.23 | 25.43 | 2.48 | 3,107.49 |
| | | 6 | 2,087 | 12,326.73 | 25.43 | 2.01 | 1,256.37 |
| | | 8 | 1,579 | 12,326.08 | 25.43 | 1.87 | 659.19 |
| | | 10 | 1,283 | 12,326.08 | 25.43 | 1.80 | 445.78 |
| | Massive Sulfide | Assay | 757 | 3,415.15 | 168.48 | 1.37 | 2,666.55 |
| | | 6 | 591 | 3,415.10 | 168.48 | 1.21 | 2,666.55 |
| | | 8 | 466 | 3,414.45 | 168.51 | 1.15 | 2,666.55 |
| | | 10 | 393 | 3,414.45 | 168.51 | 1.15 | 2,666.55 |
| Au (ppm) | Marble | Assay | 674 | 9,158.12 | 0.04 | 8.06 | 13.03 |
| | | 6 | 1,540 | 9,158.12 | 0.04 | 5.60 | 4.37 |
| | | 8 | 1,161 | 9,158.12 | 0.04 | 5.01 | 3.28 |
| | | 10 | 946 | 9,158.12 | 0.04 | 5.03 | 3.43 |
| | Skarn | Assay | 1,846 | 12,327.23 | 0.14 | 4.57 | 19.54 |
| | | 6 | 2,087 | 12,326.73 | 0.14 | 3.70 | 13.03 |
| | | 8 | 1,579 | 12,326.08 | 0.14 | 3.32 | 7.54 |
| | | 10 | 1,283 | 12,326.08 | 0.14 | 3.46 | 9.77 |
| | Massive Sulfide | Assay | 757 | 3,415.15 | 2.29 | 1.72 | 38.30 |
| | | 6 | 591 | 3,415.10 | 2.29 | 1.49 | 26.35 |
| | | 8 | 466 | 3,414.45 | 2.29 | 1.41 | 20.23 |
| | | 10 | 393 | 3,414.45 | 2.29 | 1.38 | 22.29 |

| Metal | Domain | Composite Length | Count | Length | Mean | CV | Maximum |
|---|---|---|---|---|---|---|---|
| Cu (%) | Marble | Assay | 674 | 9,158.12 | 0.01 | 9.93 | 4.00 |
| | | 6 | 1,540 | 9,158.12 | 0.01 | 6.63 | 1.27 |
| | | 8 | 1,161 | 9,158.12 | 0.01 | 5.91 | 1.00 |
| | | 10 | 946 | 9,158.12 | 0.01 | 5.77 | 0.82 |
| | Skarn | Assay | 1,846 | 12,327.23 | 0.20 | 3.23 | 23.00 |
| | | 6 | 2,087 | 12,326.73 | 0.20 | 2.78 | 23.00 |
| | | 8 | 1,579 | 12,326.08 | 0.20 | 2.68 | 23.00 |
| | | 10 | 1,283 | 12,326.08 | 0.20 | 2.64 | 23.00 |
| | Massive Sulfide | 0 | 757 | 3,415.15 | 0.53 | 1.82 | 10.56 |
| | | 6 | 591 | 3,415.10 | 0.53 | 1.68 | 9.66 |
| | | 8 | 466 | 3,414.45 | 0.53 | 1.67 | 10.56 |
| | | 10 | 393 | 3,414.45 | 0.53 | 1.65 | 7.33 |
| Pb (%) | Marble | Assay | 674 | 9,158.12 | 0.01 | 23.25 | 16.00 |
| | | 6 | 1,540 | 9,158.12 | 0.01 | 15.80 | 8.27 |
| | | 8 | 1,161 | 9,158.12 | 0.01 | 11.52 | 4.52 |
| | | 10 | 946 | 9,158.12 | 0.01 | 12.84 | 5.12 |
| | Skarn | Assay | 1,846 | 12,327.23 | 0.03 | 7.46 | 9.22 |
| | | 6 | 2,087 | 12,326.73 | 0.03 | 5.00 | 4.58 |
| | | 8 | 1,579 | 12,326.08 | 0.03 | 4.34 | 2.72 |
| | | 10 | 1,283 | 12,326.08 | 0.03 | 4.03 | 2.18 |
| | Massive Sulfide | Assay | 757 | 3,415.15 | 0.99 | 2.61 | 25.60 |
| | | 6 | 591 | 3,415.10 | 0.99 | 2.41 | 19.71 |
| | | 8 | 466 | 3,414.45 | 0.99 | 2.32 | 20.00 |
| | | 10 | 393 | 3,414.45 | 0.99 | 2.28 | 19.27 |
| Zn (%) | Marble | Assay | 674 | 9,158.12 | 0.03 | 13.95 | 19.70 |
| | | 6 | 1,540 | 9,158.12 | 0.03 | 9.79 | 8.72 |
| | | 8 | 1,161 | 9,158.12 | 0.03 | 8.82 | 7.05 |
| | | 10 | 946 | 9,158.12 | 0.03 | 8.20 | 6.13 |
| | Skarn | Assay | 1,846 | 12,327.23 | 0.38 | 4.21 | 27.10 |
| | | 6 | 2,087 | 12,326.73 | 0.38 | 3.25 | 19.56 |
| | | 8 | 1,579 | 12,326.08 | 0.38 | 3.07 | 14.02 |
| | | 10 | 1,283 | 12,326.08 | 0.38 | 2.96 | 13.02 |
| | Massive Sulfide | Assay | 757 | 3,415.15 | 8.86 | 1.07 | 46.79 |
| | | 6 | 591 | 3,415.10 | 8.86 | 0.99 | 44.68 |
| | | 8 | 466 | 3,414.45 | 8.86 | 0.97 | 43.62 |
| | | 10 | 393 | 3,414.45 | 8.86 | 0.96 | 41.55 |

## 14.5 Block Model Setup

Block model parameters are presented in Table 14-7. The block model was oriented along strike of the Laxey marble and completely encompasses the geologic model and estimation domains. The origin is defined by the lower left corner of the block model A block size of 10 ft x 10 ft x 10 ft was selected to accurately convert the wireframe solid volumes to blocks and maintain a reasonable mining unit size. Table 14-8 shows the modeled wireframes are accurately converted into block volumes with differences less than 0.5%.

**Table 14-7 Block Model Parameters**

| | X | Y | Z |
|---|---|---|---|
| Origin (LLC) | 2312100 | 392100 | 5500 |
| Block Size | 10 | 10 | 10 |
| No. Blocks | 240 | 390 | 234 |
| Boundary Size | 2400 | 3900 | 2340 |
| Max | 2314500 | 396000 | 7840 |
| Rotation | 305 degrees clockwise around Z Axis | | |

**Table 14-8 Block Model Volume Comparison to Wireframes**

| Lithology | Wireframe Volume ($ft^3$) | Block Model Volume ($ft^3$) | % Diff. |
|---|---|---|---|
| Overburden | 26,587,000 | 26,670,000 | 0.31% |
| Dikes | 476,210,000 | 476,338,000 | 0.03% |
| Marble | 450,360,000 | 450,299,000 | -0.01% |
| Skarn | 58,853,000 | 58,840,000 | -0.02% |
| Massive Sulfide | 8,827,800 | 8,838,000 | 0.12% |
| Upper Schist | 2,453,900,000 | 2,453,612,000 | -0.01% |
| Lower Schist | 2,566,600,000 | 2,566,518,000 | 0.00% |

## 14.6 Compositing and Capping

Drillhole and channel sample data were composited to 10ft intervals by estimation domain. Samples smaller than 5 ft were distributed equally. The composites were then used for grade capping analysis and variography for each domain. Descriptive statistics of composites by metal and domain are presented in Table 14-9.

**Table 14-9 Length Weighted Composite Statistics by Metal and Domain**

| Metal | Domain | Count | Length | Mean | Std. Dev. | CV | Minimum | Median | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| Ag (ppm) | Laxey Marble Unit | 2,624 | 24,868.65 | 36.31 | 94.70 | 2.61 | 0.02 | 0.35 | 2,666.55 |
| | Marble | 947 | 9,161.54 | 2.59 | 16.12 | 6.21 | 0.02 | 0.02 | 348.00 |
| | Skarn | 1,283 | 12,303.87 | 25.07 | 43.62 | 1.74 | 0.02 | 4.34 | 407.00 |
| | Massive Sulfide | 394 | 3,403.24 | 167.72 | 193.00 | 1.15 | 0.02 | 117.97 | 2,666.55 |
| Au (ppm) | Laxey Marble Unit | 2,624 | 24,868.65 | 0.394 | 1.436 | 3.64 | 0.001 | 0.005 | 22.287 |
| | Marble | 947 | 9,161.54 | 0.039 | 0.195 | 5.01 | 0.001 | 0.001 | 3.429 |
| | Skarn | 1,283 | 12,303.87 | 0.136 | 0.471 | 3.47 | 0.001 | 0.021 | 9.773 |
| | Massive Sulfide | 394 | 3,403.24 | 2.287 | 3.166 | 1.38 | 0.001 | 1.131 | 22.287 |
| Cu (%) | Laxey Marble Unit | 2,624 | 24,868.65 | 0.1734 | 0.5163 | 2.98 | 0.0001 | 0.0010 | 23.0000 |
| | Marble | 947 | 9,161.54 | 0.0113 | 0.0652 | 5.76 | 0.0001 | 0.0001 | 0.9120 |
| | Skarn | 1,283 | 12,303.87 | 0.1959 | 0.5189 | 2.65 | 0.0001 | 0.0083 | 23.0000 |
| | Massive Sulfide | 394 | 3,403.24 | 0.5280 | 0.8757 | 1.66 | 0.0001 | 0.2494 | 7.3333 |
| Pb (%) | Laxey Marble Unit | 2,624 | 24,868.65 | 0.1541 | 0.9085 | 5.89 | 0.0001 | 0.0010 | 19.2700 |
| | Marble | 947 | 9,161.54 | 0.0146 | 0.1866 | 12.82 | 0.0001 | 0.0001 | 5.1201 |
| | Skarn | 1,283 | 12,303.87 | 0.0270 | 0.1091 | 4.04 | 0.0001 | 0.0010 | 2.1808 |
| | Massive Sulfide | 394 | 3,403.24 | 0.9895 | 2.2579 | 2.28 | 0.0001 | 0.3160 | 19.2700 |
| Zn (%) | Laxey Marble Unit | 2,624 | 24,868.65 | 1.4165 | 4.3990 | 3.11 | 0.0001 | 0.0015 | 41.5480 |
| | Marble | 947 | 9,161.54 | 0.0330 | 0.2695 | 8.16 | 0.0001 | 0.0001 | 6.0589 |
| | Skarn | 1,283 | 12,303.87 | 0.3805 | 1.1066 | 2.91 | 0.0001 | 0.0213 | 11.2244 |
| | Massive Sulfide | 394 | 3,403.24 | 8.8858 | 8.4916 | 0.96 | 0.0001 | 5.9901 | 41.5480 |

The estimation of highly skewed grade distribution can be sensitive to the presence of even a few extreme values. HRC utilized a log scale Cumulative Frequency Plot ("CFP") of the composited assay data for each metal to identify the presence of statistical outliers in each estimation domain. The plots were created using MicroModel® software version 8. Based on the domain and the CFP, outliers were either capped or restricted. Grade capping is the practice of replacing any statistical outliers with a maximum value from the assumed sampled distribution. Grade restriction is similar to capping with the exception outliers are not capped within a specified distance, beyond that distance, the outlier sample assumes the capped grade. Examples of CFPs for capped and restricted grades are presented in Figures 14-8 and 14-9. All CFP plots are presented in Appendix C. Table 14-10 summarizes cap and restricted values used for each metal, by domain. Table 14-11 summarizes descriptive statistics for capped composites by domain and metal.

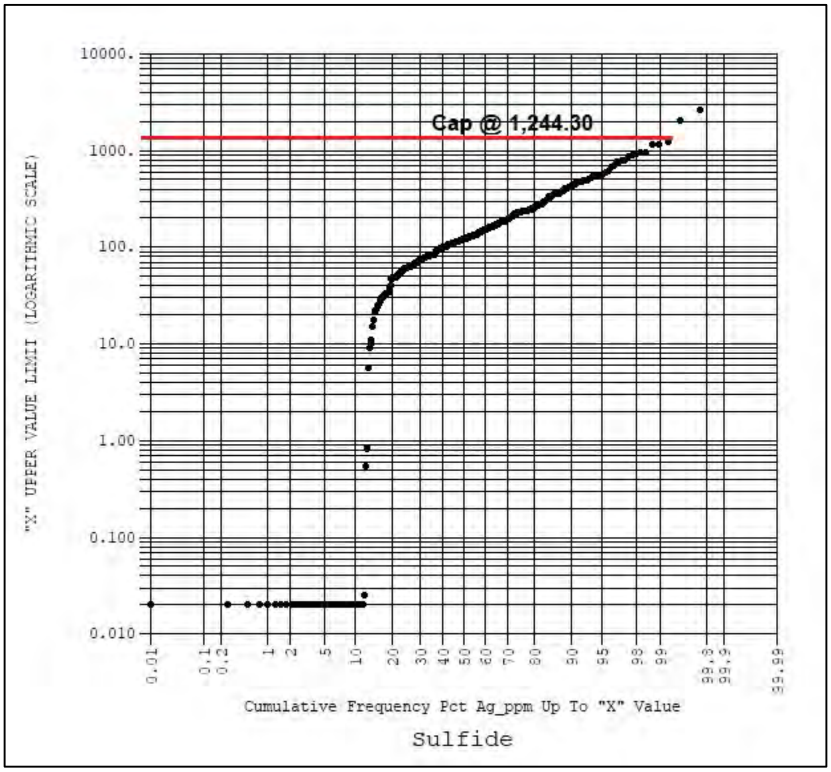



**Figure 14-8 CFP of Silver Composite Grades in the Massive Sulfide Domain**

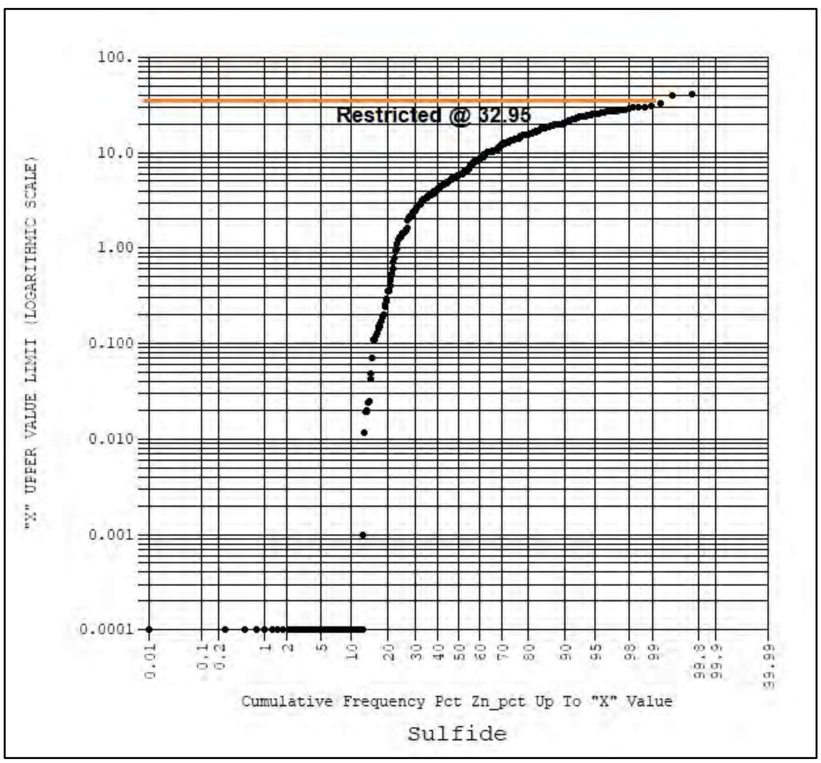



**Figure 14-9 CFP of Zinc Composite Grades in the Massive Sulfide Domain**

**Table 14-10 Capping or Restricted Values by Domain and Metal**

| Metal | Domain | Type | Grade | No. Composites |
|---|---|---|---|---|
| Ag (ppm) | Marble | Capped | 112.33 | 5 |
| | Skarn | Restricted | 220.00 | 6 |
| | Massive Sulfide | Capped | 1244.30 | 2 |
| Au (ppm) | Marble | Capped | 0.77 | 8 |
| | Skarn | Capped | 3.12 | 4 |
| | Massive Sulfide | Restricted | 17.00 | 5 |
| Cu (%) | Marble | Capped | 0.19 | 12 |
| | Skarn | Capped | 3.27 | 4 |
| | Massive Sulfide | Restricted | 6.00 | 1 |
| Pb (%) | Marble | Capped | 0.23 | 7 |
| | Skarn | Capped | 0.71 | 4 |
| | Massive Sulfide | Restricted | 11.94 | 4 |
| Zn (%) | Marble | Capped | 1.07 | 8 |
| | Skarn | Restricted | 8.87 | 3 |
| | Massive Sulfide | Restricted | 32.95 | 2 |

**Table 14-11 Length Weighted Composite Statistics by Metal and Domain**

| Metal | Domain | Count | Length | Mean | Std. Dev. | CV | Minimum | Median | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| Ag (ppm) | Laxey Marble Unit | 2,624 | 24,868.65 | 36.00 | 90.81 | 2.52 | 0.02 | 0.35 | 1,244.30 |
| | Marble | 947 | 9,161.54 | 2.23 | 11.40 | 5.11 | 0.02 | 0.02 | 112.33 |
| | Skarn | 1,283 | 12,303.87 | 25.07 | 43.62 | 1.74 | 0.02 | 4.34 | 407.00 |
| | Massive Sulfide | 394 | 3,403.24 | 166.38 | 180.55 | 1.09 | 0.02 | 117.97 | 1,244.30 |
| Au (ppm) | Laxey Marble Unit | 2,624 | 24,868.65 | 0.387 | 1.417 | 3.66 | 0.001 | 0.005 | 22.287 |
| | Marble | 947 | 9,161.54 | 0.030 | 0.104 | 3.43 | 0.001 | 0.001 | 0.770 |
| | Skarn | 1,283 | 12,303.87 | 0.127 | 0.350 | 2.76 | 0.001 | 0.021 | 3.120 |
| | Massive Sulfide | 394 | 3,403.24 | 2.287 | 3.166 | 1.38 | 0.001 | 1.131 | 22.287 |
| Cu (%) | Laxey Marble Unit | 2,624 | 24,868.65 | 0.1692 | 0.4739 | 2.80 | 0.0001 | 0.0010 | 7.3333 |
| | Marble | 947 | 9,161.54 | 0.0069 | 0.0265 | 3.82 | 0.0001 | 0.0001 | 0.1900 |
| | Skarn | 1,283 | 12,303.87 | 0.1907 | 0.4314 | 2.26 | 0.0001 | 0.0083 | 3.2700 |
| | Massive Sulfide | 394 | 3,403.24 | 0.5280 | 0.8757 | 1.66 | 0.0001 | 0.2494 | 7.3333 |
| Pb (%) | Laxey Marble Unit | 2,624 | 24,868.65 | 0.1498 | 0.9009 | 6.01 | 0.0001 | 0.0010 | 19.2700 |
| | Marble | 947 | 9,161.54 | 0.0056 | 0.0278 | 4.98 | 0.0001 | 0.0001 | 0.2300 |
| | Skarn | 1,283 | 12,303.87 | 0.0249 | 0.0829 | 3.33 | 0.0001 | 0.0010 | 0.7100 |
| | Massive Sulfide | 394 | 3,403.24 | 0.9895 | 2.2579 | 2.28 | 0.0001 | 0.3160 | 19.2700 |
| Zn (%) | Laxey Marble Unit | 2,624 | 24,868.65 | 1.4121 | 4.3979 | 3.11 | 0.0001 | 0.0015 | 41.5480 |
| | Marble | 947 | 9,161.54 | 0.0211 | 0.1191 | 5.65 | 0.0001 | 0.0001 | 1.0700 |
| | Skarn | 1,283 | 12,303.87 | 0.3805 | 1.1066 | 2.91 | 0.0001 | 0.0213 | 11.2244 |
| | Massive Sulfide | 394 | 3,403.24 | 8.8858 | 8.4916 | 0.96 | 0.0001 | 5.9901 | 41.5480 |

## 14.7 Variography

A variography analysis was completed to establish spatial variability of the metals by domain for the Project. Variography establishes the appropriate contribution that any specific composite should have when estimating a block volume value within a model. This is performed by comparing the orientation and distance used in the estimation to the variability of other samples of similar relative direction and distance.

Due to the clustered nature of the underground channel sampling and high grades in the Project, the composites were subjected to a normal score transformation before variograms could be modeled. Normal score variograms were oriented in along strike and down dip of the modeled domains. Radial Plots were then examined to establish the plunge. The gamma (y-axis) of the variograms were normalized so that the variance, or total sill, was equal to one. Ranges for the variograms along the major, semi-major, and minor axis of the variogram were modeled based on sample pairs. The normal score variograms are then back transformed to show the actual variance and ranges. The modeled variograms for zinc composites in the massive sulfide are shown in Figures 14-10 through 14-14. Table 14-12 summarizes the variogram parameters for each metal by domain. Modeled variograms by metal and domain are presented in Appendix D.

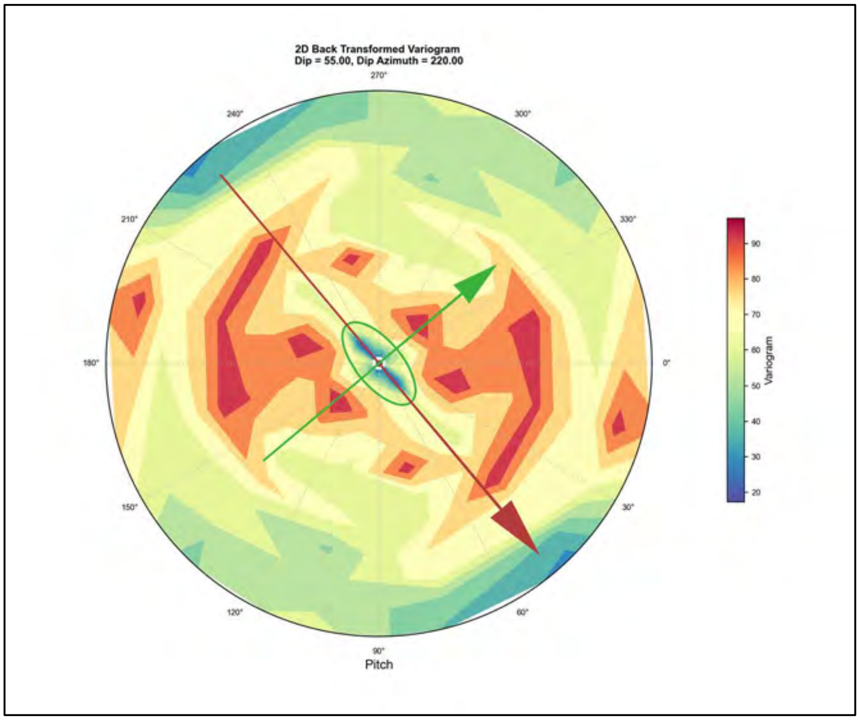



**Figure 14-10 Radial Plot for Zinc within the Massive Sulfide Domain**

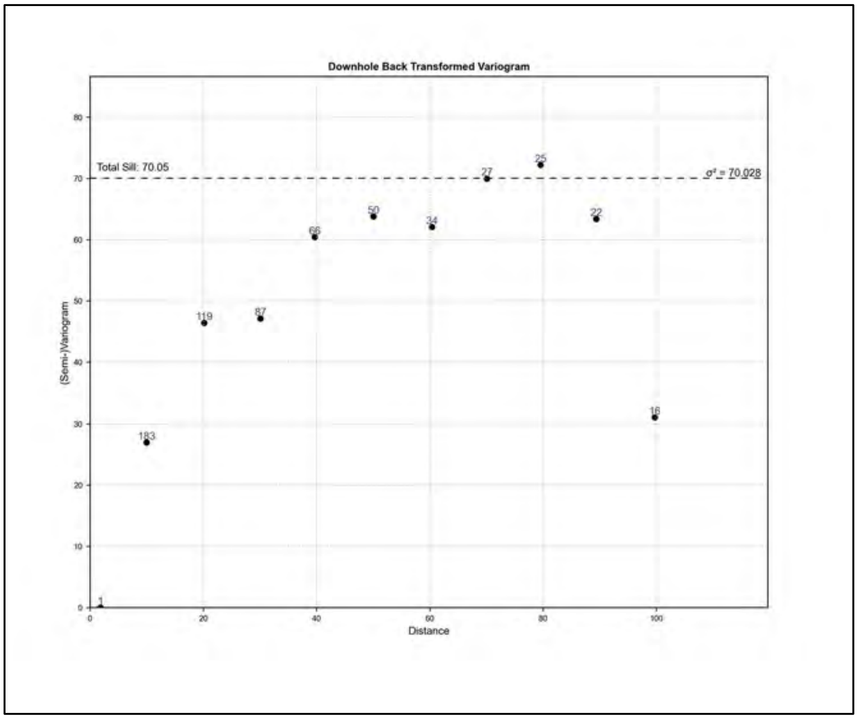



**Figure 14-11 Downhole Variogram for Zinc within the Massive Sulfide Domain**

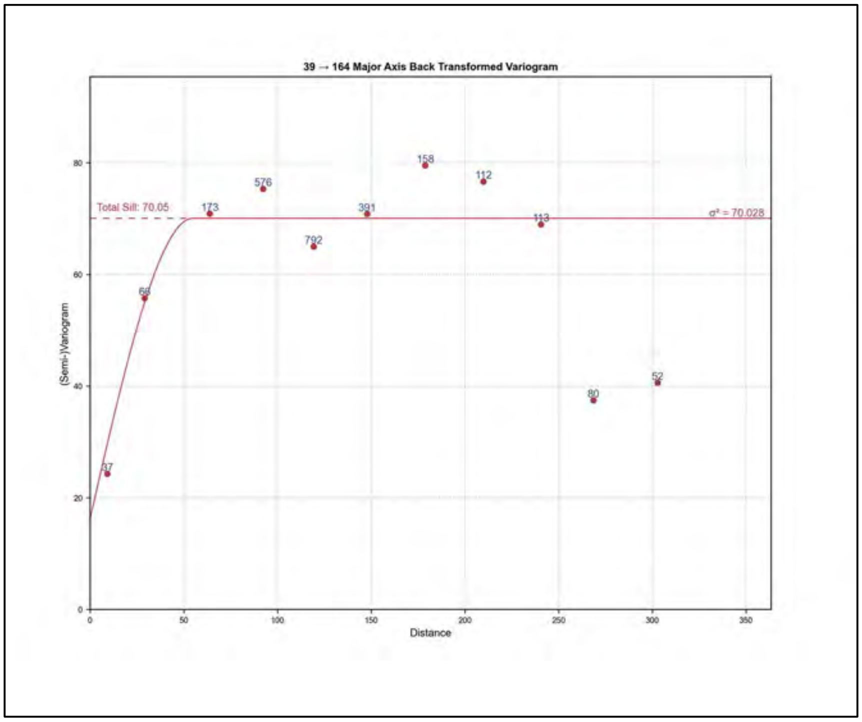



**Figure 14-12  Major Axis Variogram for Zinc within the Massive Sulfide Domain**

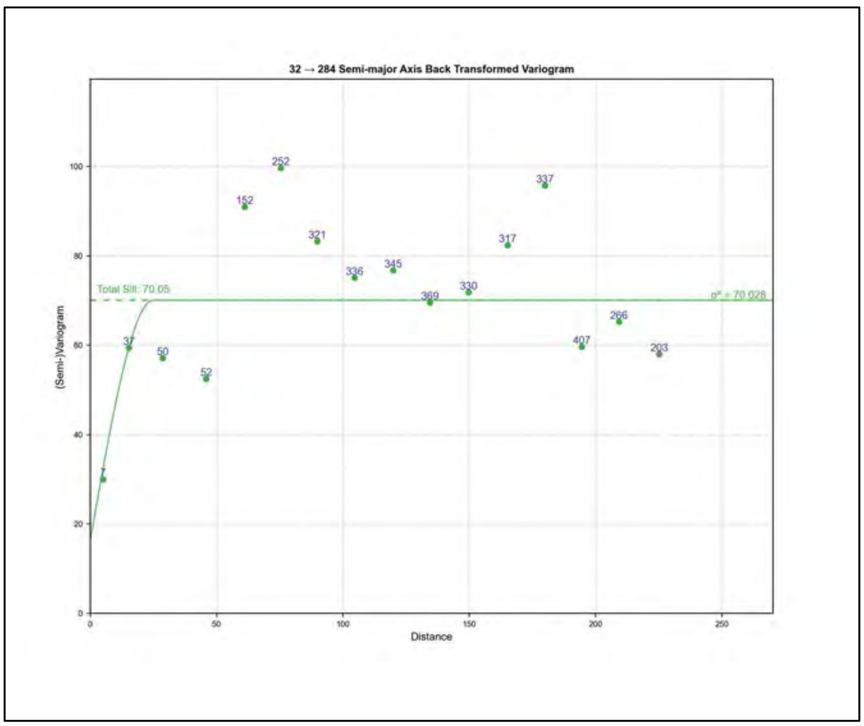



**Figure 14-13  Semi-Major Axis Variogram for Zinc within the Massive Sulfide Domain**

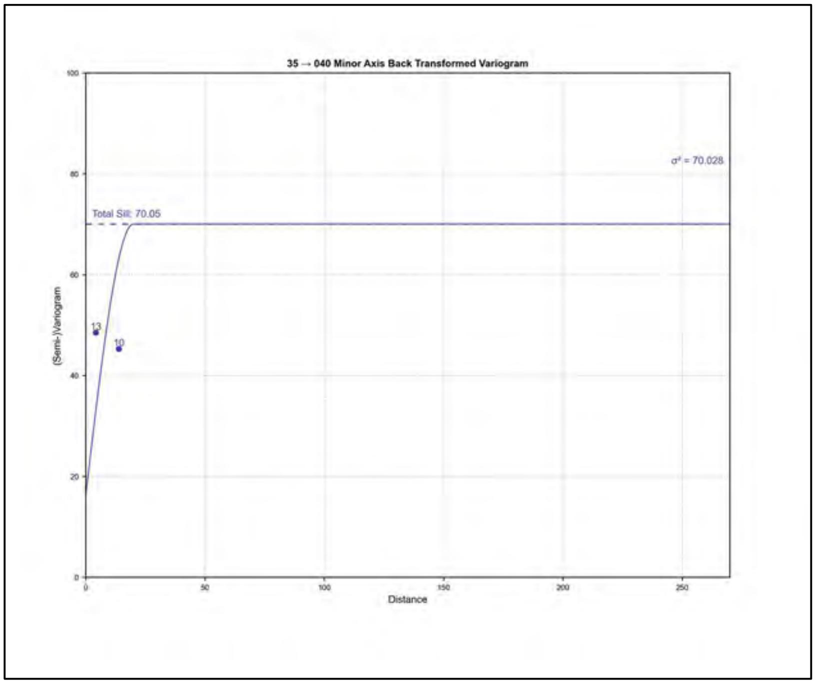



**Figure 14-14  Minor Axis Variogram for Zinc within the Massive Sulfide Domain**

### Table 14-12 Variogram Parameters for All Estimation Domains by Metal

| Domain | Metal | Direction | | | Total Sill | Nugget | Structure 1 | Structure 2 | Range 1 | | | Range 2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dip | Dip Azimuth | Pitch | | | | | Major | Semi-major | Minor | Major | Semi-major | Minor |
| **Marble** | Ag | 55 | 220 | 110 | 1.00 | 0.74 | 0.26 | | 120 | 85 | 45 | | | |
| | Au | 55 | 220 | 105 | 1.00 | 0.71 | 0.29 | | 135 | 110 | 55 | | | |
| | Cu | 55 | 220 | 105 | 1.00 | 0.63 | 0.37 | | 115 | 90 | 70 | | | |
| | Pb | 55 | 220 | 105 | 1.00 | 0.80 | 0.20 | | 90 | 85 | 45 | | | |
| | Zn | 55 | 220 | 110 | 1.00 | 0.69 | 0.31 | | 90 | 80 | 60 | | | |
| **Skarn** | Ag | 55 | 220 | 75 | 1.00 | 0.27 | 0.73 | | 80 | 55 | 20 | | | |
| | Au | 55 | 220 | 130 | 1.00 | 0.45 | 0.30 | 0.25 | 45 | 45 | 20 | 115 | 85 | 80 |
| | Cu | 55 | 220 | 100 | 1.00 | 0.56 | 0.44 | | 70 | 45 | 20 | | | |
| | Pb | 55 | 220 | 110 | 1.00 | 0.37 | 0.63 | | 55 | 50 | 40 | | | |
| | Zn | 55 | 220 | 115 | 1.00 | 0.39 | 0.61 | | 80 | 60 | 70 | | | |
| **Massive Sulfide** | Ag | 55 | 220 | 50 | 1.00 | 0.46 | 0.54 | | 75 | 20 | 35 | | | |
| | Au | 55 | 220 | 45 | 1.00 | 0.24 | 0.76 | | 80 | 20 | 15 | | | |
| | Cu | 55 | 220 | 105 | 1.00 | 0.12 | 0.88 | | 70 | 30 | 20 | | | |
| | Pb | 55 | 220 | 45 | 1.00 | 0.33 | 0.67 | | 80 | 30 | 20 | | | |
| | Zn | 55 | 220 | 50 | 1.00 | 0.23 | 0.77 | | 55 | 25 | 20 | | | |

Variograms in the marble tended to show a higher nugget and longer ranges than other domains with plunges consistently oriented between 105 and 110 degrees. The high nugget effect may be the result of higher-grade outliers within otherwise unmineralized sample population. The variograms in the skarn exhibited more moderate nuggets and shorter ranges. Plunges were dominantly oriented greater than 100 degrees, which is in line with visual observations of grade distribution. Variograms in the massive sulfide displayed similar nuggets and ranges to the skarn domain. However, plunges tended to be oriented less than 90 degrees, in opposition to the orientations observed in the other domains and visual observations of grade distribution. The result indicates the variograms in the massive sulfide are being biased by the sample distribution and drilling orientation.

## 14.8 Estimation Methodology

The zinc, silver, gold, lead, and copper grades were estimated from composites by domain using an ordinary kriging algorithm (“OK”). The estimate was done using two passes with the search ellipse oriented along strike, down dip, and down plunge of the estimation domains. The first pass used a search range of 100 ft x 50 ft x 50 ft. The search ellipse required a minimum of 2 composites, a maximum of 8 composites with no more than 2 composites coming from the same drillhole or channel sample. Outliers were restricted to 80% of the search ellipse for skarns and 70% of the search ellipse for massive sulfides. The second pass used a search range of 200 ft x 100 ft x 50 ft. The search ellipse required a minimum of 1 composite, a maximum of 6 composites with no more than 2 composites coming from the same drillhole or channel sample. Outliers were restricted to 40% of the search ellipse for skarns and 35% of the search ellipse for massive sulfides. Both estimation passes incorporated quadrant sector search methodology in order to force the algorithm to include composites from multiple sectors of the search ellipse in areas of clustered sampling. The estimation parameters are summarized in Table 14-13. Ranges for the search ellipses were established to try and maximize the coverage the modeled domains. Composite selection emphasizes local variability over bulk average, which is appropriate for selective underground mining methods. Single drillholes can be used to estimate a block. Restrictive distance ranges were established to not exceed the average of the maximum major axis range from the modeled variograms for skarn and massive sulfide domains.

**Table 14-13 Summary of Estimation Parameters**

| Pass 1 Ellipsoid Ranges | | | Pass 2 Ellipsoid Ranges | | |
|---|---|---|---|---|---|
| **Maximum** | **Intermediate** | **Minimum** | **Maximum** | **Intermediate** | **Minimum** |
| 100 | 50 | 50 | 200 | 100 | 50 |
| Restrictive Distance (% of Ellipsoid Ranges) | | | Restrictive Distance (%) | | |
| Skarn | | 80 | Skarn | | 40 |
| Massive Sulfide | | 70 | Massive Sulfide | | 35 |
| **Ellipsoid Directions** | | | **Ellipsoid Directions** | | |
| **Dip** | **Dip Azimuth** | **Pitch** | **Dip** | **Dip Azimuth** | **Pitch** |
| 55 | 220 | 120 | 55 | 220 | 120 |
| **Number of Samples** | | **Drillhole Limit** | **Number of Samples** | | **Drillhole Limit** |
| **Minimum** | **Maximum** | **Max Samples per Hole** | **Minimum** | **Maximum** | **Max Samples per Hole** |
| 2 | 8 | 2 | 1 | 6 | 2 |
| **Sector Search** | | | **Sector Search** | | |
| **Method** | **Max Samples** | **Max Empty Sectors** | **Method** | **Max Samples** | **Max Empty Sectors** |
| Quadrant | 2 | 3 | Quadrant | 2 | 3 |

## 14.9 Validation

HRC utilized several methods to validate the results of the estimation method. The combined evidence from these validation methods verifies the OK estimation model results.

### 14.9.1 Comparison with Inverse Distance and Nearest Neighbor Models

Inverse Distance to the 2.5 power ("ID") and Nearest Neighbor ("NN") models were run to serve as comparison with the estimated results from the OK method. Descriptive statistics for the OK method along with those for the ID, NN, and length weighted composites for Laxey Marble Unit, which is inclusive of all estimated domains, and the massive sulfide domain are shown in 14-14. Model comparison descriptive statistics are presented in full in Appendix E. HRC notes the following from review of these statistics:

- Negative block grades are shown in the OK estimate minimums for silver and lead. This is often the result of a search ellipse incorporating a high-grade composite near a low-grade composite resulting in a negative weight. HRC reviewed the negative blocks and found two negative blocks in the skarn domain for silver and one negative block in the skarn domain for lead.
- Estimates in the massive sulfide domain show higher means than the capped composites. This is the result of massive sulfide volumes in the northeast area of the Project being estimated with limited sample data, and high grades being spread skewing the mean. This is supported by the NN estimate also showing higher means than the capped composites.
- The overall reduction of the maximum and CV within the OK and ID models represent an appropriate amount of smoothing to account for the point to block volume variance relationship while maintaining similar means. This is confirmed in Figure 14-15 which compares the Zinc Cumulative Frequency Plots of each of the models and capped composites for the massive sulfide domain. Additional combined cumulative frequency plots are provided in Appendix E.

**Table 14-14 Descriptve Statistics for NN, ID, and OK Interpolants, and Composites**

| Metal | Domain | Estimate | Count | Mean | Std. Dev. | CV | Minimum | Median | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| Ag (ppm) | Laxey Marble Unit | Capped Comp | 2,624 | 36.00 | 90.81 | 2.52 | 0.02 | 0.35 | 1,244.30 |
| | | NN | 157,701 | 17.80 | 58.08 | 3.26 | 0.02 | 0.03 | 1,244.30 |
| | | ID | 157,701 | 18.29 | 52.32 | 2.86 | 0.02 | 0.19 | 966.65 |
| | | OK | 157,701 | 18.46 | 51.15 | 2.77 | -0.05 | 0.20 | 656.24 |
| | Massive Sulfide | Capped Comp | 394 | 166.38 | 180.55 | 1.09 | 0.02 | 117.97 | 1,244.30 |
| | | NN | 8,689 | 184.45 | 149.47 | 0.81 | 0.02 | 147.44 | 1,244.30 |
| | | ID | 8,689 | 186.42 | 116.18 | 0.62 | 0.02 | 162.95 | 966.65 |
| | | OK | 8,689 | 186.28 | 108.60 | 0.58 | 0.02 | 163.50 | 656.24 |
| Au (ppm) | Laxey Marble Unit | Capped Comp | 2,624 | 0.387 | 1.417 | 3.66 | 0.001 | 0.005 | 22.287 |
| | | NN | 157,701 | 0.171 | 0.689 | 4.02 | 0.001 | 0.012 | 22.287 |
| | | ID | 157,701 | 0.171 | 0.581 | 3.39 | 0.001 | 0.031 | 16.529 |
| | | OK | 157,701 | 0.172 | 0.551 | 3.20 | 0.001 | 0.034 | 13.585 |
| | Massive Sulfide | Capped Comp | 394 | 2.281 | 3.356 | 1.47 | 0.001 | 0.857 | 22.287 |
| | | NN | 8,689 | 1.622 | 2.287 | 1.41 | 0.001 | 0.590 | 22.287 |
| | | ID | 8,689 | 1.616 | 1.774 | 1.10 | 0.001 | 0.965 | 16.529 |
| | | OK | 8,689 | 1.643 | 1.597 | 0.97 | 0.001 | 1.266 | 13.585 |
| Cu (%) | Laxey Marble Unit | Capped Comp | 2,624 | 0.1692 | 0.4739 | 2.80 | 0.0001 | 0.0010 | 7.3333 |
| | | NN | 157,701 | 0.0887 | 0.3023 | 3.41 | 0.0001 | 0.0010 | 7.3333 |
| | | ID | 157,701 | 0.0921 | 0.2692 | 2.92 | 0.0001 | 0.0035 | 5.1287 |
| | | OK | 157,701 | 0.0921 | 0.2579 | 2.80 | 0.0001 | 0.0036 | 4.6294 |
| | Massive Sulfide | Capped Comp | 394 | 0.5280 | 0.8757 | 1.66 | 0.0001 | 0.2494 | 7.3333 |
| | | NN | 8,689 | 0.6280 | 0.6645 | 1.06 | 0.0001 | 0.3668 | 7.3333 |
| | | ID | 8,689 | 0.6563 | 0.5773 | 0.88 | 0.0001 | 0.4279 | 5.1287 |
| | | OK | 8,689 | 0.6536 | 0.5676 | 0.87 | 0.0001 | 0.4340 | 4.6294 |
| Pb (%) | Laxey Marble Unit | Capped Comp | 2,624 | 0.1498 | 0.9009 | 6.01 | 0.0001 | 0.0010 | 19.2700 |
| | | NN | 157,701 | 0.0656 | 0.5087 | 7.76 | 0.0001 | 0.0010 | 16.4000 |
| | | ID | 157,701 | 0.0674 | 0.4226 | 6.27 | 0.0001 | 0.0010 | 15.3340 |
| | | OK | 157,701 | 0.0671 | 0.3864 | 5.76 | -0.0042 | 0.0010 | 9.5061 |
| | Massive Sulfide | Capped Comp | 394 | 0.9895 | 2.2579 | 2.28 | 0.0001 | 0.3160 | 19.2700 |
| | | NN | 8,689 | 0.9826 | 1.9344 | 1.97 | 0.0001 | 0.4113 | 16.4000 |
| | | ID | 8,689 | 0.9998 | 1.5111 | 1.51 | 0.0001 | 0.4835 | 15.3340 |
| | | OK | 8,689 | 0.9881 | 1.3322 | 1.35 | 0.0001 | 0.5313 | 9.5061 |
| Zn (%) | Laxey Marble Unit | Capped Comp | 2,624 | 1.4121 | 4.3979 | 3.11 | 0.0001 | 0.0015 | 41.5480 |
| | | NN | 157,701 | 0.6554 | 2.6802 | 4.0891 | 0.0001 | 0.0010 | 41.5480 |
| | | ID | 157,701 | 0.6528 | 2.3597 | 3.6148 | 0.0001 | 0.0019 | 29.4841 |
| | | OK | 157,701 | 0.6538 | 2.2843 | 3.4941 | 0.0001 | 0.0020 | 28.4015 |
| | Massive Sulfide | Capped Comp | 394 | 8.8858 | 8.4916 | 0.96 | 0.0001 | 5.9901 | 41.5480 |
| | | NN | 8,689 | 8.7038 | 7.3439 | 0.8438 | 0.0001 | 6.5800 | 41.5480 |
| | | ID | 8,689 | 8.5392 | 5.5301 | 0.6476 | 0.0001 | 7.9033 | 29.4841 |
| | | OK | 8,689 | 8.4668 | 5.0610 | 0.5977 | 0.0001 | 7.9655 | 28.4015 |

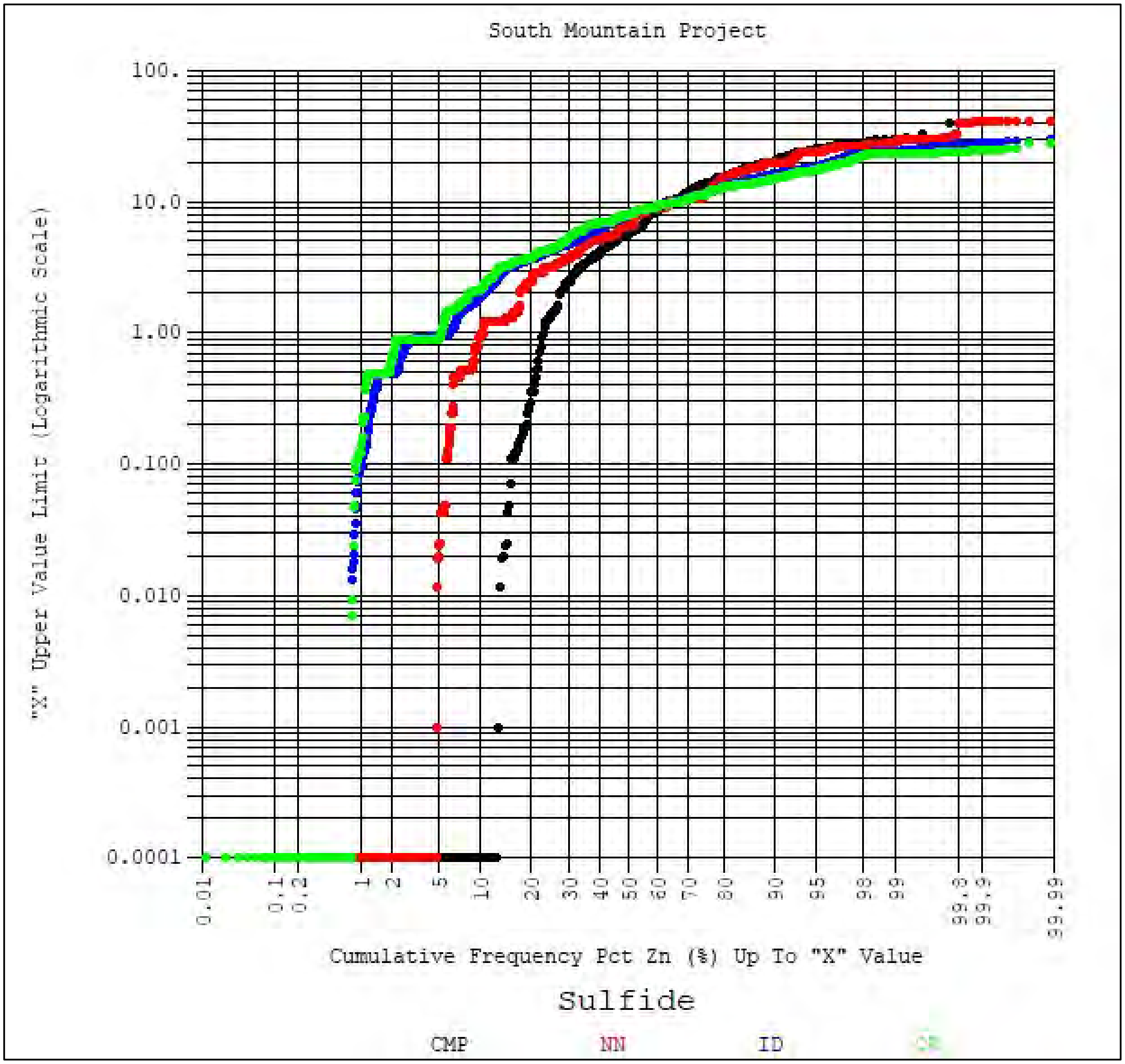



**Figure 14-15 Comparative Cumulative Frequency Plot of Zinc Values for Massive Sulfides**

### 14.9.2 Swath Plots

Swath plots were generated to compare average estimated gold grade from the OK method to the two validation model methods (ID and NN). The results from the OK model, plus those for the validation ID model method are compared using the swath plot to the results from the NN model.

Three swath plots were generated for each metal by domain along the rotated X axis (across strike), the rotated Y axis (along strike), and the Z axis (elevation). Swath plots for zinc in the massive sulfide domain are presented as an example of the results: Figure 14-16 shows average zinc grade looking at 215 degrees azimuth, perpendicular to the strike; Figure 14-17 shows average zinc grade in the strike direction at 305 degrees; Figure 14-18 shows average zinc grade from top to bottom. A complete set of swath plots is provided in Appendix E.

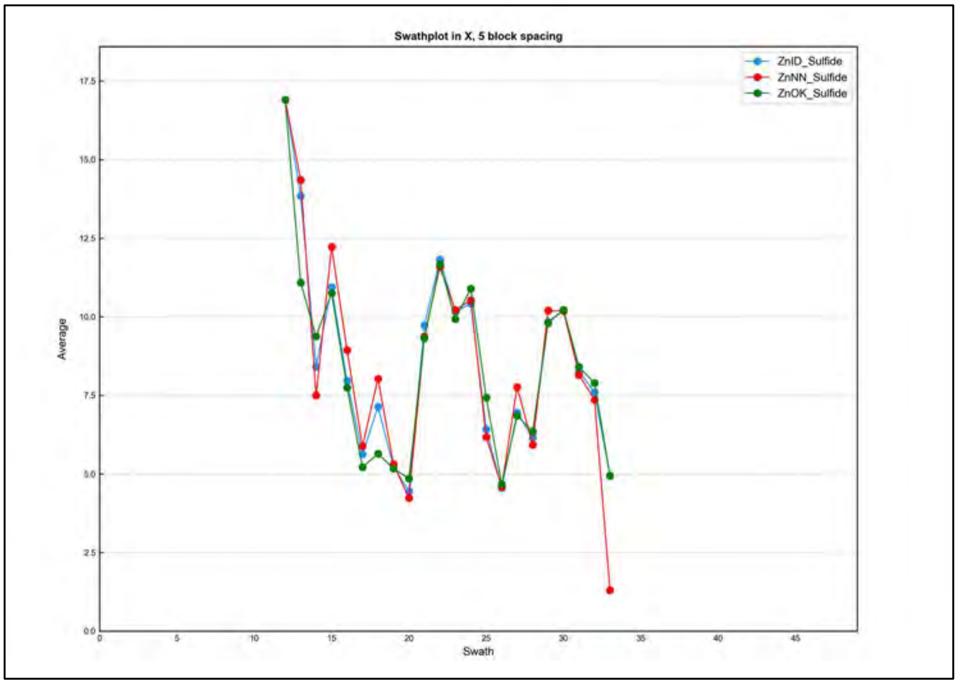



**Figure 14-16 Rotated X-Axis Zinc Swath Plot (Massive Sulfide)**

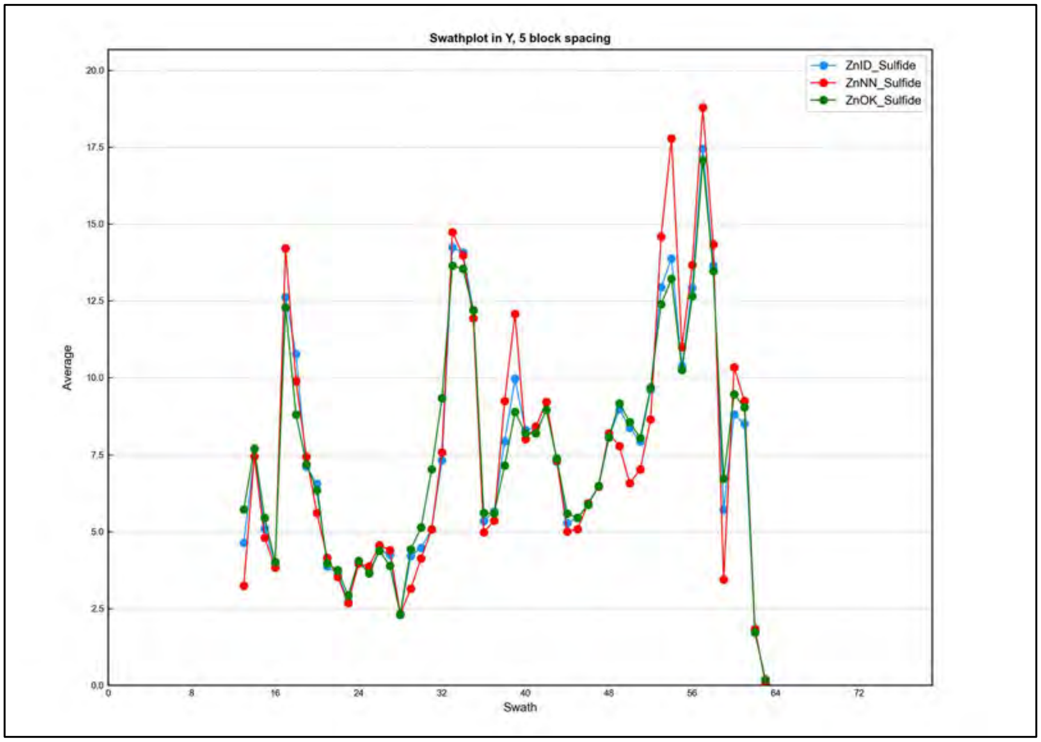



**Figure 14-17 Rotated Y-Axis Zinc Swath Plot (Massive Sulfide)**

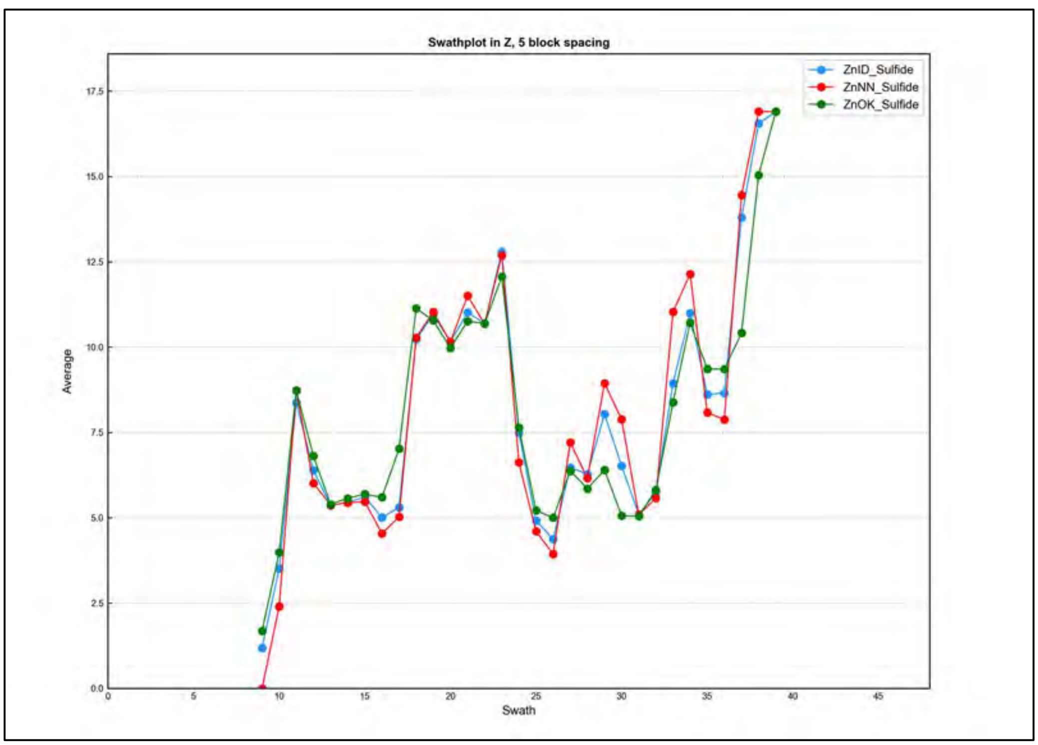



**Figure 14-18 Z-Axis Zinc Swath Plot (Massive Sulfide)**

On a local scale, the nearest neighbor model does not provide a reliable estimate of grade, but on a much larger scale, it represents an unbiased estimation of the grade distribution based on the total data set. Therefore, if the OK model is unbiased, the grade trends may show local fluctuations on a swath plot, but the overall trend should be similar to the distribution of grade from the nearest neighbor.

Overall, there is good correlation between the grade models, although deviations occur near the edges of the deposit and in areas where the density of sampling is lesser.

### 14.9.3 Visual Inspection

Bench plans, cross-sections, and long sections comparing modeled grades to the 10-foot composites were evaluated. A view, oriented northeast, of the silver estimate within the Massive Sulfide domain is shown in Figure 14-19. Images of the estimate by metal and domain along the same orientation are presented Appendix E. Figure 14-20 and 14-21 show estimated grades for the Laxey and Sonneman Levels respectively. The figures show good agreement between modeled grades and the composite grades. In addition, the modeled blocks display continuity of grades along strike and down dip.

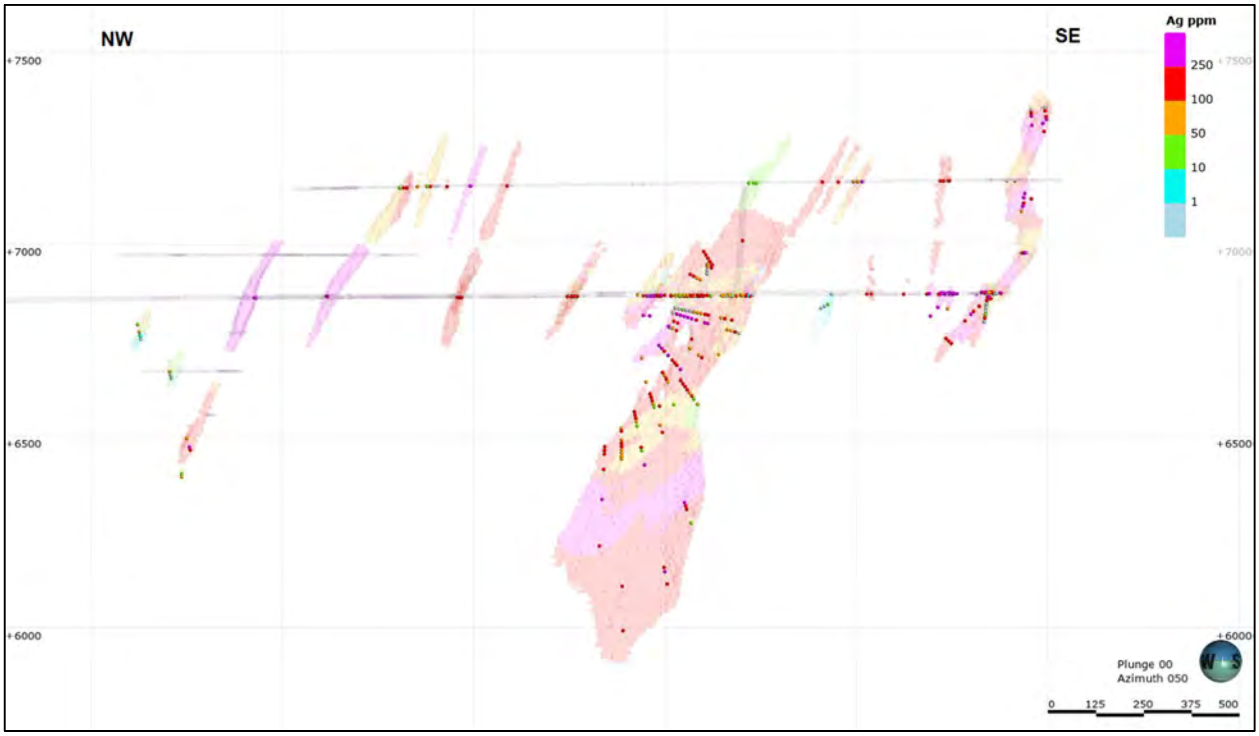



**Figure 14-19 View of the Silver Estimate within the Massive Sulfide looking Northeast**

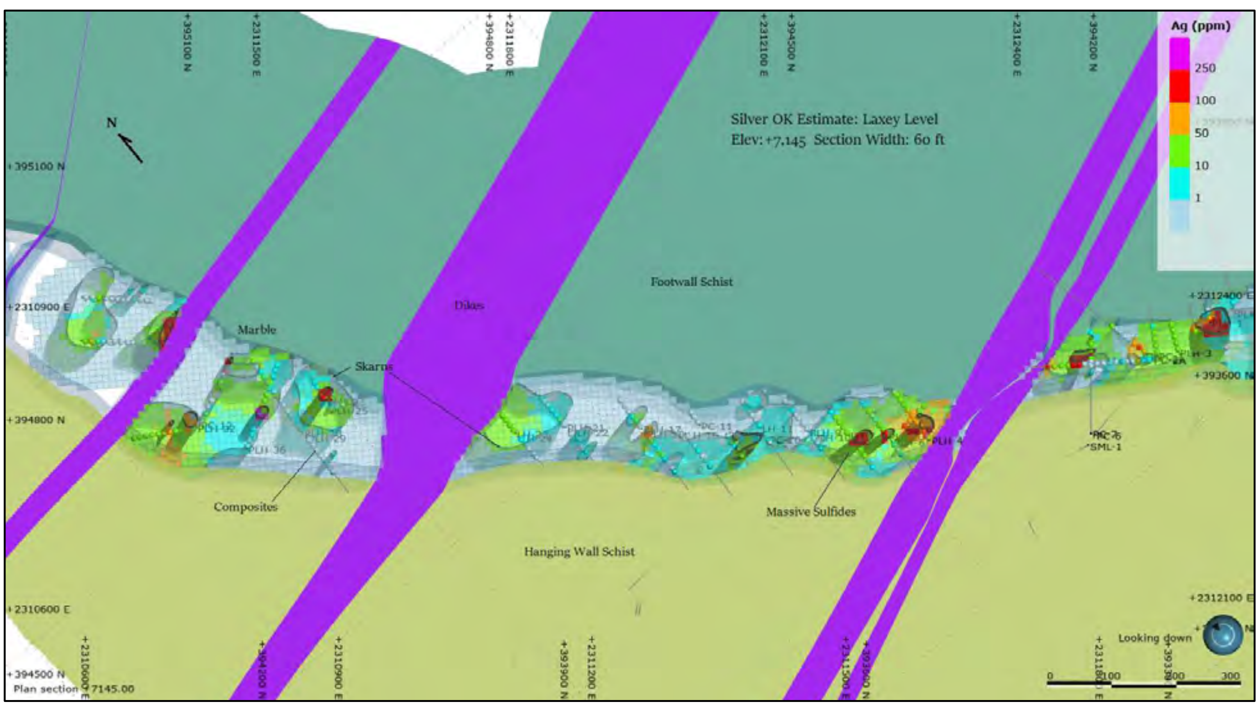



**Figure 14-20 Estimated Silver Grades on the Laxey Level**


Hard Rock Consulting, LLC

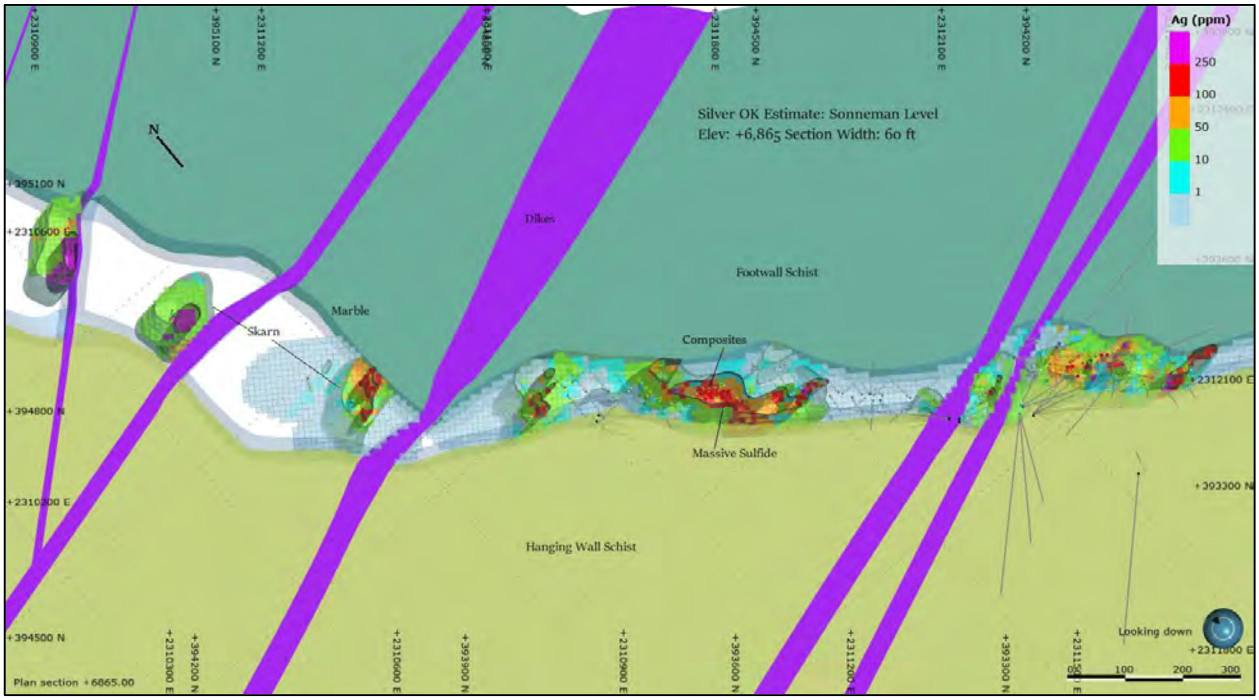



**Figure 14-21 Estimated Silver Grades on the Sonneman Level**

## 14.10 Density

The following discussion of the density specific to the Project is largely modified from, and in some cases, is excerpted directly from an interoffice memo from Ed Fields and Asa Beckwith entitled "South Mountain Tonnage Factor 10-14" (THMG 2014). Table 14-15 summarizes the densities applied to the block model lithologies based on the results from this study.

A total of seventy (70) samples were collected from the 2014 surface and underground drill core. The samples were located in the three main mineralized zones; Texas, DMEA2 and Laxey in order to have a mine-wide representation and were collected from intersections above the Laxey Level, between the Laxey and Sonneman Level, and below the Sonneman Level.

The samples were collected by THMG Geologist and Technical Advisor Ed Fields, P.G., from various rock types initially identified in the detailed core logging and care was taken to select the best representative sample of the specific rock type at the preselected interval. A total of six rock types were determined to be of interest based on the total amount of mining anticipated in any individual lithology unit. These included massive sulfide; semi massive sulfide; Laxey marble (main ore zone host rock); upper marble (other marble layers); skarn hedenbergite (Alteration surrounding mineralized zones); and schist (wall rock waste). No samples were taken of either the Tertiary dike material or larger intrusive because none were encountered in the drilling. The samples were approximately 4 to 6 inches in length and were intact massive samples that were not fractured or broken in order to obtain a good specific gravity analytical result. The samples consisted of both half-split and unsplit core depending on whether it was from a mineralized zone that had previously been sampled for regular elemental analysis. The samples weighed between ½ to 1 kg at the ALS laboratory prior to specific gravity analysis.

An important point regarding some of the rock types is the variation in sulfide mineral content that affects the specific gravity measurements. The massive sulfide as defined can contain 50 to 100% sulfides including sphalerite, pyrrhotite, chalcopyrite, pyrite and galena with the remainder of the material usually being calcite, ilvaite and or minor hedenbergite. The semi-massive sulfide contains 10-50% sulfides with the same matrix material. The skarn hedenbergite can have a variable amount of hedenbergite with the remainder as calcite, and or a minor amount (>5%) of sulfides. This variation is reflected in the wide range of maximum and minimum specific gravity and tonnage factors for these rock types. The Laxey marble and upper marble units and the schist units have a narrower range of values due to their lack of variation in mineral content.

The results of the sampling were combined into a single spreadsheet, and the Tonnage Factor per cubic foot was calculated for each sample.

The massive sulfide material has the lowest tonnage factor (8.26 ft3/ton) average as might be expected due to the predominance (+50%) of sulfide material in the samples.

The Laxey marble had a tonnage factor of 11.75 ft3/ton with a low spread of minimum (11.129) and maximum (12.049) values. The Laxey marble is slightly denser than the upper marble due to recrystallization of the calcite. However, this is not considered to be a significant variation.

The skarn hedenbergite had a tonnage factor of 10.44 ft3/ton with a fairly high spread of minimum (9.596) and maximum (12.004) values. This is due to the variable composition of the skarn which can have wide variation of calcite and hedenbergite with a minor component of disseminated sulfides.

BMET collected 333 additional specific gravity samples during the 2019 and 2020 drilling. Specific gravity was determined by immersion methodology (Forbush, 2019). Review of the average measurements confirmed the densities from the previous work.

**Table 14-15 Densities Applied the Block Model**

| Rock Type | Density | |
|---|---|---|
| | Short Ton/ft$^3$ | SG |
| Overburden | 0.078 | 2.50 |
| Dike | 0.0765 | 2.45 |
| Marble | 0.085 | 2.72 |
| Skarn | 0.096 | 3.08 |
| Sulfide | 0.121 | 3.88 |
| Schist | 0.0874 | 2.80 |

## 14.11 Mineral Resource Classification

Estimated blocks were classified as either Measured, Indicated, or Inferred, in accordance with CIM definition standards adopted by CIM Counsel on November 19, 2019 based on the minimum distance from the Laxey and Sonneman levels to the block, the number of samples used to estimate a block, the estimation domain, and geologic/geospatial support for specific areas of the resource. Measured mineral resources are those blocks within the DMEA or Texas resource areas, within 40ft of the Sonneman level, and estimated with at least six composites corresponding to three unique sample ID's. Indicated mineral resources are those blocks within the DMEA or Texas resource areas, within 100 ft of the Sonneman level and 40 ft of the Laxey level, and estimated with at least four composites, corresponding to two unique sample ID's. Inferred mineral resources are all remaining estimated blocks. Figure 14-22 shows a view looking Northeast of the resource classification stepping from Measured, Measured and Indicated, and Measured Indicated and Inferred.

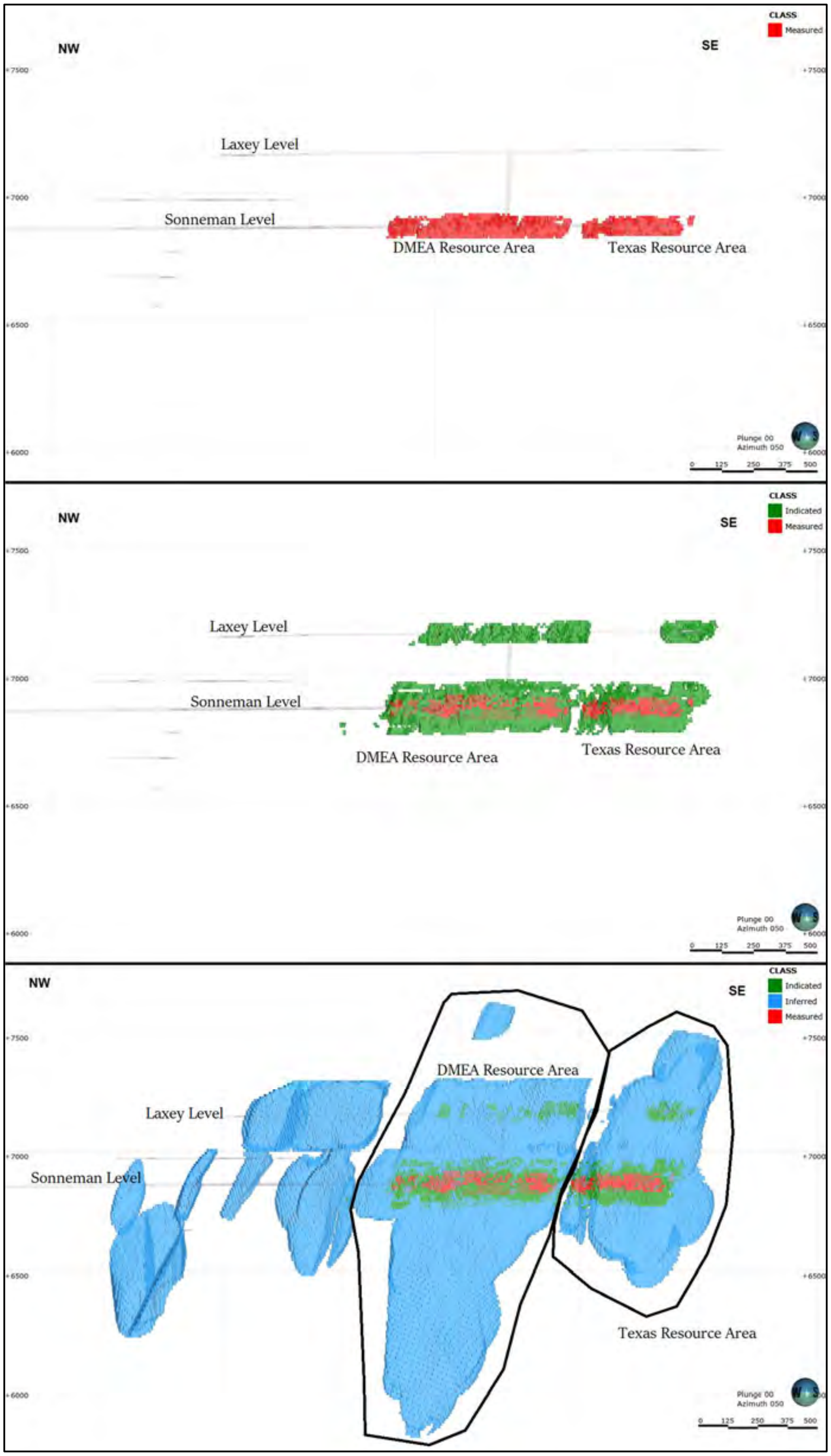



**Figure 14-22 View of Measured and Indicated Polylines over Modeled Estimation Domains**

## 14.12 Removal of Mined Out Volumes

The extent and dimensions of historically mined out material at South Mountain is not currently well understood. HRC used the best information available to remove mined out material from the mineral resource. Mined out stopes were determined from a long section (Figure 14-23). The long section was georeferenced to the underground developments and vertically oriented. Polylines were then traced around the mined-out stopes on the long sections. 3D wireframe solids were extruded from the polylines, through the block model to code the blocks with mined out stopes. 3D solids of the underground developments were also coded into the block model and removed from the mineral resource.

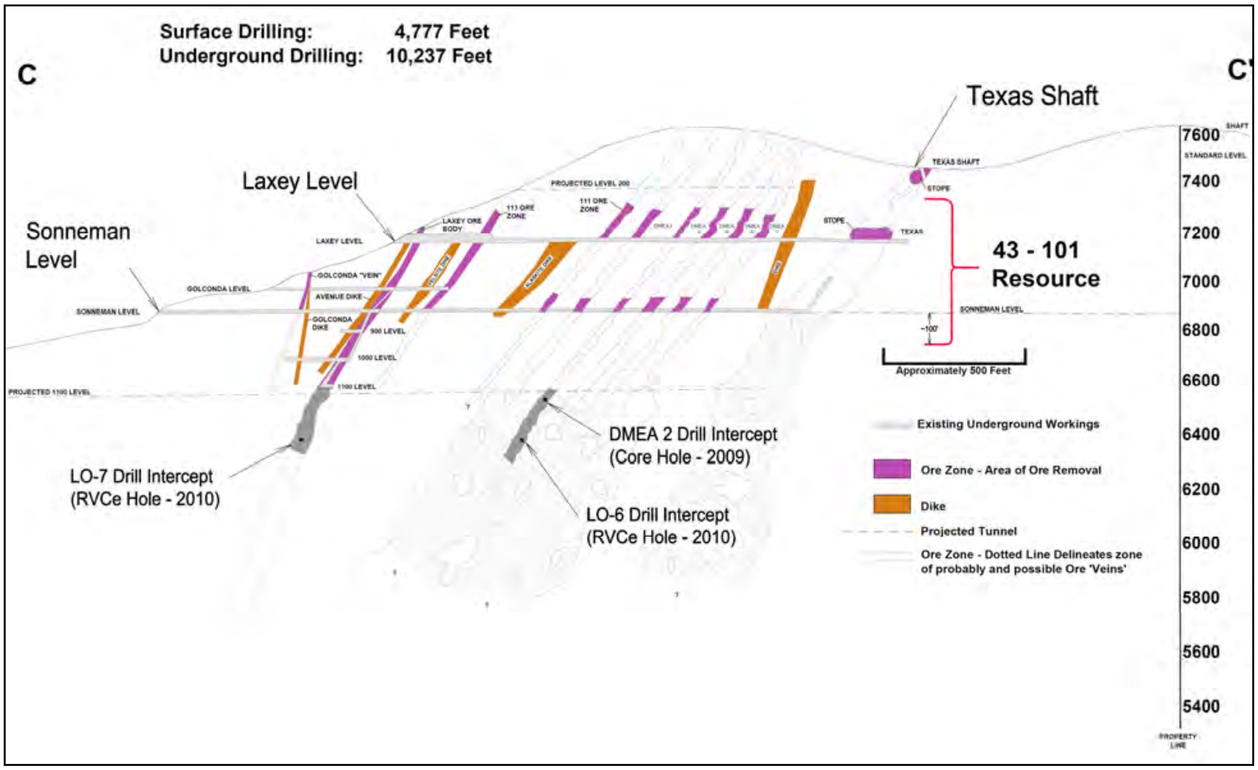



**Figure 14-23 Long Section Used to Classify Mined Out Material within the Block Model**

## 14.13 Mineral Resource Statement

Mr. Richard A. Schwering, P.G., SME-RM, a Resource Geologist with Hard Rock Consulting, LLC, is responsible for the South Mountain Project mineral resource estimate ("MRE") with an effective date of April 20, 2021. Mr. Schwering is a Qualified Person as defined by NI43-101 and is independent of South Mountain Mining, Inc. BeMetals Corp., and Thunder Mountain Gold Corp. Mineral resources are not mineral reserves and do not have demonstrated economic viability such as diluting materials and allowances for losses that may occur when material is mined or extracted; or modifying factors including but not restricted to mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors. Inferred mineral resources are that part of the mineral resource for which quantity and grade or quality are estimated on the basis of limited geologic evidence and sampling, which is sufficient to imply but not verify grade or quality continuity. Inferred mineral resources may not be converted to mineral reserves. It is reasonably expected, though not guaranteed, that the majority of Inferred mineral resources could be upgraded to Indicated mineral resources with continued exploration. The mineral resource is reported at an underground mining cut-off of $102.50 U.S. Net Smelter Return ("NSR") within coherent wireframe models.

Two NSR calculations were applied to the block model based on different ore types on the Project. The Massive Sulfide style ore type is high in zinc, low in copper and represents the majority of the deposit. The Skarn style ore type is high in copper, low in zinc and is locally constrained to the Texas West area of the Project. It is important to note that while the majority of the Skarn ore type is made up of modeled Skarn material, massive sulfide material is also present. The opposite is true for the Massive Sulfide ore type. A surface was drawn separating the metallurgical domains to allow for separate NSR calculations (Figure 14-24). NSR smelter terms use recent industry norms. Metal prices are based on an approximate 10% increase from consensus long term forecast information from major banking firms. The inputs for the NSR calculations are presented in Table 14-16. Gold and silver grades were converted from ppm to troy ounces per short ton ("opt") for the purpose of the NSR calculation. The NSR calculation is presented below:

> NSR = (Ag grade x Ag price x Ag Recovered & Payable) + (Au grade x Au price x Au Recovered & Payable) + (Pb grade x 20 x Pb Price x Pb Recovered & Payable) + (Cu grade x 20 x Cu Price x Cu Recovered & Payable) + (Zn grade x 20 x Zn Price x Zn Recovered & Payable) – (smelter charges)

**Table 14-16 Cut-off Grade Parameters**

| Massive Sulfide Ore Type | | | | | | |
|---|---|---|---|---|---|---|
| **Metal** | **Units** | **Price** | **Recovery** | **Payable** | **Recovered & Payable** | **Smelter TC $/t** |
| Au | opt | $1,750.00 | 70.00% | 74.64% | 52.25% | |
| Ag | opt | $23.00 | 80.00% | 89.06% | 71.25% | |
| Zn | %/lb | $1.20 | 85.50% | 83.51% | 71.40% | ($29.33) |
| Pb | %/lb | $1.02 | 85.00% | 78.24% | 66.50% | ($1.86) |
| Cu | %/lb | $3.40 | 75.00% | 65.33% | 49.00% | ($2.10) |
| **Total** | **$/ton** | | | | | ($33.29) |
| **Skarn Ore Type** | | | | | | |
| **Metal** | **Units** | **Price** | **Recovery** | **Payable** | **Recovered & Payable** | **Smelter TC $/t** |
| Au | opt | $1,750.00 | 80.00% | 89.06% | 71.25% | |
| Ag | opt | $23.00 | 90.00% | 89.72% | 80.75% | |
| Zn | %/lb | $1.20 | 66.00% | 77.27% | 51.00% | ($0.63) |
| Pb | %/lb | $1.02 | 65.00% | 73.08% | 47.50% | ($0.27) |
| Cu | %/lb | $3.40 | 95.00% | 92.32% | 87.70% | ($6.34) |
| **Total** | **$/ton** | | | | | ($7.24) |

The cut-off is based on the following assumptions presented in Table 14-17.

**Table 14-17 NSR Cut-off Grade Parameters**

| | | |
|---|---|---|
| **Mining** | $/Ore Ton | $ 70.00 |
| **Processing** | $/Ore Ton | $ 25.00 |
| **G&A** | $/Ore Ton | $ 7.50 |
| **NSR Cut-off** | | $ 102.50 |

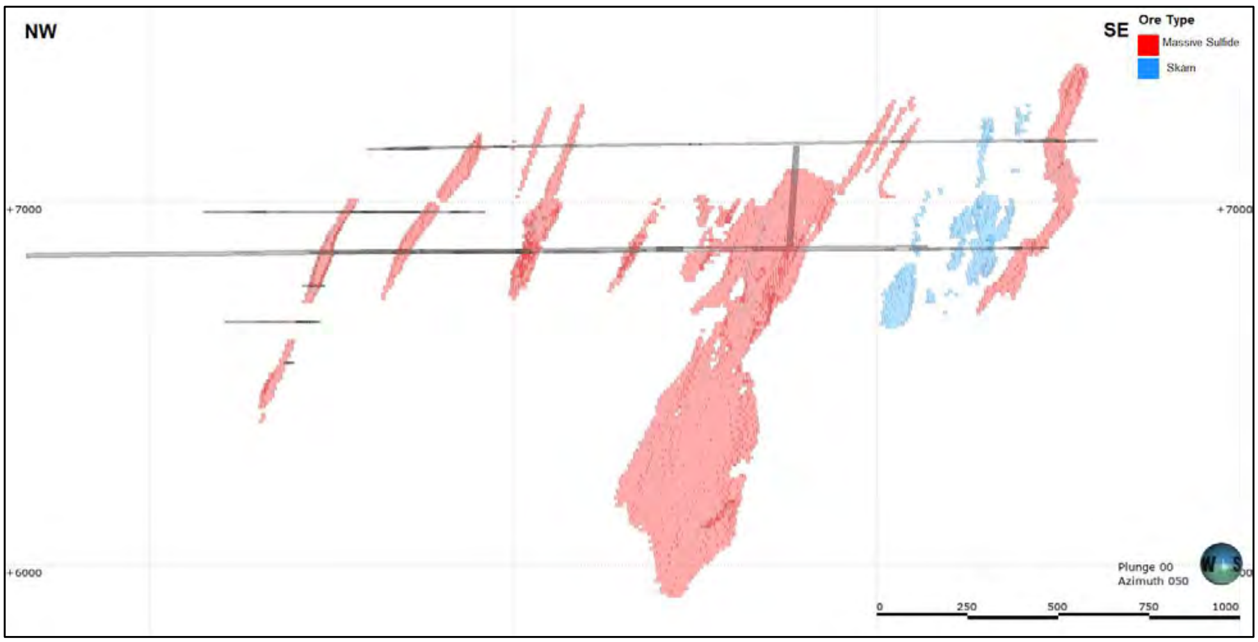



**Figure 14-24 View Looking Northeast Showing Ore Types above the NSR Cut-off**

The mineral resource statement for the Project is presented in Table 14-18 and restated in metric units in 14-19. Rounding may result in apparent differences when summing tons, grade and contained metal content. Tonnage and grade measurements are in imperial units. A zinc equivalent grade was also calculated using the formula below.

Zn Grade + (((Pb Price x Pb Recovered & Payable) / (Zn Price x Zn Recovered & Payable)) x Pb Grade) + (((Cu Price x Cu Recovered & Payable) / (Zn Price x Zn Recovered & Payable)) x Cu Grade) + (((Ag Price x Ag Recovered & Payable) / (Zn Price x 20 x Zn Recovered & Payable)) x Ag Grade) + (((Au Price x Au Recovered & Payable) / (Zn Price x 20 x Zn Recovered & Payable)) x Au Grade)

**Table 14-18 Mineral Resource Statement for the South Mountain Project, April 20, 2021, in U.S. Customary Units**

| Ore Type | Classification | *NSR Resource* | | *Contained Metal* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mass | NSR | Zinc | | Silver | | Gold | | Copper | | Lead | | Zinc Equivalent | |
| | | thousand sh. ton | $/sh. ton | % | thousand lb. | t. oz/sh. ton | thousand t. oz | t. oz/sh. ton | thousand t. oz | % | thousand lb | % | thousand lb | % | thousand lb |
| Massive Sulfide | Measured | 53.8 | 312.8 | 11.45 | 12,300 | 3.67 | 197 | 0.069 | 3.7 | 0.46 | 500 | 0.79 | 900 | 20.21 | 21,800 |
| | Indicated | 118.9 | 345.89 | 11.36 | 27,000 | 4.77 | 568 | 0.077 | 9.1 | 0.53 | 1,300 | 1.36 | 3,200 | 22.14 | 52,700 |
| | Measured + Indicated | 172.8 | 335.58 | 11.39 | 39,300 | 4.43 | 765 | 0.074 | 12.9 | 0.51 | 1,800 | 1.18 | 4,100 | 21.54 | 74,400 |
| | Inferred | 777.2 | 280.69 | 8.09 | 125,700 | 5.9 | 4,586 | 0.043 | 33.7 | 0.74 | 11,500 | 1.04 | 16,100 | 18.34 | 285,100 |
| Skarn | Measured | 10.6 | 215.79 | 1.25 | 300 | 5.46 | 58 | 0.023 | 0.2 | 1.26 | 300 | 0.3 | 100 | 18.23 | 3,900 |
| | Indicated | 23.5 | 147.32 | 0.49 | 200 | 3.78 | 89 | 0.005 | 0.1 | 1.2 | 600 | 0.07 | 0 | 12.63 | 5,900 |
| | Measured + Indicated | 34.1 | 168.64 | 0.72 | 500 | 4.3 | 147 | 0.011 | 0.4 | 1.21 | 800 | 0.14 | 100 | 14.38 | 9,800 |
| | Inferred | 56.5 | 175.32 | 1.34 | 1,500 | 3.19 | 181 | 0.006 | 0.3 | 1.66 | 1,900 | 0.04 | 100 | 14.92 | 16,900 |
| Total | Measured | 64.5 | 296.84 | 9.77 | 12,600 | 3.96 | 255 | 0.062 | 4 | 0.59 | 800 | 0.71 | 900 | 19.88 | 25,600 |
| | Indicated | 142.4 | 313.18 | 9.57 | 27,200 | 4.61 | 656 | 0.065 | 9.2 | 0.64 | 1,800 | 1.15 | 3,300 | 20.57 | 58,600 |
| | Measured + Indicated | 206.9 | 308.09 | 9.63 | 39,800 | 4.41 | 912 | 0.064 | 13.2 | 0.63 | 2,600 | 1.01 | 4,200 | 20.36 | 84,200 |
| | Inferred | 833.7 | 273.55 | 7.63 | 127,300 | 5.72 | 4,766 | 0.041 | 34 | 0.81 | 13,400 | 0.97 | 16,200 | 18.1 | 302,000 |

1. The effective date of the mineral resource estimate is April 20th, 2021. The QP for the estimate, Mr. Richard A. Schwering, P.G., SME-RM, of HRC, is independent of SMMI, THMG, and BMET.
2. Mineral resources are not mineral reserves and do not have demonstrated economic viability, such as diluting materials and allowances for losses that may occur when material is mined or extracted, or modifying factors including but not restricted to mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors. Inferred mineral resources may not be converted to mineral reserves. It is reasonably expected, though not guaranteed, that the majority of Inferred mineral resources could be upgraded to Indicated mineral resources with continued exploration.
3. The mineral resource is reported at an underground mining cut-off of $102.5 U.S. Net Smelter Return ("NSR") within coherent wireframe models. The NSR calculation and cut-off is based on the following assumptions: an Au price of $1,750/oz, Ag price of $23.00/oz, Pb price of $1.02/lb., Zn price of $1.20/lb. and Cu price of $3.40/lb.; Massive sulfide ore type metallurgical recoveries and payables of 52.25% for Au, 71.25% for Ag, 71.40% for Zn, 66.50% for Pb, and 49.00% for Cu and a total smelter cost of $33.29; Skarn ore type metallurgical recoveries and payables of 71.25% for Au, 80.75% for Ag, 51.00% for Zn, 47.50% for Pb, and 87.70% for Cu and a smelter cost of $7.24; assumed mining cost of $70/ton, process costs of $25/ton, and general and administrative costs of $7.5/ton. Based on the stated prices and recoveries the NSR formula is calculated as follows; NSR = (Ag grade * Ag price * Ag Recovery and Payable) + (Au grade * Au price * Au Recovery and Payable) + (Pb grade * 20 * Pb Price * Pb Recovery and Payable) + (Cu grade * 20 * Cu Price * Cu Recovery and Payable) + (Zn grade * 20 * Zn Price * Zn Recovery and Payable) – (smelter charges) for each ore type. The zinc equivalent grades were calculated as Zn Grade + (((Pb Price * Pb Recovery and Payable) / (Zn Price*Zn Recovery and Payable)) * Pb Grade) + (((Cu Price * Cu Recovery and Payable) / (Zn Price * Zn Recovery and Payable)) * Cu Grade) + (((Ag Price * Ag Recovery and Payable) / (Zn Price * 20 * Zn Recovery and Payable)) * Ag Grade) + (((Au Price * Au Recovery and Payable) / (Zn Price * 20 * Zn Recovery and Payable)) * Au Grade).
4. Rounding may result in apparent differences when summing tons, grade and contained metal content. Tonnage and grade measurements are in U.S. Customary units.

**Table 14-19 Mineral Resource Statement for the South Mountain Project, April 20, 2021, in Metric Units**

| Ore Type | Classification | *NSR Resource* | | *Contained Metal* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mass | NSR | Zinc | | Silver | | Gold | | Copper | | Lead | | Zinc Equivalent | |
| | | kt | $U.S./tonne | % | t | ppm | kg | ppm | g | % | t | % | t | % | t |
| Massive Sulfide | Measured | 48.85 | 344.81 | 11.45 | 5,600 | 126 | 6,100 | 2.38 | 116,200 | 0.46 | 200 | 0.79 | 400 | 20.21 | 9,900 |
| | Indicated | 107.9 | 381.28 | 11.36 | 12,300 | 164 | 17,700 | 2.63 | 283,500 | 0.53 | 600 | 1.36 | 1,500 | 22.14 | 23,900 |
| | **Measured + Indicated** | **156.75** | **369.92** | **11.39** | **17,800** | **152** | **23,800** | **2.55** | **399,700** | **0.51** | **800** | **1.18** | **1,900** | **21.54** | **33,800** |
| | Inferred | 705.03 | 309.41 | 8.09 | 57,000 | 202 | 142,600 | 1.49 | 1,049,000 | 0.74 | 5,200 | 1.04 | 7,300 | 18.34 | 129,300 |
| Skarn | Measured | 9.62 | 237.87 | 1.25 | 100 | 187 | 1,800 | 0.78 | 7,500 | 1.26 | 100 | 0.3 | 0 | 18.23 | 1,800 |
| | Indicated | 21.28 | 162.39 | 0.49 | 100 | 130 | 2,800 | 0.17 | 3,700 | 1.2 | 300 | 0.07 | 0 | 12.63 | 2,700 |
| | **Measured + Indicated** | **30.9** | **185.9** | **0.72** | **200** | **148** | **4,600** | **0.36** | **11,200** | **1.21** | **400** | **0.14** | **0** | **14.38** | **4,400** |
| | Inferred | 51.26 | 193.26 | 1.34 | 700 | 110 | 5,600 | 0.19 | 9,900 | 1.66 | 900 | 0.04 | 0 | 14.92 | 7,600 |
| Total | Measured | 58.47 | 327.21 | 9.77 | 5,700 | 136 | 7,900 | 2.12 | 123,700 | 0.59 | 300 | 0.71 | 400 | 19.88 | 11,600 |
| | Indicated | 129.18 | 345.23 | 9.57 | 12,400 | 158 | 20,400 | 2.22 | 287,300 | 0.64 | 800 | 1.15 | 1,500 | 20.57 | 26,600 |
| | Measured + Indicated | 187.65 | 339.61 | 9.63 | 18,100 | 151 | 28,400 | 2.19 | 411,000 | 0.63 | 1,200 | 1.01 | 1,900 | 20.36 | 38,200 |
| | Inferred | 756.3 | 301.54 | 7.63 | 57,700 | 196 | 148,200 | 1.4 | 1,058,900 | 0.81 | 6,100 | 0.97 | 7,300 | 18.1 | 137,000 |

1. The effective date of the mineral resource estimate is April 20th, 2021. The QP for the estimate, Mr. Richard A. Schwering, P.G., SME-RM, of HRC, is independent of SMMI, THMG, and BMET.
2. Mineral resources are not mineral reserves and do not have demonstrated economic viability, such as diluting materials and allowances for losses that may occur when material is mined or extracted, or modifying factors including but not restricted to mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors. Inferred mineral resources may not be converted to mineral reserves. It is reasonably expected, though not guaranteed, that the majority of Inferred mineral resources could be upgraded to Indicated mineral resources with continued exploration.
3. The mineral resource is reported at an underground mining cut-off of $102.5 U.S. Net Smelter Return ("NSR") within coherent wireframe models. The NSR calculation and cut-off is based on the following assumptions: an Au price of $1,750/oz, Ag price of $23.00/oz, Pb price of $1.02/lb., Zn price of $1.20/lb. and Cu price of $3.40/lb.; Massive sulfide ore type metallurgical recoveries and payables of 52.25% for Au, 71.25% for Ag, 71.40% for Zn, 66.50% for Pb, and 49.00% for Cu and a total smelter cost of $33.29; Skarn ore type metallurgical recoveries and payables of 71.25% for Au, 80.75% for Ag, 51.00% for Zn, 47.50% for Pb, and 87.70% for Cu and a smelter cost of $7.24; assumed mining cost of $70/ton, process costs of $25/ton, and general and administrative costs of $7.5/ton. Based on the stated prices and recoveries the NSR formula is calculated as follows; NSR = (Ag grade * Ag price * Ag Recovery and Payable) + (Au grade * Au price * Au Recovery and Payable) + (Pb grade * 20 * Pb Price * Pb Recovery and Payable) + (Cu grade * 20 * Cu Price * Cu Recovery and Payable) + (Zn grade * 20 * Zn Price * Zn Recovery and Payable) for each ore type. The zinc equivalent grades were calculated as Zn Grade + (((Pb Price * Pb Recovery and Payable) / (Zn Price*Zn Recovery and Payable)) * Pb Grade) + (((Cu Price * Cu Recovery and Payable) / (Zn Price * Zn Recovery and Payable)) * Cu Grade) + (((Ag Price * Ag Recovery and Payable) / (Zn Price * 20 * Zn Recovery and Payable)) * Ag Grade) + (((Au Price * Au Recovery and Payable) / (Zn Price * 20 * Zn Recovery and Payable)) * Au Grade) – (smelter charges)
4. Rounding may result in apparent differences when summing tons, grade and contained metal content. Tonnage and grade measurements are in U.S. customary units and converted to metric.

Figure 14-25 shows the grade tonnage curve for the estimated NSR grade with mined out volumes not included.

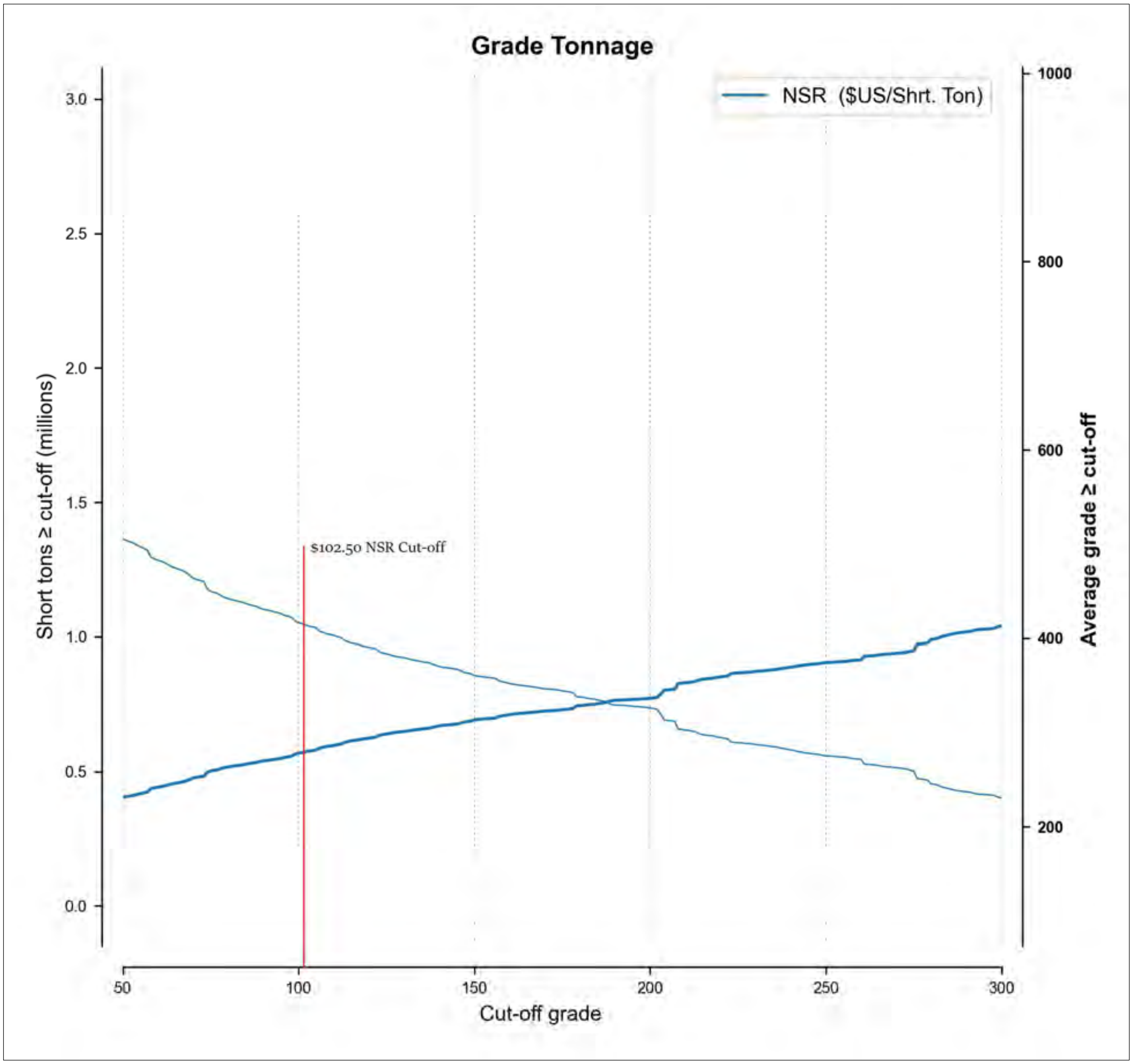



**Figure 14-25 Grade Tonnage Curve for Estimated NSR Grade**

# 15. ADJACENT PROPERTIES

HRC knows of no adjacent properties which might materially affect the interpretation or evaluation of mineralization or exploration targets at the South Mountain Project.

# 16. OTHER RELEVANT DATA AND INFORMATION

This report summarizes all data and information material to the South Mountain Project as of April 20, 2021. HRC knows of no other relevant technical or other data or information that might materially impact the interpretations and conclusions presented herein, nor of any additional information necessary to make the report more understandable or not misleading.

# 17. INTERPRETATION AND CONCLUSIONS

HRC concludes that the geology of the South Mountain Project is well understood and that the appropriate deposit model is being applied for exploration. The conceptual geologic model is sound, and in conjunction with drilling results, indicates that mineralization is essentially open in all directions. Significant potential exists to increase the known mineral resource with additional drilling, as well as to upgrade existing mineral resource classifications with some amount of infill drilling. HRC finds the current mineral resource at the South Mountain Project sufficient to warrant continued planning and effort in order to further advance and develop the Project.

HRC finds the sample preparation, analytical procedures, and security measures presently employed at the South Mountain Project to be reasonable and adequate to ensure the validity and integrity of the data derived from sampling programs to date. Based on the results of the site investigation and data validation efforts, HRC considers the drilling and sampling data, as contained in the current Project database, to be reasonably accurate and suitable for use in estimating mineral resources.

The South Mountain Project is not subject to any known environmental liabilities. Existing surface rights are sufficient for all presently proposed development and operations activities. The Project is largely located on and surrounded by private land surface, and as such the permitting and environmental aspects of the Project are quite simple and straightforward. Based on permits in hand and associated work completed to date, in conjunction with the long and successful history of mineral exploration throughout the district, no barriers to proposed or future plans for exploration and development at the Project are anticipated.

## 17.1 Risks and Uncertainties

At the present stage of Project development, the most likely processing scenario involves producing a lead and zinc and potentially copper concentrate. Discussion with smelters should be continued to determine optimum marketing for any future concentrate production. This will be considered in the ongoing PEA study.

HRC notes the following risks and uncertainties within the MRE:

- Location and dimensions of stopes from historic production are not precisely known. Figure 14-23 represents the best information of their location at the time. Resource classification reflects the uncertainty in historic stope locations.
- Core logs in the Texas Zone indicate the presence of a fault, not currently modeled, between the Texas East and Texas West zones. The potential fault does not significantly offset the Laxey Marble Unit, or mineralization within.
- The orientation of the underground drilling is relatively oblique to mineralization complicating geologic modeling and mineral resource estimation. The continuity for the down dip extension of the DMEA zone is assumed but is well supported by geologic evidence. Resource classification reflects the relative uncertainty of true thickness due to the orientation of the 2019, 2020 drilling.

HRC knows of no other significant existing risks or uncertainties that could reasonably affect the reliability or confidence in exploration information, mineral resource estimates, or the current potential economic viability of the Project.

# 18. RECOMMENDATIONS

## 18.1 General Recommendations

The QA/QC program instituted during the 2019 and 2020 drilling on behalf of BMET was in accordance with previous recommendations from HRC. The QA/QC program complies with current industry standards and represents a substantial improvement from previous drilling on the property. HRC recommends the following procedures continue to be employed during future work:

- The formal, written procedures for data collection and handling should be made available to all Project field personnel. These should include procedures and protocols for field work, geological mapping and logging, database construction, sample chain of custody, and documentation trail. These procedures should also include detailed and specific QA/QC procedures for analytical work, including acceptance/rejection criteria for batches of samples.
- A detailed review of field practices and sample collection procedures should be performed on regular basis, to ensure that the correct procedures and protocols are being followed.
- Review and evaluation of laboratory work should be an on-going process, including occasional visits to the laboratories involved.
- For drill hole samples, the control samples sent to a second (check) laboratory should be from pulp duplicates in all cases and should include one blank, two sample pulps, and one standard for every 40-sample batch.

The QP's also recommend that SMMI establish a routine, internal mechanical audit procedure to check for overlaps, gaps, total drill hole length inconsistencies, non-numeric assay values, and negative numbers. The internal mechanical audit should be carried out after any significant update to the database, and the results of each audit, including any corrective actions taken, should be documented and stored for future use in database validation.

## 18.2 Metallurgical

Additional selective flotation testing should be completed toward optimizing the zinc flotation circuit with emphasis on pyrrhotite and pyrite rejection. Sphalerite reagent optimization is required, and some concentrate cleaning work is recommended. The removal of pyrrhotite from the final zinc concentrate by low intensity magnetic separation may be warranted. Producing a separate copper concentrate from the higher-grade copper zones should also be investigated, and communication with smelters on possible terms should be started to understand what the payables in the final concentrates will be. SMMI is currently completing first pass visual geo-metallurgical characterization of the deposit from drill core logging and material will likely be provided to SGS Lakefield for updating of the historical DMEA Zone test work and initial test of Texas Zone material. Additional metallurgical test work is in progress.

## 18.3 Drilling

HRC recommends that SMMI develop a plan, if practical, to orient drilling to closer intersect at true thickness angles. Development of exploration drifts from current workings to provide new drill stations, drilling from surface, and/or incorporating wedges should also be considered. This would more accurately define the true widths of the DMEA massive sulfide.

## 18.4 Recommended Work Plan and Budget

At this time, HRC recommends a single-phase work plan which includes preparation of a Preliminary Economic Assessment and all associated mineralogical and metallurgical testwork, environmental studies, and permitting activity, etc. The work plan also includes a limited amount of additional exploration in the form of surface geological mapping and geochemical sampling. Estimated costs for the recommended scope of work are summarized in Table 18-1.

**Table 18-1 Recommended Scope of Work for the South Mountain Project**

| Item | Estimated Costs |
|---|---|
| PEA Study, Including Mineralogical and Metallurgical Test Work, and Associated Sampling | $ 451,500 |
| Baseline Environmental Sampling and Data Collection, Including Labor and Analytical | $ 464,500 |
| Land and Permitting Work | $24,000 |
| Surface Geological Mapping and Geochemistry | $50,000 |
| Administration and Overhead | $399,160 |
| **TOTAL** | **$1,389,160** |

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# APPENDIX A. DRILLHOLE COLLARS

### Table A- 1 Drillhole Collar Information

| Hole ID | Drill Type | Northing | Easting | Elevation | Length | Azi. | Dip | Diameter | Company | Year | Drilling Company |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PC-1 | Core | 393724 | 2312219 | 7166 | 75.7 | 30 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PC-10 | Core | 394012 | 2311675 | 7161 | 68.0 | 185 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PC-11 | Core | 394097 | 2311609 | 7159 | 68.0 | 5 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PC-12 | Core | 394593 | 2311018 | 7151 | 143.0 | 66 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PC-2 | Core | 393727 | 2312211 | 7166 | 238.5 | 348 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PC-2A | Core | 393724 | 2312209 | 7166 | 190.0 | 306 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PC-3 | Core | 393713 | 2312287 | 7166 | 47.0 | 27 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PC-6 | Core | 393693 | 2312067 | 7166 | 204.7 | 80 | -35 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PC-7 | Core | 393698 | 2312063 | 7166 | 184.0 | 40 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PC-9 | Core | 393891 | 2311845 | 7163 | 73.6 | 84 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-1 | Longhole | 393711 | 2312315 | 7166 | 54.0 | 25 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-10 | Longhole | 393971 | 2311730 | 7162 | 85.0 | 182 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-13 | Longhole | 385569 | 2299947 | 6000 | 60.0 | 0 | -90 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-14 | Longhole | 394059 | 2311631 | 7160 | 60.0 | 185 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-17 | Longhole | 394150 | 2311537 | 7158 | 60.0 | 3 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-18 | Longhole | 394141 | 2311537 | 7159 | 110.0 | 183 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-2 | Longhole | 393697 | 2312354 | 7166 | 162.0 | 25 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-21 | Longhole | 394227 | 2311448 | 7157 | 72.0 | 0 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-22 | Longhole | 394218 | 2311447 | 7157 | 60.0 | 180 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-25 | Longhole | 394483 | 2311184 | 7153 | 75.0 | 110 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-26 | Longhole | 394495 | 2311191 | 7153 | 45.0 | 56 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-27 | Longhole | 394497 | 2311189 | 7153 | 90.0 | 10 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-28 | Longhole | 394482 | 2311131 | 7153 | 140.0 | 5 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-29 | Longhole | 394472 | 2311132 | 7150 | 108.0 | 183 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-3 | Longhole | 393707 | 2312248 | 7166 | 66.0 | 25 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-32 | Longhole | 394594 | 2311010 | 7151 | 100.0 | 300 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-34 | Longhole | 394810 | 2310961 | 7147 | 137.0 | 132 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-35 | Longhole | 394860 | 2311005 | 7146 | 109.0 | 133 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-36 | Longhole | 394518 | 2311049 | 7152 | 140.0 | 60 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-4 | Longhole | 393851 | 2311867 | 7164 | 102.0 | 3 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-5 | Longhole | 393898 | 2311820 | 7163 | 72.0 | 3 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-6 | Longhole | 393886 | 2311820 | 7163 | 72.0 | 184 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| PLH-9 | Longhole | 393980 | 2311731 | 7160 | 99.0 | 2 | 0 | unknown | Potash Corp. | 1960-1969 | Unknown |
| Austral5-1 | Core | 408997 | 2305945 | 5934 | 464.0 | 100 | -40 | unknown | Austral Oil | 1971 | Longyear |
| Austral5-2 | Core | 413382 | 2306602 | 6090 | 1335.0 | 103 | -60 | unknown | Austral Oil | 1971 | Longyear |
| Austral5-3 | Core | 408167 | 2307397 | 5939 | 540.0 | 140 | -60 | unknown | Austral Oil | 1971 | Longyear |
| Austral5-4 | Core | 405658 | 2306181 | 6083 | 783.0 | 135 | -70 | unknown | Austral Oil | 1971 | Longyear |
| Austral5-5 | Core | 396573 | 2312287 | 7459 | 926.0 | 180 | -60 | unknown | Austral Oil | 1971 | Longyear |
| Austral5-6 | Core | 412231 | 2306696 | 5847 | 597.0 | 315 | -70 | unknown | Austral Oil | 1971 | Longyear |
| Austral5-7 | Core | 396723 | 2312568 | 7441 | 910.0 | 180 | -75 | unknown | Austral Oil | 1971 | Longyear |
| Austral5-8 | Core | 415929 | 2307028 | 5860 | 1996.0 | 90 | -70 | unknown | Austral Oil | 1971 | Longyear |
| 3487 | Longhole | 394000 | 2311380 | 6865 | 28.0 | 259 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3488 | Longhole | 394023 | 2311420 | 6865 | 24.0 | 62 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3489 | Longhole | 394031 | 2311363 | 6865 | 24.0 | 263 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3551 | Longhole | 393854 | 2311567 | 6870 | 28.0 | 10 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3634 | Longhole | 393686 | 2311847 | 6870 | 32.0 | 218 | 9 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3635 | Longhole | 393669 | 2311862 | 6870 | 32.0 | 200 | 8 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3636 | Longhole | 393654 | 2311889 | 6870 | 32.0 | 51 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3637 | Longhole | 393630 | 2311909 | 6870 | 40.0 | 82 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3640 | Longhole | 393624 | 2311913 | 6871 | 60.0 | 104 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |

| Hole ID | Drill Type | Northing | Easting | Elevation | Length | Azi. | Dip | Diameter | Company | Year | Drilling Company |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3641 | Longhole | 393672 | 2311868 | 6870 | 20.0 | 95 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3642 | Longhole | 393702 | 2311808 | 6870 | 32.0 | 232 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3643 | Longhole | 393644 | 2311882 | 6870 | 24.0 | 226 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3647 | Longhole | 393599 | 2311925 | 6870 | 28.0 | 190 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3648 | Longhole | 393612 | 2311933 | 6870 | 28.0 | 63 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3651 | Longhole | 393612 | 2311933 | 6870 | 60.0 | 67 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3652 | Longhole | 393592 | 2311936 | 6870 | 44.0 | 143 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3701 | Longhole | 393713 | 2311728 | 6870 | 28.0 | 317 | 14 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3702 | Longhole | 393718 | 2311703 | 6869 | 28.0 | 90 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3703 | Longhole | 393716 | 2311709 | 6870 | 28.0 | 69 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3705 | Longhole | 393771 | 2311640 | 6870 | 28.0 | 254 | 7 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 3706 | Longhole | 393779 | 2311643 | 6870 | 24.0 | 358 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ATDH-14 | Air Track | 394350 | 2310474 | 7086 | 72.0 | 0 | -90 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ATDH-15 | Air Track | 396100 | 2312317 | 7523 | 95.0 | 0 | -90 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ATDH-16 | Air Track | 396525 | 2312240 | 7462 | 107.0 | 0 | -90 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ATDH-17 | Air Track | 394461 | 2311986 | 7647 | 107.0 | 0 | -90 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ATDH-18 | Air Track | 393940 | 2311967 | 7665 | 105.0 | 0 | -90 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| LH-11 | Longhole | 394033 | 2311678 | 7160 | 60.0 | 5 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| LH-16 | Longhole | 394100 | 2311583 | 7159 | 120.0 | 183 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| LH-23 | Longhole | 394270 | 2311383 | 7156 | 54.0 | 2 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| LH-24 | Longhole | 394261 | 2311383 | 7157 | 60.0 | 180 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| LH-7 | Longhole | 393936 | 2311775 | 7162 | 71.0 | 2 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| LH-8 | Longhole | 393921 | 2311776 | 7162 | 63.0 | 185 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N1901 | Longhole | 394173 | 2311087 | 6864 | 60.0 | 95 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N1902 | Longhole | 394178 | 2311078 | 6863 | 24.0 | 16 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N1903 | Longhole | 394197 | 2311097 | 6863 | 60.0 | 264 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N1904 | Longhole | 394208 | 2311090 | 6863 | 60.0 | 311 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N1905 | Longhole | 394200 | 2311102 | 6864 | 60.0 | 356 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N1906 | Longhole | 394214 | 2311131 | 6864 | 50.0 | 87 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N1907 | Longhole | 394213 | 2311115 | 6864 | 50.0 | 3 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N1908 | Longhole | 394221 | 2311134 | 6864 | 50.0 | 53 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N2009 | Longhole | 394186 | 2311167 | 6864 | 50.0 | 180 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N2010 | Longhole | 394201 | 2311171 | 6864 | 50.0 | 351 | -1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N2011 | Longhole | 394200 | 2311187 | 6864 | 32.0 | 89 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N2012 | Longhole | 394171 | 2311195 | 6864 | 52.0 | 1 | 4 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| N2013 | Longhole | 394162 | 2311195 | 6864 | 48.0 | 189 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| O2014 | Longhole | 394147 | 2311225 | 6864 | 52.0 | 359 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| O2016 | Longhole | 394112 | 2311255 | 6865 | 52.0 | 358 | 4 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| O2115 | Longhole | 394134 | 2311224 | 6867 | 44.0 | 170 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| O2117 | Longhole | 394091 | 2311279 | 6865 | 40.0 | 357 | 6 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| O2118 | Longhole | 394081 | 2311279 | 6865 | 52.0 | 193 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| O2119 | Longhole | 394081 | 2311294 | 6865 | 32.0 | 355 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |

| Hole ID | Drill Type | Northing | Easting | Elevation | Length | Azi. | Dip | Diameter | Company | Year | Drilling Company |
|---|---|---|---|---|---|---|---|---|---|---|---|
| O2120 | Longhole | 394074 | 2311293 | 6865 | 48.0 | 173 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| O2121 | Longhole | 394073 | 2311307 | 6865 | 60.0 | 351 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| O2122 | Longhole | 394065 | 2311322 | 6865 | 52.5 | 349 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2102 | Longhole | 394064 | 2311325 | 6865 | 52.0 | 90 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2123 | Longhole | 394055 | 2311324 | 6865 | 32.0 | 169 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2201 | Longhole | 394060 | 2311315 | 6865 | 24.0 | 180 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2203 | Longhole | 394004 | 2311387 | 6865 | 48.0 | 270 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2204 | Longhole | 394000 | 2311381 | 6866 | 52.0 | 247 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2205 | Longhole | 393996 | 2311388 | 6866 | 16.0 | 181 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2206 | Longhole | 394020 | 2311406 | 6866 | 52.0 | 9 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2224 | Longhole | 394046 | 2311338 | 6865 | 56.0 | 186 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2225 | Longhole | 394045 | 2311353 | 6865 | 4.0 | 4 | 4 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2225R | Longhole | 394038 | 2311350 | 6865 | 8.0 | 184 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2226 | Longhole | 394036 | 2311353 | 6865 | 16.0 | 176 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2227 | Longhole | 394027 | 2311369 | 6865 | 60.0 | 176 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2228 | Longhole | 394025 | 2311384 | 6866 | 44.0 | 356 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| P2230 | Longhole | 393997 | 2311408 | 6866 | 16.0 | 180 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2307 | Longhole | 393954 | 2311452 | 6866 | 40.0 | 275 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2332 | Longhole | 393963 | 2311453 | 6866 | 32.0 | 1 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2333 | Longhole | 393953 | 2311452 | 6866 | 52.0 | 184 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2334 | Longhole | 393950 | 2311467 | 6866 | 52.0 | 2 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2335A | Longhole | 393940 | 2311467 | 6866 | 52.0 | 266 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2335R | Longhole | 393940 | 2311467 | 6866 | 52.0 | 180 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2336 | Longhole | 393934 | 2311483 | 6866 | 52.0 | 7 | 4 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2337 | Longhole | 393926 | 2311482 | 6866 | 8.0 | 182 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2338 | Longhole | 393918 | 2311499 | 6867 | 52.0 | 9 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2338A | Longhole | 393910 | 2311498 | 6867 | 52.0 | 189 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2339 | Longhole | 393905 | 2311512 | 6866 | 52.0 | 6 | 4 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2340 | Longhole | 393895 | 2311513 | 6867 | 36.0 | 185 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2341 | Longhole | 393890 | 2311528 | 6867 | 52.0 | 0 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| Q2372 | Longhole | 393884 | 2311532 | 6866 | 52.0 | 90 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2442 | Longhole | 393869 | 2311540 | 6867 | 52.0 | 187 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2443 | Longhole | 393861 | 2311557 | 6867 | 52.0 | 1 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2444 | Longhole | 393853 | 2311556 | 6867 | 24.0 | 270 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2445 | Longhole | 393847 | 2311572 | 6867 | 48.0 | 88 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2446 | Longhole | 393834 | 2311574 | 6867 | 16.0 | 189 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2446R | Longhole | 393833 | 2311575 | 6867 | 44.0 | 175 | -1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2447 | Longhole | 393838 | 2311583 | 6867 | 52.0 | 356 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2449 | Longhole | 393804 | 2311617 | 6868 | 44.0 | 353 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2450 | Longhole | 393795 | 2311616 | 6868 | 32.0 | 173 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2450A | Longhole | 393796 | 2311615 | 6868 | 52.0 | 268 | 4 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2451 | Longhole | 393794 | 2311627 | 6868 | 52.0 | 88 | -1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |

| Hole ID | Drill Type | Northing | Easting | Elevation | Length | Azi. | Dip | Diameter | Company | Year | Drilling Company |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R2452 | Longhole | 393774 | 2311647 | 6868 | 20.0 | 358 | -2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2470 | Longhole | 393853 | 2311569 | 6867 | 60.0 | 45 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| R2471 | Longhole | 393841 | 2311565 | 6867 | 52.0 | 225 | 1 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-25-1 | Core | 393734 | 2311645 | 6868 | 364.0 | 315 | -0.5 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-25-2 | Core | 393734 | 2311645 | 6868 | 221.0 | 310 | -30 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-25-3 | Core | 393732 | 2311645 | 6868 | 379.0 | 298 | -25 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-25-4 | Core | 393717 | 2311655 | 6868 | 64.0 | 160 | -60 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-25-5 | Core | 393717 | 2311655 | 6868 | 80.0 | 135 | -60 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-25-6 | Core | 393719 | 2311658 | 6868 | 74.3 | 104.5 | -17 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-25-7 | Core | 393721 | 2311658 | 6868 | 96.7 | 92 | -17 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-25-8 | Core | 393717 | 2311656 | 6868 | 53.0 | 117.5 | -17 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-25-9 | Core | 393721 | 2311658 | 6868 | 77.0 | 85 | -17 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S2655 | Longhole | 393714 | 2311731 | 6869 | 52.0 | 315 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S2656 | Longhole | 393716 | 2311742 | 6869 | 52.0 | 28 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S2656D | Longhole | 393716 | 2311746 | 6869 | 52.0 | 315 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-27-1 | Core | 393671 | 2311755 | 6869 | 60.0 | 68 | 1 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-27-2 | Core | 393668 | 2311756 | 6869 | 120.0 | 97 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-27-3 | Core | 393666 | 2311755 | 6869 | 100.0 | 112 | -0.5 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S-27-4 | Core | 393669 | 2311756 | 6869 | 118.0 | 84 | -30 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S2757 | Longhole | 393674 | 2311856 | 6869 | 48.0 | 270 | 3 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S2757A | Longhole | 393670 | 2311858 | 6869 | 12.0 | 231 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S2758 | Longhole | 393674 | 2311868 | 6869 | 52.0 | 90 | 2 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S2766 | Longhole | 393700 | 2311856 | 6869 | 52.0 | 43 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S2767 | Longhole | 393704 | 2311837 | 6869 | 48.0 | 54 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| S2768 | Longhole | 393707 | 2311819 | 6869 | 52.0 | 60 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| SML-1 | Core | 393687 | 2312049 | 7166 | 375.4 | 281 | -52 | BX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ST-1 | Core | 393611 | 2311936 | 6870 | 171.5 | 108 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ST-10 | Core | 393696 | 2311879 | 6869 | 251.0 | 78 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ST-11 | Core | 393660 | 2311743 | 6869 | 314.0 | 226 | 1 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ST-12 | Core | 393661 | 2311744 | 6869 | 224.0 | 215 | 2 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ST-13 | Core | 393661 | 2311744 | 6869 | 157.3 | 205 | 1 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ST-2 | Core | 393614 | 2311932 | 6870 | 87.7 | 50 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ST-28-1 | Core | 393449 | 2311834 | 6870 | 296.0 | 225 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ST-3 | Core | 393603 | 2311918 | 6870 | 41.6 | 238 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ST-4 | Core | 393605 | 2311917 | 6870 | 138.7 | 260 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ST-8 | Core | 393699 | 2311858 | 6869 | 79.0 | 50 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| ST-9 | Core | 393699 | 2311859 | 6869 | 52.0 | 66 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2759 | Longhole | 393658 | 2311874 | 6869 | 24.0 | 279 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2760 | Longhole | 393658 | 2311883 | 6870 | 44.0 | 92 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2801 | Longhole | 393603 | 2311933 | 6870 | 40.0 | 45 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2802 | Longhole | 393618 | 2311924 | 6870 | 28.0 | 45 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2803 | Longhole | 393547 | 2311986 | 6871 | 28.0 | 320 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |

| Hole ID | Drill Type | Northing | Easting | Elevation | Length | Azi. | Dip | Diameter | Company | Year | Drilling Company |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T2804 | Longhole | 393547 | 2311988 | 6871 | 36.0 | 355 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2805 | Longhole | 393541 | 2311963 | 6871 | 44.0 | 181 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2806 | Longhole | 393524 | 2311997 | 6871 | 38.0 | 185 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2807 | Longhole | 393595 | 2311939 | 6871 | 24.0 | 45 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2808 | Longhole | 393620 | 2311917 | 6871 | 40.0 | 45 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2809 | Longhole | 393554 | 2311942 | 6871 | 20.0 | 220 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2810 | Longhole | 393561 | 2311941 | 6871 | 24.0 | 270 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2891 | Longhole | 393544 | 2311991 | 6871 | 48.0 | 62 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2892 | Longhole | 393536 | 2312010 | 6871 | 28.0 | 72 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2893 | Longhole | 393533 | 2312006 | 6871 | 16.0 | 107 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T2894 | Longhole | 393528 | 2312005 | 6871 | 16.0 | 138 | 0 | unknown | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T28R-1 | Core | 393579 | 2312149 | 6975 | 80.2 | 275 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T28R-2 | Core | 393579 | 2312149 | 6975 | 75.0 | 245 | 5 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T28R-3 | Core | 393579 | 2312149 | 6975 | 113.0 | 238 | 5 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T28R-4 | Core | 393582 | 2312153 | 6975 | 96.5 | 290 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T28R-5 | Core | 393584 | 2312157 | 6975 | 78.0 | 338 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T28R-6 | Core | 393584 | 2312157 | 6975 | 40.6 | 345 | 0 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T28R-7 | Core | 393577 | 2312154 | 6977 | 65.0 | 198 | 1 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| T28R-9 | Core | 393578 | 2312156 | 6977 | 54.0 | 190 | 1 | EX/AX | South Mountain Mines | 1975-1985 | South Mountain Mines |
| 84-G-1 | Core | 395211 | 2310458 | 7025 | 328.0 | 194 | -70 | NC | South Mountain Mines | 1984 | South Mountain Mines |
| T29-86-1 | Core | 393533 | 2311987 | 6867 | 55.5 | 145 | -39 | EX/AX | South Mountain Mines | 1986 | South Mountain Mines |
| T29-86-2 | Core | 393533 | 2311987 | 6867 | 17.8 | 145 | -44 | EX/AX | South Mountain Mines | 1986 | South Mountain Mines |
| T29-86-3 | Core | 393533 | 2311987 | 6867 | 42.0 | 170 | -46 | EX/AX | South Mountain Mines | 1986 | South Mountain Mines |
| T29-86-4 | Core | 393535 | 2311991 | 6867 | 131.4 | 245 | -69 | EX/AX | South Mountain Mines | 1986 | South Mountain Mines |
| T29-86-5 | Core | 393535 | 2311991 | 6867 | 295.0 | 245 | -62 | EX/AX | South Mountain Mines | 1986 | South Mountain Mines |
| DMEA2 | Core | 393994 | 2311147 | 7364 | 863.0 | 42 | -86 | HQ | Thunder Mountain Gold | 2008 | REI |
| TX-1 | Core | 393928 | 2311978 | 7651 | 1221.0 | 195 | -59.2 | HQ | Thunder Mountain Gold | 2008 | REI |
| LO-01 | RC | 392210 | 2310720 | 7636 | 625.0 | 0 | -90 | 6.5" nominal | Thunder Mountain Gold | 2010 | Envirotech |
| LO-02 | RC | 392635 | 2310073 | 7460 | 850.0 | 0 | -90 | 6.5" nominal | Thunder Mountain Gold | 2010 | Envirotech |
| LO-03 | RC | 392970 | 2308744 | 7133 | 940.0 | 0 | -90 | 6.5" nominal | Thunder Mountain Gold | 2010 | Envirotech |
| LO-04 | RC | 390391 | 2312356 | 7264 | 505.0 | 0 | -90 | 6.5" nominal | Thunder Mountain Gold | 2010 | Envirotech |
| LO-05 | RC | 390425 | 2311925 | 7284 | 620.0 | 0 | -90 | 6.5" nominal | Thunder Mountain Gold | 2010 | Envirotech |
| LO-06 | RC | 393953 | 2311156 | 7364 | 885.0 | 0 | -90 | 6.5" nominal | Thunder Mountain Gold | 2010 | Envirotech |
| LO-07 | RC | 394861 | 2310297 | 7007 | 640.0 | 0 | -90 | 6.5" nominal | Thunder Mountain Gold | 2010 | Envirotech |
| DM2UC13-13 | Core | 394126 | 2311185 | 6867 | 329.0 | 133 | -24 | NQ | Thunder Mountain Gold | 2013 | KB Drilling |
| DM2UC13-14 | Core | 394126 | 2311185 | 6867 | 363.0 | 133 | -17 | NQ | Thunder Mountain Gold | 2013 | KB Drilling |
| DM2UC13-15 | Core | 394126 | 2311185 | 6867 | 296.0 | 133 | -31 | NQ | Thunder Mountain Gold | 2013 | KB Drilling |
| DM2UC13-16 | Core | 394126 | 2311185 | 6867 | 306.0 | 133 | -36 | NQ | Thunder Mountain Gold | 2013 | KB Drilling |
| DM2UC13-17 | Core | 394126 | 2311185 | 6867 | 342.0 | 133 | -12 | NQ | Thunder Mountain Gold | 2013 | KB Drilling |
| DM2UC13-18 | Core | 394126 | 2311185 | 6867 | 226.0 | 133 | -47 | NQ | Thunder Mountain Gold | 2013 | KB Drilling |
| DMEA13-08 | Core | 393861 | 2311270 | 7408 | 657.0 | 50 | -66.3 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |
| DMEA13-09 | Core | 393860 | 2311268 | 7408 | 573.0 | 46 | -66.33 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |

| Hole ID | Drill Type | Northing | Easting | Elevation | Length | Azi. | Dip | Diameter | Company | Year | Drilling Company |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DMEA13-10 | Core | 393966 | 2311176 | 7369 | 601.0 | 88 | -46.87 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |
| LX13-11 | Core | 394861 | 2310143 | 6932 | 640.0 | 78 | -60.12 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |
| LX13-12 | Core | 394861 | 2310143 | 6932 | 745.0 | 75 | -75.6 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |
| TX13-01 | Core | 393688 | 2312334 | 7597 | 443.0 | 68 | -56.57 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |
| TX13-02 | Core | 393687 | 2312332 | 7597 | 415.0 | 68 | -64.87 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |
| TX13-03 | Core | 393688 | 2312329 | 7597 | 609.0 | 58 | -61.59 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |
| TX13-04 | Core | 393624 | 2312445 | 7597 | 798.0 | 266 | -62.5 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |
| TX13-05 | Core | 393624 | 2312447 | 7597 | 658.0 | 272 | -69.16 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |
| TX13-06 | Core | 393626 | 2312445 | 7597 | 572.0 | 282 | -71.48 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |
| TX13-07 | Core | 393624 | 2312449 | 7597 | 878.0 | 266 | -69.5 | HQ | Thunder Mountain Gold | 2013 | KB Drilling |
| SM19-001 | Core | 394120 | 2311176 | 6868 | 149.0 | 40 | -82 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-002 | Core | 394120 | 2311176 | 6864 | 336.0 | 138 | -28.95 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-003 | Core | 394120 | 2311176 | 6864 | 328.0 | 152 | -47.35 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-004 | Core | 394120 | 2311176 | 6864 | 393.0 | 175 | -56.96 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-005 | Core | 394120 | 2311176 | 6864 | 323.0 | 175 | -52.04 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-006 | Core | 393979 | 2311481 | 6864 | 192.5 | 320 | 58.44 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-007 | Core | 393979 | 2311481 | 6864 | 243.0 | 313 | 29.1 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-008 | Core | 393979 | 2311481 | 6864 | 282.0 | 50 | 68.41 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-009 | Core | 393764 | 2311776 | 6870 | 474.0 | 110 | 17.54 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-010 | Core | 393741 | 2311799 | 6870 | 387.0 | 150 | -13.43 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-011 | Core | 393741 | 2311799 | 6870 | 429.0 | 128 | 8 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-012 | Core | 393979 | 2311481 | 6864 | 253.0 | 3 | 67.54 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-013 | Core | 394129 | 2311176 | 6864 | 478.0 | 210 | -65 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-014 | Core | 394129 | 2311176 | 6864 | 899.4 | 210 | -60.3 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-015 | Core | 394129 | 2311176 | 6864 | 348.0 | 237 | -69.26 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-016 | Core | 394129 | 2311176 | 6864 | 878.0 | 237 | -59.88 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-017 | Core | 394412 | 2310900 | 6858 | 243.0 | 240 | -44.08 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-018 | Core | 394412 | 2310900 | 6858 | 203.0 | 235 | -21.9 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-019 | Core | 394498 | 2310841 | 6858 | 300.0 | 205 | -44.78 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-020 | Core | 394498 | 2310841 | 6858 | 303.0 | 205 | -50.44 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| SM19-021 | Core | 394498 | 2310841 | 6858 | 33.0 | 205 | -41 | NQ | BeMetals Corp. | 2019 | KB Drilling |
| PD-2020-05A | Core | 394116 | 2311177 | 6864 | 9.3 | 165 | -50 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-022 | Core | 394116 | 2311177 | 6864 | 259.0 | 83.45 | 20.64 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-023 | Core | 394106 | 2311177 | 6864 | 403.0 | 150.94 | -35.15 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-024 | Core | 394106 | 2311177 | 6864 | 408.0 | 166.79 | -50.23 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-025 | Core | 394106 | 2311177 | 6864 | 832.0 | 195 | -60.73 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-026 | Core | 394106 | 2311177 | 6864 | 490.0 | 228.99 | -59.02 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-027 | Core | 394106 | 2311177 | 6864 | 1070.0 | 227.11 | -61.25 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-028 | Core | 393645 | 2311764 | 6867 | 245.5 | 89.33 | 15.39 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-029 | Core | 393645 | 2311764 | 6867 | 325.0 | 125.68 | -12.01 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-030 | Core | 393645 | 2311764 | 6867 | 125.0 | 85.15 | -30.06 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-031 | Core | 393645 | 2311764 | 6867 | 179.0 | 109.97 | -13.22 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-032 | Core | 393645 | 2311764 | 6867 | 144.0 | 104.79 | -64.33 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-033 | Core | 393645 | 2311764 | 6867 | 205.0 | 114.57 | -30.54 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-034 | Core | 393645 | 2311764 | 6867 | 217.0 | 79.33 | 15.06 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-035 | Core | 393645 | 2311764 | 6867 | 78.0 | 105 | 14 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-036 | Core | 393645 | 2311764 | 6867 | 268.6 | 105.02 | -14.19 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-037 | Core | 393645 | 2311764 | 6867 | 225.2 | 99.99 | -14.09 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-038 | Core | 393645 | 2311764 | 6867 | 185.0 | 110.04 | -30.22 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-039 | Core | 393645 | 2311764 | 6867 | 350.0 | 122.39 | -7.95 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-040 | Core | 393645 | 2311764 | 6867 | 200.0 | 105.58 | -29.44 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-041 | Core | 393645 | 2311764 | 6867 | 185.0 | 110.07 | -40 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-042 | Core | 393645 | 2311764 | 6867 | 204.0 | 87.27 | -61.58 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-043 | Core | 393645 | 2311764 | 6867 | 399.0 | 124.17 | -19.95 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-044 | Core | 393645 | 2311764 | 6867 | 154.0 | 74.01 | -44.98 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-045 | Core | 393645 | 2311764 | 6867 | 108.0 | 0.06 | -54.63 | NQ | BeMetals Corp. | 2020 | Boart Longyear |

| Hole ID | Drill Type | Northing | Easting | Elevation | Length | Azi. | Dip | Diameter | Company | Year | Drilling Company |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SM20-046 | Core | 393645 | 2311764 | 6867 | 305.0 | 127.32 | -36.95 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-047 | Core | 393645 | 2311764 | 6867 | 173.5 | 60.14 | -79.87 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-048 | Core | 393645 | 2311764 | 6867 | 275.0 | 134.73 | -36.14 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-049 | Core | 393645 | 2311764 | 6867 | 205.0 | 155.42 | -60.17 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-050 | Core | 393645 | 2311764 | 6867 | 275.8 | 150.62 | -42.34 | NQ | BeMetals Corp. | 2020 | Boart Longyear |
| SM20-051 | Core | 393643 | 2311760 | 6866 | 404.0 | 169.65 | -48.57 | NQ | BeMetals Corp. | 2020 | Boart Longyear |

## Table A- 2 Channel Sample Information

| Channel Sample ID | Northing | Easting | Elevation | Length | Azi | Dip | Company | Year |
|---|---|---|---|---|---|---|---|---|
| CH_2151 | 393538 | 2311971 | 6871 | 6 | 35 | 90 | South Mountain Mines | 1975-1985 |
| CH_2152 | 393534 | 2311975 | 6871 | 6 | 35 | 90 | South Mountain Mines | 1975-1985 |
| CH_2153 | 393531 | 2311979 | 6871 | 8.4 | 35 | 90 | South Mountain Mines | 1975-1985 |
| CH_2154 | 393529 | 2311984 | 6871 | 5.75 | 30 | 90 | South Mountain Mines | 1975-1985 |
| CH_2155 | 393527 | 2311988 | 6871 | 7 | 30 | 90 | South Mountain Mines | 1975-1985 |
| CH_2156 | 393526 | 2311991 | 6871 | 9.5 | 30 | 90 | South Mountain Mines | 1975-1985 |
| CH_2157 | 393525 | 2311995 | 6871 | 8 | 30 | 90 | South Mountain Mines | 1975-1985 |
| CH_2158 | 393527 | 2312000 | 6871 | 9.6 | 30 | 90 | South Mountain Mines | 1975-1985 |
| CH_2159 | 393528 | 2312004 | 6871 | 9 | 35 | 90 | South Mountain Mines | 1975-1985 |
| CH_2160 | 393546 | 2311978 | 6871 | 6.6 | 90 | 90 | South Mountain Mines | 1975-1985 |
| CH_2161 | 393543 | 2311992 | 6871 | 4.2 | 120 | 90 | South Mountain Mines | 1975-1985 |
| CH_2162 | 393539 | 2312003 | 6871 | 6 | 115 | 90 | South Mountain Mines | 1975-1985 |
| CH_2163 | 393528 | 2311983 | 6871 | 5 | 100 | 90 | South Mountain Mines | 1975-1985 |
| CH_2164 | 393526 | 2311988 | 6871 | 6 | 100 | 90 | South Mountain Mines | 1975-1985 |
| CH_2165 | 393524 | 2311994 | 6871 | 6.4 | 95 | 90 | South Mountain Mines | 1975-1985 |
| CH_2167 | 393627 | 2311945 | 6870 | 7.5 | 150 | 90 | South Mountain Mines | 1975-1985 |
| CH_2168 | 393625 | 2311940 | 6870 | 5 | 50 | 90 | South Mountain Mines | 1975-1985 |
| CH_2169 | 393622 | 2311935 | 6870 | 5 | 50 | 90 | South Mountain Mines | 1975-1985 |
| CH_2170 | 393620 | 2311944 | 6870 | 3.8 | 40 | 90 | South Mountain Mines | 1975-1985 |
| CH_2171 | 393618 | 2311929 | 6870 | 3.8 | 40 | 90 | South Mountain Mines | 1975-1985 |
| CH_2172 | 393605 | 2311932 | 6870 | 2 | 50 | 90 | South Mountain Mines | 1975-1985 |
| CH_2173 | 393600 | 2311933 | 6870 | 1 | 50 | 90 | South Mountain Mines | 1975-1985 |
| CH_2175 | 394197 | 2311097 | 6864 | 2 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_2176 | 393930 | 2311486 | 6866 | 5 | 134 | 90 | South Mountain Mines | 1975-1985 |
| CH_2177 | 393534 | 2312043 | 6871 | 2 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_2178 | 393536 | 2312009 | 6871 | 5 | 115 | 90 | South Mountain Mines | 1975-1985 |
| CH_2179 | 393528 | 2312006 | 6871 | 5 | 80 | 90 | South Mountain Mines | 1975-1985 |
| CH_2180 | 393532 | 2312037 | 6871 | 5 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3415 | 394198 | 2311095 | 6864 | 3 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3416 | 394209 | 2311095 | 6864 | 4.5 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3417 | 394219 | 2311135 | 6864 | 1.5 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3429_3468 | 394047 | 2311348 | 6865 | 40 | 115 | 0 | South Mountain Mines | 1975-1985 |
| CH_3469_3481 | 394047 | 2311337 | 6865 | 65 | 125 | 0 | South Mountain Mines | 1975-1985 |
| CH_3482_3486 | 394011 | 2311389 | 6865 | 25 | 175 | 0 | South Mountain Mines | 1975-1985 |
| CH_3490_3534 | 393956 | 2311449 | 6865 | 55 | 134 | 0 | South Mountain Mines | 1975-1985 |
| CH_3539_3542 | 393778 | 2311633 | 6870 | 20 | 130 | 0 | South Mountain Mines | 1975-1985 |
| CH_3554_3563 | 394106 | 2311261 | 6865 | 60 | 133 | 0 | South Mountain Mines | 1975-1985 |
| CH_3559_3566 | 394089 | 2311269 | 6865 | 50 | 130 | 0 | South Mountain Mines | 1975-1985 |
| CH_3567_3569 | 394195 | 2311098 | 6864 | 20 | 320 | 0 | South Mountain Mines | 1975-1985 |
| CH_3571_3573 | 394208 | 2311095 | 6864 | 15 | 140 | 0 | South Mountain Mines | 1975-1985 |
| CH_3574 | 394201 | 2311105 | 6864 | 5 | 85 | 0 | South Mountain Mines | 1975-1985 |
| CH_3575_3579 | 394203 | 2311109 | 6864 | 25 | 30 | 0 | South Mountain Mines | 1975-1985 |
| CH_3600_3605 | 393717 | 2311706 | 6870 | 30 | 105 | 0 | South Mountain Mines | 1975-1985 |
| CH_3651 | 393592 | 2311936 | 6870 | 5 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3652 | 393598 | 2311936 | 6870 | 6 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3653 | 393601 | 2311933 | 6870 | 3 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3654 | 393604 | 2311932 | 6870 | 6 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3655 | 393608 | 2311934 | 6870 | 3.5 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3656 | 393614 | 2311927 | 6870 | 5 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3657 | 393617 | 2311922 | 6870 | 7 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3658 | 393619 | 2311917 | 6870 | 6 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3659 | 393624 | 2311913 | 6870 | 6 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3660 | 393628 | 2311910 | 6870 | 6 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3661 | 393607 | 2311933 | 6870 | 4.5 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3662 | 393595 | 2311938 | 6870 | 2.8 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3663 | 393622 | 2311905 | 6870 | 2 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3664 | 393621 | 2311908 | 6870 | 2 | 0 | 90 | South Mountain Mines | 1975-1985 |
| CH_3708_3720 | 393708 | 2311813 | 6870 | 65 | 105 | 0 | South Mountain Mines | 1975-1985 |
| CH_3721_3646 | 393693 | 2311839 | 6870 | 100 | 130 | 0 | South Mountain Mines | 1975-1985 |
| CH_3721_3656 | 393690 | 2311832 | 6870 | 195 | 137.3 | 0 | South Mountain Mines | 1975-1985 |
| OGT_161671-702 | 394091 | 2311260 | 6867 | 294.8 | 129.56 | 0 | Thunder Mountain Gold | 2014 |
| OGT_161703 | 393933 | 2311487 | 6867 | 7.8 | 124.71 | 0 | Thunder Mountain Gold | 2014 |
| OGT_161704-714 | 394419 | 2310872 | 6861 | 62.4 | 277.4 | 0 | Thunder Mountain Gold | 2014 |
| OGT_161715-722 | 394419 | 2310872 | 6861 | 44.5 | 97.4 | 0 | Thunder Mountain Gold | 2014 |
| OGT_161724-730 | 394738 | 2310737 | 6864 | 40 | 222.51 | 0 | Thunder Mountain Gold | 2014 |
| OGT_161731-734 | 394974 | 2310703 | 6859 | 44 | 211.33 | 0 | Thunder Mountain Gold | 2014 |
| OGT_161735-739 | 394928 | 2310670 | 6860 | 40 | 213.69 | 0 | Thunder Mountain Gold | 2014 |

# APPENDIX B. EDA

Statistics and box plots by sample type are presented below. For the box plots, The whiskers represent the minimimum and maximum values, the box represents the interquartile range, the median is represented by the black line, and the mean is represented by the red diamond.

**Table B- 1 Length Weited Statiststics by Metal and Sample Type**

| Metal | Sample Types | Count | Length | Mean | Std. Dev. | CV | Min. | Median | Max. |
|---|---|---|---|---|---|---|---|---|---|
| Ag (ppm) | All Types | 3,156 | 15,826.89 | 58.43 | 134.72 | 2.31 | 0.02 | 6.86 | 3,107.49 |
| | BeMet Core | 1,491 | 7,185.50 | 46.77 | 96.75 | 2.07 | 0.25 | 5.20 | 1,055.00 |
| | Channel Sample | 246 | 1,427.85 | 159.37 | 263.07 | 1.65 | 0.02 | 80.92 | 2,666.55 |
| | Hist. Core | 460 | 1,479.04 | 116.09 | 220.02 | 1.90 | 0.02 | 22.20 | 3,107.49 |
| | Hist. RC | 70 | 350.00 | 8.88 | 23.11 | 2.60 | 0.02 | 0.35 | 124.02 |
| | Longhole | 889 | 5,384.50 | 34.62 | 69.12 | 2.00 | 0.02 | 3.43 | 667.92 |
| Au (ppm) | All Types | 3,156 | 15,826.89 | 0.633 | 2.11 | 3.33 | 0.001 | 0.034 | 38.300 |
| | BeMet Core | 1,491 | 7,185.50 | 0.481 | 1.59 | 3.30 | 0.003 | 0.036 | 38.300 |
| | Channel Sample | 246 | 1,427.85 | 2.070 | 4.52 | 2.18 | 0.001 | 0.131 | 27.430 |
| | Hist. Core | 460 | 1,479.04 | 1.284 | 2.98 | 2.32 | 0.001 | 0.069 | 34.288 |
| | Hist. RC | 70 | 350.00 | 0.152 | 0.45 | 2.98 | 0.005 | 0.006 | 2.270 |
| | Longhole | 889 | 5,384.50 | 0.307 | 1.03 | 3.35 | 0.001 | 0.034 | 14.401 |
| Cu (%) | All Types | 3,156 | 15,826.89 | 0.277 | 0.73 | 2.64 | 0.0001 | 0.0250 | 23.00 |
| | BeMet Core | 1,491 | 7,185.50 | 0.232 | 0.61 | 2.63 | 0.0001 | 0.0121 | 8.16 |
| | Channel Sample | 246 | 1,427.85 | 0.663 | 1.24 | 1.87 | 0.0010 | 0.2300 | 23.00 |
| | Hist. Core | 460 | 1,479.04 | 0.422 | 0.93 | 2.21 | 0.0001 | 0.0500 | 10.12 |
| | Hist. RC | 70 | 350.00 | 0.023 | 0.07 | 2.96 | 0.0001 | 0.0018 | 0.37 |
| | Longhole | 889 | 5,384.50 | 0.213 | 0.62 | 2.90 | 0.0001 | 0.0300 | 10.56 |
| Pb (%) | All Types | 3,156 | 15,826.89 | 0.244 | 1.30 | 5.33 | 0.0001 | 0.0024 | 25.60 |
| | BeMet Core | 1,491 | 7,185.50 | 0.188 | 1.04 | 5.55 | 0.0001 | 0.0057 | 20.00 |
| | Channel Sample | 246 | 1,427.85 | 0.670 | 1.77 | 2.65 | 0.0001 | 0.0554 | 19.27 |
| | Hist. Core | 460 | 1,479.04 | 0.890 | 2.99 | 3.36 | 0.0001 | 0.0247 | 25.60 |
| | Hist. RC | 70 | 350.00 | 0.021 | 0.06 | 2.96 | 0.0001 | 0.0013 | 0.39 |
| | Longhole | 889 | 5,384.50 | 0.044 | 0.16 | 3.61 | 0.0001 | 0.0010 | 2.11 |
| Zn (%) | All Types | 3,156 | 15,826.89 | 2.240 | 5.79 | 2.59 | 0.0001 | 0.0315 | 46.79 |
| | BeMet Core | 1,491 | 7,185.50 | 1.454 | 4.54 | 3.12 | 0.0006 | 0.0276 | 30.00 |
| | Channel Sample | 246 | 1,427.85 | 6.503 | 8.83 | 1.36 | 0.0001 | 1.3300 | 32.46 |
| | Hist. Core | 460 | 1,479.04 | 4.412 | 7.41 | 1.68 | 0.0001 | 0.2610 | 30.00 |
| | Hist. RC | 70 | 350.00 | 0.921 | 3.57 | 3.88 | 0.0007 | 0.0078 | 26.80 |
| | Longhole | 889 | 5,384.50 | 1.647 | 5.23 | 3.17 | 0.0001 | 0.0010 | 46.79 |

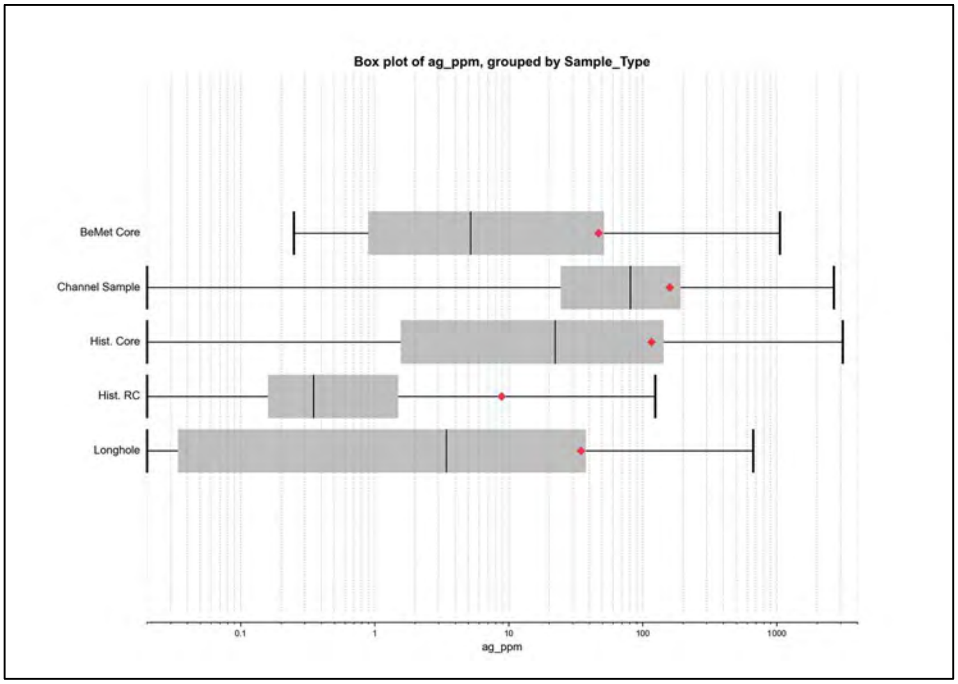


**Figure B- 1 Box Plot of Silver Grade by Sample Type**

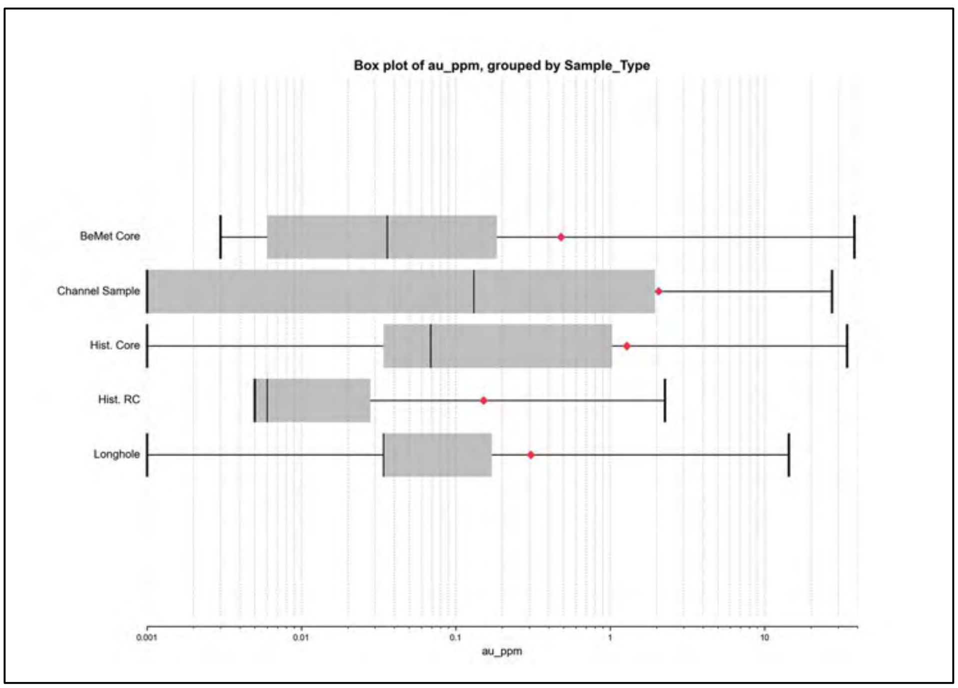


**Figure B- 2 Box Plot of Gold Grade by Sample Type**

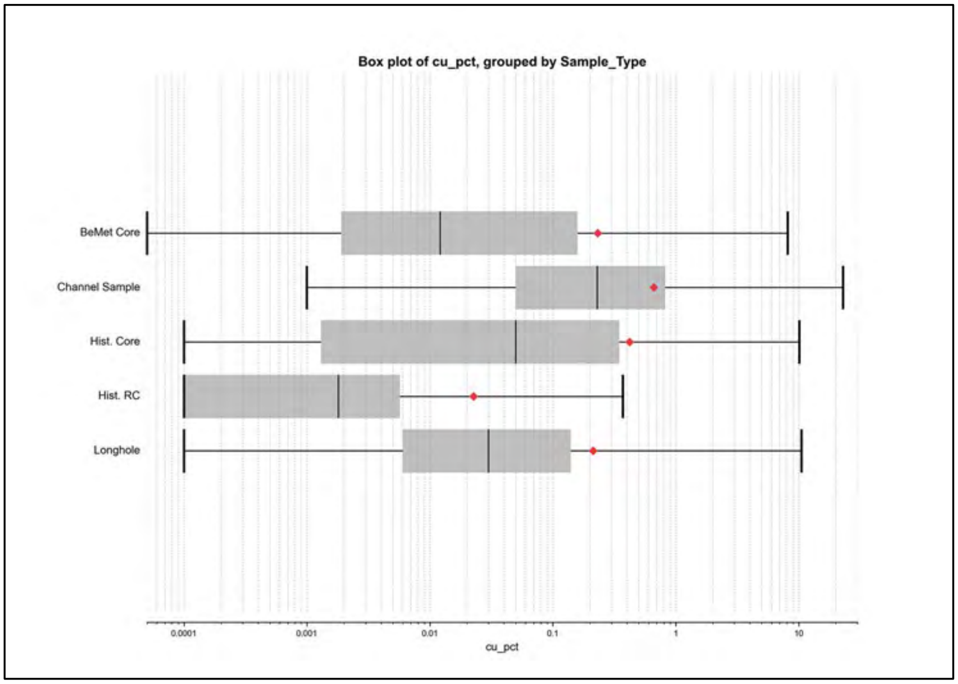


**Figure B- 3 Box Plot of Copper Grade by Sample Type**

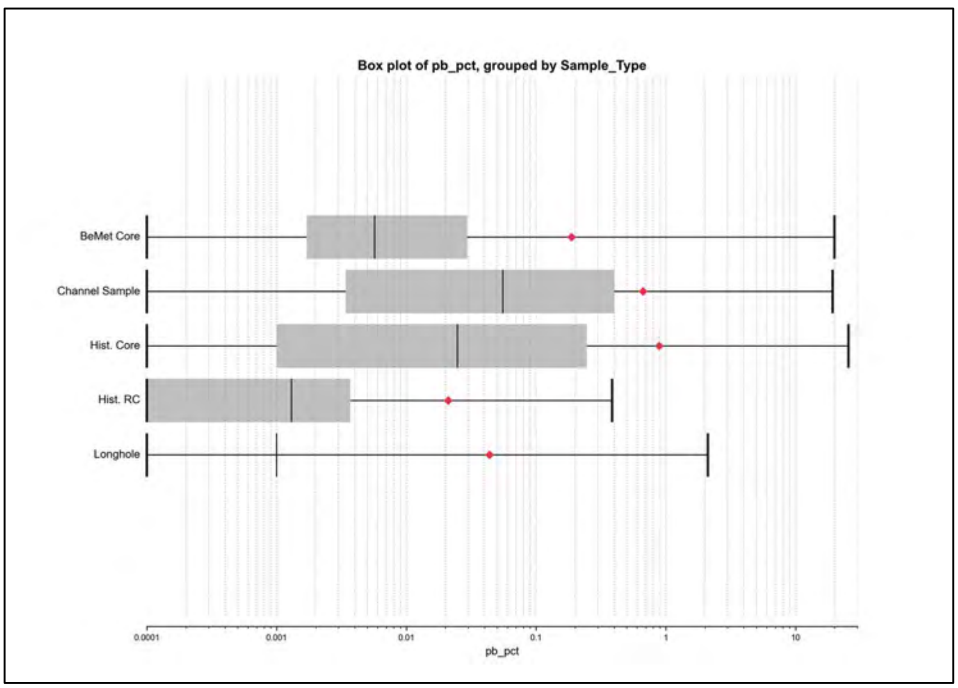


**Figure B- 4 Box Plot of Lead Grade by Sample Type**

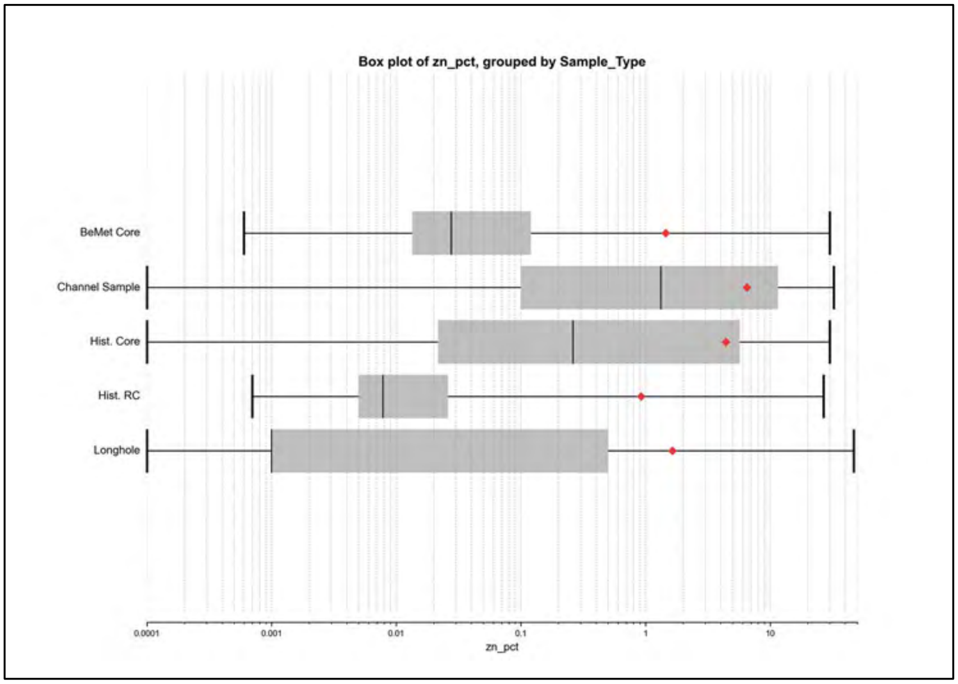


**Figure B- 5 Box Plot of Zinc Grade by Sample Type**

Interval Length vs. grade plots are presented below. The black line represents average grade and the grey bars represent the sample count.

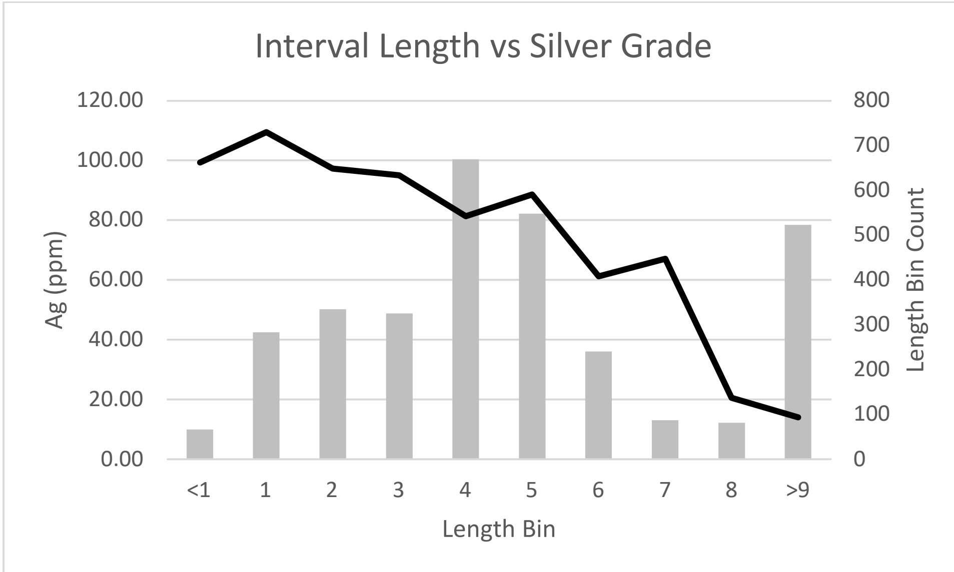


**Figure B- 6 Interval Length vs Grade Plot for Silver**

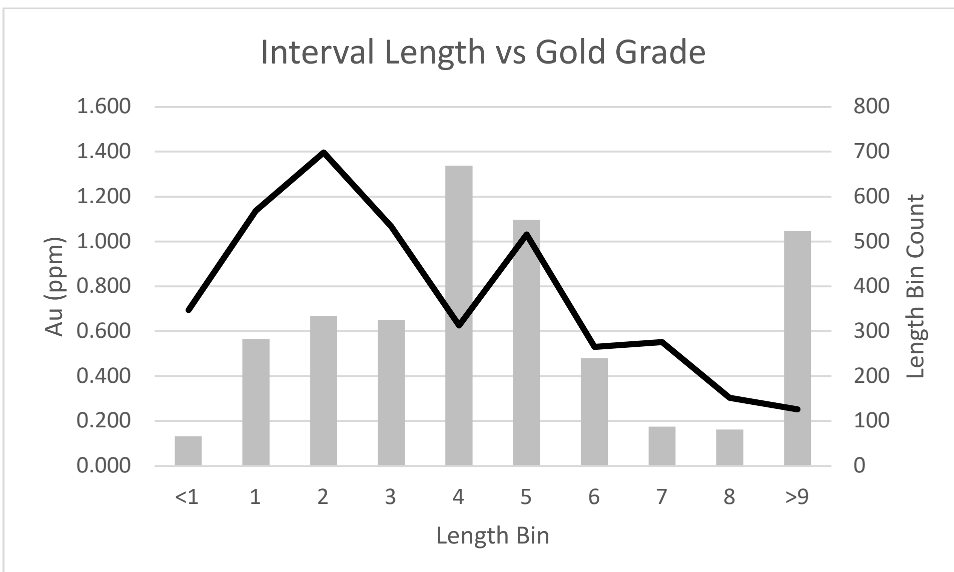


**Figure B- 7 Interval Length vs Grade Plot for Gold**

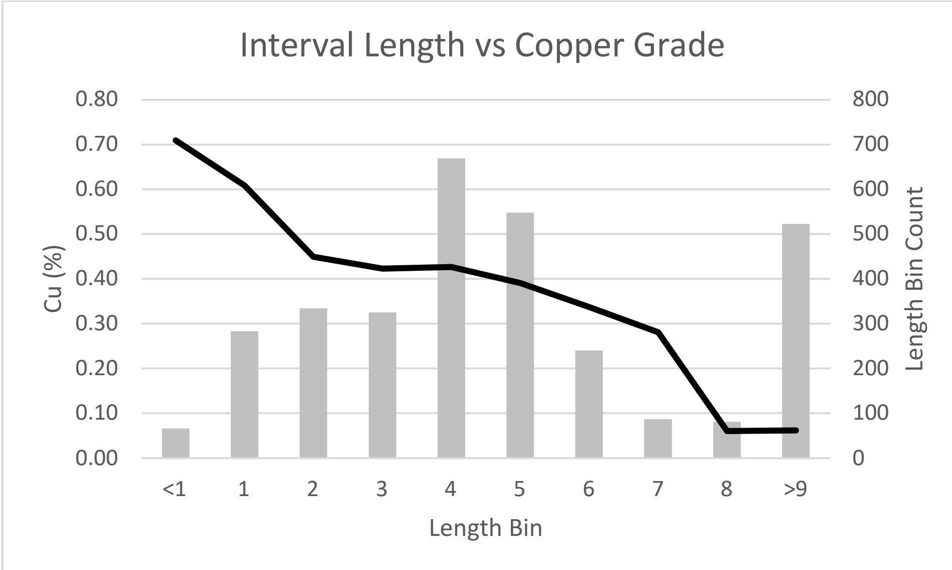


**Figure B- 8 Interval Length vs Grade Plot for Copper**

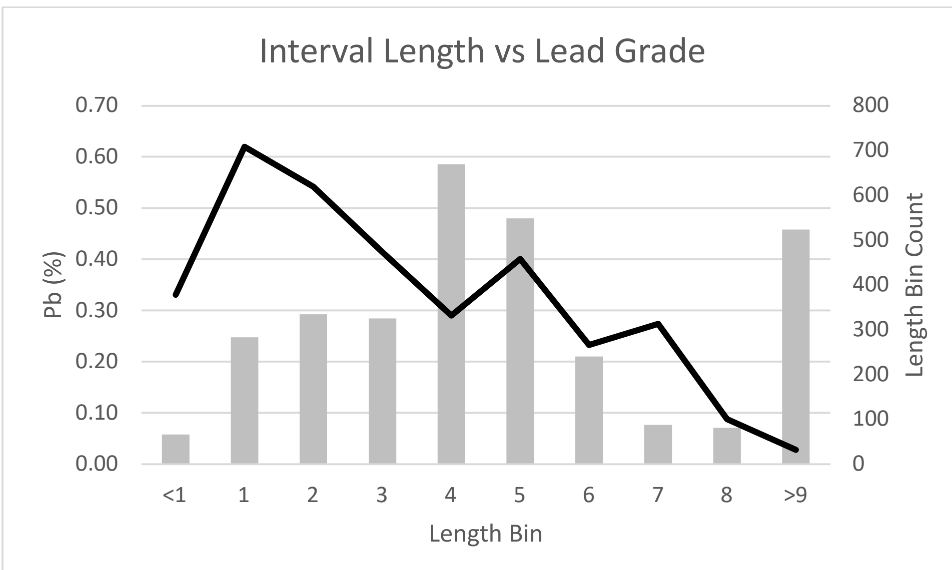


**Figure B- 9 Interval Length vs Grade Plot for Lead**

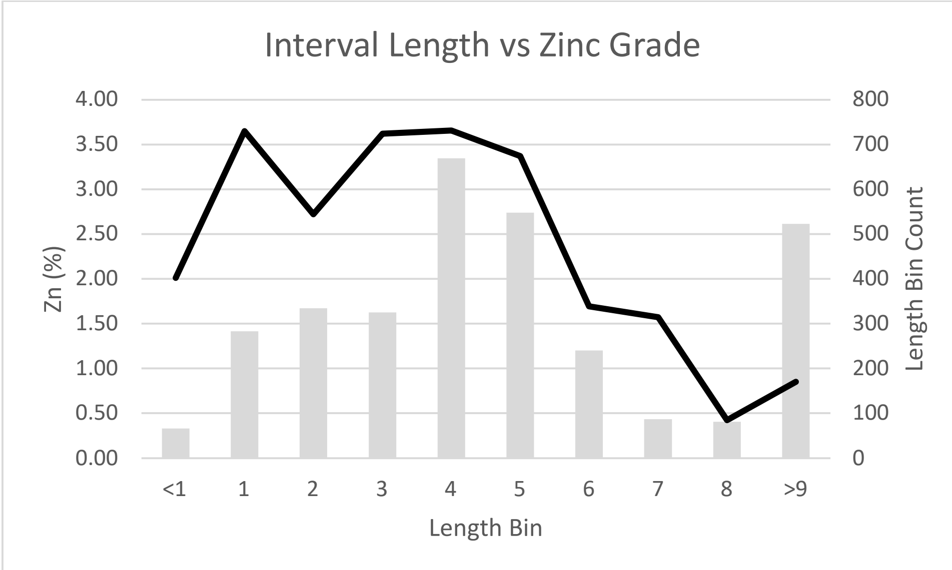


**Figure B- 10 Interval Length vs Grade Plot for Zinc**

Contact plots by metal and geologic domain are presented below.

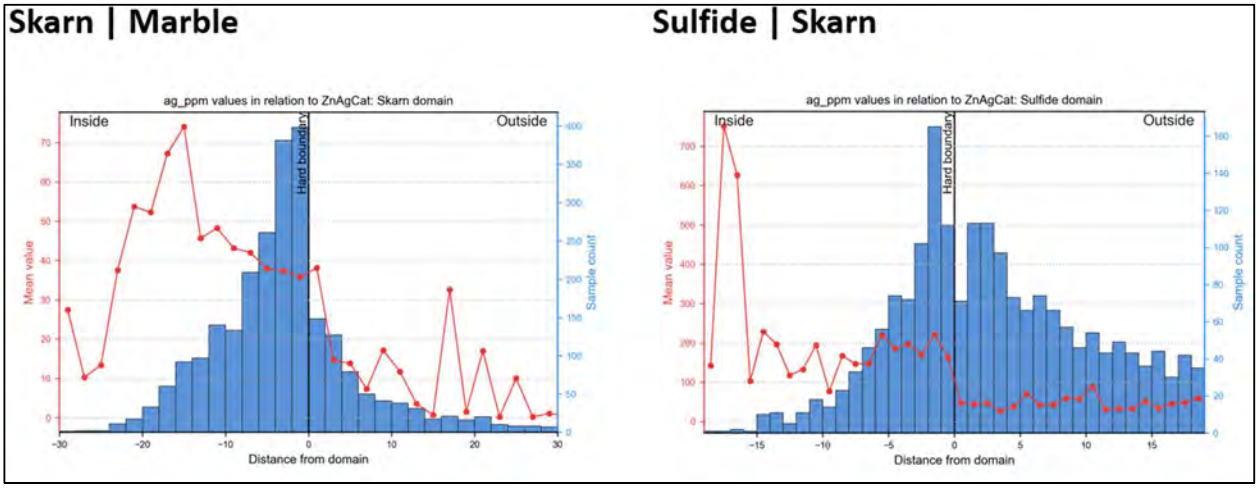


Figure B- 11 Contact Plots by Domain for Silver

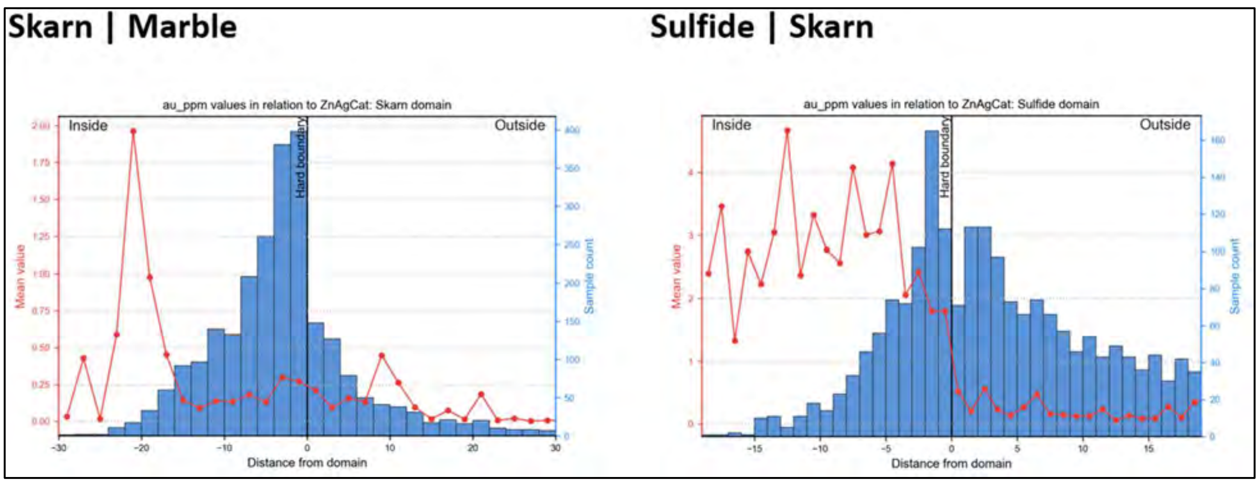


Figure B- 12 Contact Plots by Domain for Gold

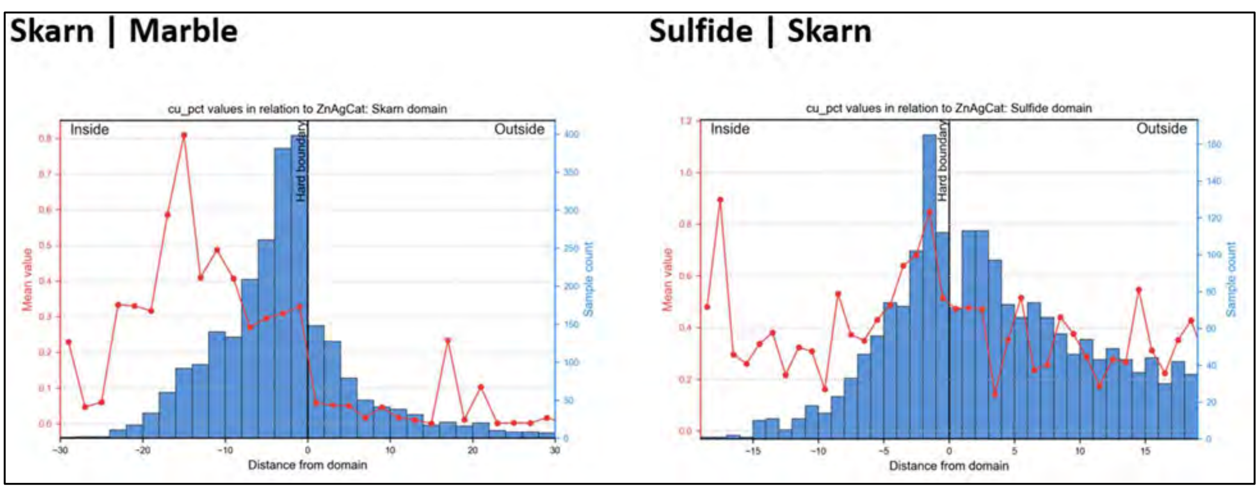


Figure B- 13 Contact Plots by Domain for Copper

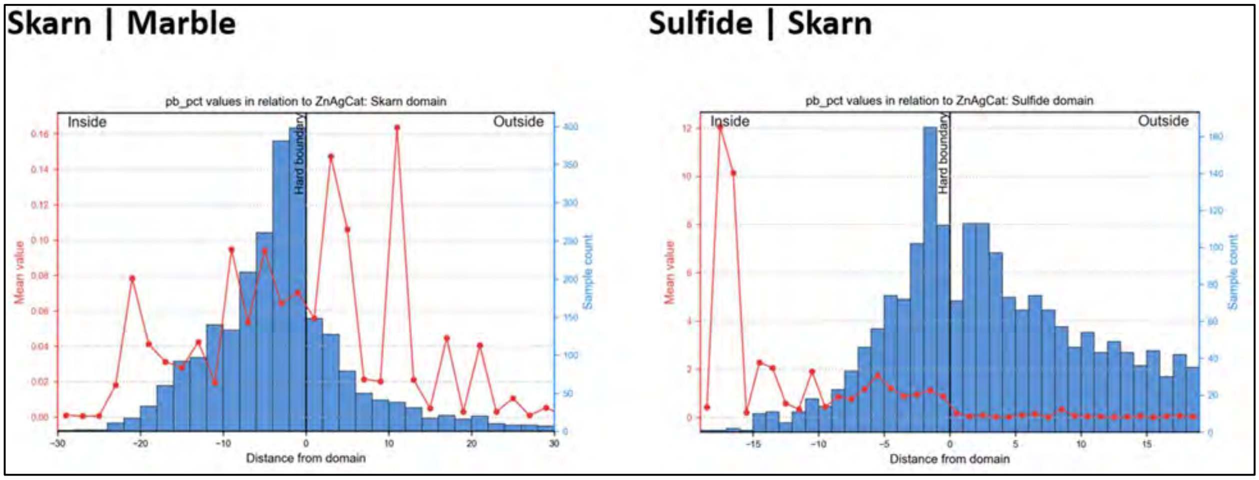


**Figure B- 14 Contact Plots by Domain for Lead**

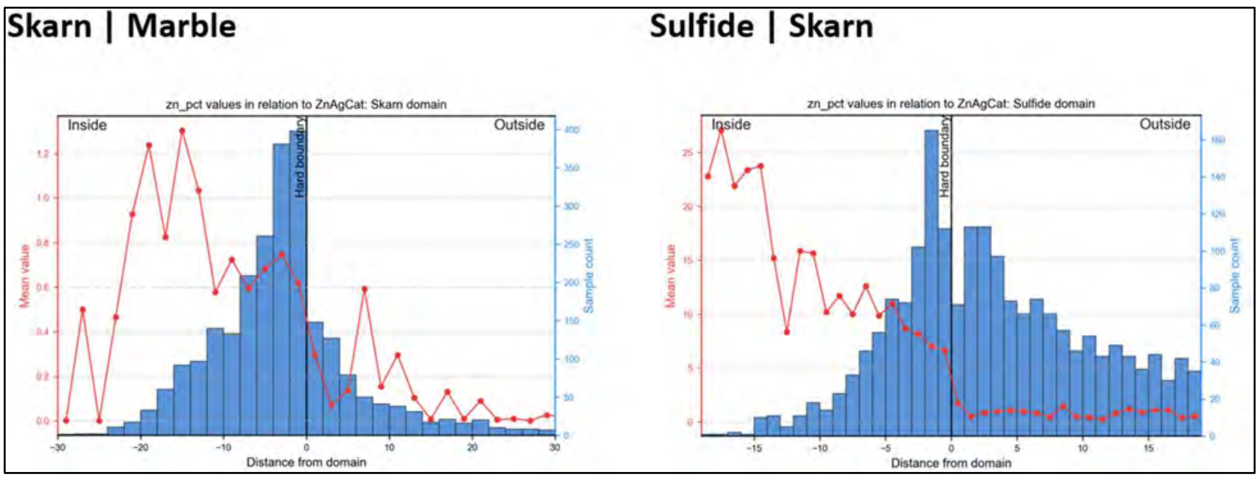


**Figure B- 15 Contact Plots by Domain for Zinc**

# APPENDIX C. COMPOSITE CUMULATIVE FREQUECY PLOTS

Composite cumulative frequency plots by metal and domain are presented below. Capping and restion limits are als shown of the plots.

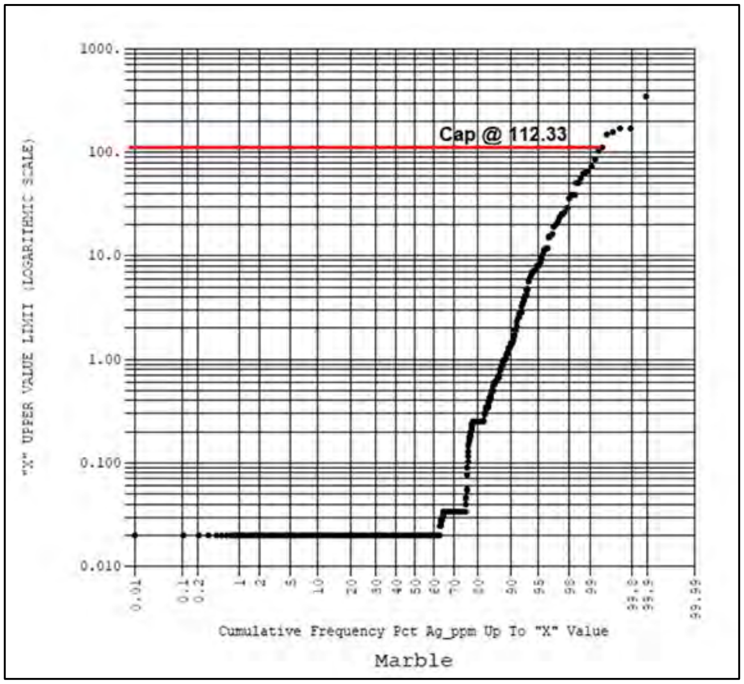


**Figure C - 1 Silver Composits in Marble**

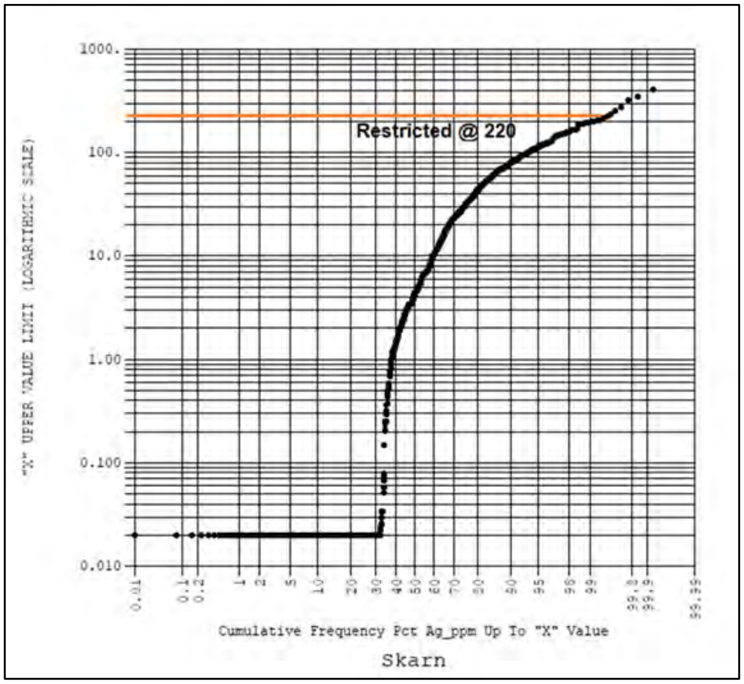


**Figure C - 2  Silver Composits in Skarn**

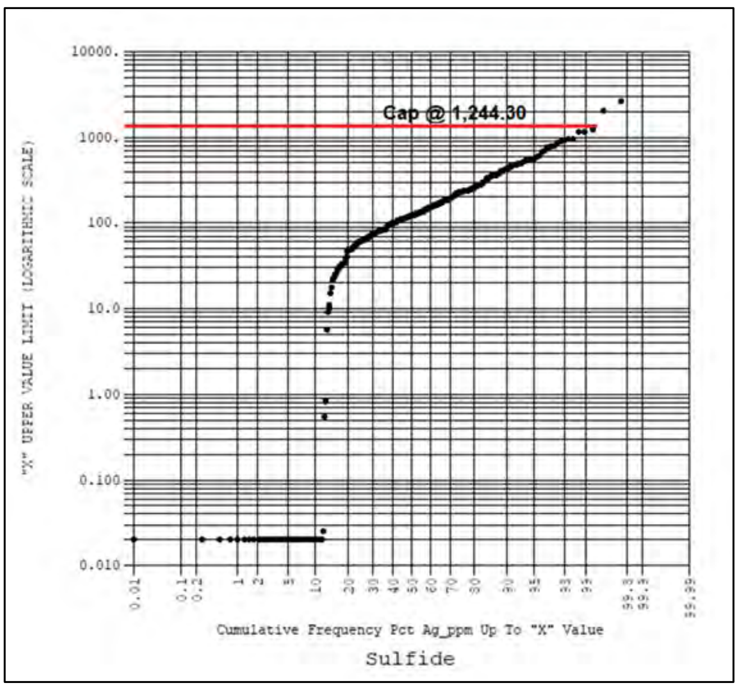


**Figure C - 3  Silver Composits in Massive Sulfide**



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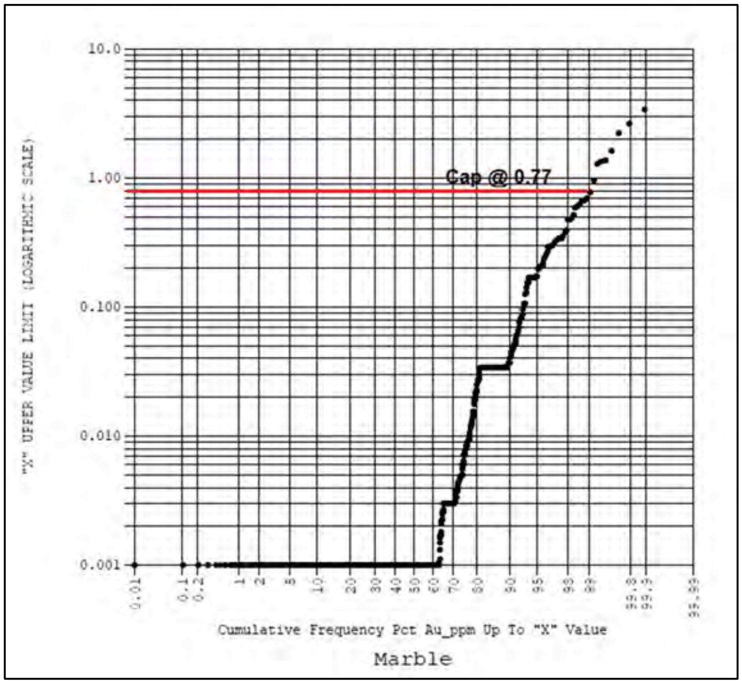



**Figure C - 4 Gold Composits in Marble**

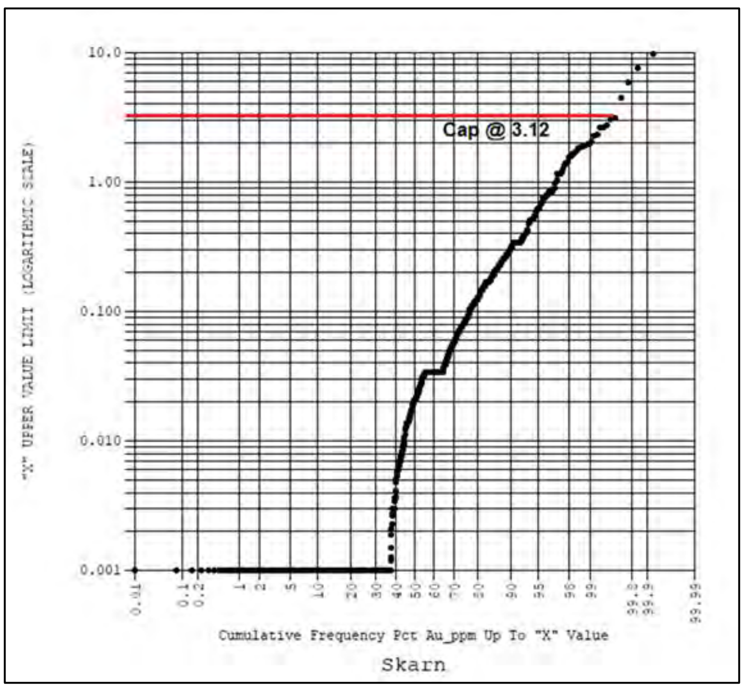



**Figure C - 5 Gold Composits in Skarn**

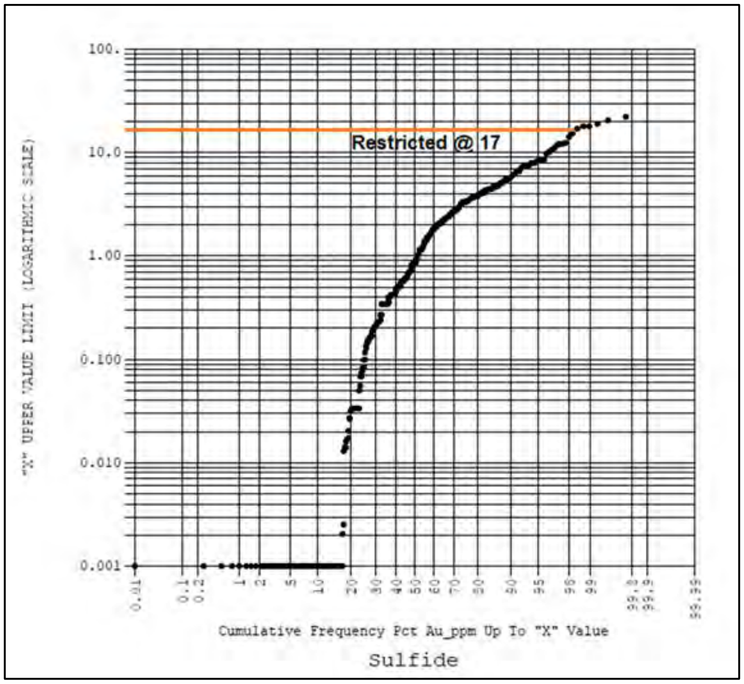



**Figure C - 6 Gold Composits in Massive Sulfide**

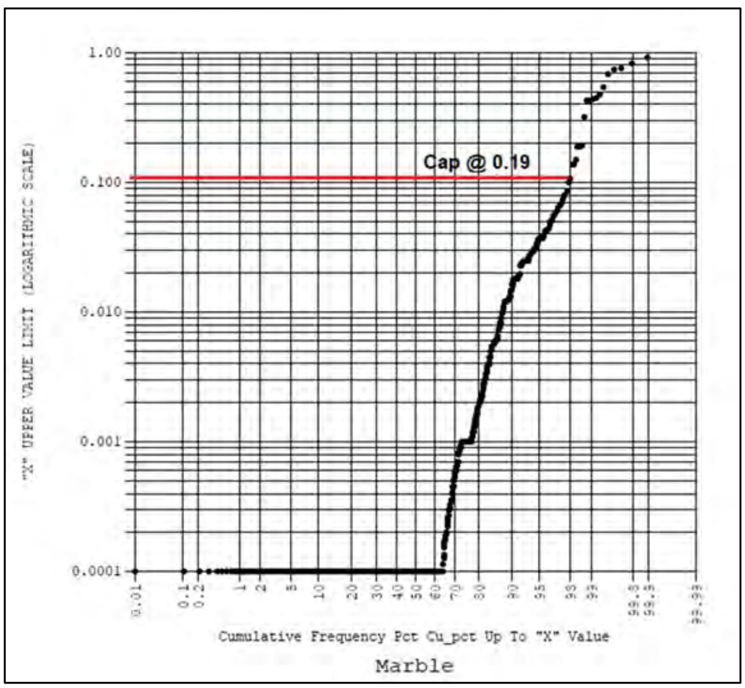



**Figure C - 7 Copper Composits in Marble**

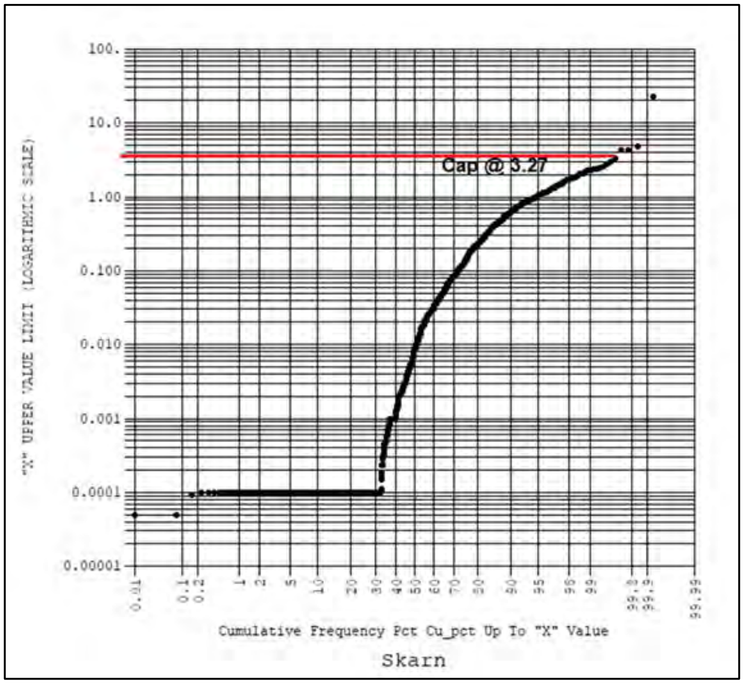



**Figure C - 8  Copper Composits in Skarn**

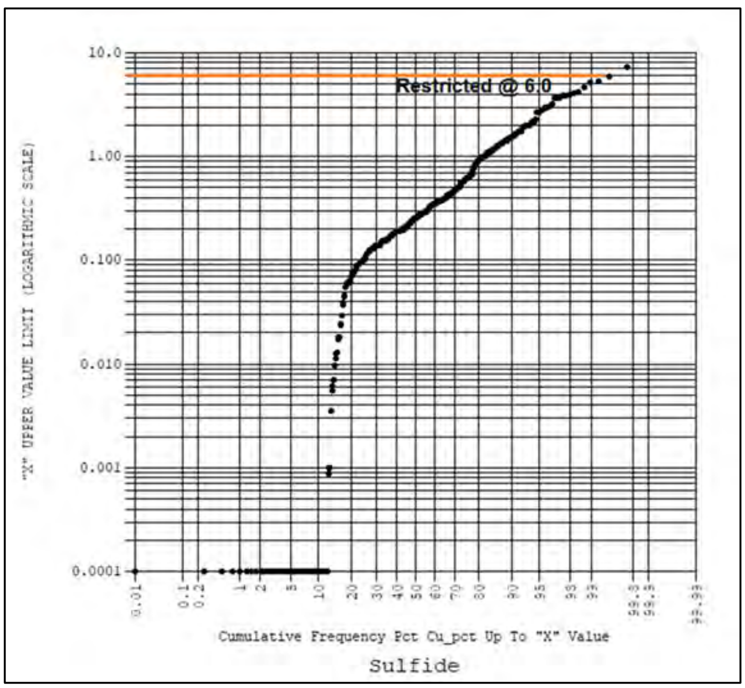



**Figure C - 9 Copper  Composits in Massive Sulfide**

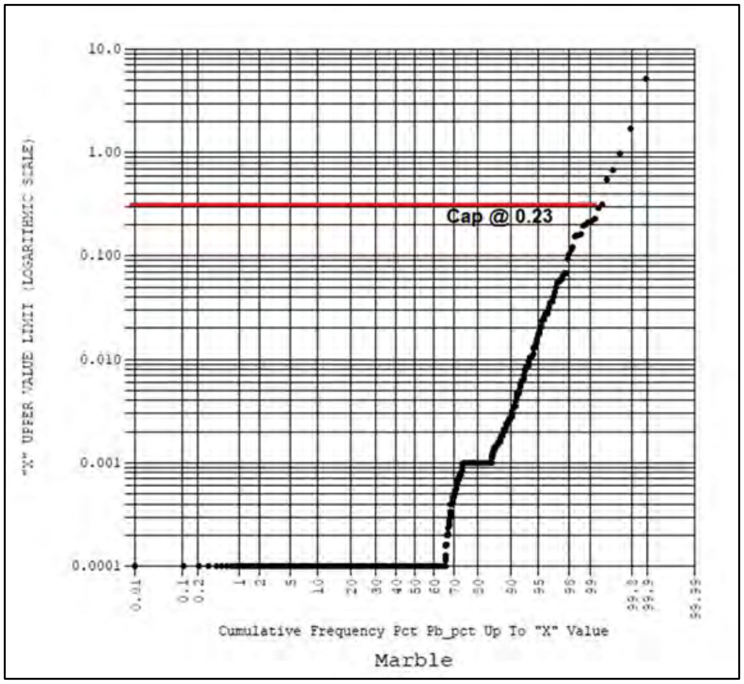



**Figure C - 10 Lead Composits in Marble**

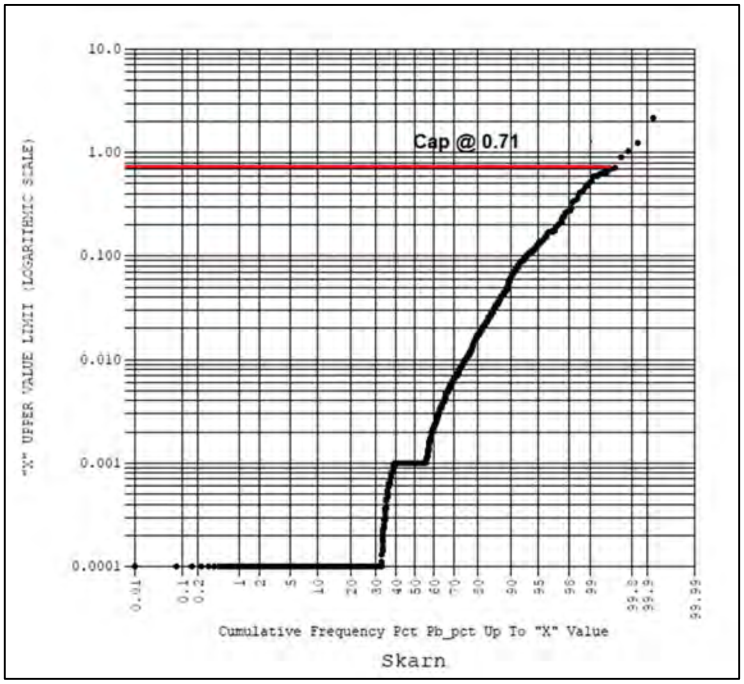



**Figure C - 11 Lead Composits in Skarn**

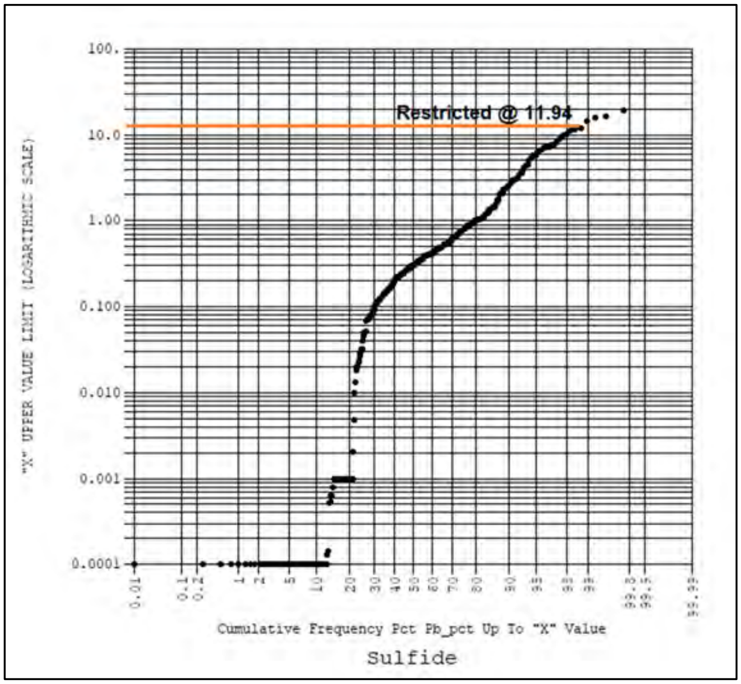



**Figure C - 12 Lead Composits in Massive Sulfide**

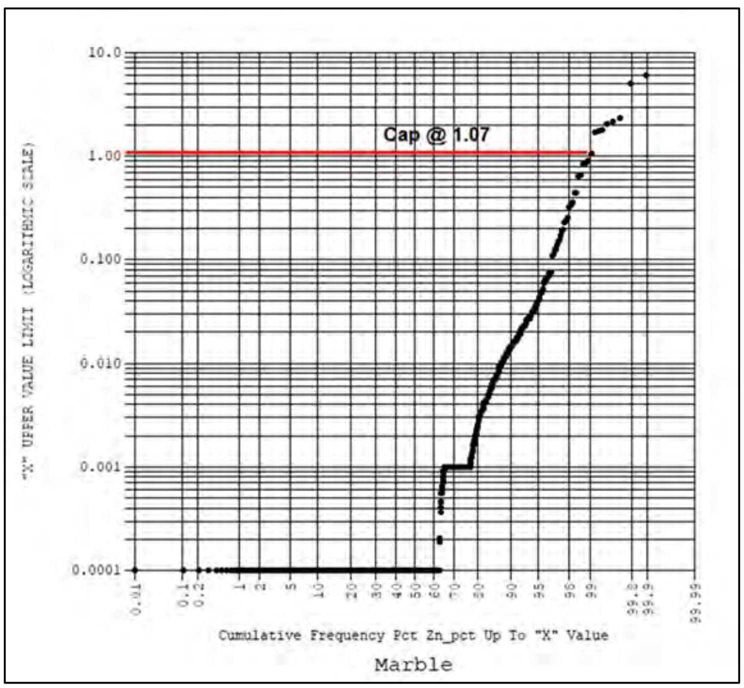



**Figure C - 13 Zinc Composits in Marble**

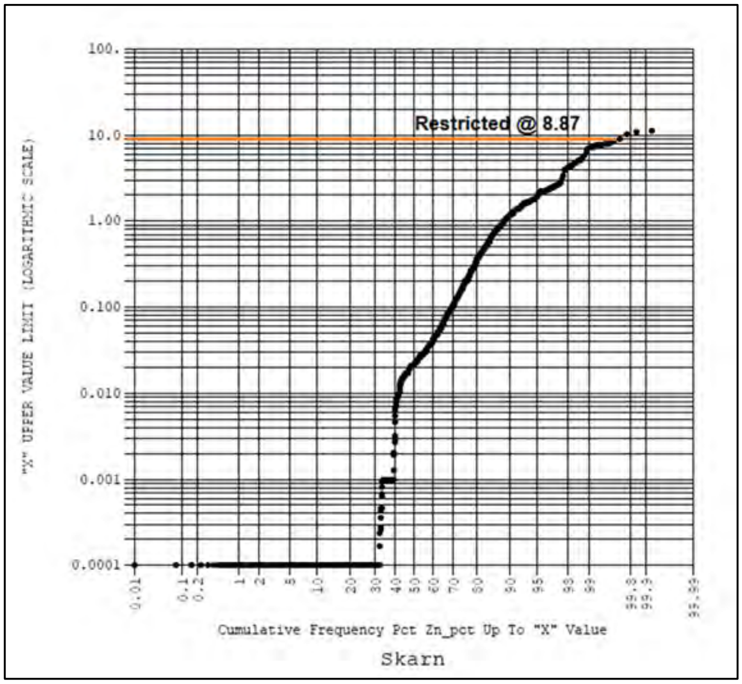



**Figure C - 14 Zinc Composits in Skarn**

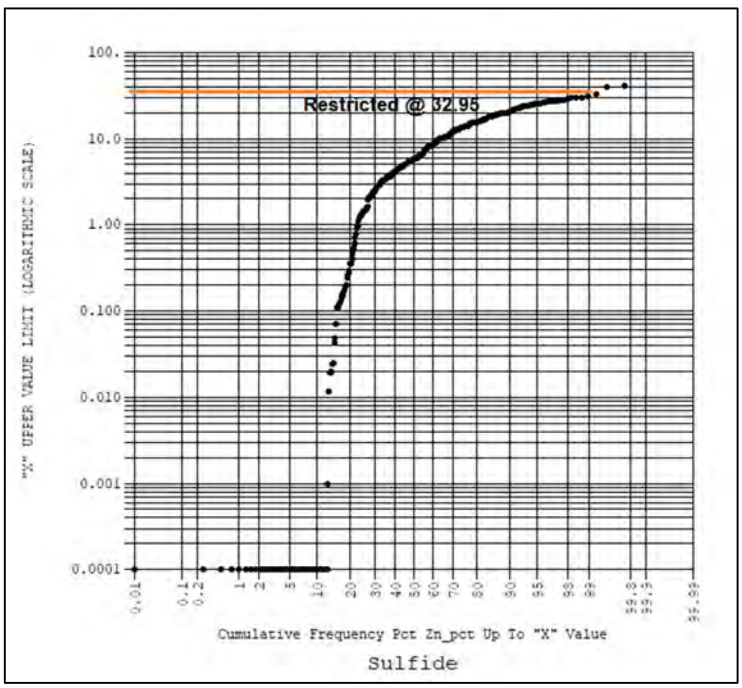


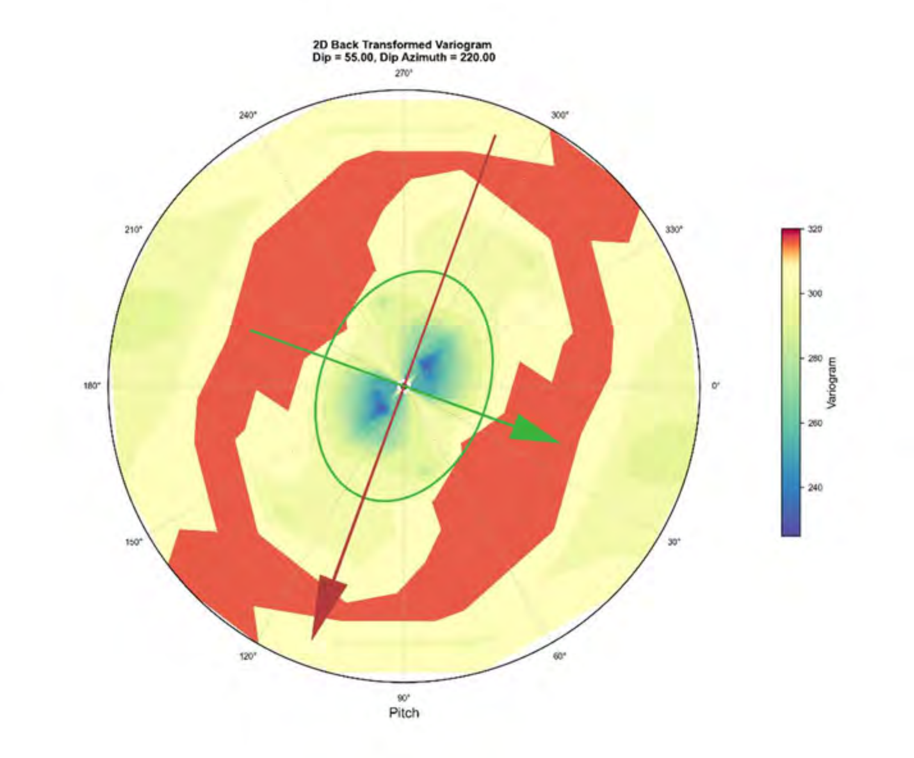

**Figure C - 15 Zinc Composits in Massive Sulfide**

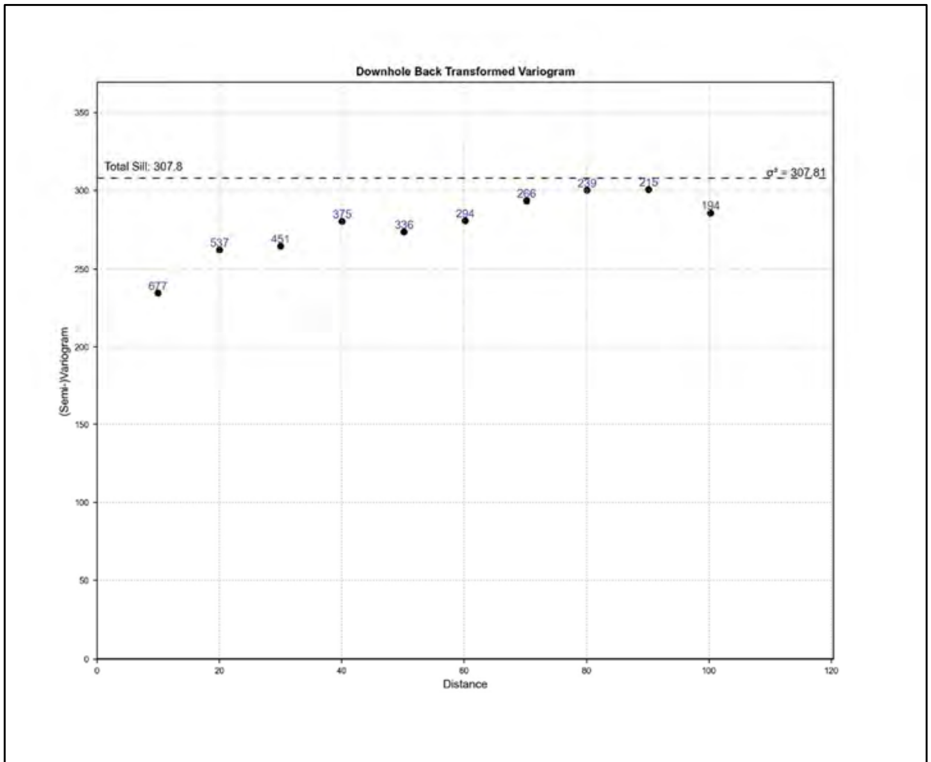
# APPENDIX D. VARIOGRAPHY

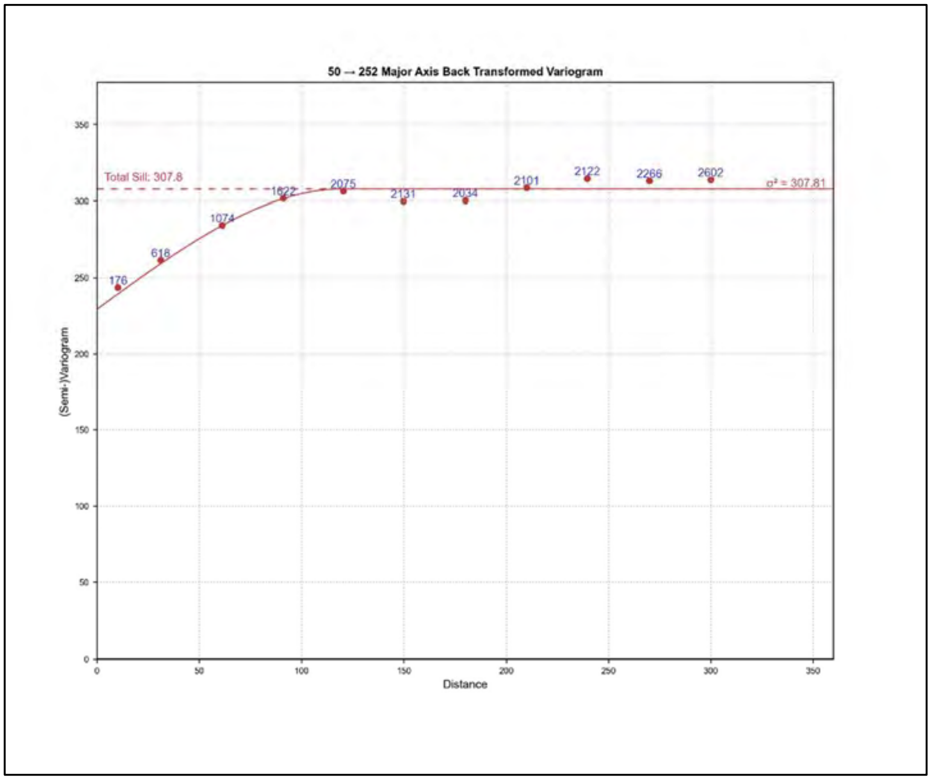
Back transformed normal score variogram models are presented by metal and domain. Variograms plots are shown in the following order:

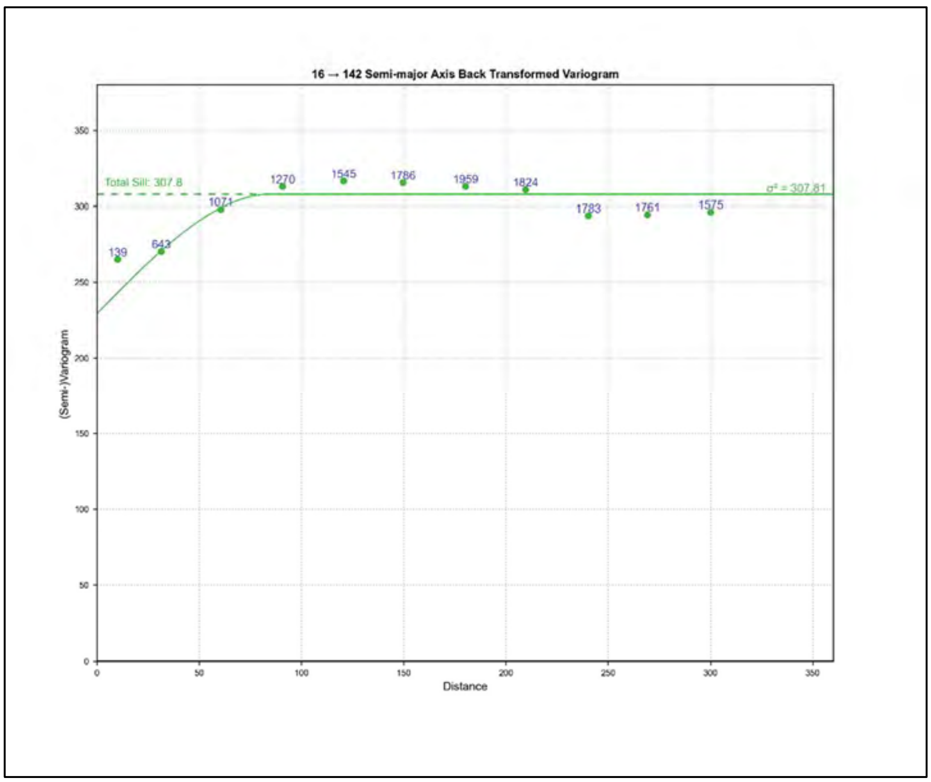
- Radial Plot
- Downhole Plot
- Major Axis
- Semi-Major Axis
- Minor Axis

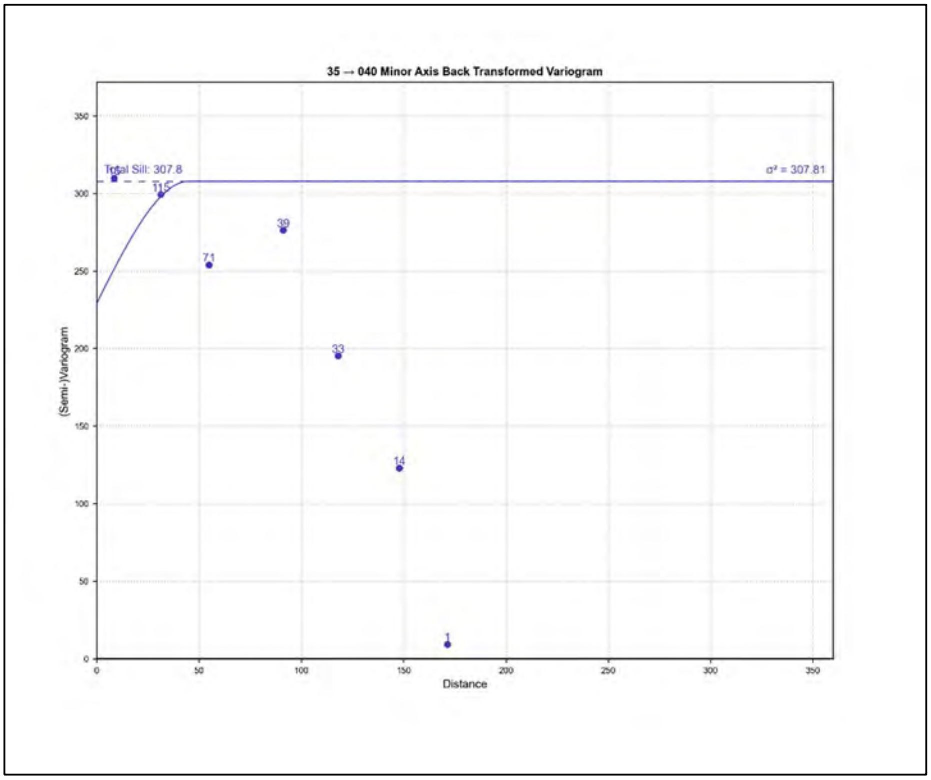
## Silver in Marble Variogram Plots



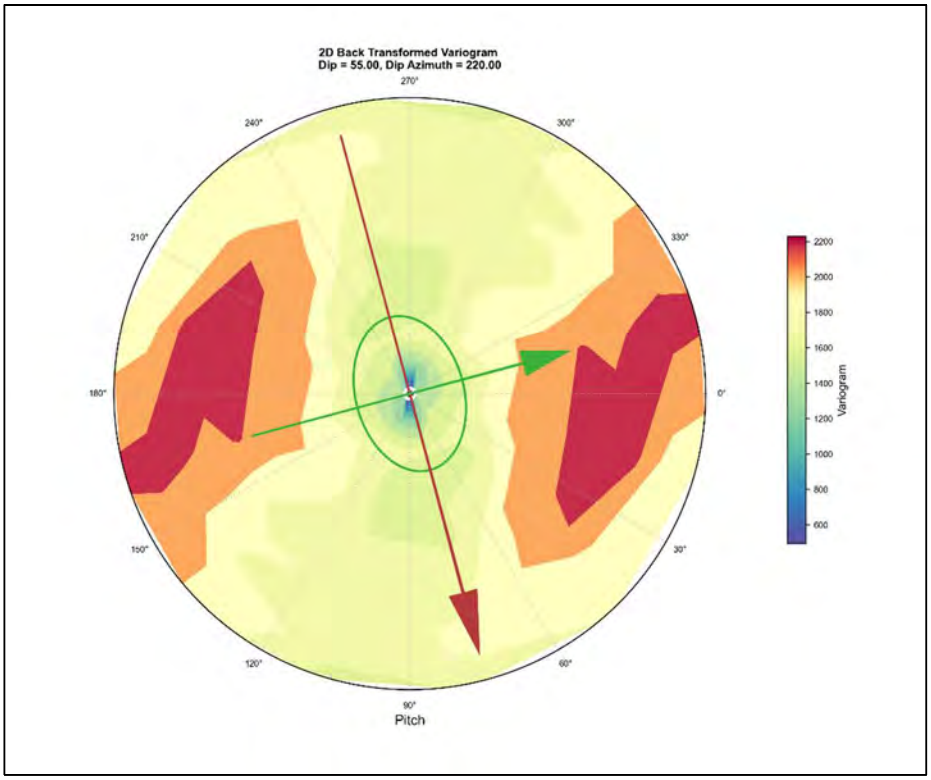



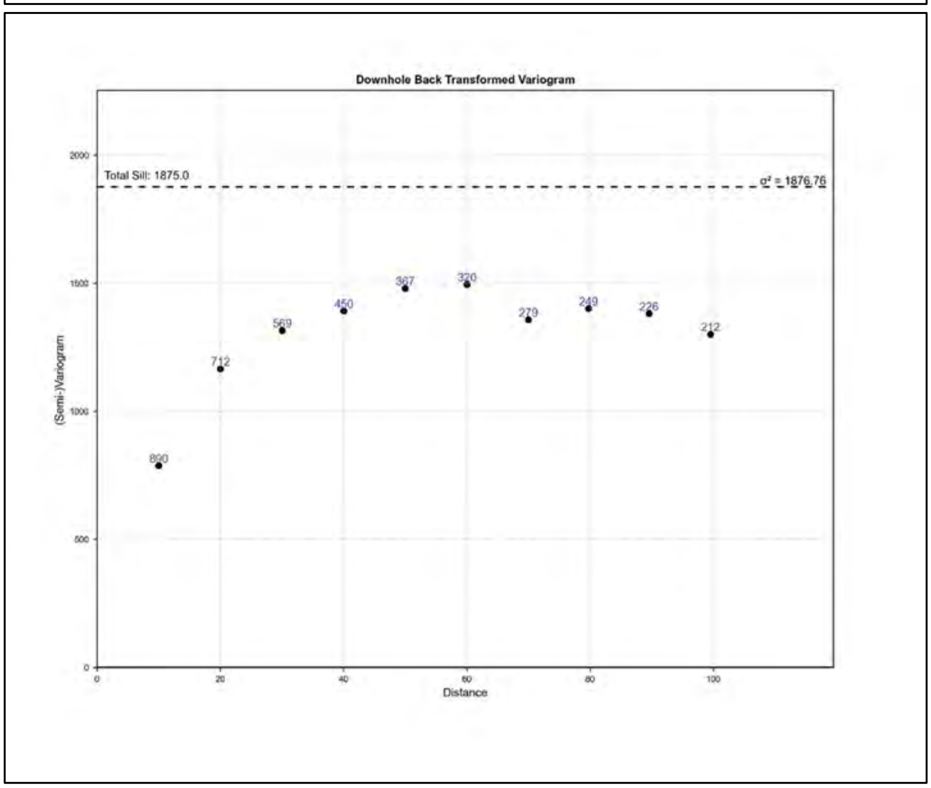

50 → 252 Major Axis Back Transformed Variogram
Total Sill: 307.8
176
616
1074
1822
2075
2131
2034
2101
2122
2266
2602
σ² = 307.81
(Semi-)Variogram
Distance

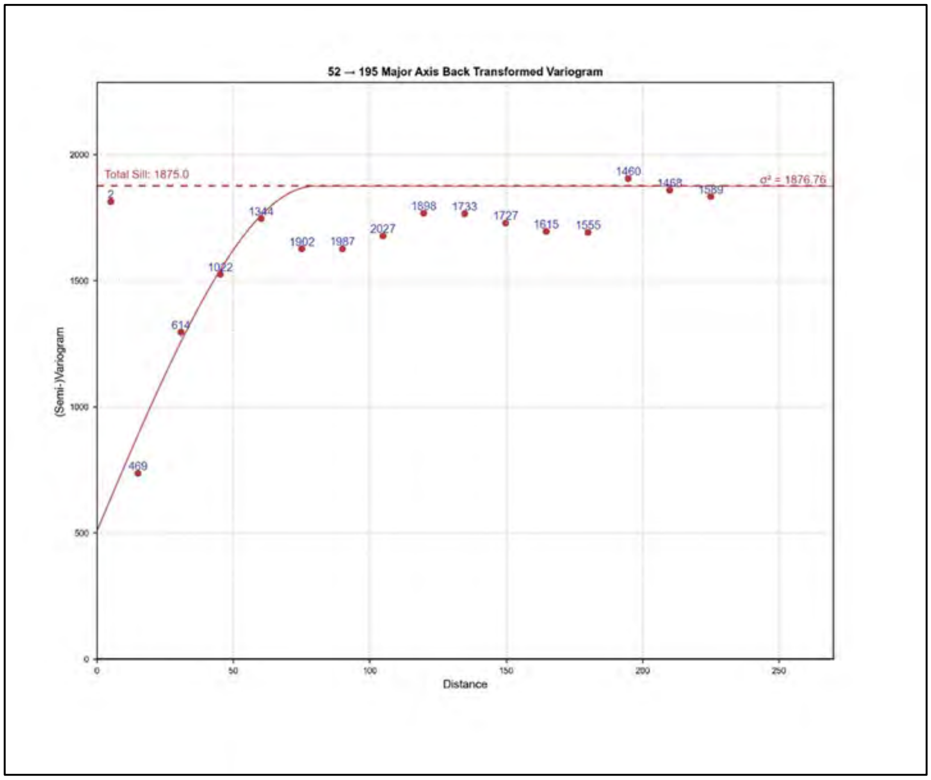

16 → 142 Semi-major Axis Back Transformed Variogram
Total Sill: 307.8
139
643
1071
1270
1545
1786
1959
1824
1783
1761
1575
σ² = 307.81
(Semi-)Variogram
Distance

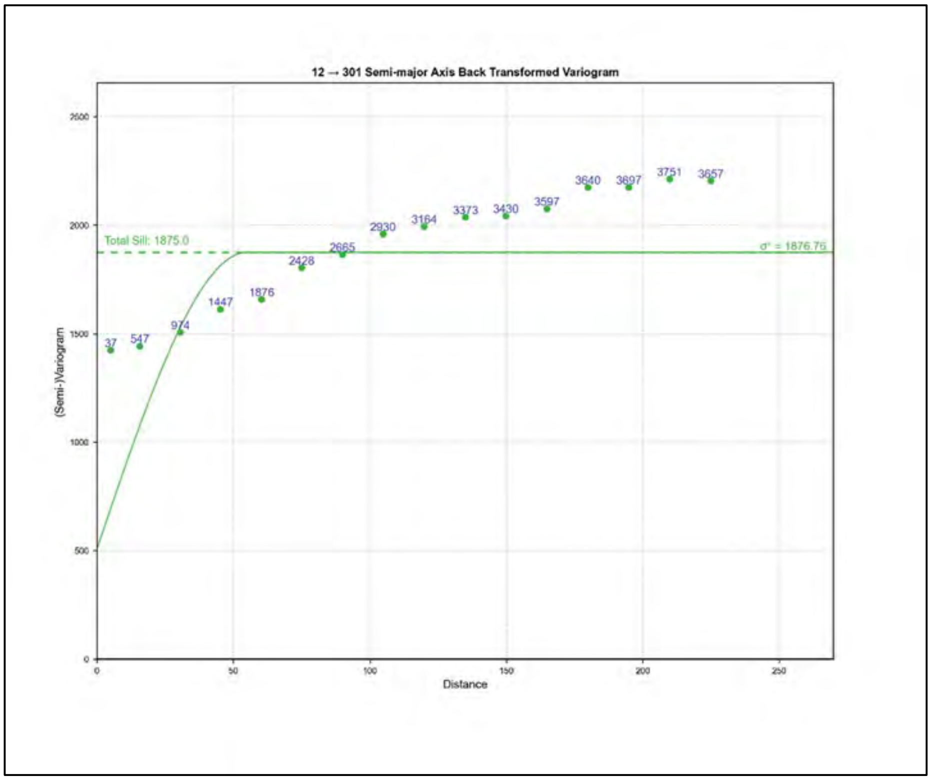

35 → 040 Minor Axis Back Transformed Variogram
Total Sill: 307.8
σ² = 307.81
(Semi-)Variogram
Distance
115
39
71
33
14
1
0
50
100
150
200
250
300
350

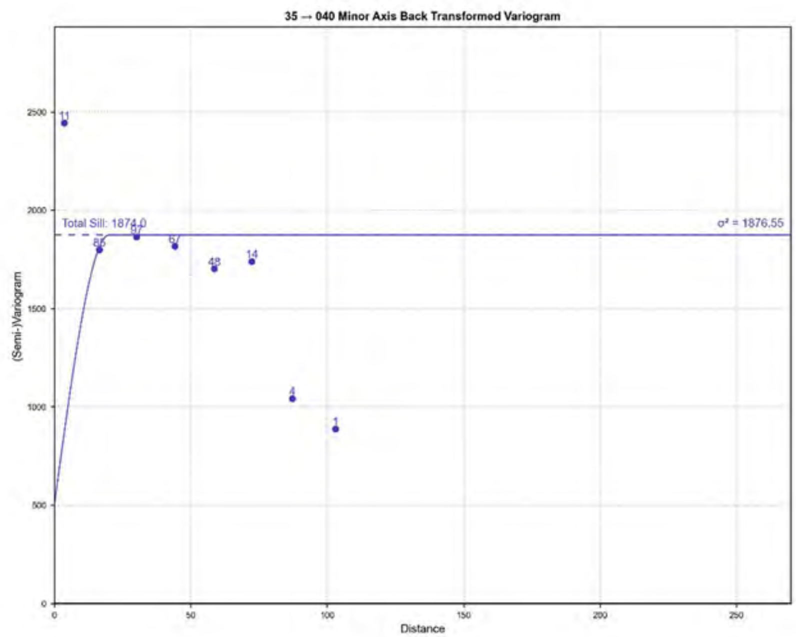
## Silver in Skarn Variogram Plots



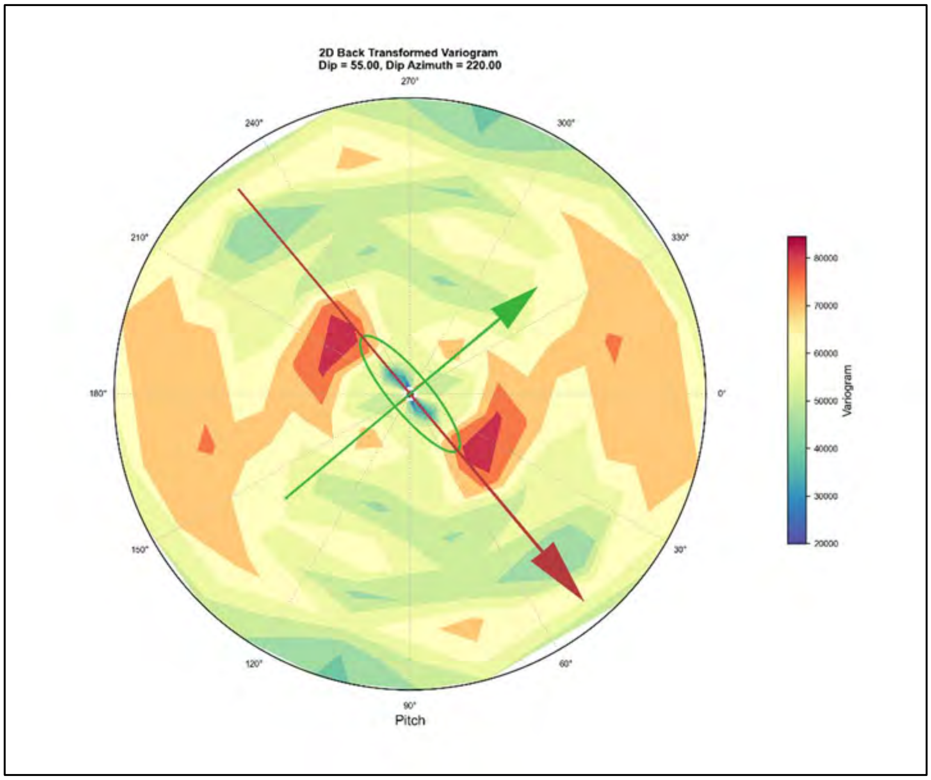



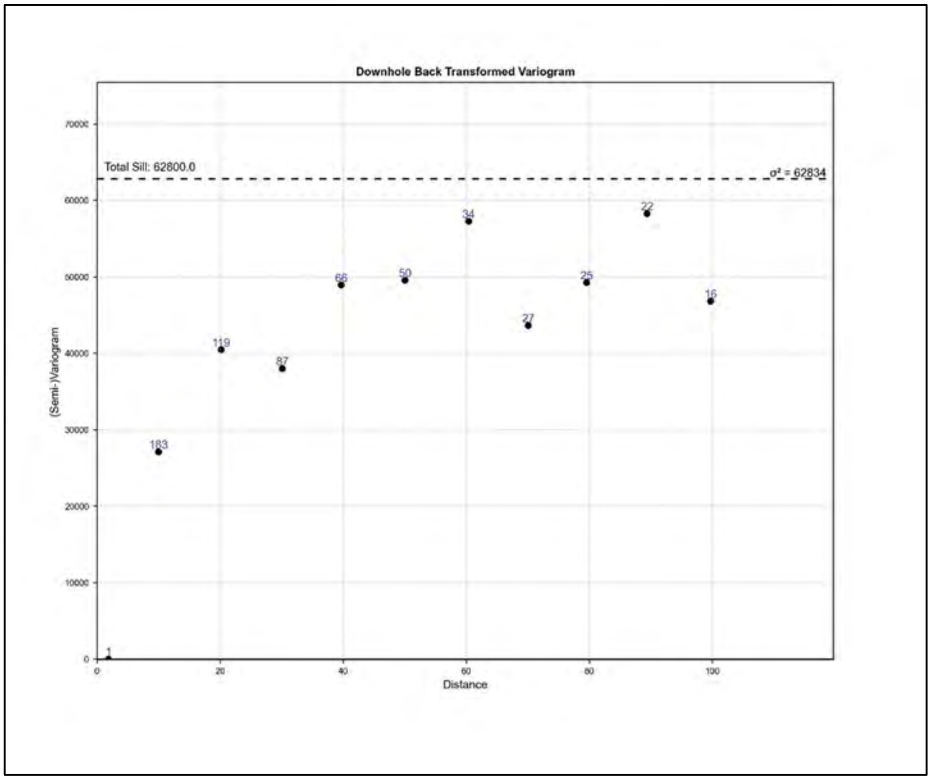

52 → 195 Major Axis Back Transformed Variogram
Total Sill: 1875.0
σ² = 1876.76
(Semi-)Variogram
Distance
2
469
614
1022
1344
1902
1987
2027
1898
1733
1727
1615
1555
1460
1468
1589

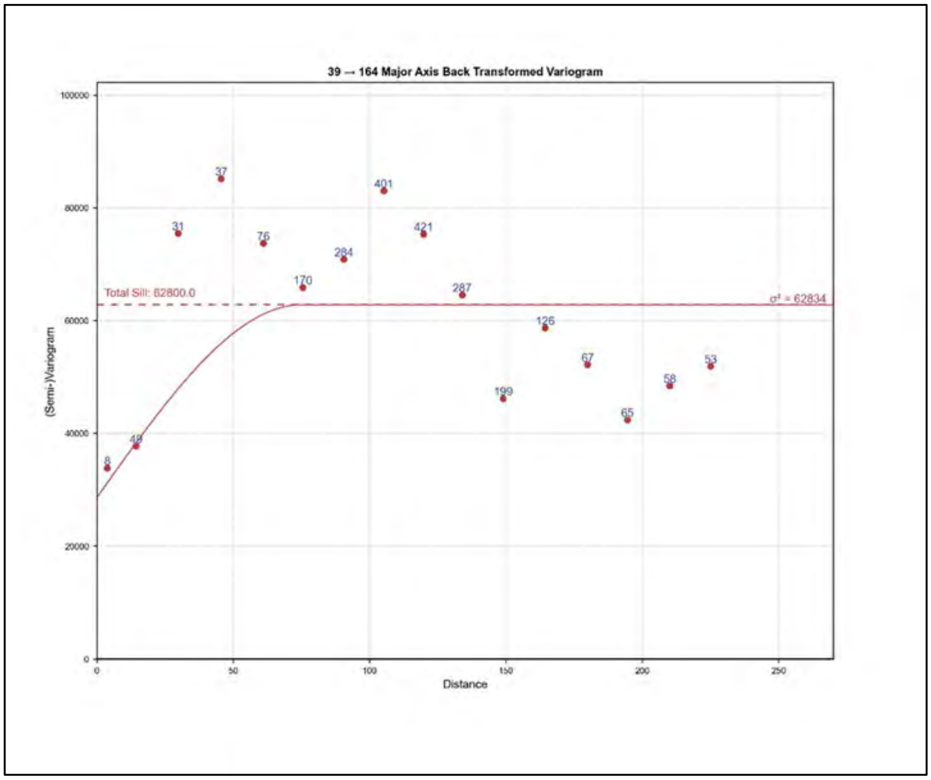

12 → 301 Semi-major Axis Back Transformed Variogram
Total Sill: 1875.0
σ² = 1876.76
(Semi-)Variogram
Distance
37
547
974
1447
1876
2428
2665
2930
3164
3373
3430
3597
3640
3697
3751
3657

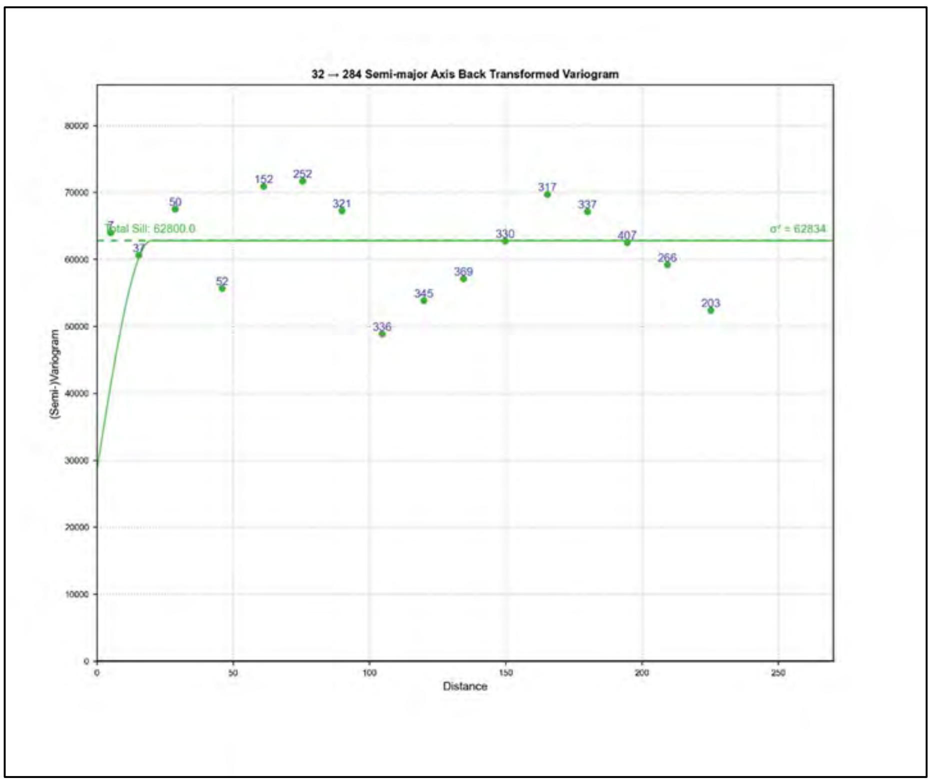

35 → 040 Minor Axis Back Transformed Variogram
Total Sill: 1874.0
σ² = 1876.55
(Semi-)Variogram
Distance

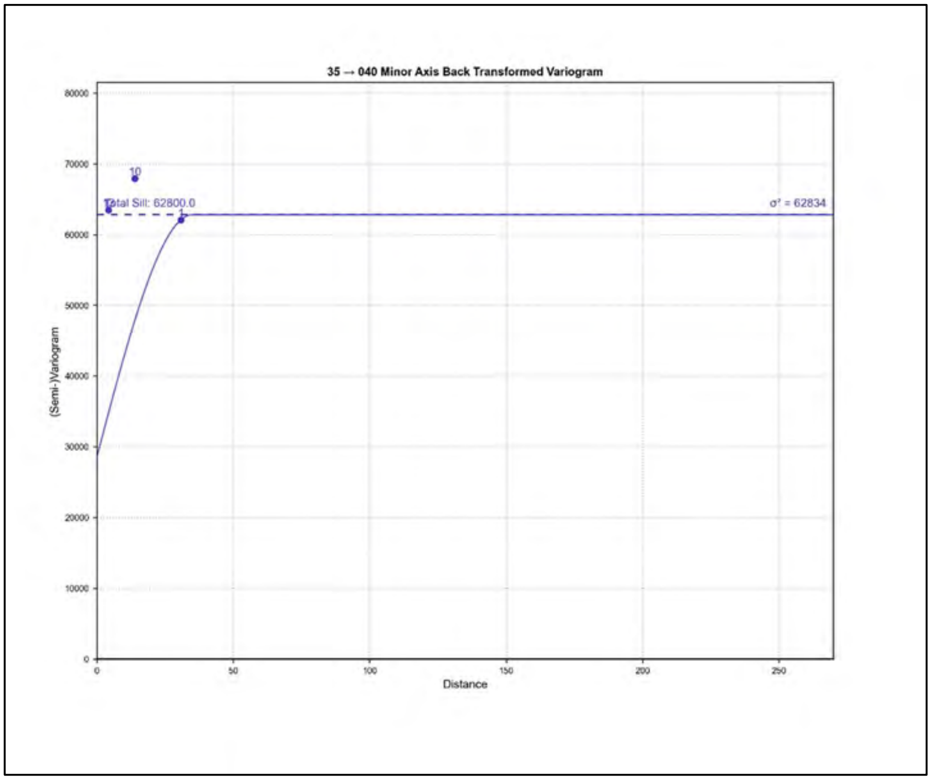
## Silver in Massive Sulfide Variogram Plots



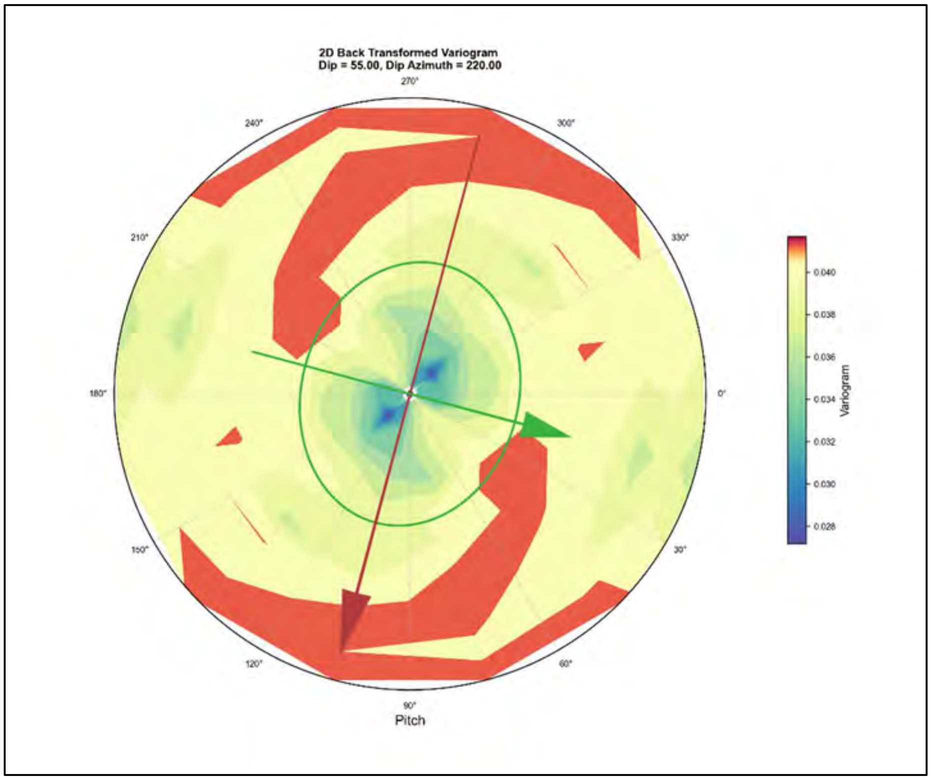



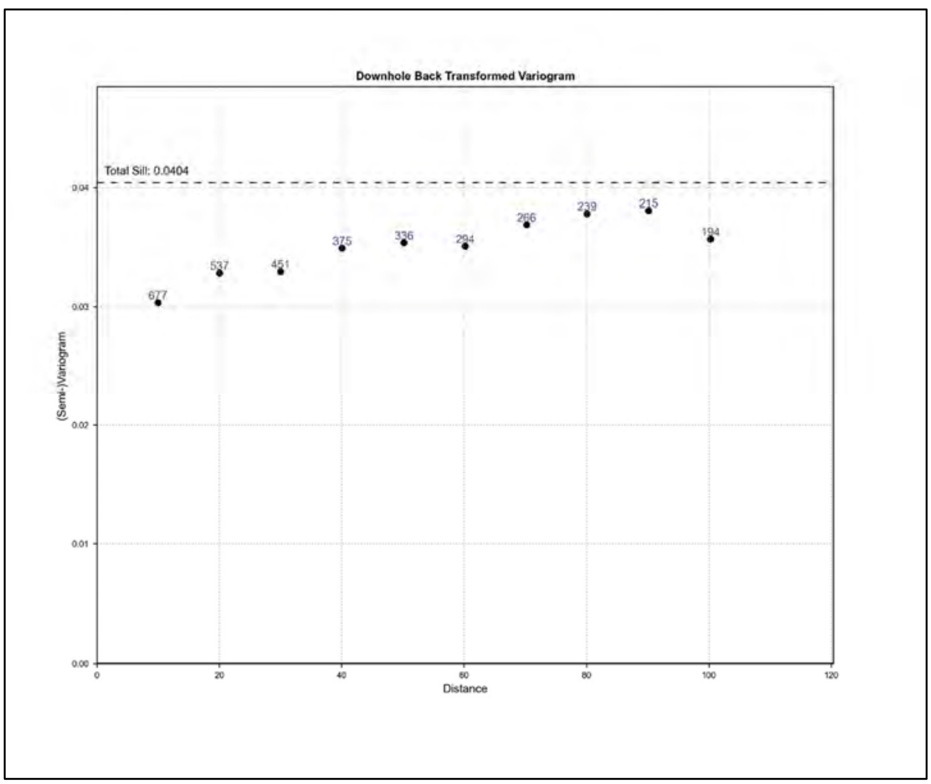

39 → 164 Major Axis Back Transformed Variogram
Total Sill: 62800.0
σ² = 62834
(Semi-)Variogram
Distance

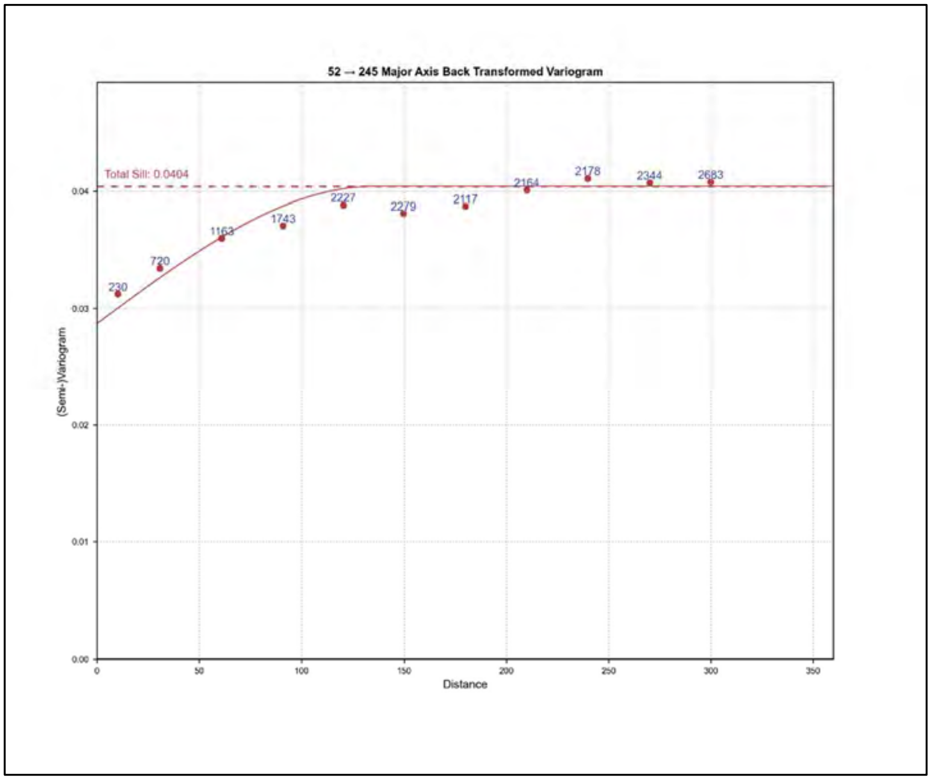

32 → 284 Semi-major Axis Back Transformed Variogram
Total Sill: 62800.0
σ² = 62834
(Semi-)Variogram
Distance

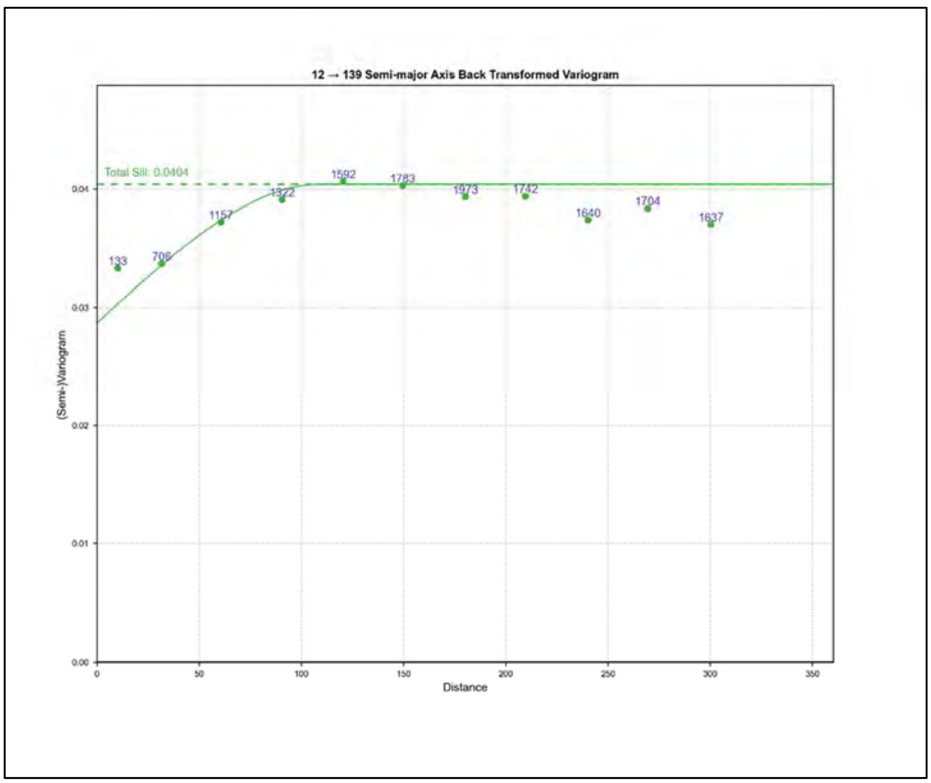

35 → 040 Minor Axis Back Transformed Variogram
(Semi-)Variogram
Distance
Total Sill: 62800.0
σ² = 62834
10
1
80000
70000
60000
50000
40000
30000
20000
10000
0
0
50
100
150
200
250

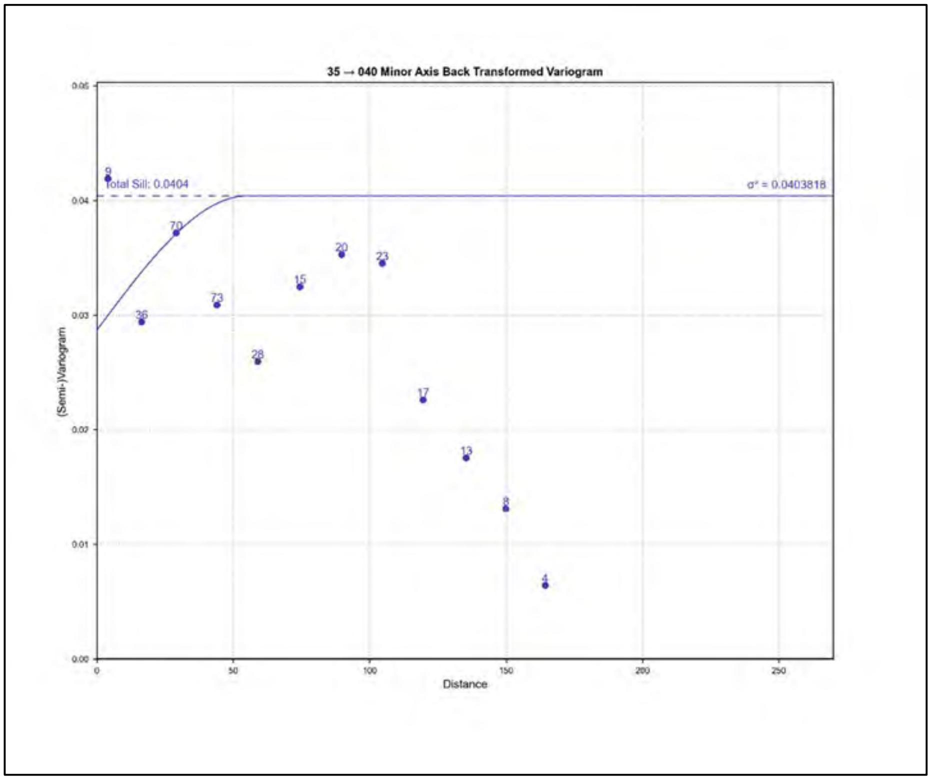
## Gold in Marble Variogram Plots



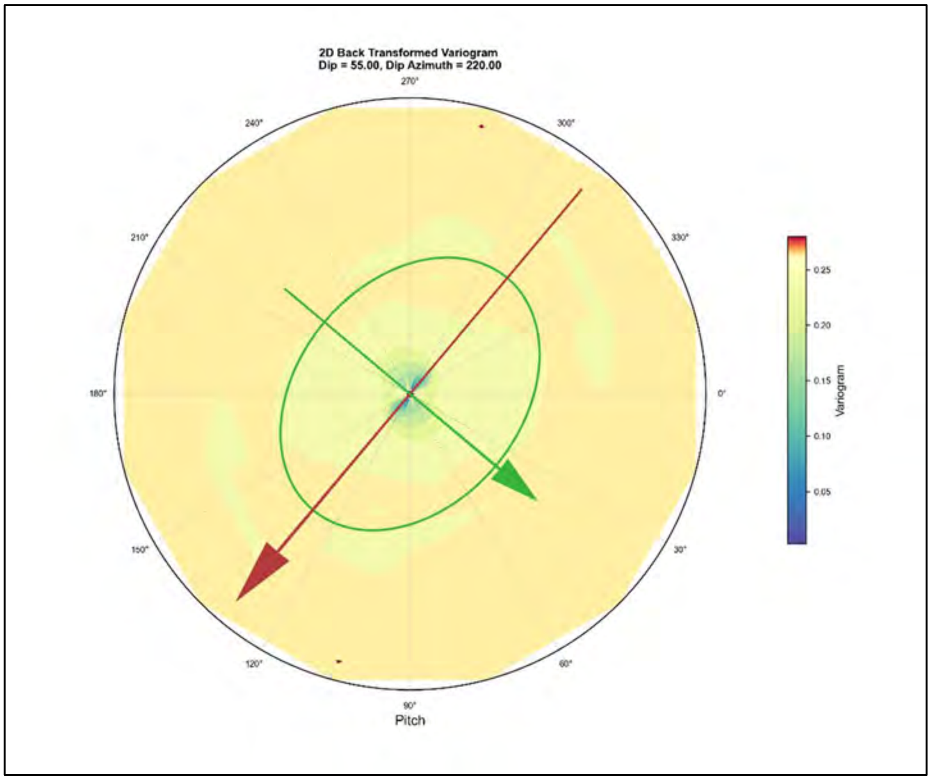



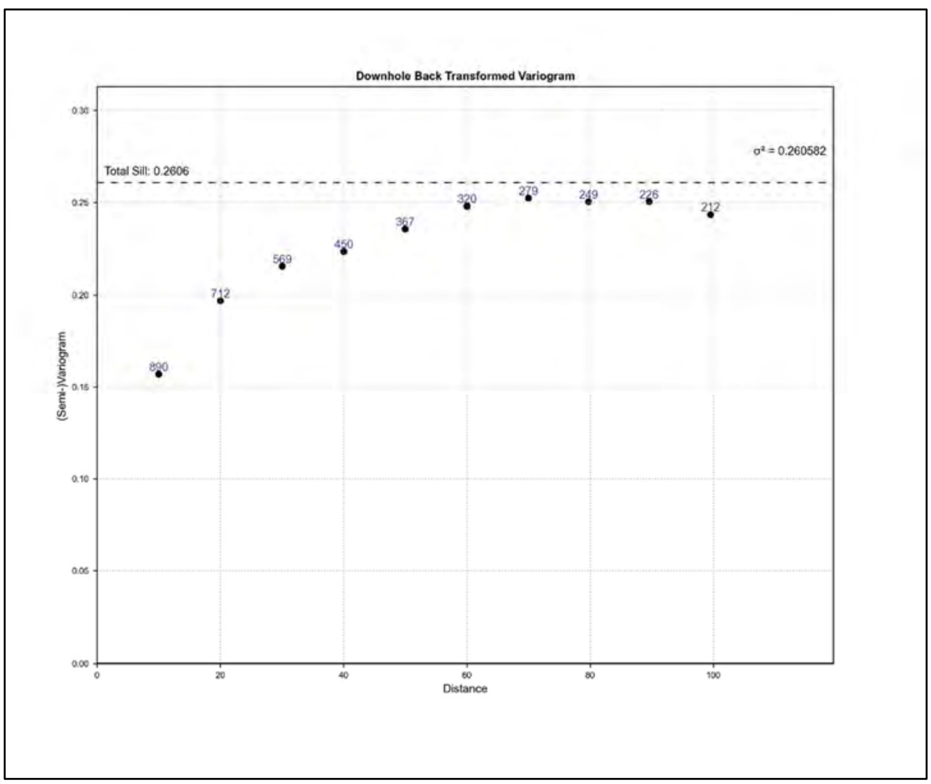

52 → 245 Major Axis Back Transformed Variogram
Total Sill: 0.0404
(Semi-)Variogram
Distance
230
720
1163
1743
2227
2279
2117
2164
2178
2344
2683

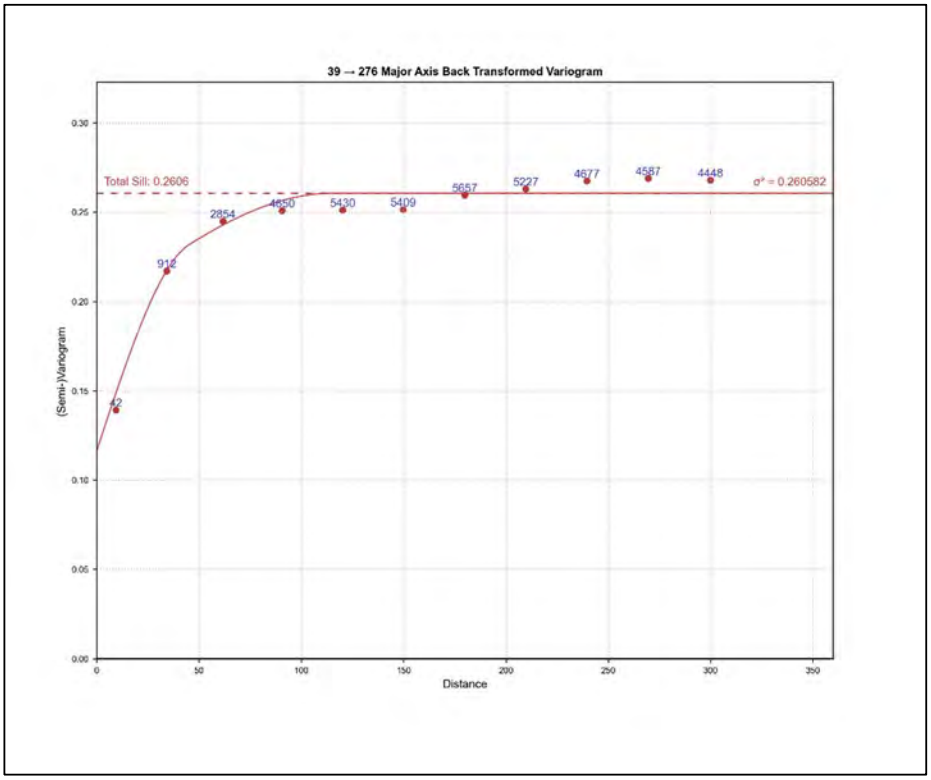

12 → 139 Semi-major Axis Back Transformed Variogram
Total Sill: 0.0404
(Semi-)Variogram
Distance
133
706
1157
1372
1592
1783
1973
1742
1640
1704
1637

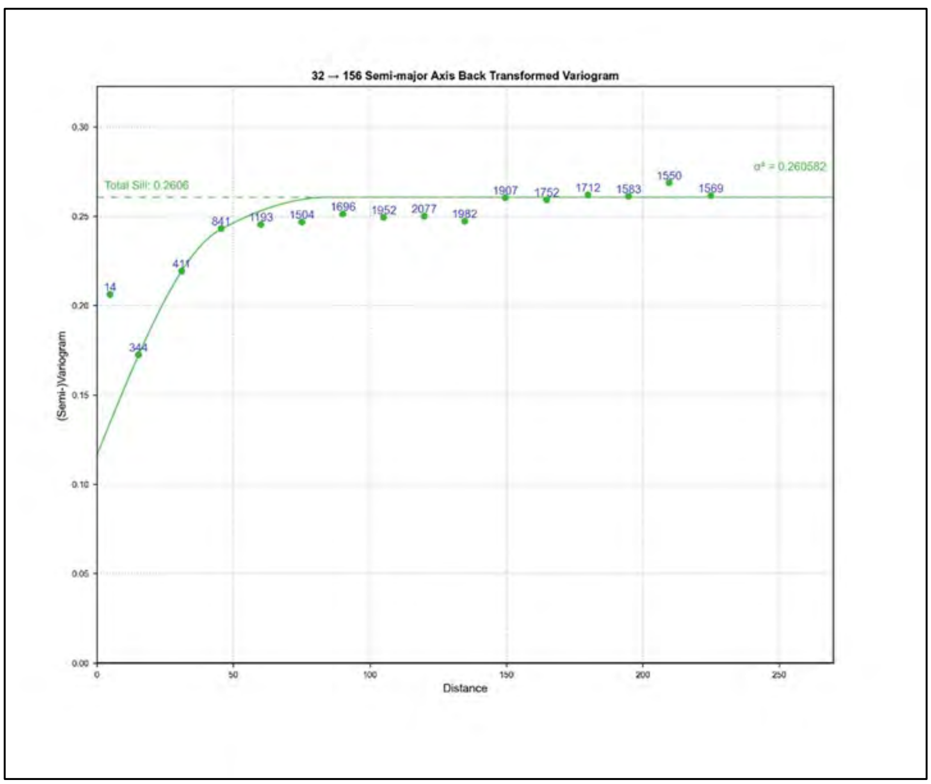

35 → 040 Minor Axis Back Transformed Variogram
Total Sill: 0.0404
σ² = 0.0403818
(Semi-)Variogram
Distance
0.00
0.01
0.02
0.03
0.04
0.05
0
50
100
150
200
250
9
70
36
73
28
15
20
23
17
13
8
4

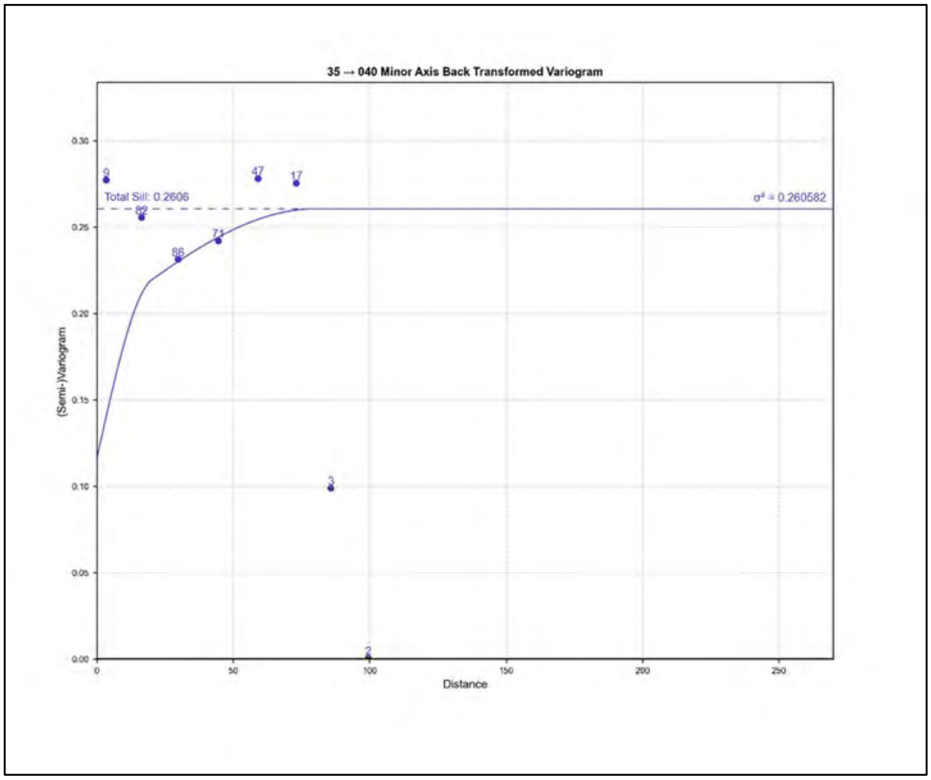
## Gold in Skarn Variogram Plots



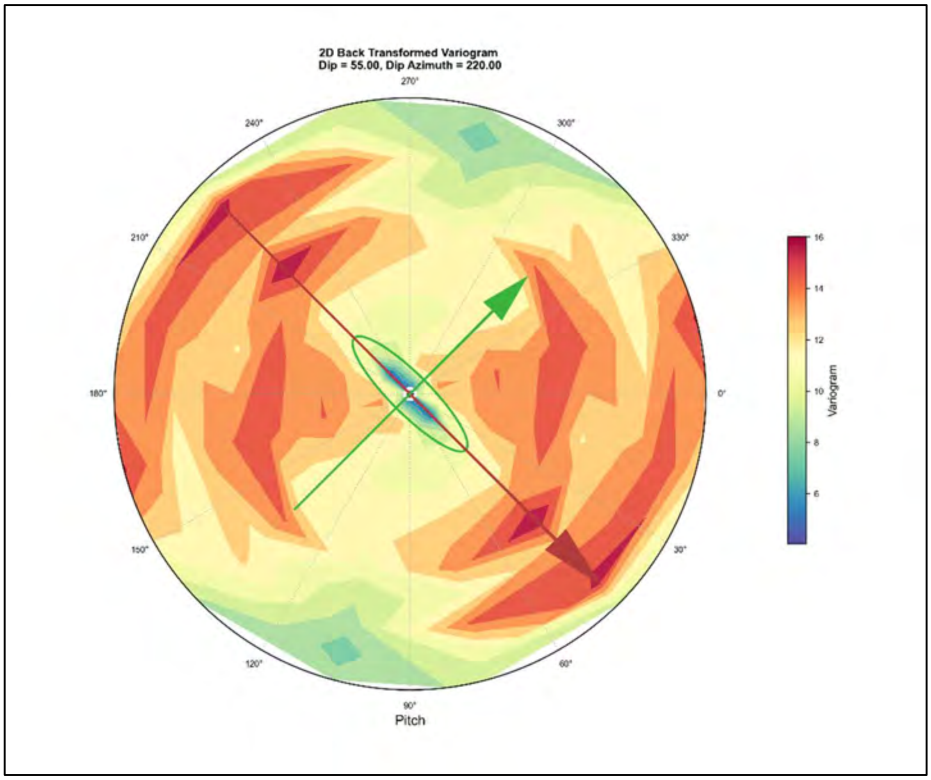



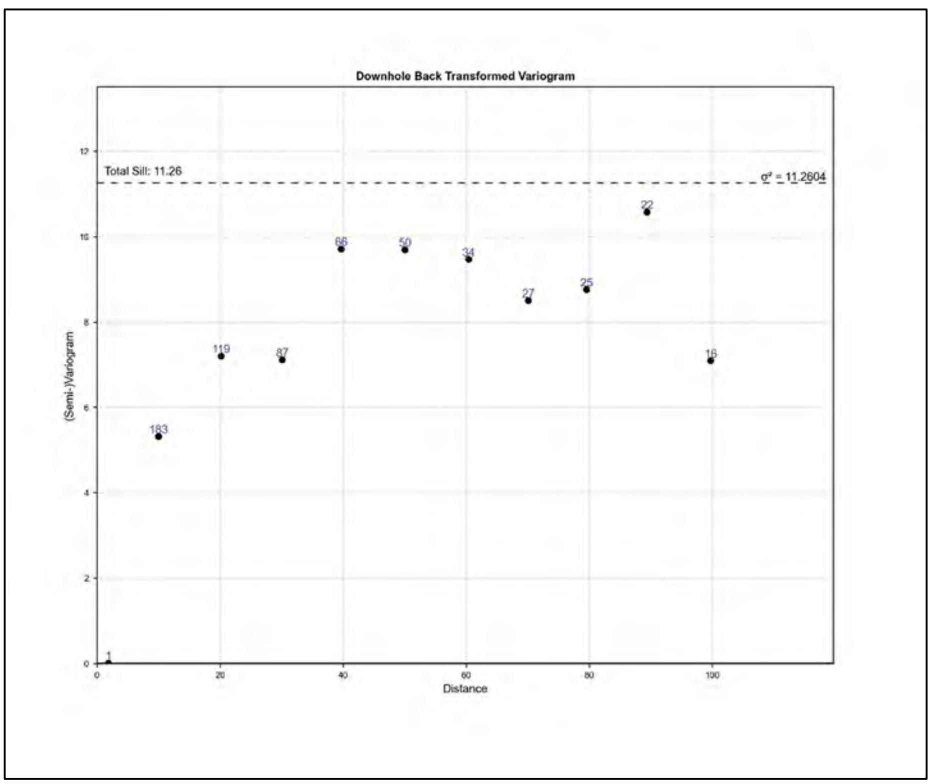

39 → 276 Major Axis Back Transformed Variogram
Total Sill: 0.2606
σ² = 0.260582
(Semi-)Variogram
Distance
42
912
2854
4650
5430
5409
5657
5227
4677
4587
4448


32 → 156 Semi-major Axis Back Transformed Variogram
Total Sill: 0.2606
σ² = 0.260582
(Semi-)Variogram
Distance
14
344
411
841
1193
1504
1696
1952
2077
1982
1907
1752
1712
1583
1550
1569


35 → 040 Minor Axis Back Transformed Variogram
Total Sill: 0.2606
σ² = 0.260582
(Semi-)Variogram
Distance
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
50
100
150
200
250
9
82
86
71
47
17
3
2

## Gold in Massive Sulfide Variogram Plots





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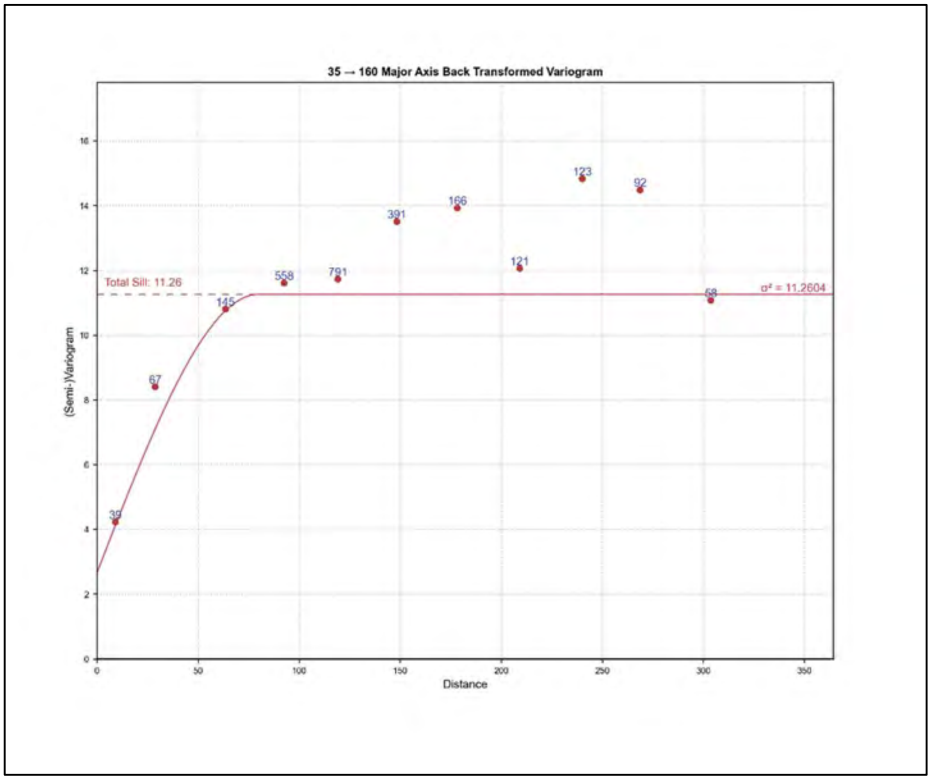
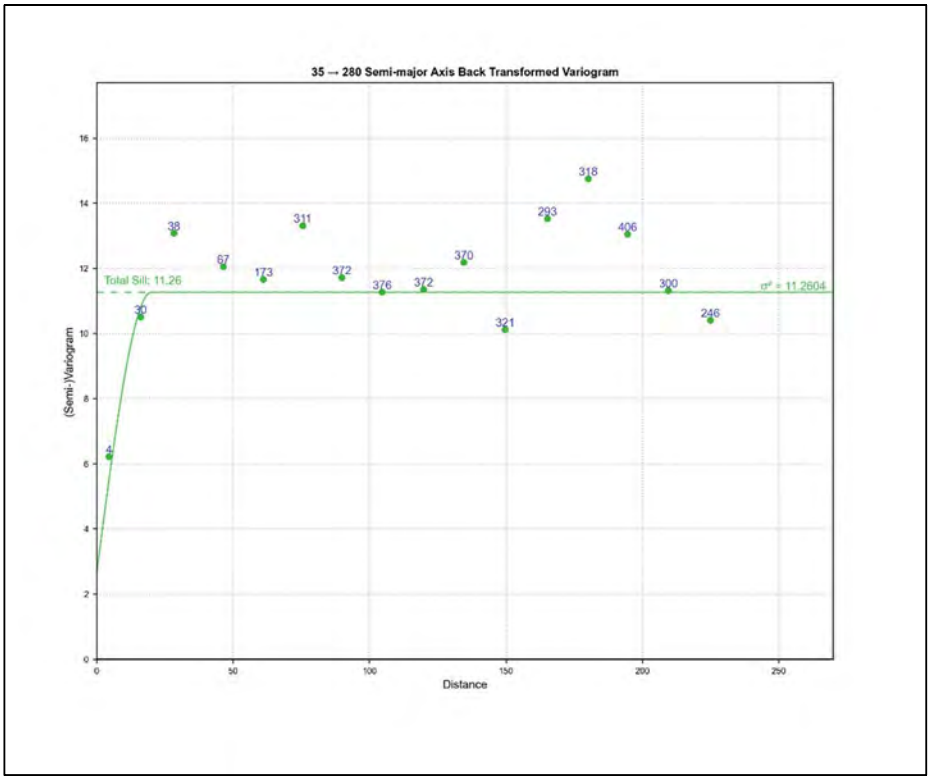
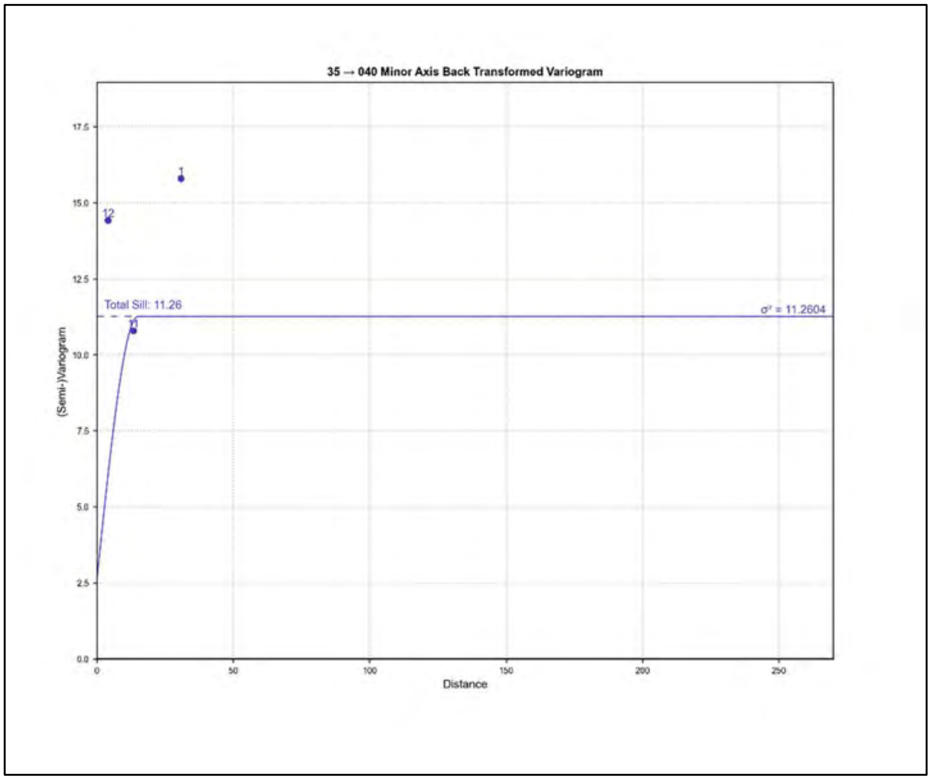
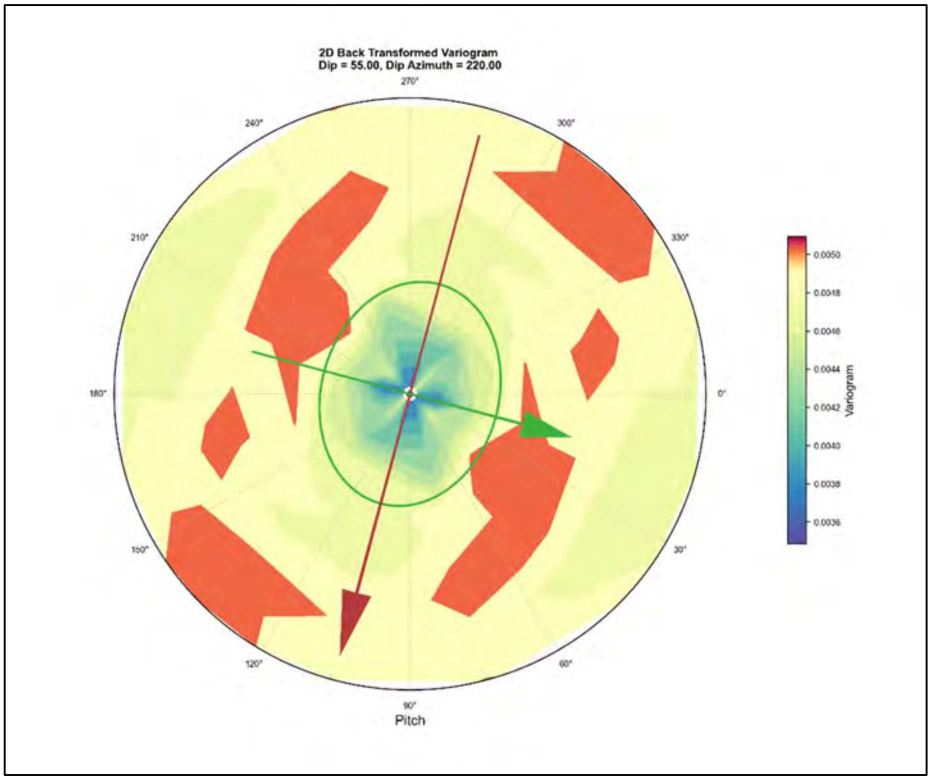
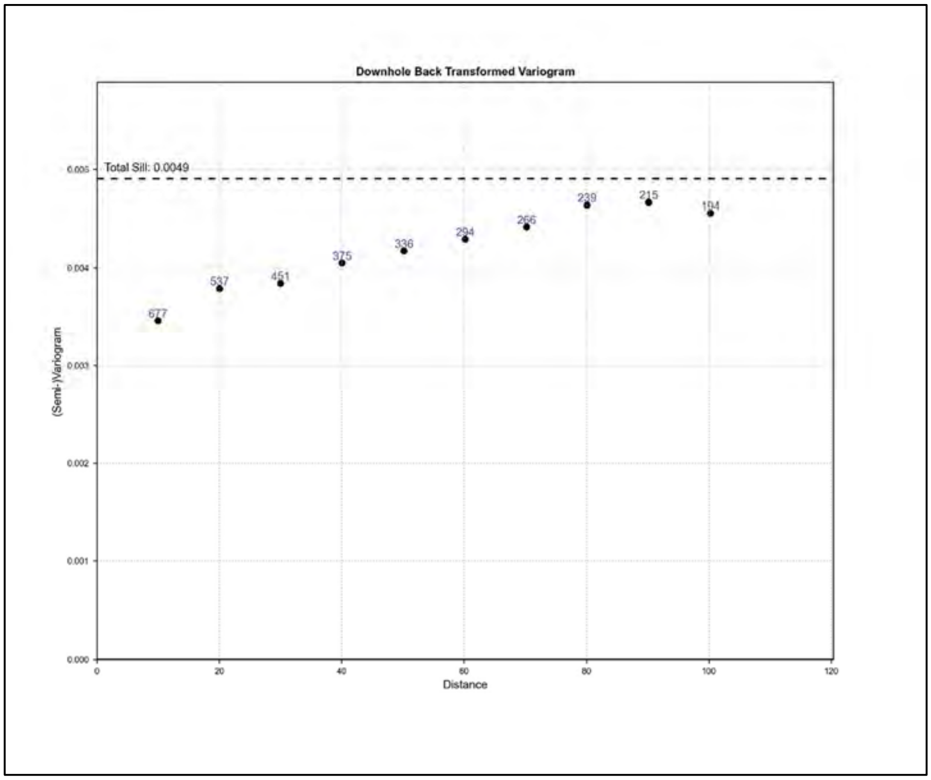

35 → 160 Major Axis Back Transformed Variogram
(Semi-)Variogram
Distance
Total Sill: 11.26
σ² = 11.2604

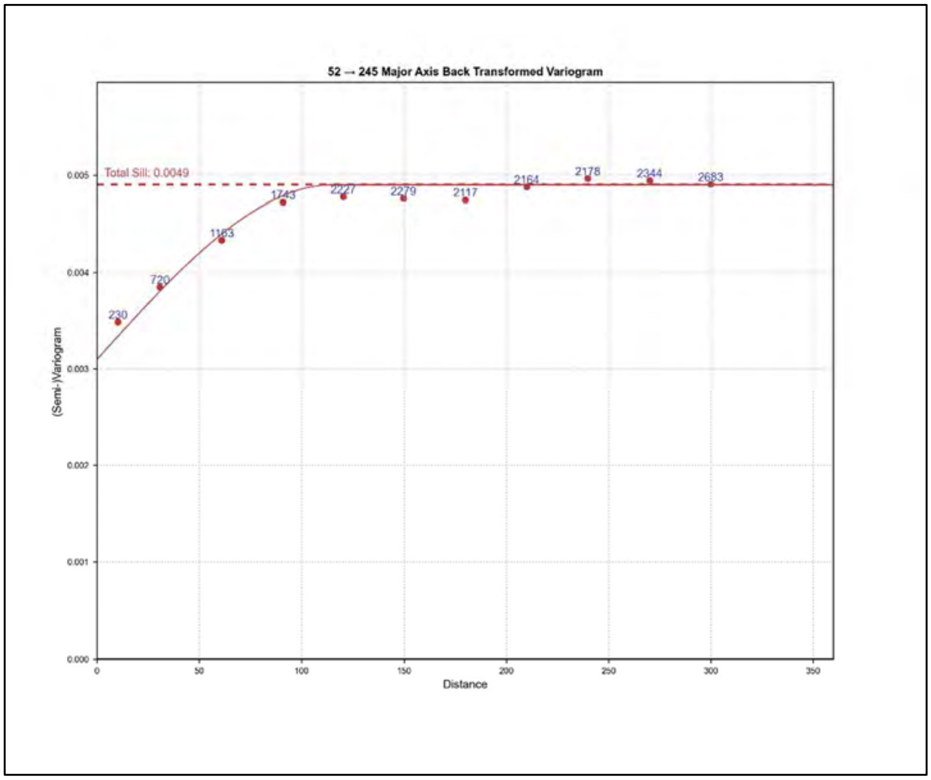

35 → 280 Semi-major Axis Back Transformed Variogram
(Semi-)Variogram
Distance
Total Sill: 11.26
σ² = 11.2604

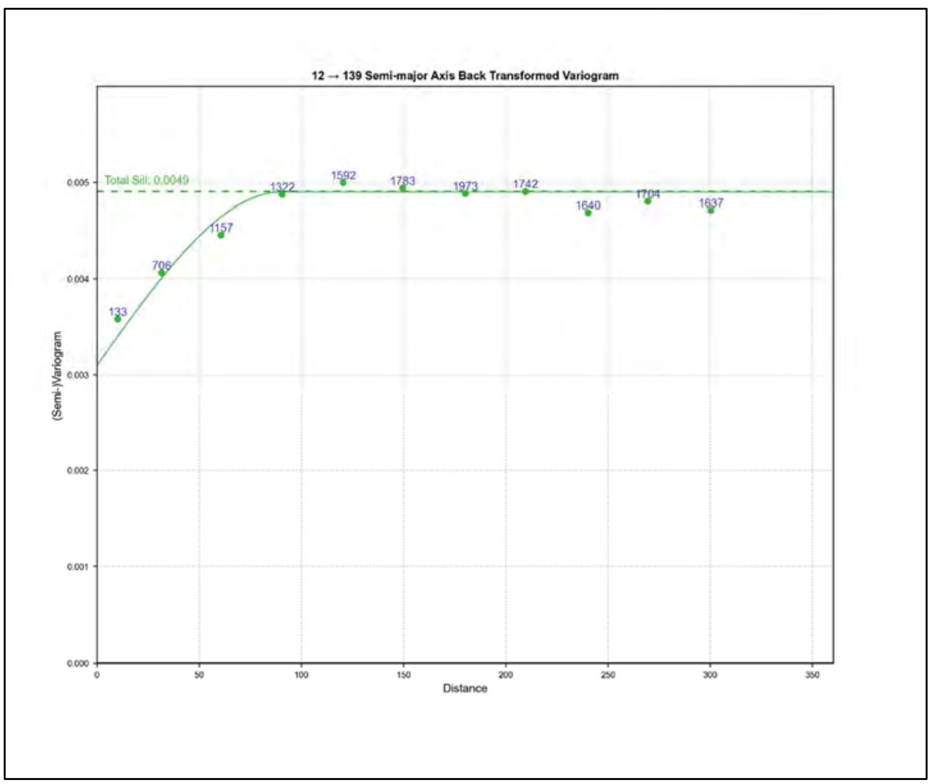

35 → 040 Minor Axis Back Transformed Variogram
(Semi-)Variogram
Distance
Total Sill: 11.26
σ² = 11.2604
12
1
11
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
0
50
100
150
200
250

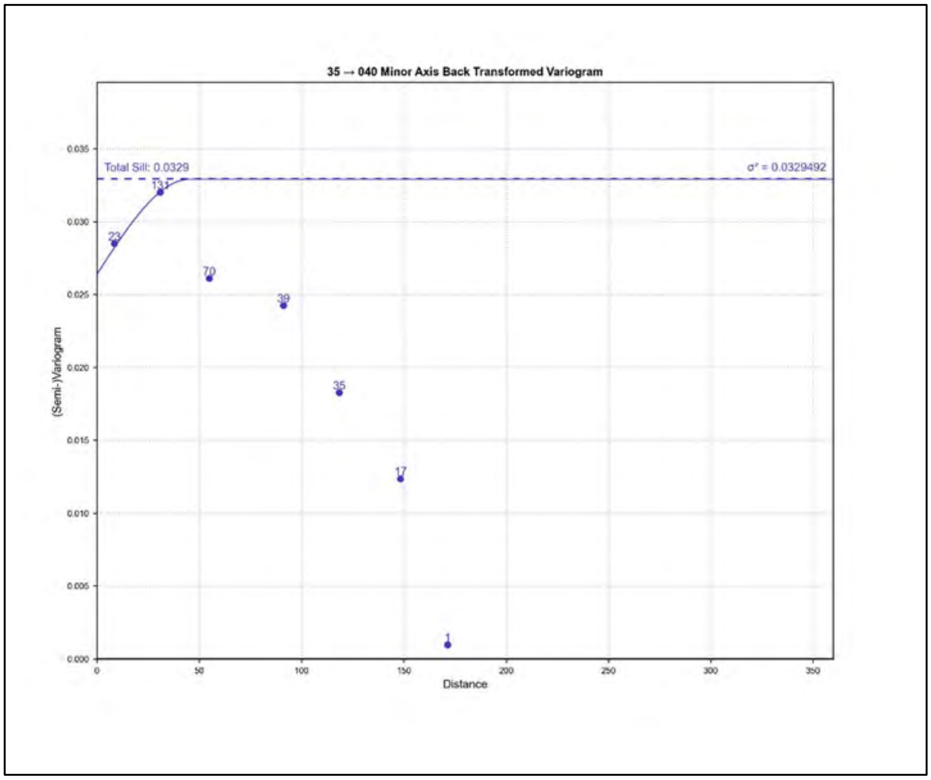
**Copper in Marble Variogram Plots**



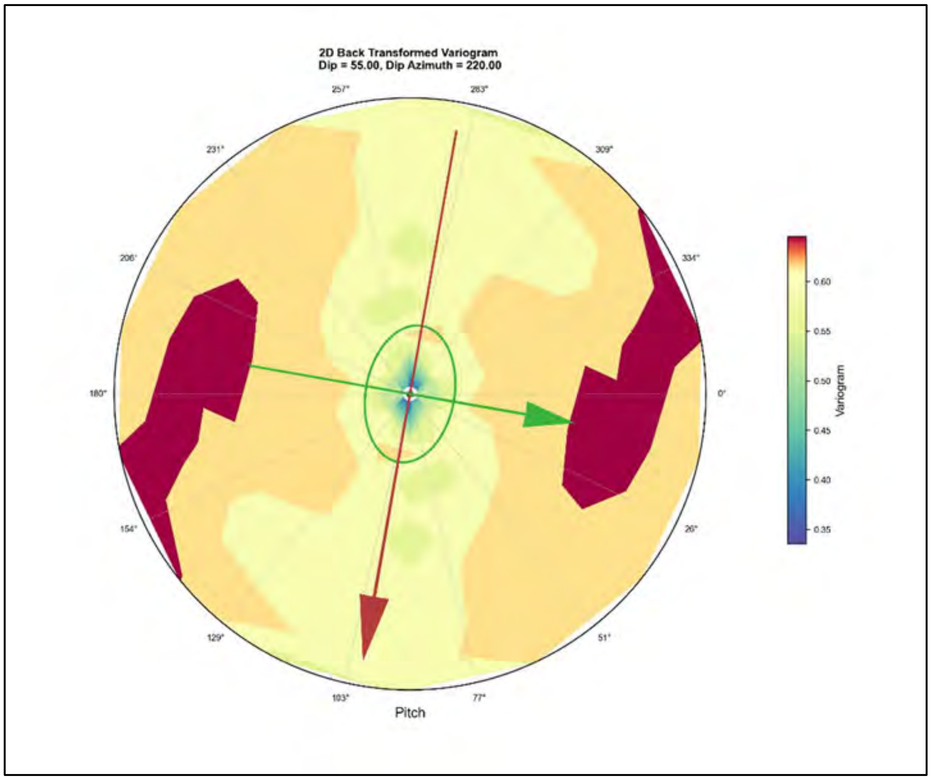



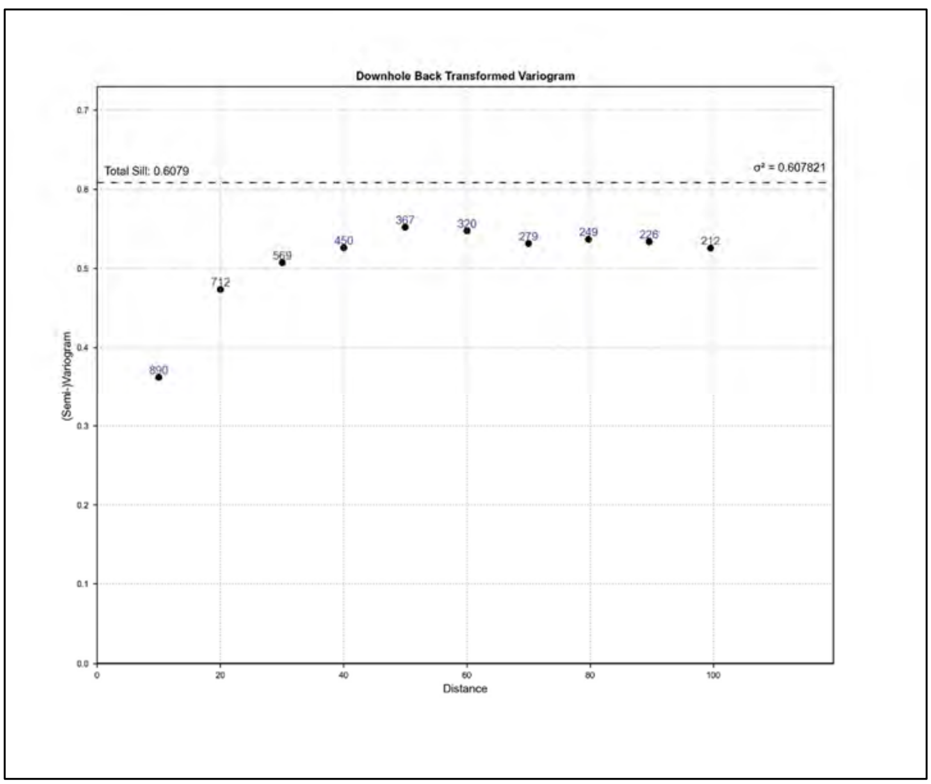

52 → 245 Major Axis Back Transformed Variogram
Total Sill: 0.0049
(Semi-)Variogram
Distance
230
720
1163
1743
2227
2279
2117
2164
2178
2344
2683

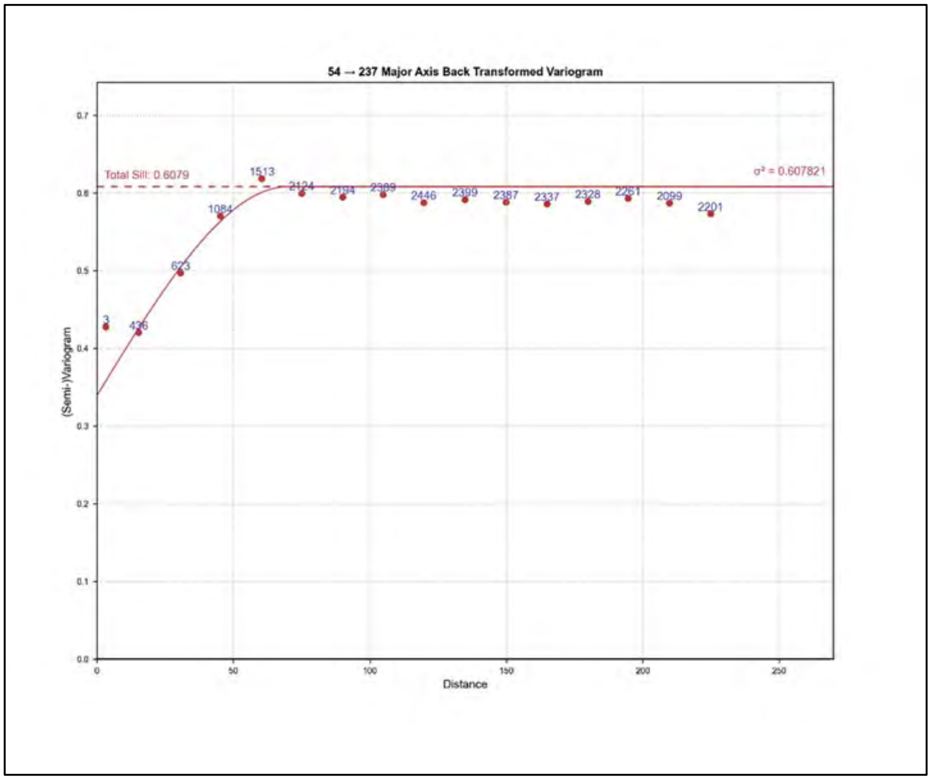

12 → 139 Semi-major Axis Back Transformed Variogram
Total Sill: 0.0049
(Semi-)Variogram
Distance
133
706
1157
1322
1592
1783
1973
1742
1640
1704
1637

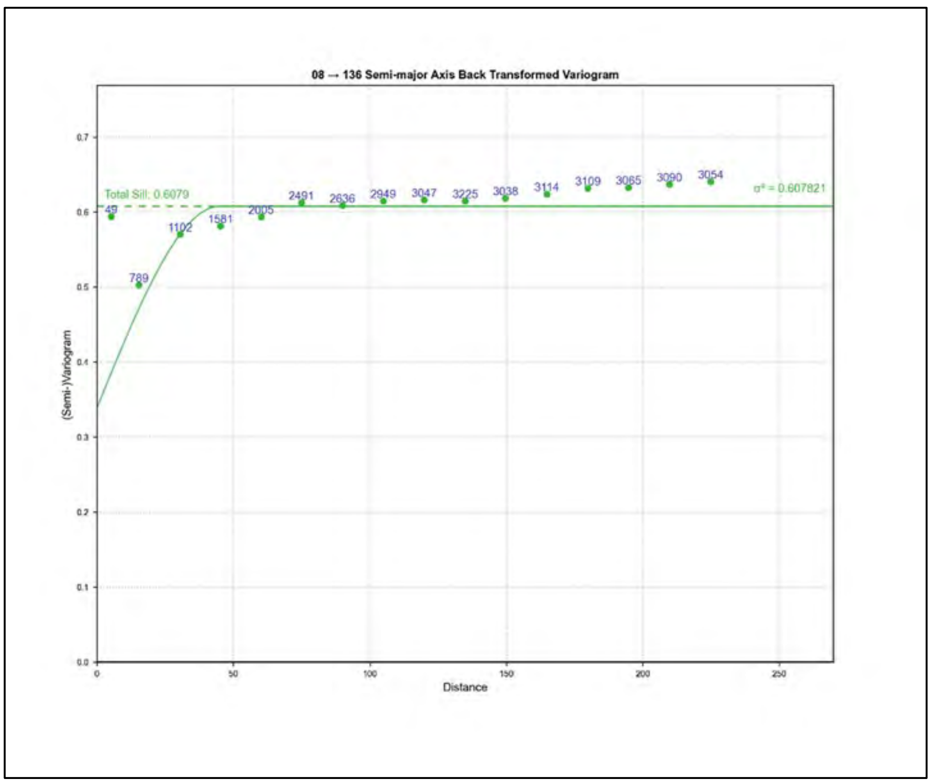

35 → 040 Minor Axis Back Transformed Variogram
Total Sill: 0.0329
σ² = 0.0329492
(Semi-)Variogram
Distance
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0.035
0
50
100
150
200
250
300
350
23
131
70
39
35
17
1

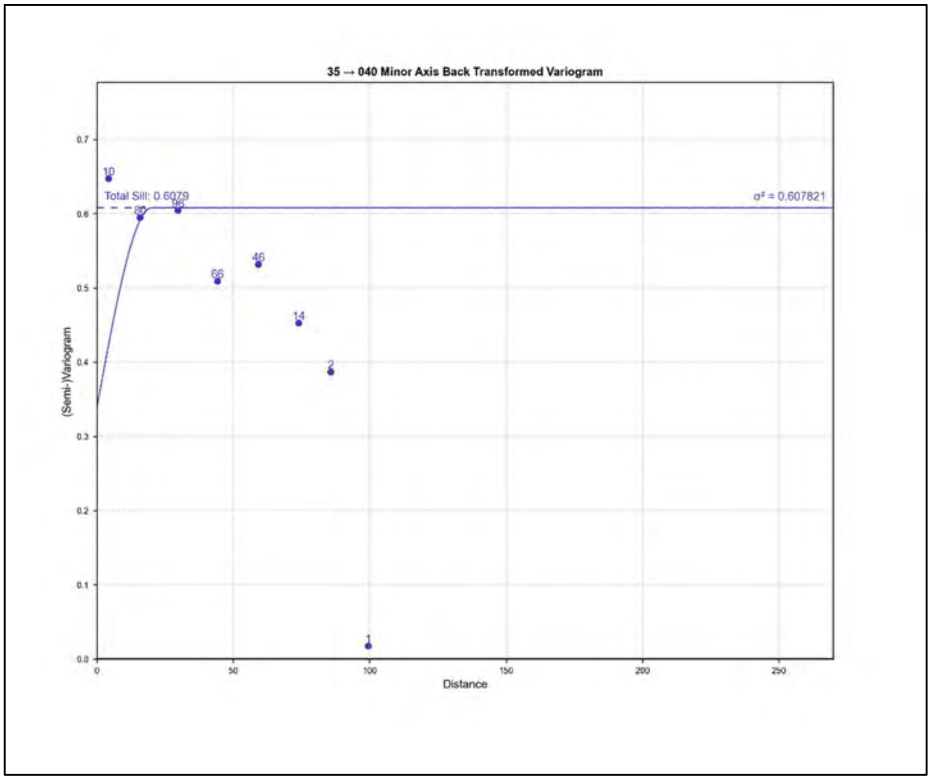
## Copper in Skarn Variogram Plots



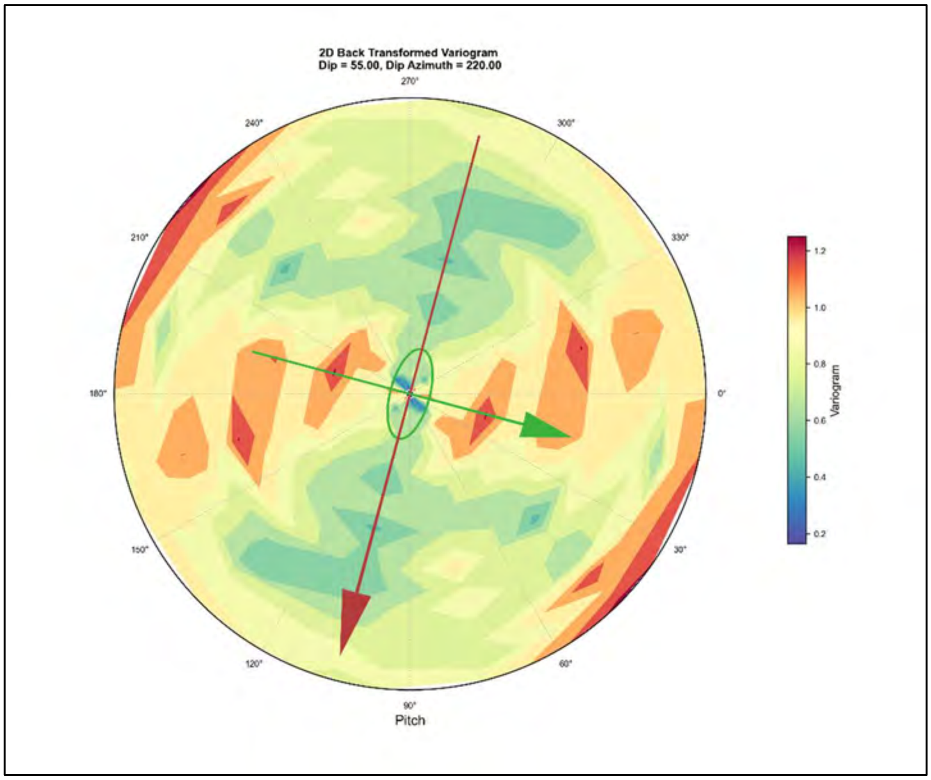



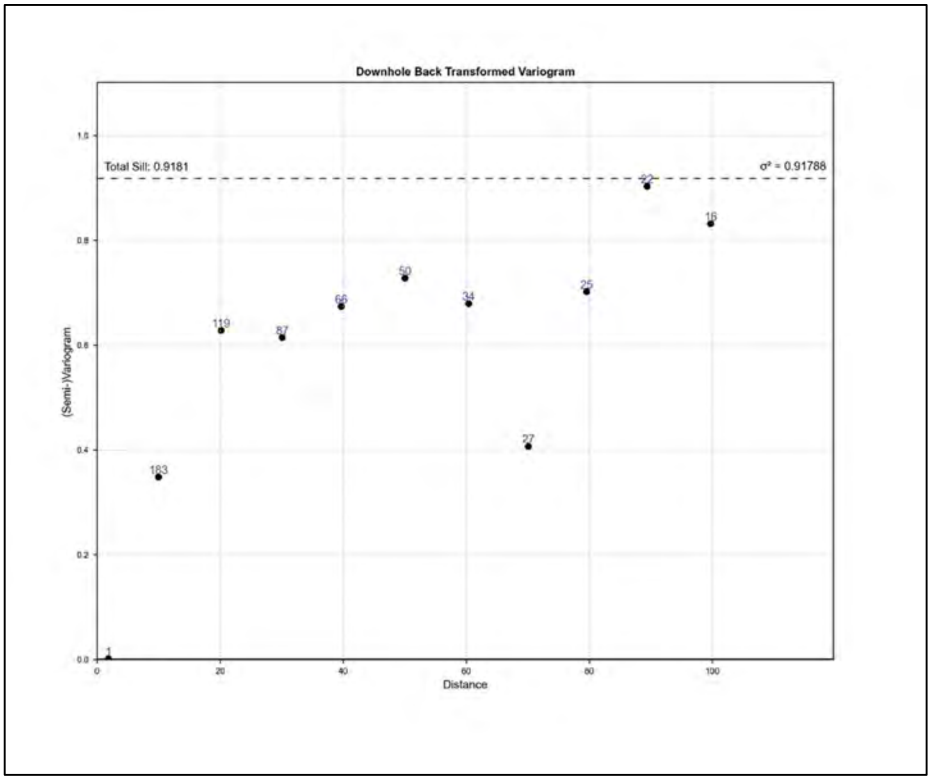

54 → 237 Major Axis Back Transformed Variogram
Total Sill: 0.6079
σ² = 0.607821
3
436
623
1084
1513
2124
2194
2389
2446
2399
2387
2337
2328
2261
2099
2201
(Semi-)Variogram
Distance

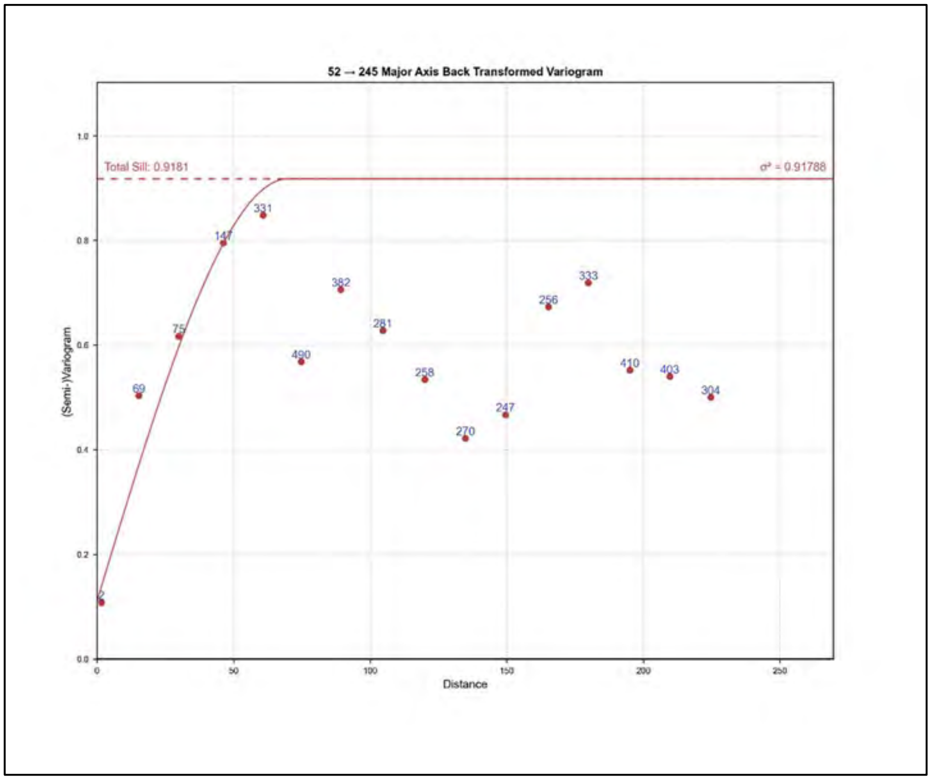

08 → 136 Semi-major Axis Back Transformed Variogram
Total Sill: 0.6079
σ² = 0.607821
49
789
1102
1581
2005
2491
2636
2949
3047
3225
3038
3114
3109
3065
3090
3054
(Semi-)Variogram
Distance

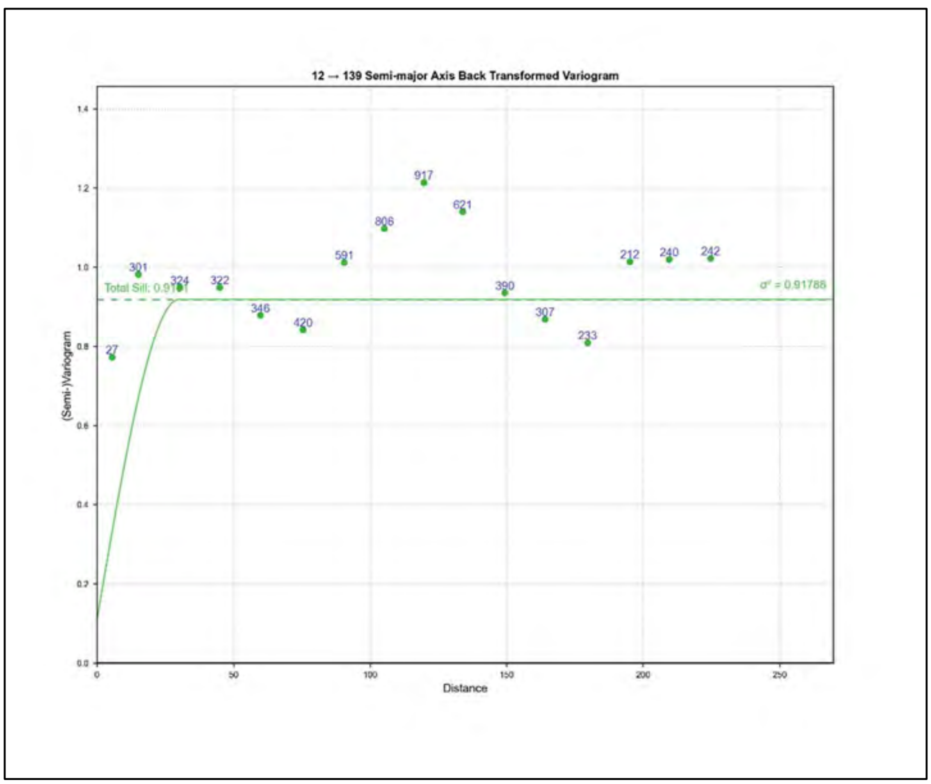

35 → 040 Minor Axis Back Transformed Variogram
Total Sill: 0.6079
σ² = 0.607821
(Semi-)Variogram
Distance
10
80
96
66
46
14
2
1
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
50
100
150
200
250

## Copper in Massive Sulfide Variogram Plots



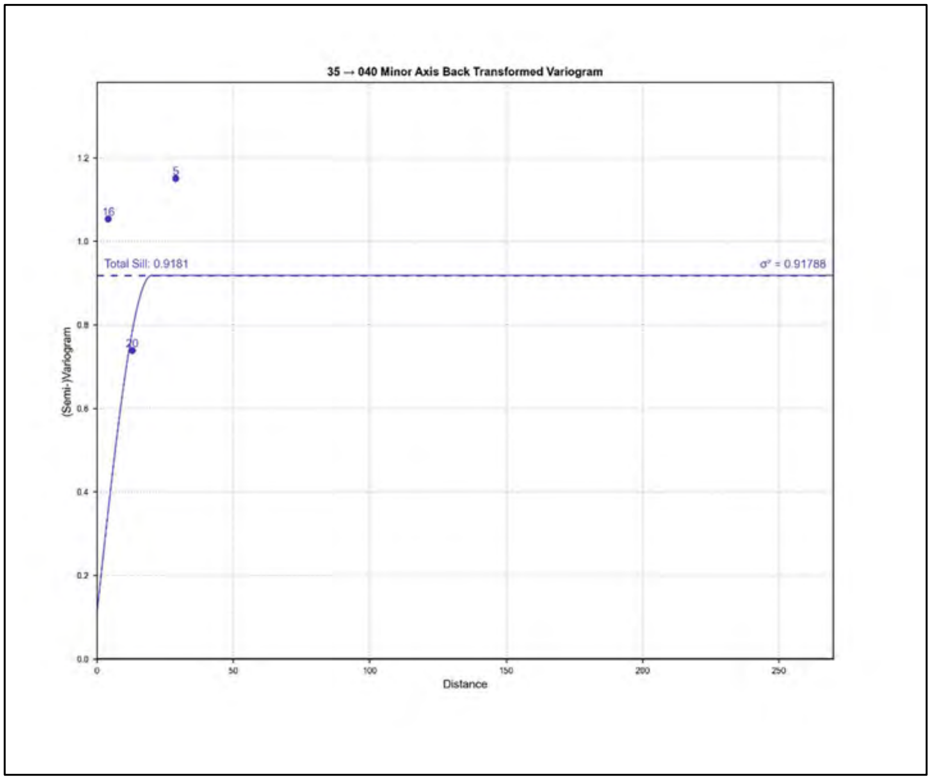





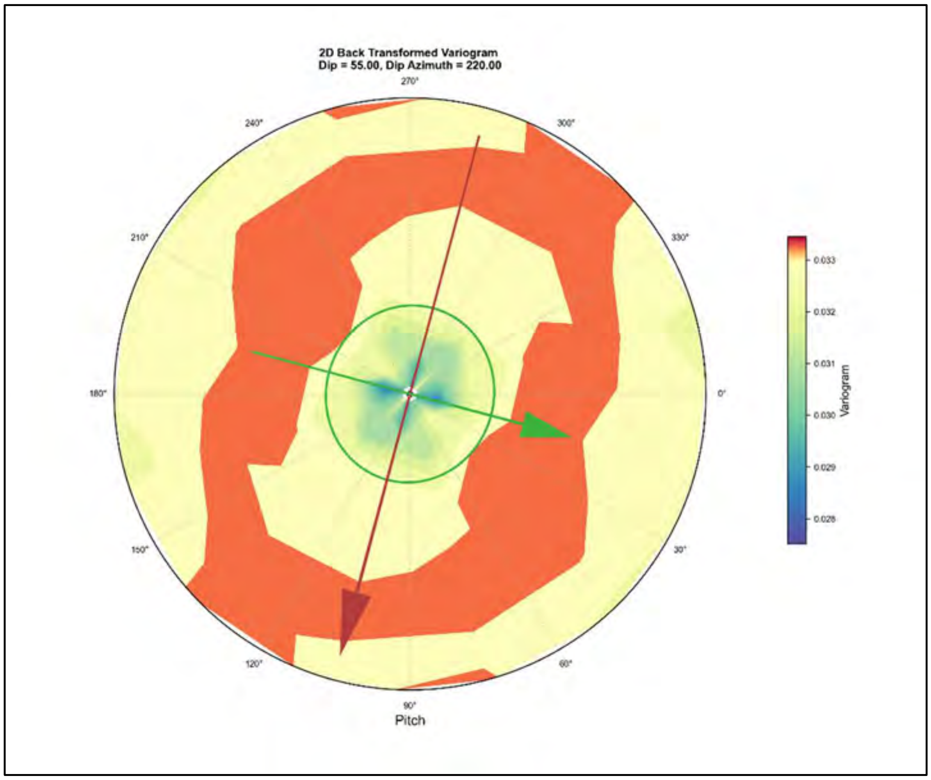



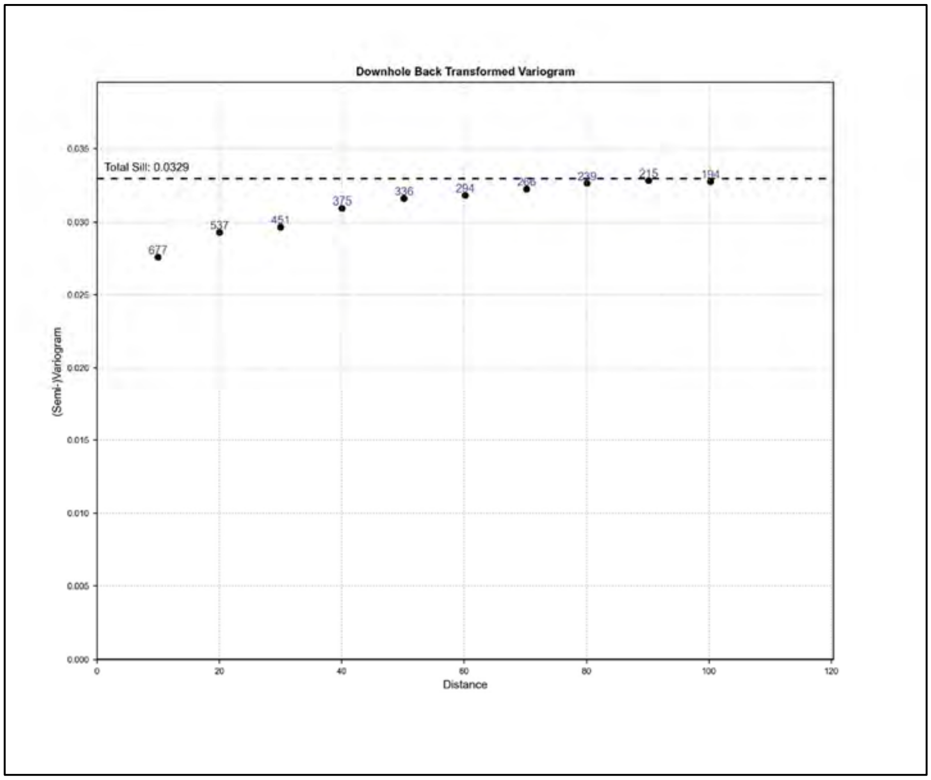


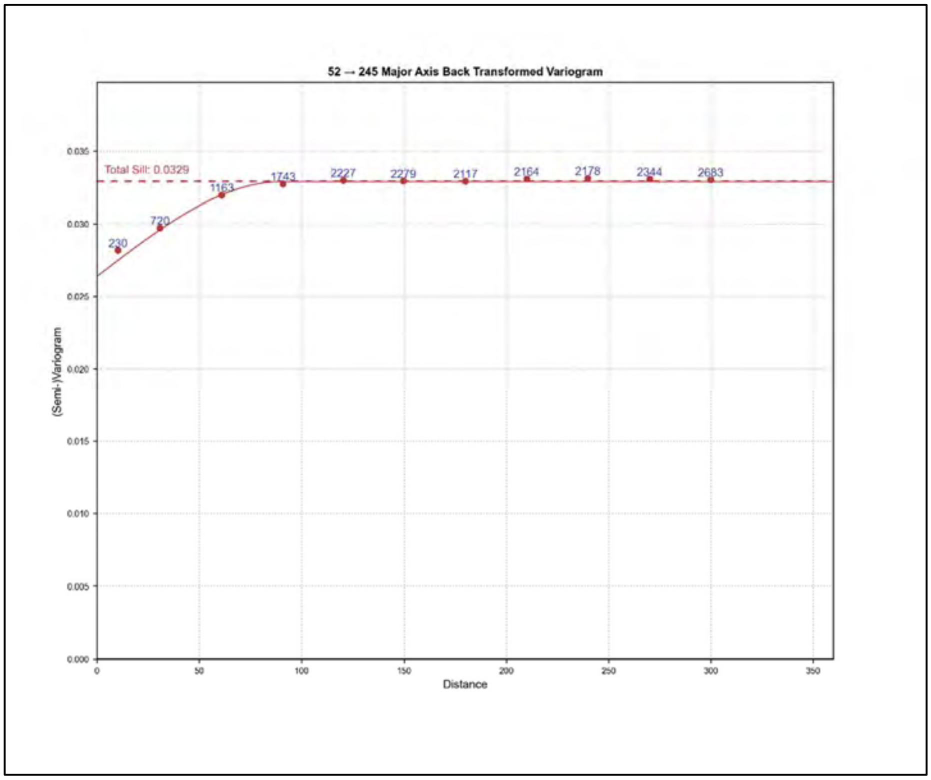

HARD ROCK CONSULTING, LLC

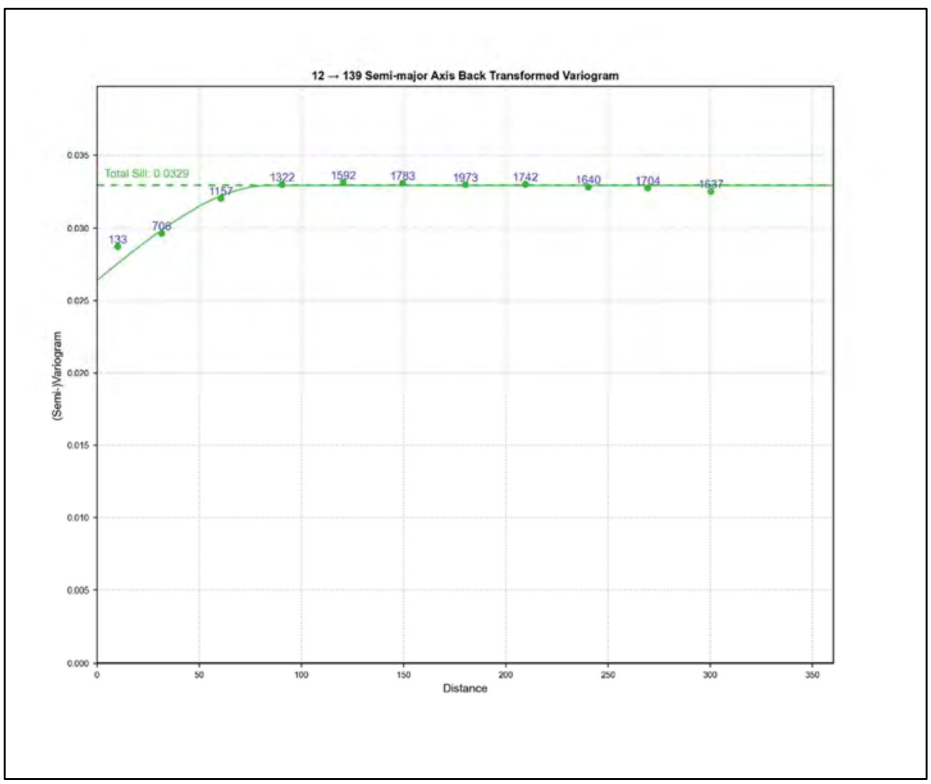

35 → 040 Minor Axis Back Transformed Variogram
Total Sill: 0.9181
σ² = 0.91788
(Semi-)Variogram
Distance
16
5
20
0.0
0.2
0.4
0.6
0.8
1.0
1.2
0
50
100
150
200
250

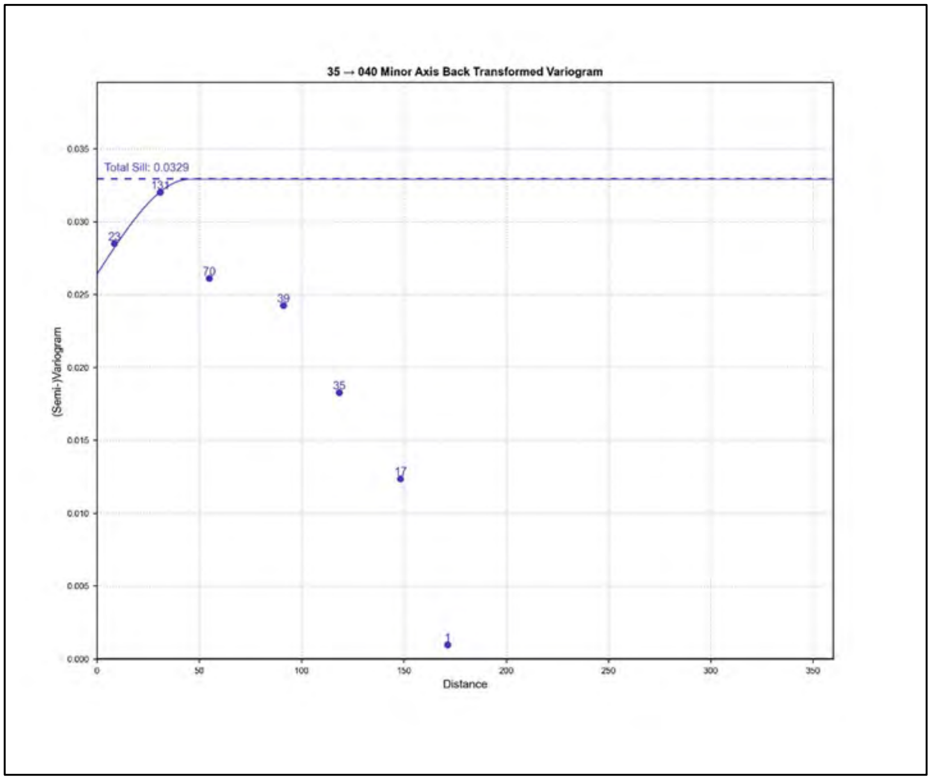
## Lead in Marble Variogram Plots



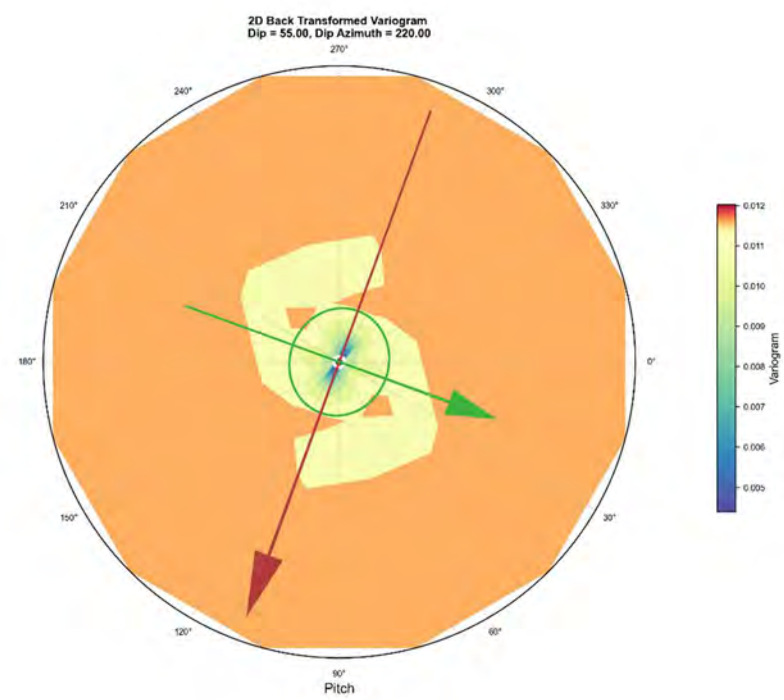



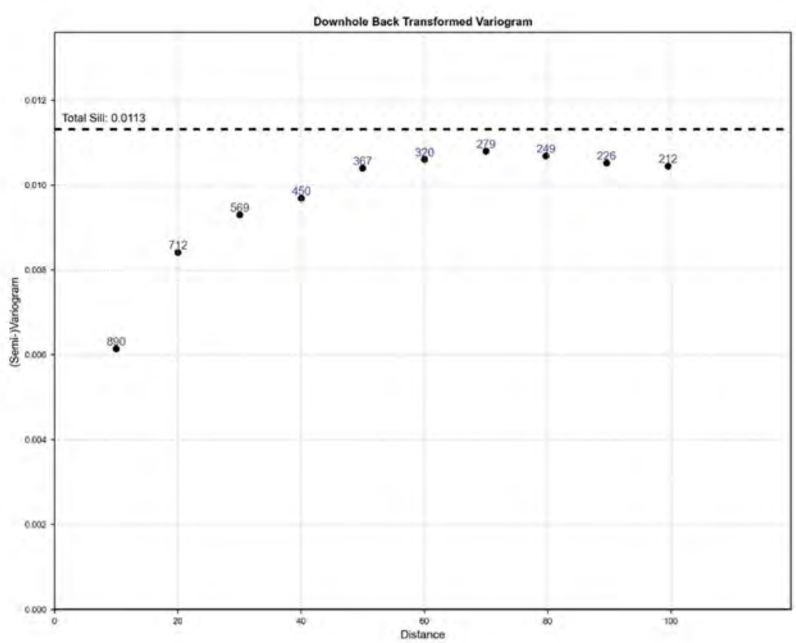

52 → 245 Major Axis Back Transformed Variogram
Total Sill: 0.0329
(Semi-)Variogram
Distance
230
720
1163
1743
2227
2279
2117
2164
2178
2344
2683


12 → 139 Semi-major Axis Back Transformed Variogram
Total Sill: 0.0329
(Semi-)Variogram
Distance
133
708
1157
1322
1592
1783
1973
1742
1640
1704
1637


35 → 040 Minor Axis Back Transformed Variogram
Total Sill: 0.0329
(Semi-)Variogram
Distance
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0.035
0
50
100
150
200
250
300
350
23
131
70
39
35
17
1

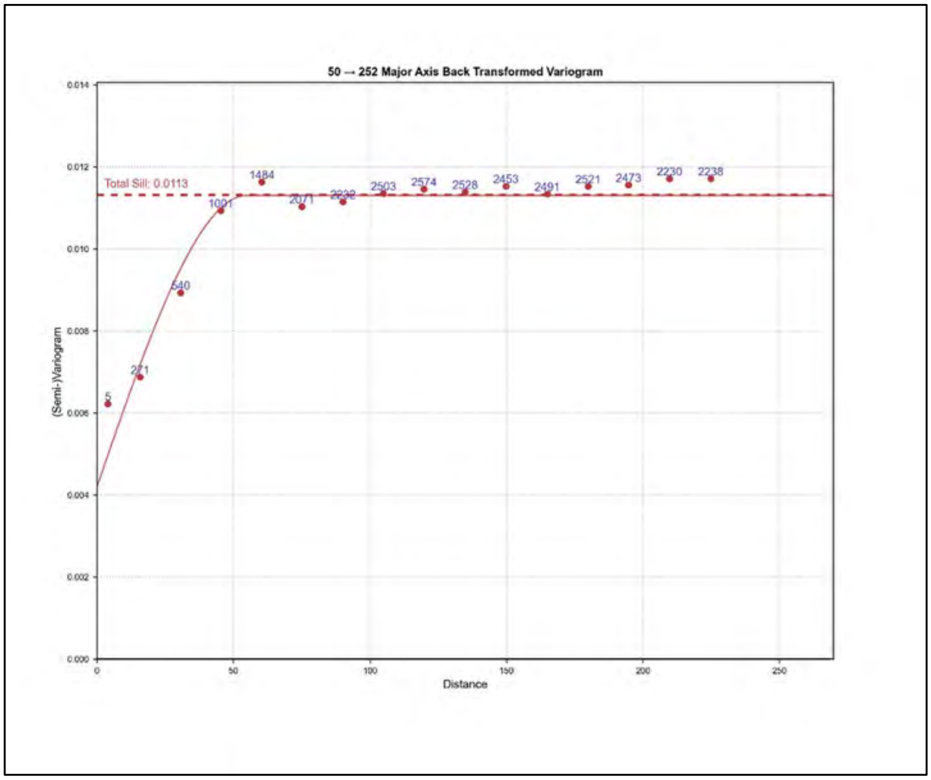
## Lead in Skarn Variogram Plots

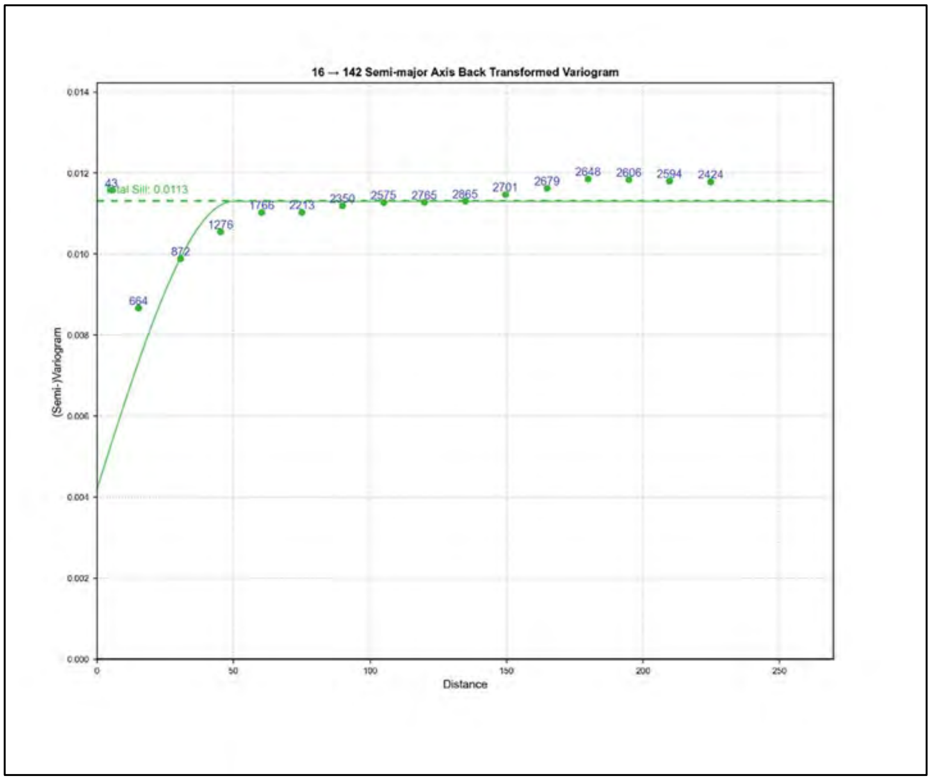


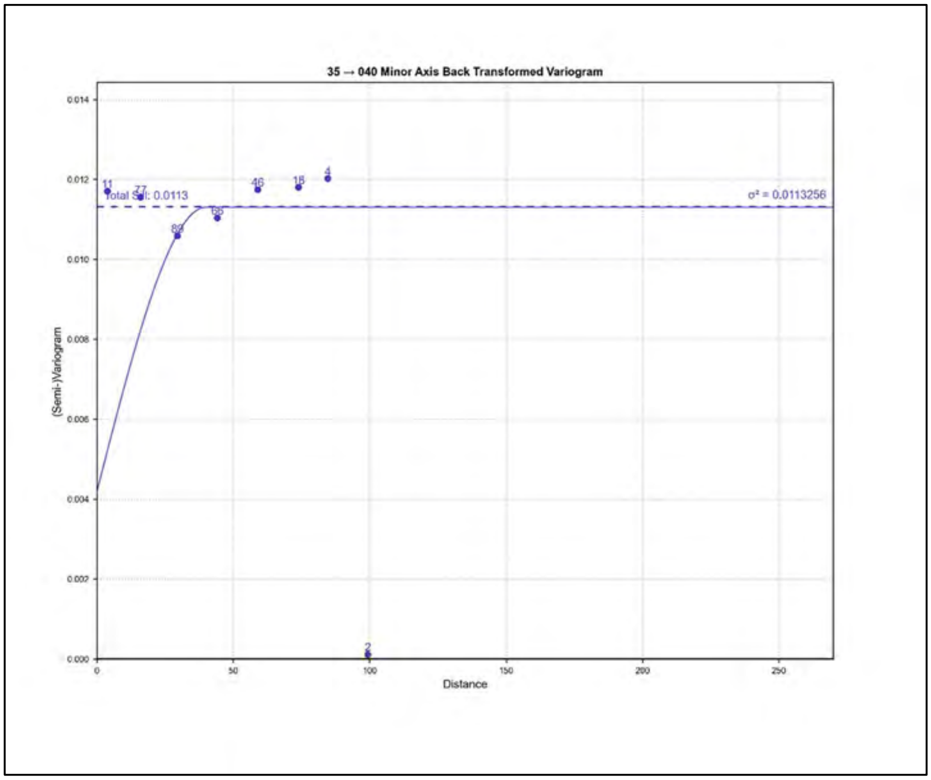





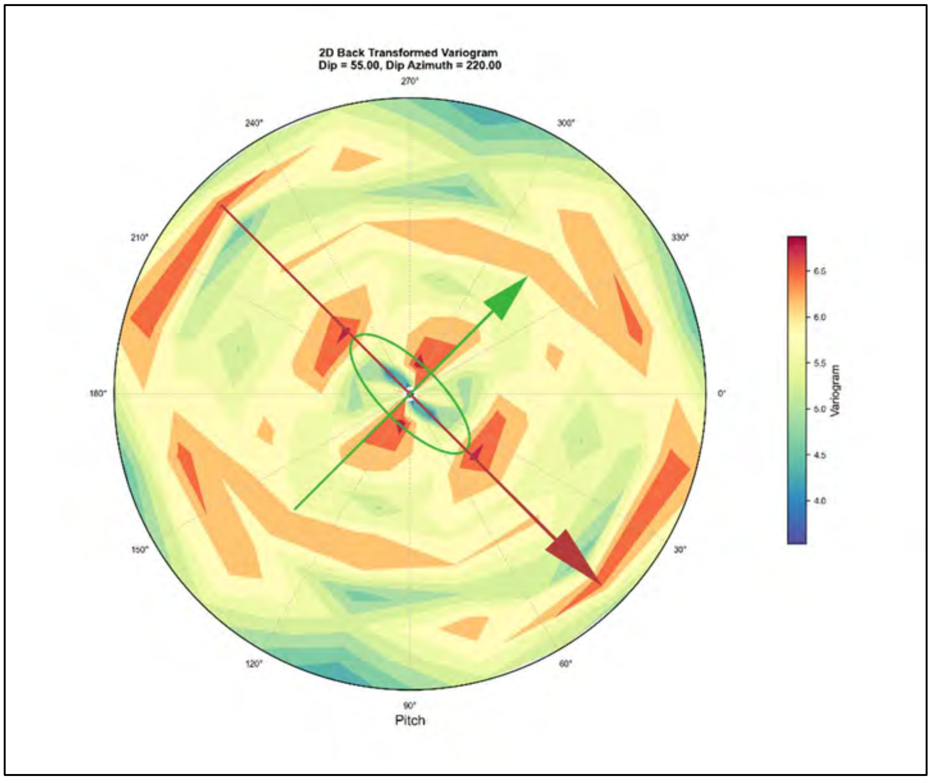
Hard Rock Consulting, LLC

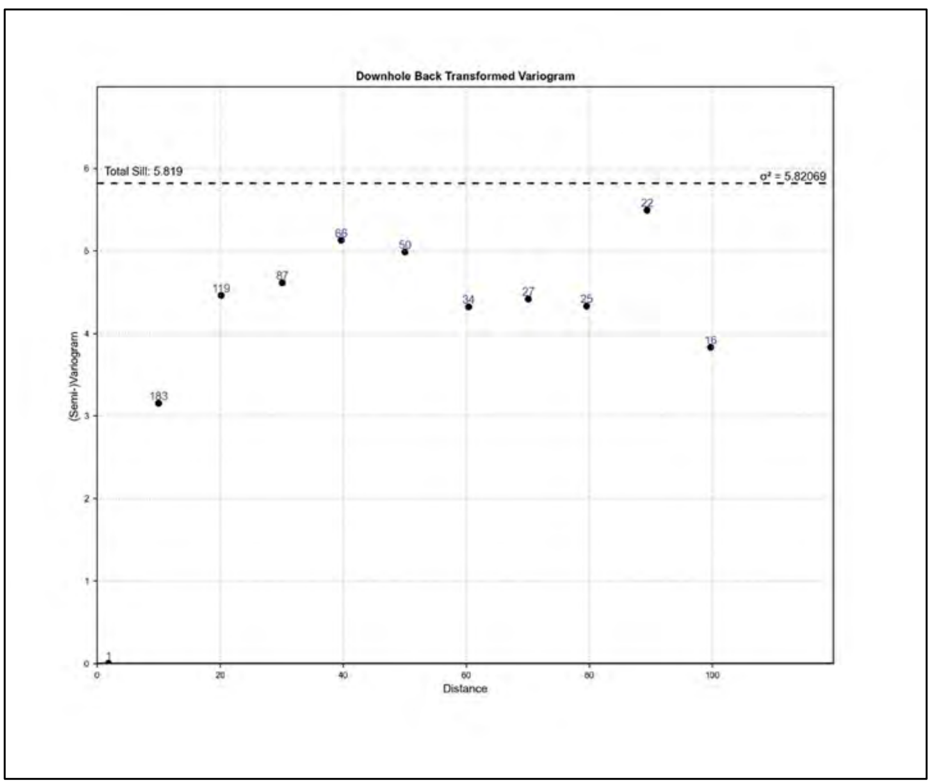

50 → 252 Major Axis Back Transformed Variogram
Total Sill: 0.0113
(Semi-)Variogram
Distance

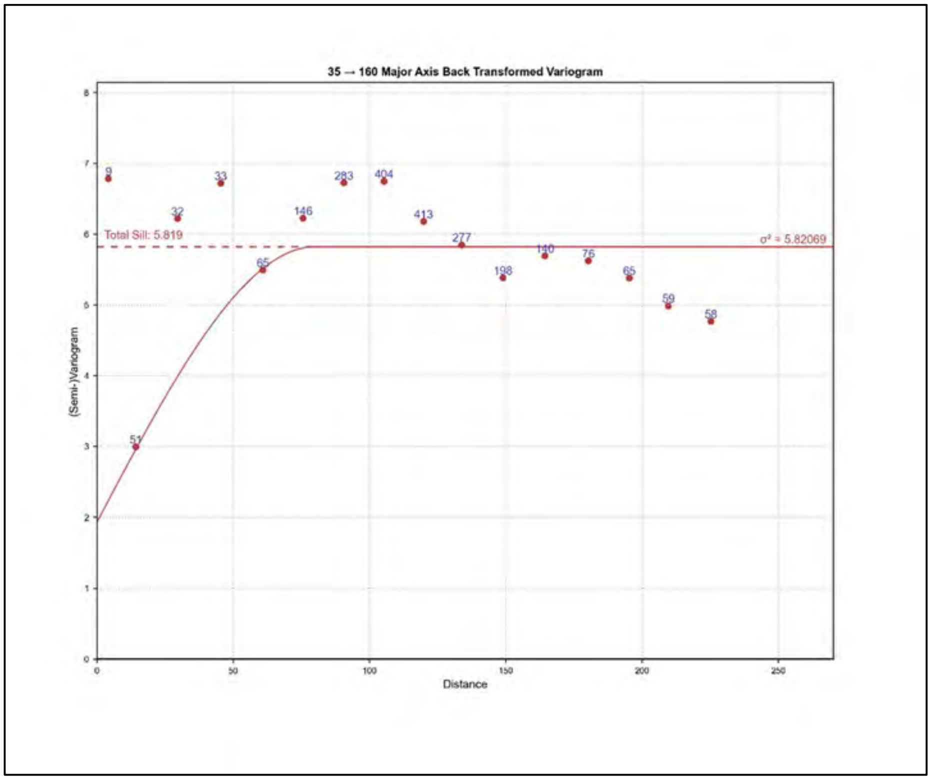

16 → 142 Semi-major Axis Back Transformed Variogram
Total Sill: 0.0113
(Semi-)Variogram
Distance

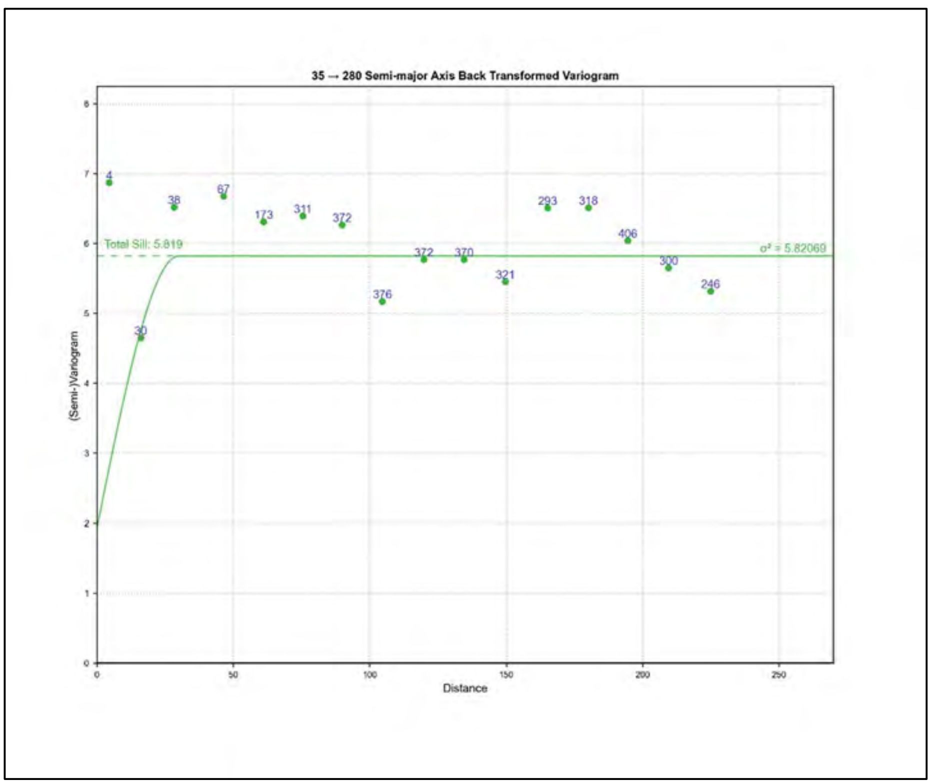

35 → 040 Minor Axis Back Transformed Variogram
(Semi-)Variogram
Distance
Total Sill: 0.0113
σ² = 0.0113256
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
0
50
100
150
200
250
11
77
89
56
46
18
4
2

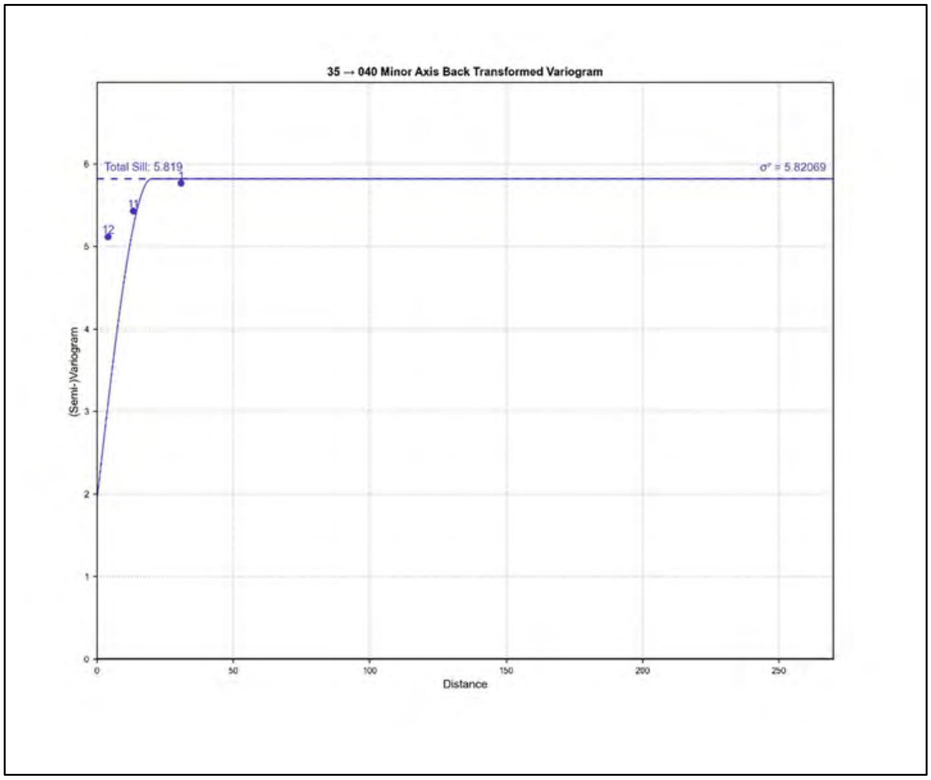
**Lead in Massive Sulfide Variogram Plots**



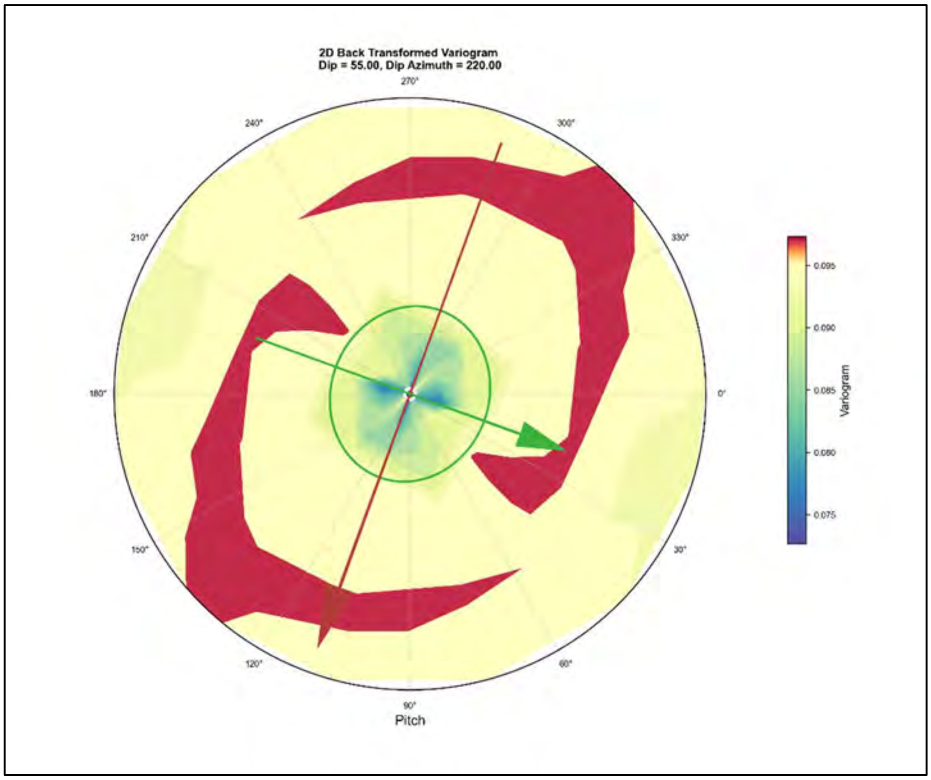



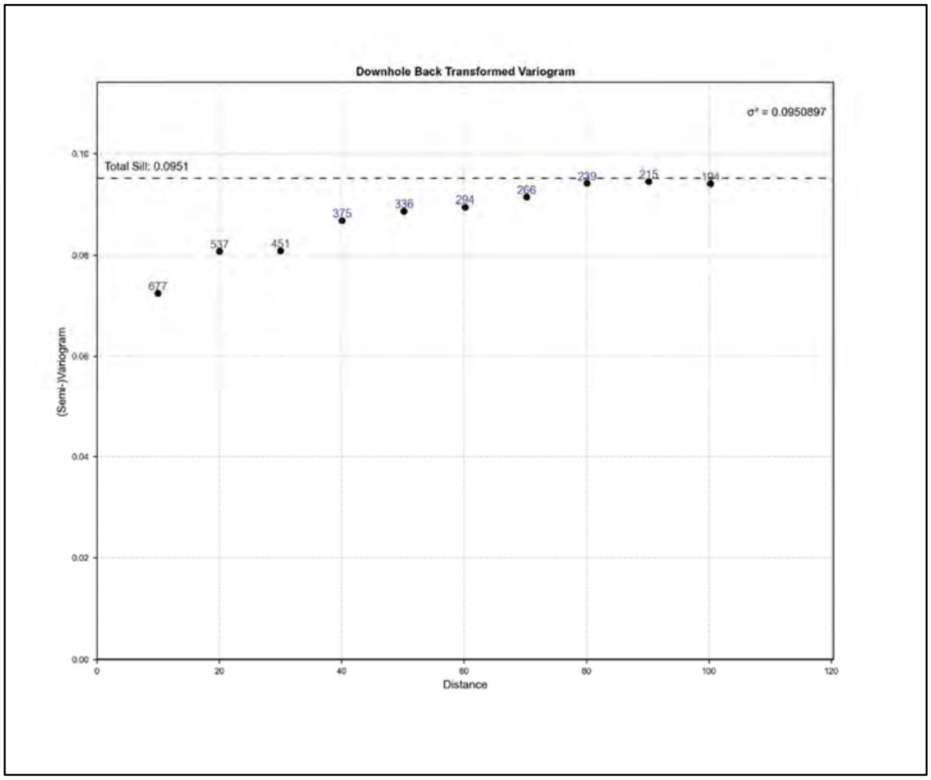

35 → 160 Major Axis Back Transformed Variogram
(Semi-)Variogram
Distance
Total Sill: 5.819
σ² = 5.82069

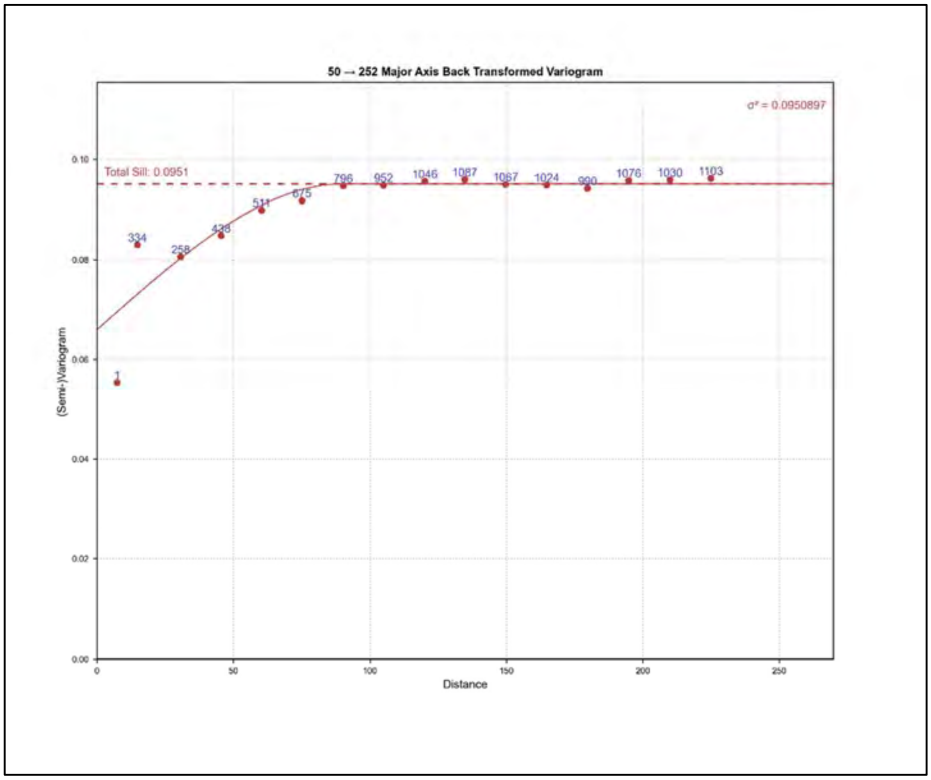

35 → 280 Semi-major Axis Back Transformed Variogram
(Semi-)Variogram
Distance
Total Sill: 5.819
σ² = 5.82069

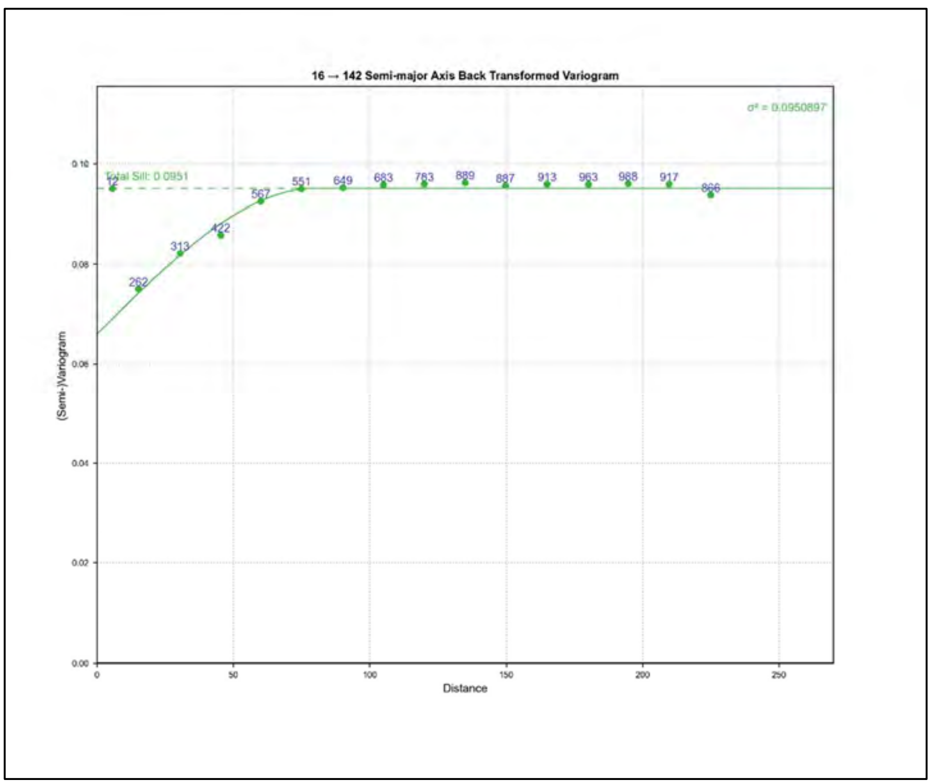

35 → 040 Minor Axis Back Transformed Variogram
Total Sill: 5.819
σ² = 5.82069
(Semi-)Variogram
Distance
12
11
1
0
1
2
3
4
5
6
0
50
100
150
200
250

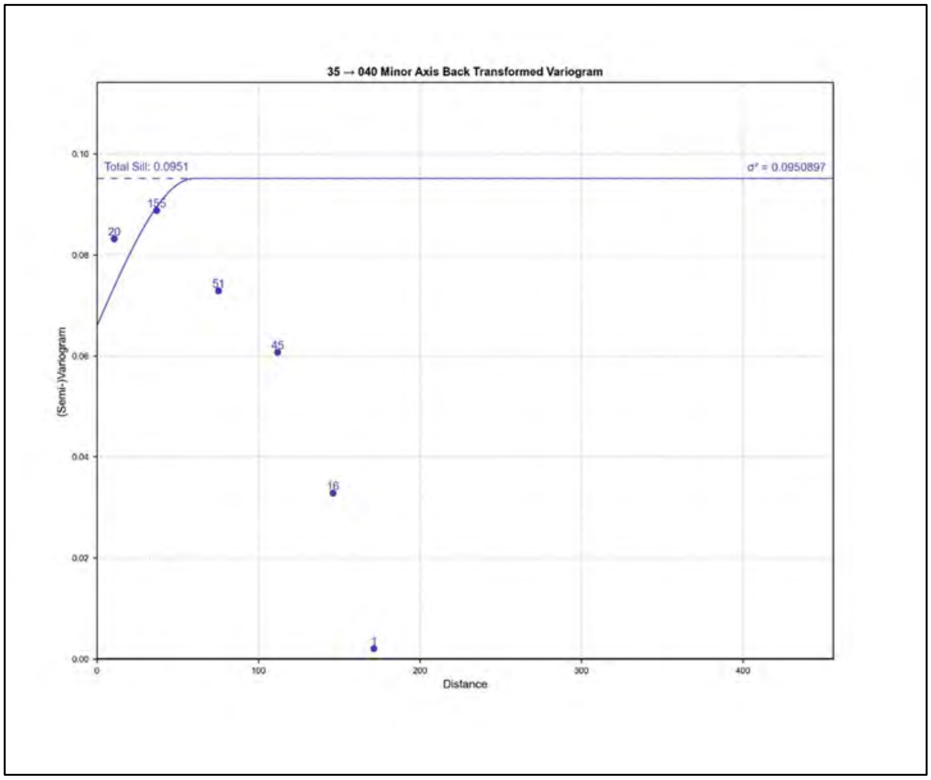
**Zinc in Marble Variogram Plots**



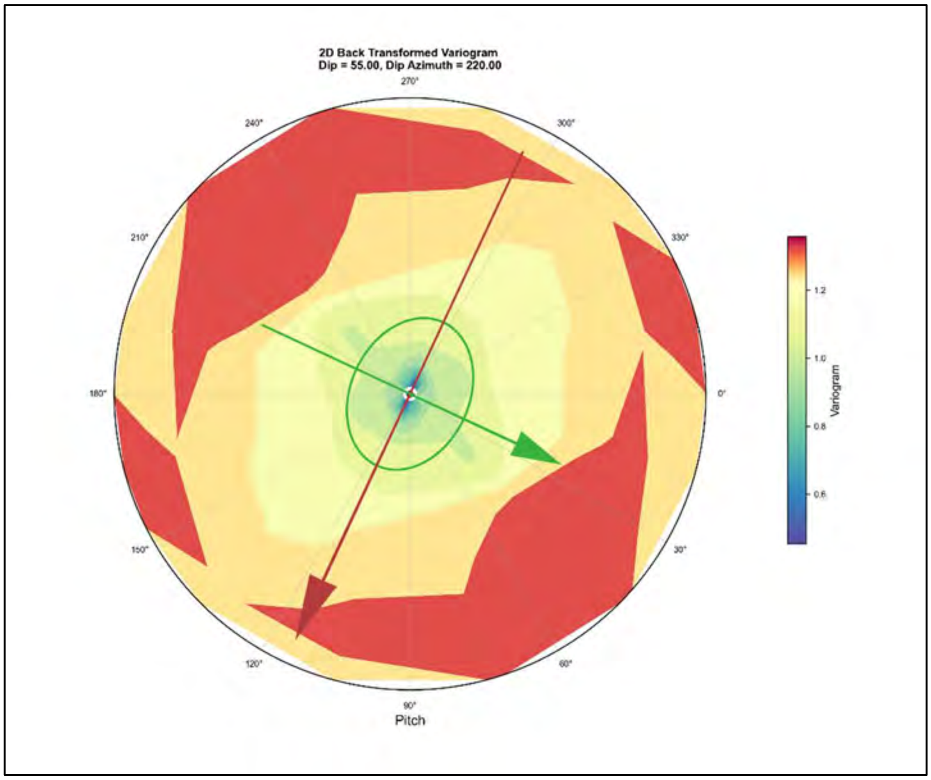



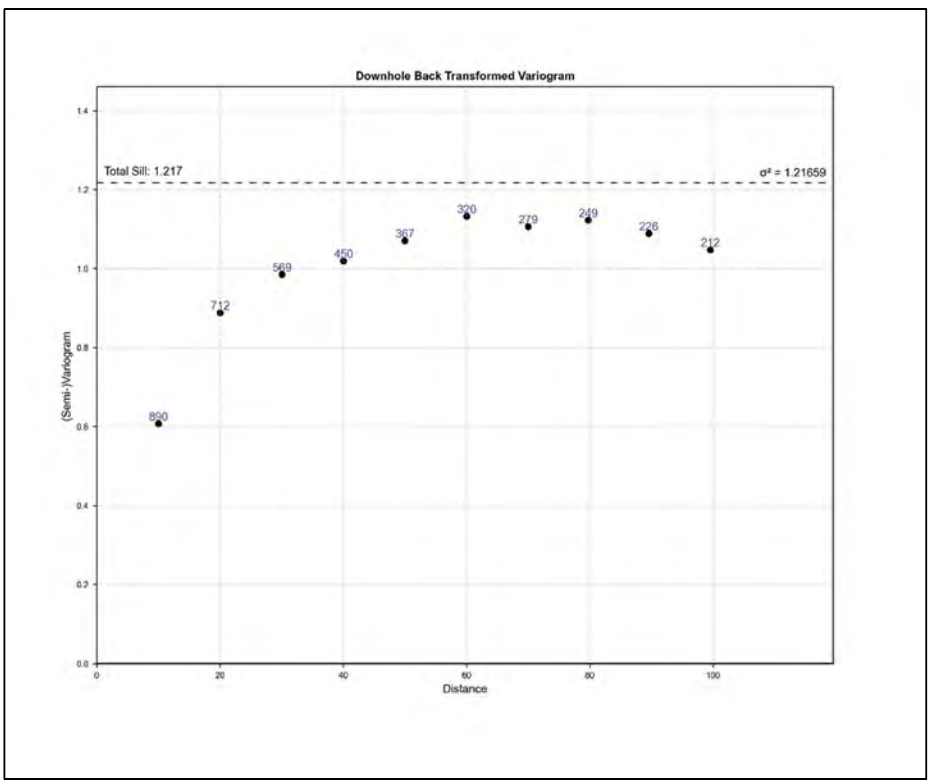

50 → 252 Major Axis Back Transformed Variogram
σ² = 0.0950897
Total Sill: 0.0951
1
334
258
438
511
675
796
952
1046
1087
1067
1024
990
1076
1030
1103
(Semi-)Variogram
0.00
0.02
0.04
0.06
0.08
0.10
0
50
100
150
200
250
Distance

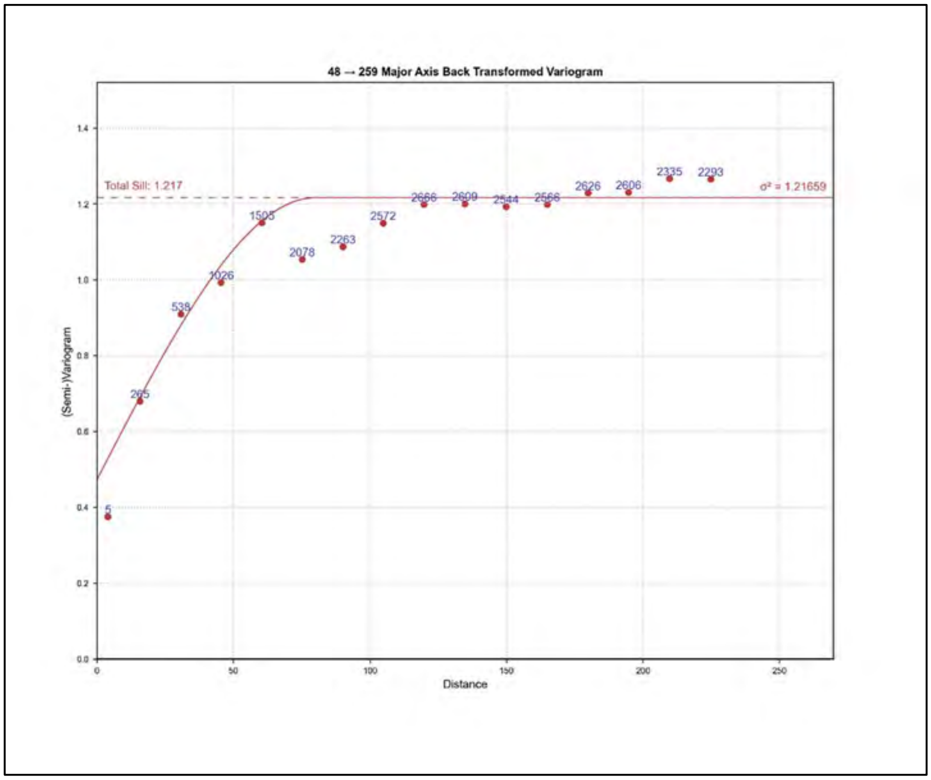

16 → 142 Semi-major Axis Back Transformed Variogram
σ² = 0.0950897
Total Sill: 0.0951
12
262
313
422
567
551
649
683
783
889
887
913
963
988
917
866
(Semi-)Variogram
0.00
0.02
0.04
0.06
0.08
0.10
0
50
100
150
200
250
Distance

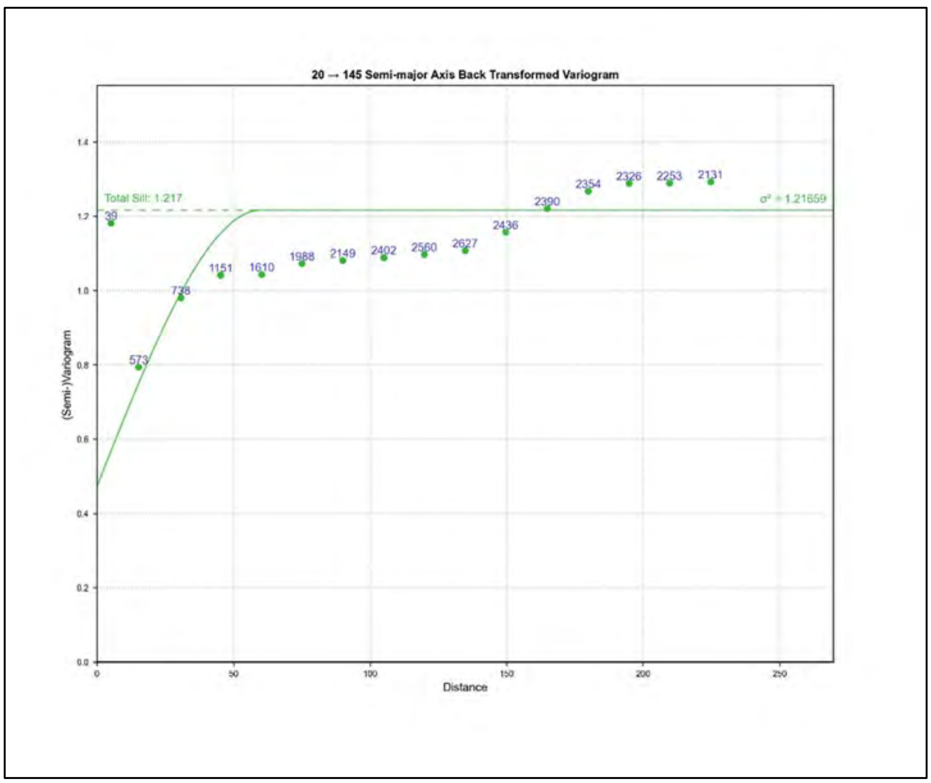

35 → 040 Minor Axis Back Transformed Variogram
Total Sill: 0.0951
σ² = 0.0950897
(Semi-)Variogram
Distance
0.00
0.02
0.04
0.06
0.08
0.10
0
100
200
300
400
20
155
51
45
16
1

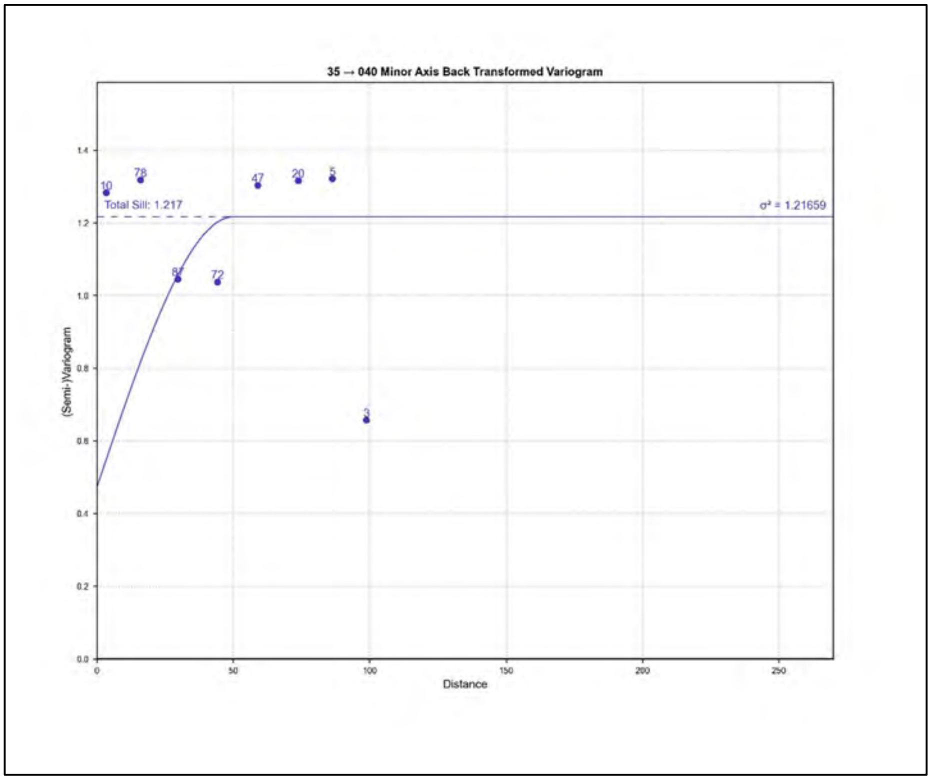
## Zinc in Skarn Variogram Plots



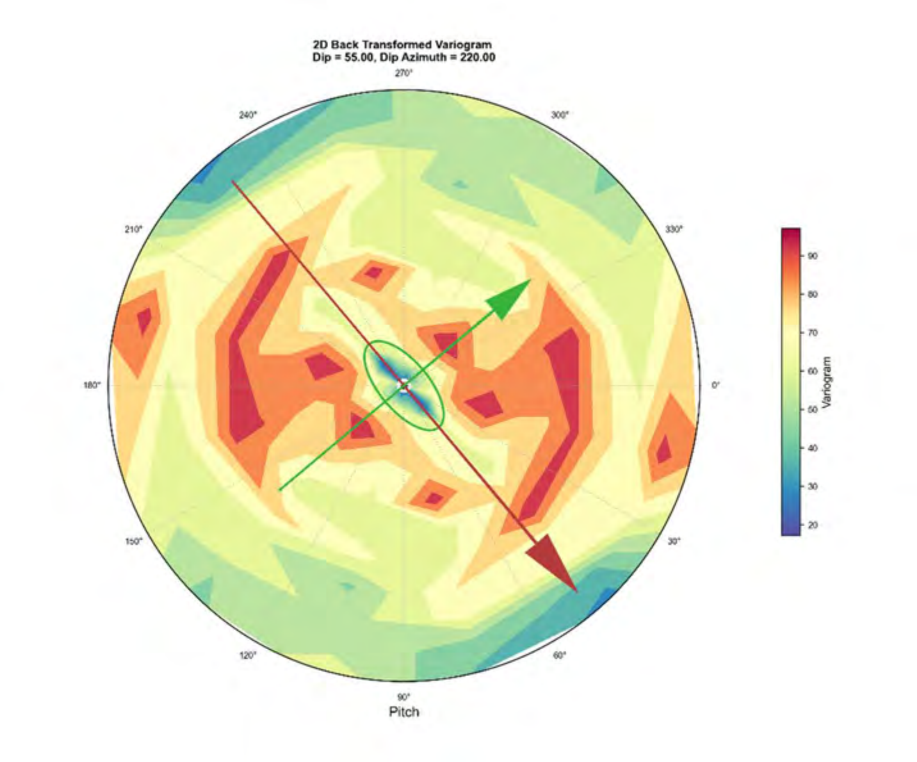



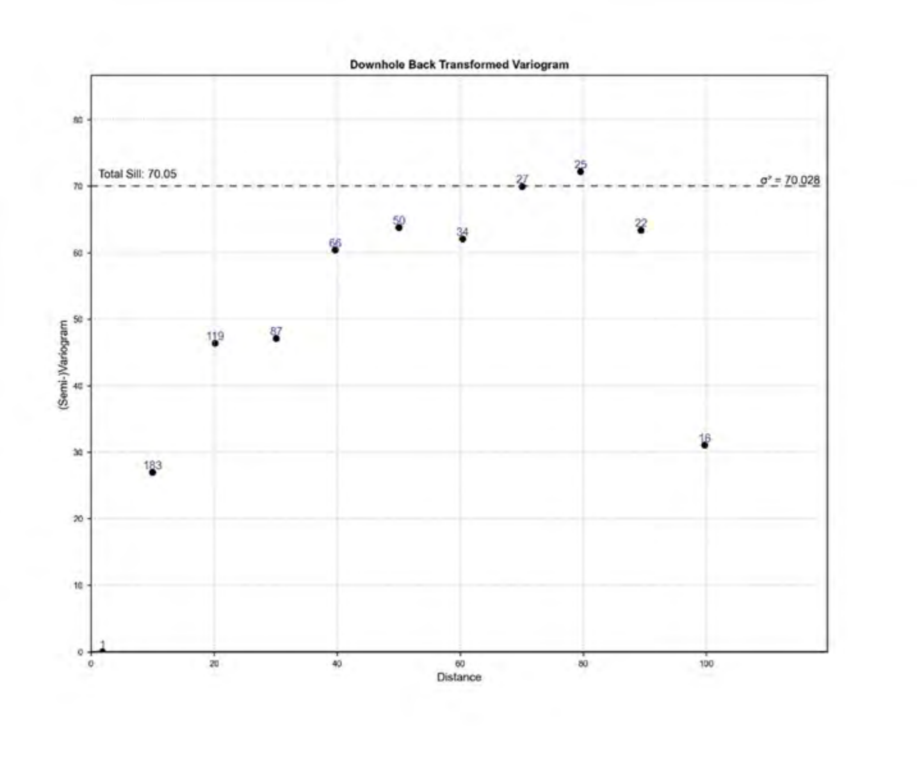

48 → 259 Major Axis Back Transformed Variogram
Total Sill: 1.217
σ² = 1.21659
(Semi-)Variogram
Distance

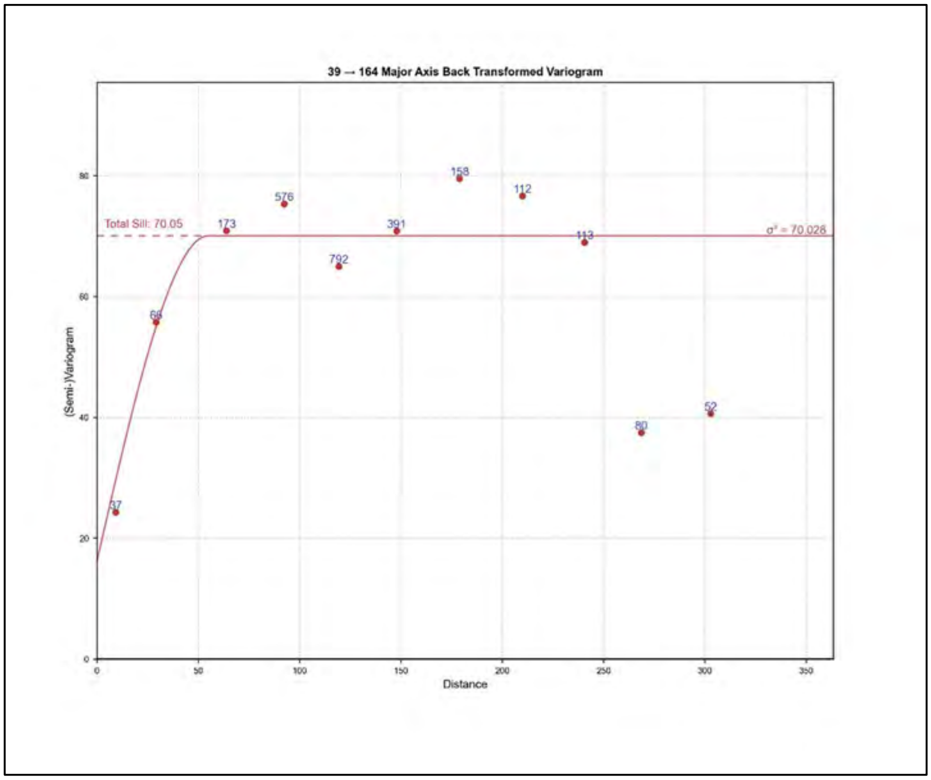

20 → 145 Semi-major Axis Back Transformed Variogram
Total Sill: 1.217
σ² = 1.21659
(Semi-)Variogram
Distance

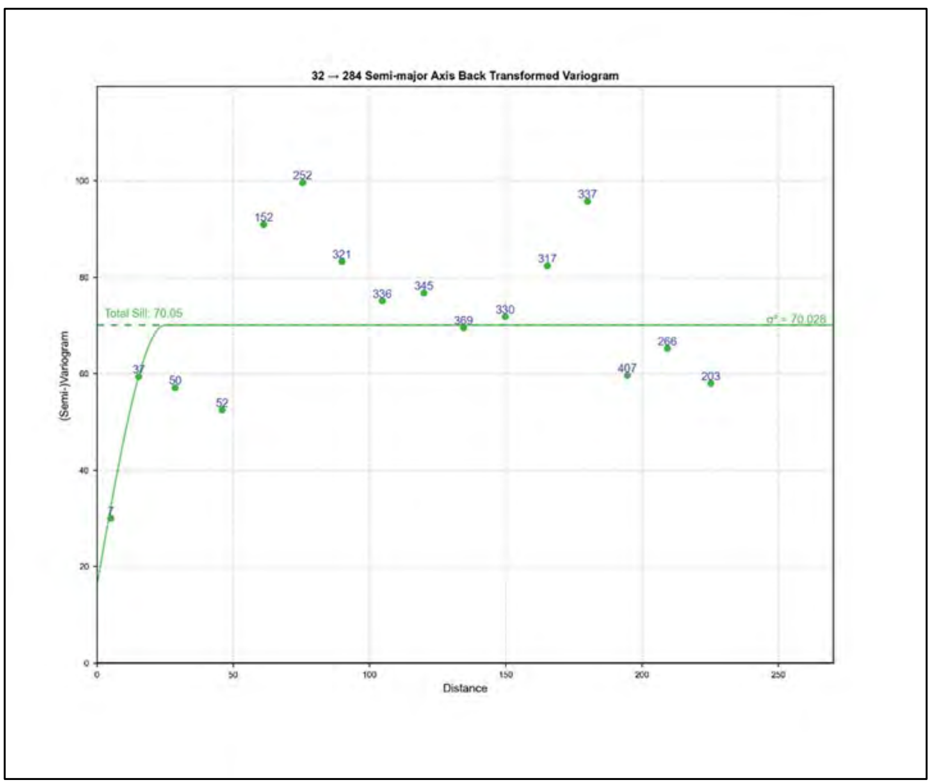

35 → 040 Minor Axis Back Transformed Variogram
Total Sill: 1.217
σ² = 1.21659
(Semi-)Variogram
Distance
10
78
87
72
47
20
5
3
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
0
50
100
150
200
250

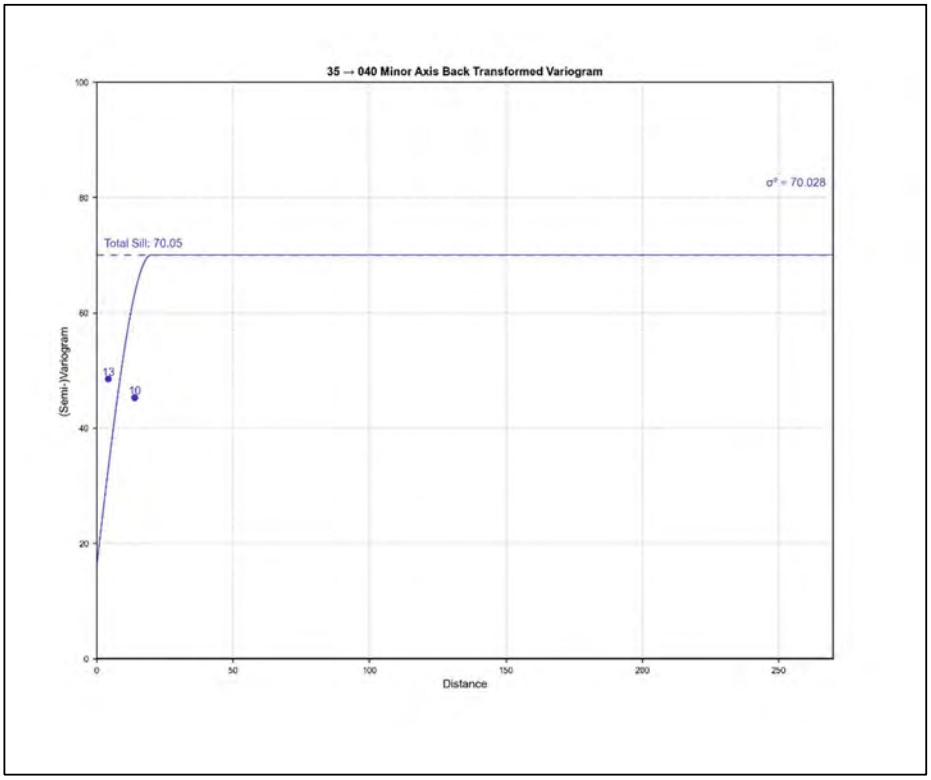
## Zinc in Massive Sulfide Variogram Plots




39 → 164 Major Axis Back Transformed Variogram
Total Sill: 70.05
σ² = 70.028
(Semi-)Variogram
Distance


32 → 284 Semi-major Axis Back Transformed Variogram
Total Sill: 70.05
σ² = 70.028
(Semi-)Variogram
Distance


35 → 040 Minor Axis Back Transformed Variogram
σ² = 70.028
Total Sill: 70.05
(Semi-)Variogram
Distance
13
10
0
20
40
60
80
100
0
50
100
150
200
250

# APPENDIX E. VALIDATION

Descriptive statistics for each metal and by domain are presented for the capped composites (Capped Comp), Nearst Neighbor (NN), Inverse Distance to the 2.5 power (ID) as a validation against the Ordinary Krige (OK) interpolation. Note, the Laxey Marble Unit represents all estimated domains.

**Table E - 1 Comparative Statistics for Silver**

| Metal | Domain | Estimate | Count | Mean | Std. Dev. | CV | Minimum | Median | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| Ag (ppm) | Laxey Unit | Capped Comp | 2,624 | 36.00 | 90.81 | 2.52 | 0.02 | 0.35 | 1,244.30 |
| | | NN | 157,701 | 17.80 | 58.08 | 3.26 | 0.02 | 0.03 | 1,244.30 |
| | | ID | 157,701 | 18.29 | 52.32 | 2.86 | 0.02 | 0.19 | 966.65 |
| | | OK | 157,701 | 18.46 | 51.15 | 2.77 | -0.05 | 0.20 | 656.24 |
| | Marble | Capped Comp | 947 | 2.23 | 11.40 | 5.11 | 0.02 | 0.02 | 112.33 |
| | | NN | 95,630 | 0.74 | 5.05 | 6.82 | 0.02 | 0.02 | 112.33 |
| | | ID | 95,630 | 0.91 | 4.20 | 4.62 | 0.02 | 0.03 | 110.75 |
| | | OK | 95,630 | 0.94 | 4.17 | 4.42 | 0.02 | 0.03 | 89.67 |
| | Skarn | Capped Comp | 1,283 | 25.07 | 43.62 | 1.74 | 0.02 | 4.34 | 407.00 |
| | | NN | 53,381 | 21.25 | 35.06 | 1.65 | 0.02 | 6.86 | 407.00 |
| | | ID | 53,381 | 22.05 | 26.50 | 1.20 | 0.02 | 12.68 | 331.25 |
| | | OK | 53,381 | 22.51 | 25.04 | 1.11 | -0.05 | 13.94 | 279.52 |
| | Sulfide | Capped Comp | 394 | 166.38 | 180.55 | 1.09 | 0.02 | 117.97 | 1,244.30 |
| | | NN | 8,689 | 184.45 | 149.47 | 0.81 | 0.02 | 147.44 | 1,244.30 |
| | | ID | 8,689 | 186.42 | 116.18 | 0.62 | 0.02 | 162.95 | 966.65 |
| | | OK | 8,689 | 186.28 | 108.60 | 0.58 | 0.02 | 163.50 | 656.24 |

## Table E - 2 Comparative Statistics for Gold

| Metal | Domain | Estimate | Count | Mean | Std. Dev. | CV | Minimum | Median | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| Au (ppm) | Laxey Unit | Capped Comp | 2,624 | 0.387 | 1.417 | 3.66 | 0.001 | 0.005 | 22.287 |
| | | NN | 157,701 | 0.171 | 0.689 | 4.02 | 0.001 | 0.012 | 22.287 |
| | | ID | 157,701 | 0.171 | 0.581 | 3.39 | 0.001 | 0.031 | 16.529 |
| | | OK | 157,701 | 0.172 | 0.551 | 3.20 | 0.001 | 0.034 | 13.585 |
| | Marble | Capped Comp | 947 | 0.030 | 0.104 | 3.43 | 0.001 | 0.001 | 0.770 |
| | | NN | 95,630 | 0.037 | 0.104 | 2.79 | 0.001 | 0.001 | 0.770 |
| | | ID | 95,630 | 0.039 | 0.088 | 2.27 | 0.001 | 0.003 | 0.770 |
| | | OK | 95,630 | 0.039 | 0.085 | 2.19 | 0.001 | 0.003 | 0.770 |
| | Skarn | Capped Comp | 394 | 2.287 | 3.166 | 1.38 | 0.001 | 1.131 | 22.287 |
| | | NN | 53,381 | 0.176 | 0.397 | 2.26 | 0.001 | 0.034 | 3.120 |
| | | ID | 53,381 | 0.174 | 0.315 | 1.81 | 0.001 | 0.064 | 3.021 |
| | | OK | 53,381 | 0.172 | 0.291 | 1.69 | 0.001 | 0.071 | 2.743 |
| | Sulfide | Capped Comp | 394 | 2.281 | 3.356 | 1.47 | 0.001 | 0.857 | 22.287 |
| | | NN | 8,689 | 1.622 | 2.287 | 1.41 | 0.001 | 0.590 | 22.287 |
| | | ID | 8,689 | 1.616 | 1.774 | 1.10 | 0.001 | 0.965 | 16.529 |
| | | OK | 8,689 | 1.643 | 1.597 | 0.97 | 0.001 | 1.266 | 13.585 |

## Table E - 3 Comparative Statistics for Copper

| Metal | Domain | Estimate | Count | Mean | Std. Dev. | CV | Minimum | Median | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| Cu (%) | Laxey Unit | Capped Comp | 2,624 | 0.1692 | 0.4739 | 2.80 | 0.0001 | 0.0010 | 7.3333 |
| | | NN | 157,701 | 0.0887 | 0.3023 | 3.41 | 0.0001 | 0.0010 | 7.3333 |
| | | ID | 157,701 | 0.0921 | 0.2692 | 2.92 | 0.0001 | 0.0035 | 5.1287 |
| | | OK | 157,701 | 0.0921 | 0.2579 | 2.80 | 0.0001 | 0.0036 | 4.6294 |
| | Marble | Capped Comp | 947 | 0.0069 | 0.0265 | 3.82 | 0.0001 | 0.0001 | 0.1900 |
| | | NN | 95,630 | 0.0063 | 0.0177 | 2.82 | 0.0001 | 0.0001 | 0.1900 |
| | | ID | 95,630 | 0.0065 | 0.0148 | 2.28 | 0.0001 | 0.0002 | 0.1900 |
| | | OK | 95,630 | 0.0064 | 0.0143 | 2.21 | 0.0001 | 0.0002 | 0.1900 |
| | Skarn | Capped Comp | 1,283 | 0.1907 | 0.4314 | 2.26 | 0.0001 | 0.0083 | 3.2700 |
| | | NN | 53,381 | 0.1485 | 0.3668 | 2.47 | 0.0001 | 0.0259 | 3.2700 |
| | | ID | 53,381 | 0.1538 | 0.3010 | 1.96 | 0.0001 | 0.0443 | 3.1146 |
| | | OK | 53,381 | 0.1542 | 0.2744 | 1.78 | 0.0001 | 0.0473 | 2.7931 |
| | Sulfide | Capped Comp | 394 | 0.5280 | 0.8757 | 1.66 | 0.0001 | 0.2494 | 7.3333 |
| | | NN | 8,689 | 0.6280 | 0.6645 | 1.06 | 0.0001 | 0.3668 | 7.3333 |
| | | ID | 8,689 | 0.6563 | 0.5773 | 0.88 | 0.0001 | 0.4279 | 5.1287 |
| | | OK | 8,689 | 0.6536 | 0.5676 | 0.87 | 0.0001 | 0.4340 | 4.6294 |

## Table E - 4 Comparative Statistics for Lead

| Metal | Domain | Estimate | Count | Mean | Std. Dev. | CV | Minimum | Median | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| Pb (%) | Laxey Unit | Capped Comp | 2,624 | 0.1498 | 0.9009 | 6.01 | 0.0001 | 0.0010 | 19.2700 |
| | | NN | 157,701 | 0.0656 | 0.5087 | 7.76 | 0.0001 | 0.0010 | 16.4000 |
| | | ID | 157,701 | 0.0674 | 0.4226 | 6.27 | 0.0001 | 0.0010 | 15.3340 |
| | | OK | 157,701 | 0.0671 | 0.3864 | 5.76 | -0.0042 | 0.0010 | 9.5061 |
| | Marble | Capped Comp | 947 | 0.0056 | 0.0278 | 4.98 | 0.0001 | 0.0001 | 0.2300 |
| | | NN | 95,630 | 0.0030 | 0.0189 | 6.27 | 0.0001 | 0.0001 | 0.2300 |
| | | ID | 95,630 | 0.0035 | 0.0151 | 4.26 | 0.0001 | 0.0002 | 0.2300 |
| | | OK | 95,630 | 0.0036 | 0.0151 | 4.19 | 0.0001 | 0.0002 | 0.2300 |
| | Skarn | Capped Comp | 1,283 | 0.0249 | 0.0829 | 3.33 | 0.0001 | 0.0010 | 0.7100 |
| | | NN | 53,381 | 0.0283 | 0.0972 | 3.43 | 0.0001 | 0.0010 | 0.7100 |
| | | ID | 53,381 | 0.0300 | 0.0730 | 2.43 | 0.0001 | 0.0021 | 0.7100 |
| | | OK | 53,381 | 0.0310 | 0.0717 | 2.31 | -0.0042 | 0.0025 | 0.7100 |
| | Sulfide | Capped Comp | 394 | 0.9895 | 2.2579 | 2.28 | 0.0001 | 0.3160 | 19.2700 |
| | | NN | 8,689 | 0.9826 | 1.9344 | 1.97 | 0.0001 | 0.4113 | 16.4000 |
| | | ID | 8,689 | 0.9998 | 1.5111 | 1.51 | 0.0001 | 0.4835 | 15.3340 |
| | | OK | 8,689 | 0.9881 | 1.3322 | 1.35 | 0.0001 | 0.5313 | 9.5061 |

## Table E - 5 Comparative Statistics for Zinc

| Metal | Domain | Estimate | Block Count | Mean | Std. Dev. | CV | Minimum | Median | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| Zn (%) | Laxey Unit | Capped Comp | 2,624 | 1.4121 | 4.3979 | 3.11 | 0.0001 | 0.0015 | 41.5480 |
| | | NN | 157,701 | 0.6554 | 2.6802 | 4.0891 | 0.0001 | 0.0010 | 41.5480 |
| | | ID | 157,701 | 0.6528 | 2.3597 | 3.6148 | 0.0001 | 0.0019 | 29.4841 |
| | | OK | 157,701 | 0.6538 | 2.2843 | 3.4941 | 0.0001 | 0.0020 | 28.4015 |
| | Marble | Capped Comp | 947 | 0.0211 | 0.1191 | 5.65 | 0.0001 | 0.0001 | 1.0700 |
| | | NN | 95,630 | 0.0093 | 0.0674 | 7.2773 | 0.0001 | 0.0001 | 1.0700 |
| | | ID | 95,630 | 0.0111 | 0.0552 | 4.9819 | 0.0001 | 0.0008 | 1.0700 |
| | | OK | 95,630 | 0.0113 | 0.0530 | 4.7000 | 0.0001 | 0.0008 | 1.0700 |
| | Skarn | Capped Comp | 1,283 | 0.3805 | 1.1066 | 2.91 | 0.0001 | 0.0213 | 11.2244 |
| | | NN | 53,381 | 0.5030 | 1.0582 | 2.1039 | 0.0001 | 0.0569 | 11.2244 |
| | | ID | 53,381 | 0.5187 | 0.7665 | 1.4777 | 0.0001 | 0.2077 | 9.7525 |
| | | OK | 53,381 | 0.5330 | 0.7425 | 1.3929 | 0.0001 | 0.2411 | 9.4515 |
| | Sulfide | Capped Comp | 394 | 8.8858 | 8.4916 | 0.96 | 0.0001 | 5.9901 | 41.5480 |
| | | NN | 8,689 | 8.7038 | 7.3439 | 0.8438 | 0.0001 | 6.5800 | 41.5480 |
| | | ID | 8,689 | 8.5392 | 5.5301 | 0.6476 | 0.0001 | 7.9033 | 29.4841 |
| | | OK | 8,689 | 8.4668 | 5.0610 | 0.5977 | 0.0001 | 7.9655 | 28.4015 |

Comparative cumulative frequency plots by metal and are presented below.

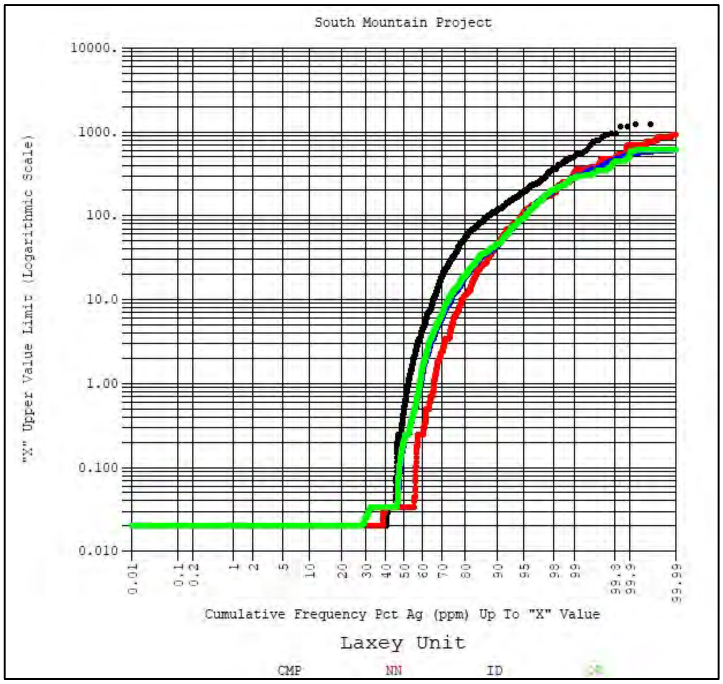



**Figure E - 1 Silver in the Laxey Marble Unit**

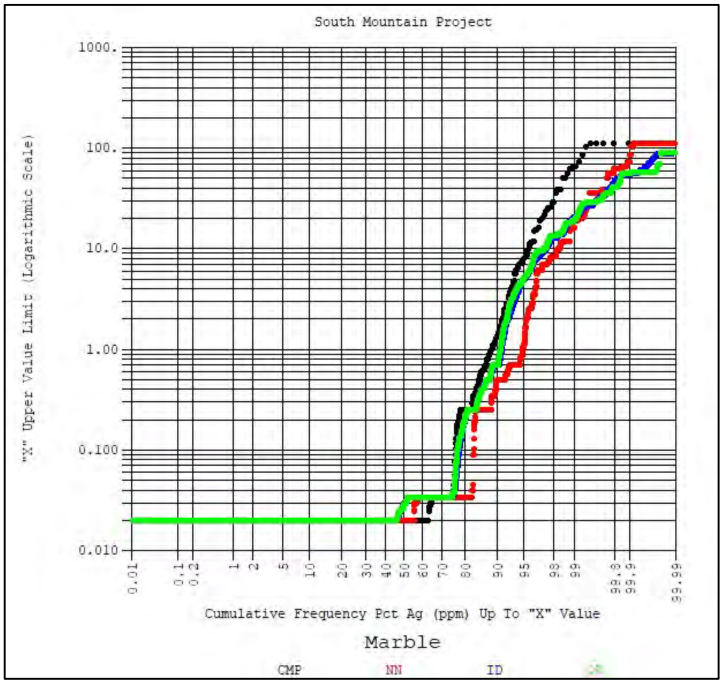



**Figure E - 2 Silver in Marble**

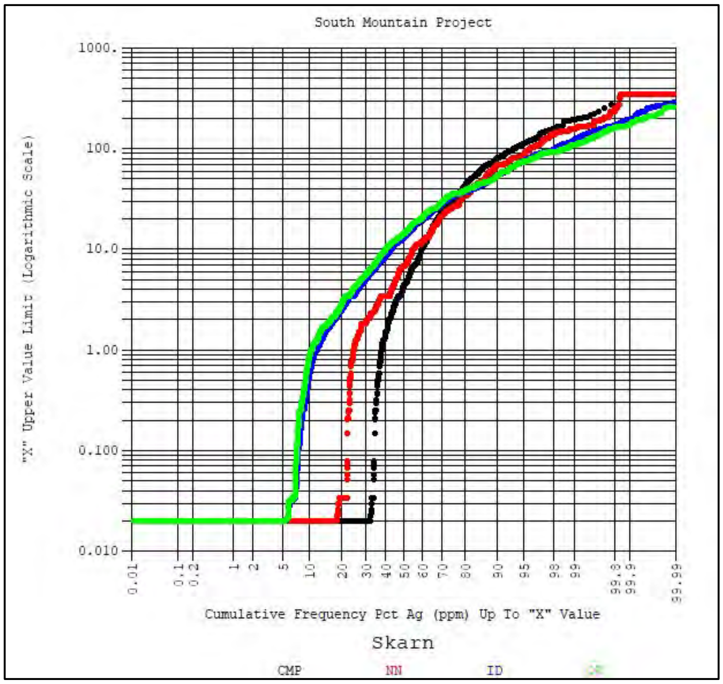



**Figure E - 3 Silver in Skarn**

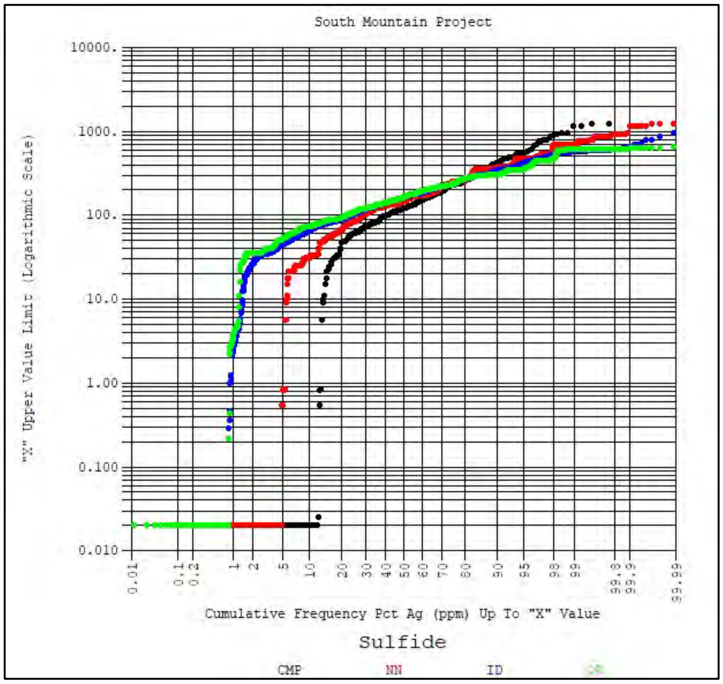



**Figure E - 4 Silver in Massive Sulfide**

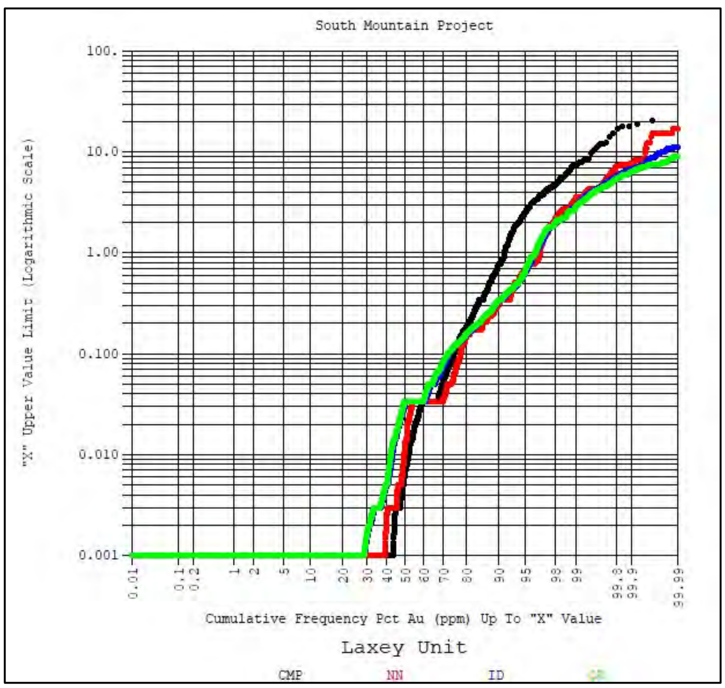



**Figure E - 5 Gold in the Laxey Marble Unit**

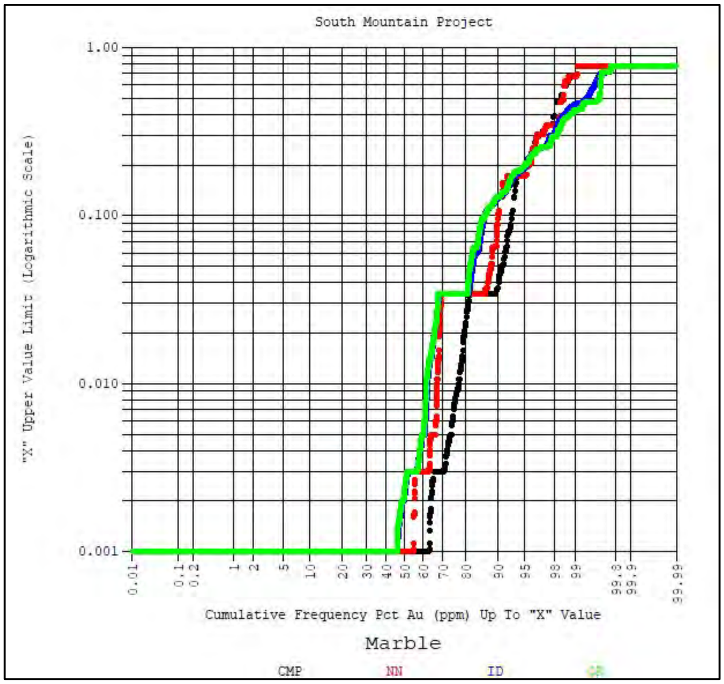



**Figure E - 6  Gold in Marble**

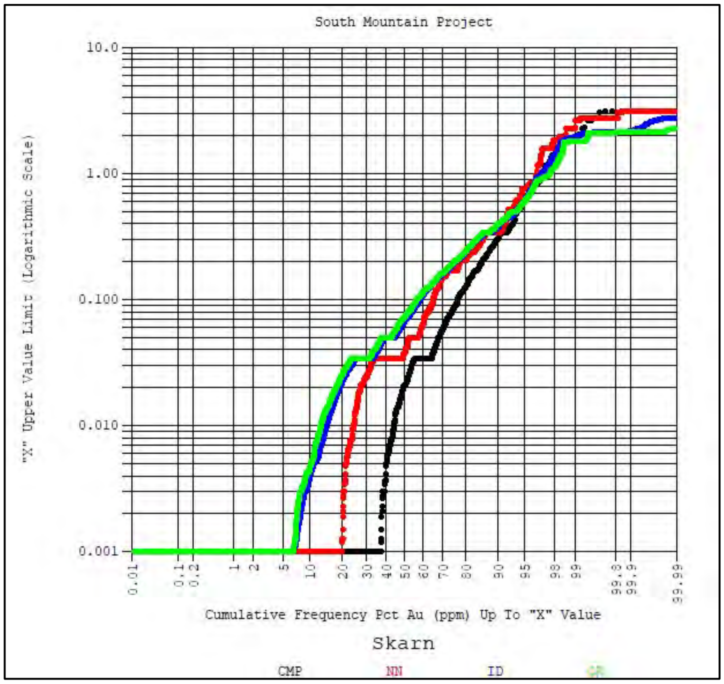



**Figure E - 7  Gold in Skarn**

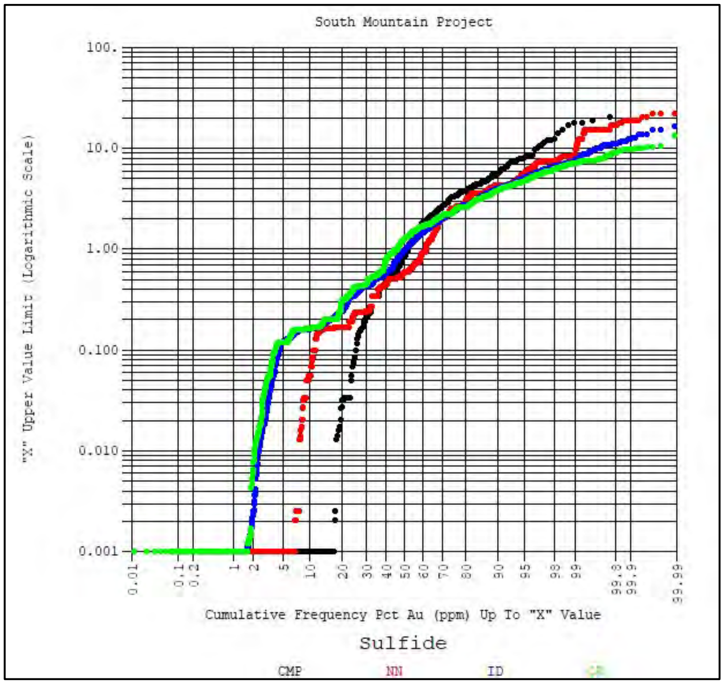



**Figure E - 8 Gold in Massive Sulfide**

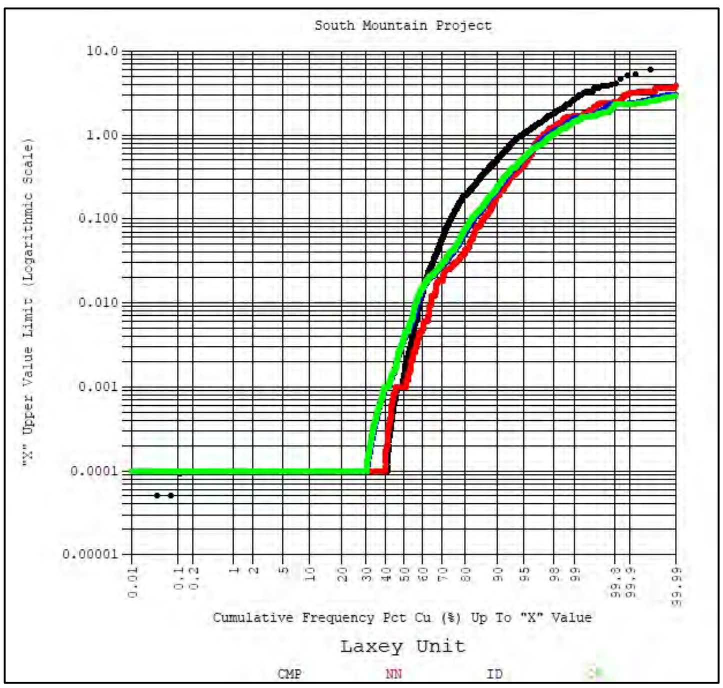



**Figure E - 9 Copper in the Laxey Marble Unit**

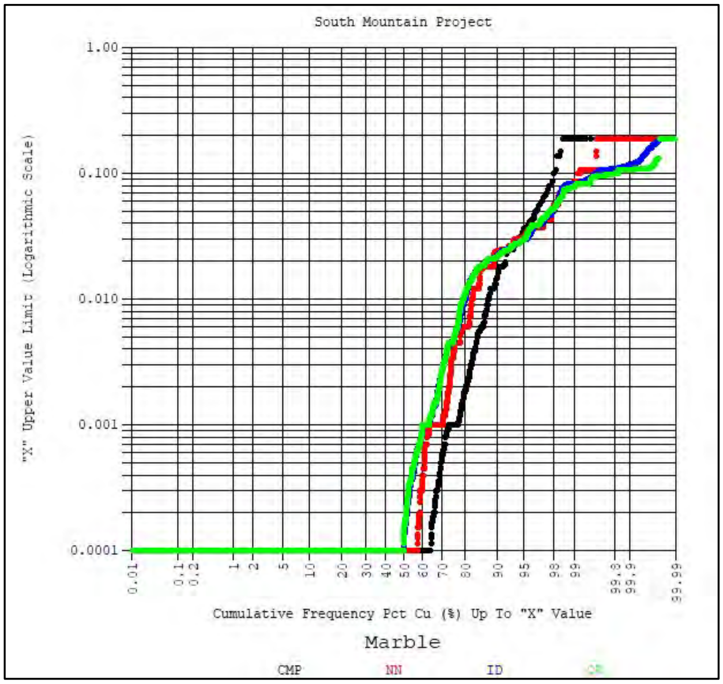



**Figure E - 10 Copper in Marble**

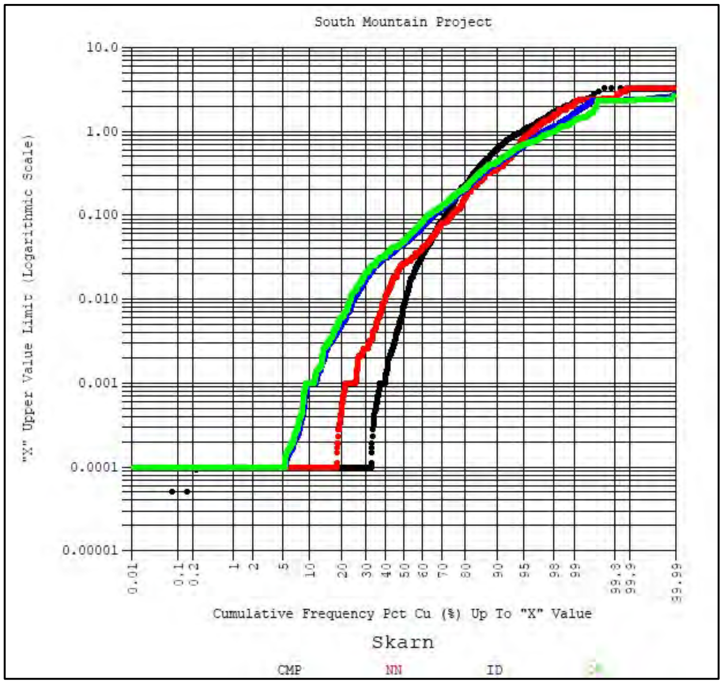



**Figure E - 11 Copper in Skarn**

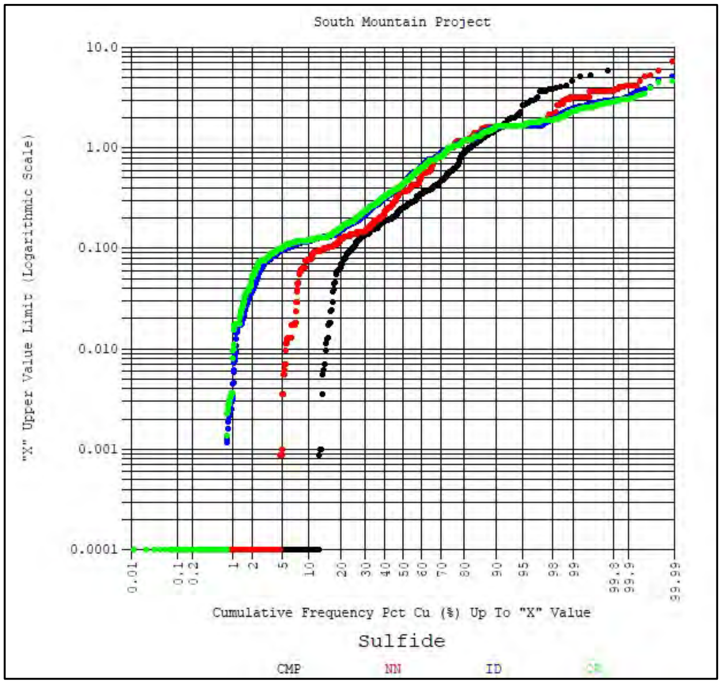



**Figure E - 12  Copper in Massive Sulfide**

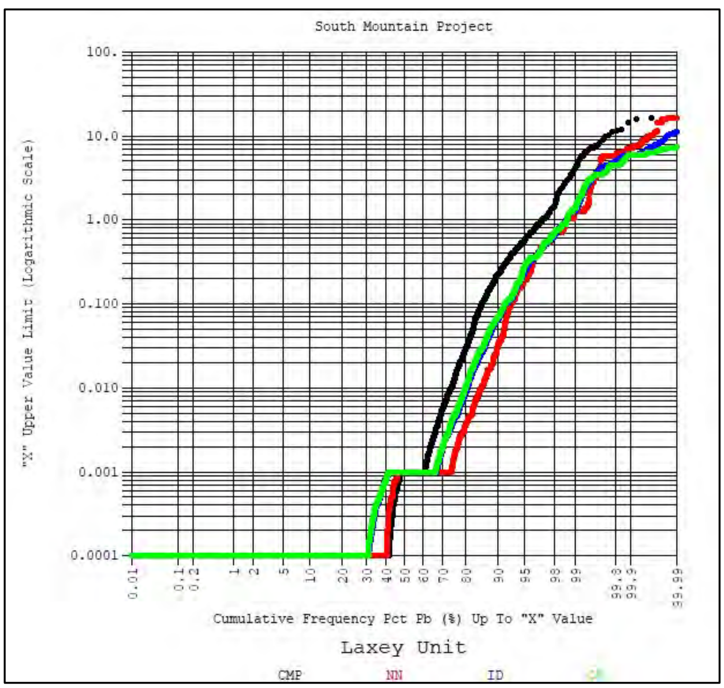



**Figure E - 13  Lead in the Laxey Marble Unit**

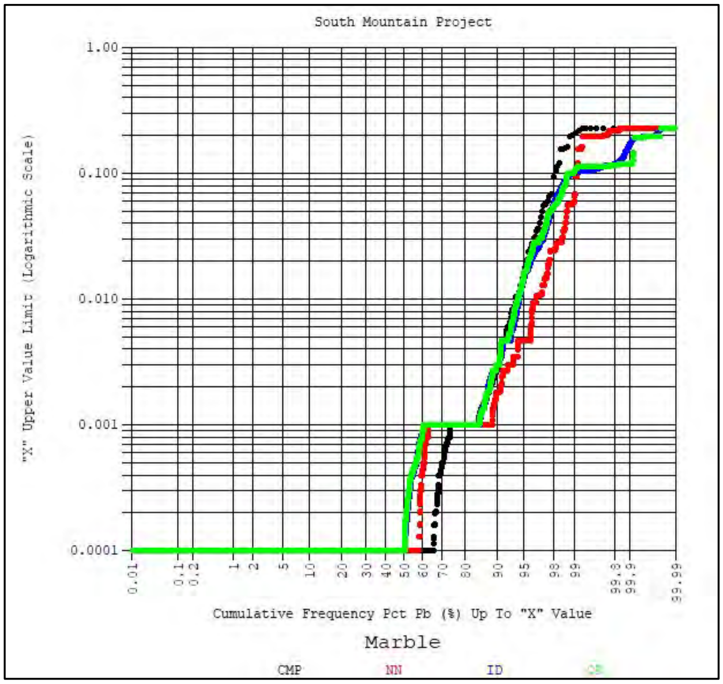



**Figure E - 14 Lead in Marble**

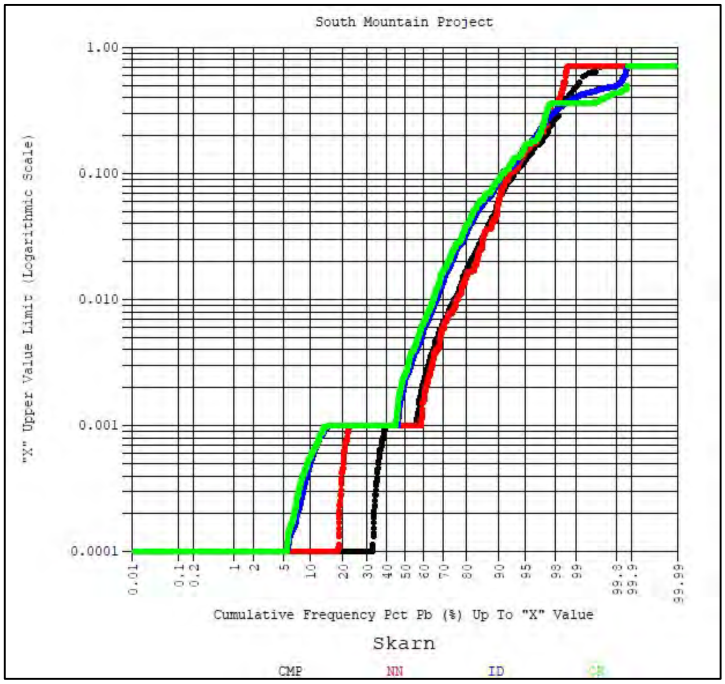



**Figure E - 15 Lead in Skarn**

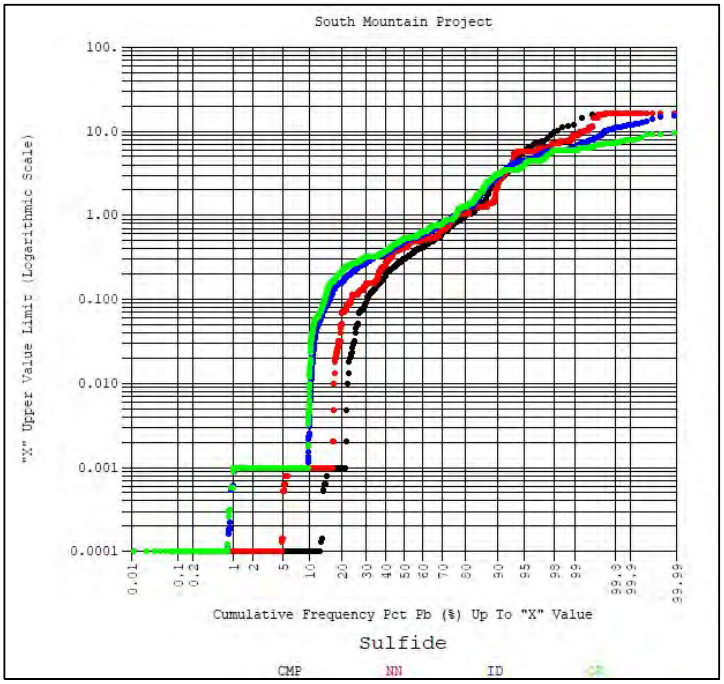



**Figure E - 16 Lead in Massive Sulfide**

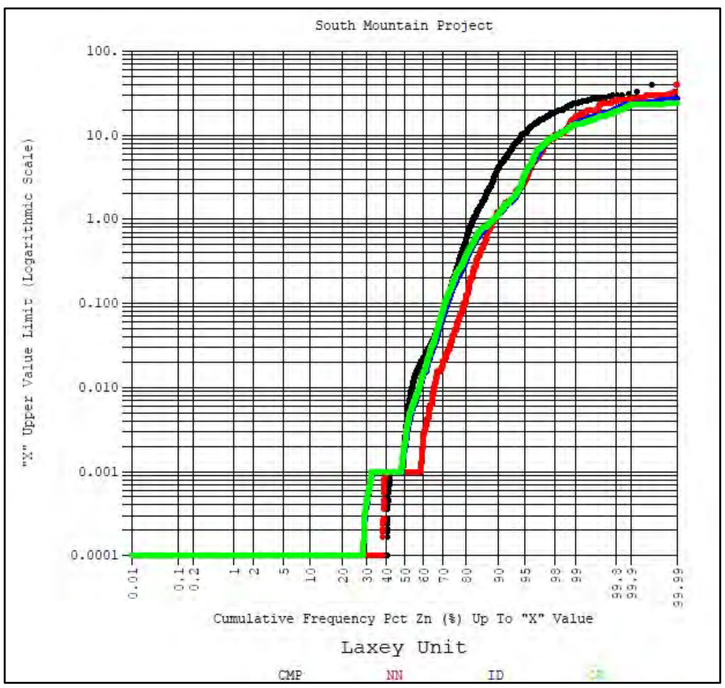



**Figure E - 17 Zinc in the Laxey Marble Unit**

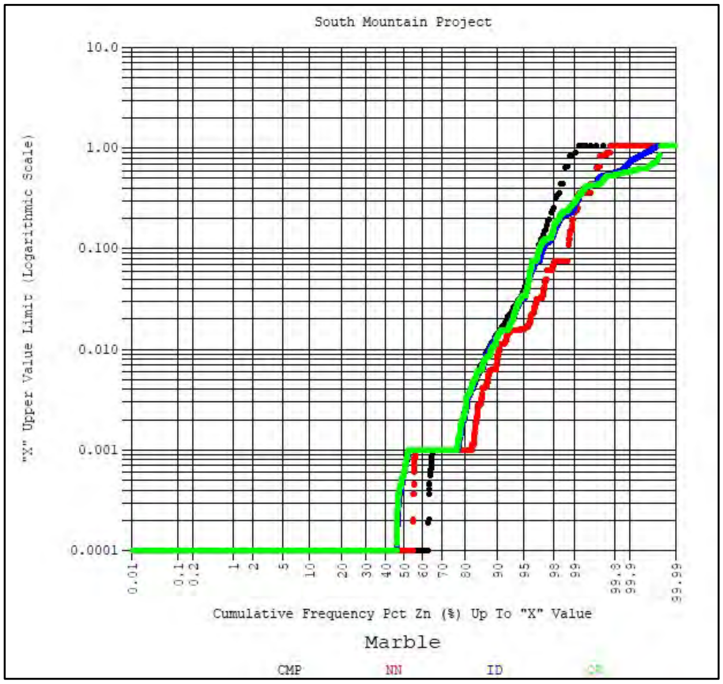



**Figure E - 18  Zinc in Marble**

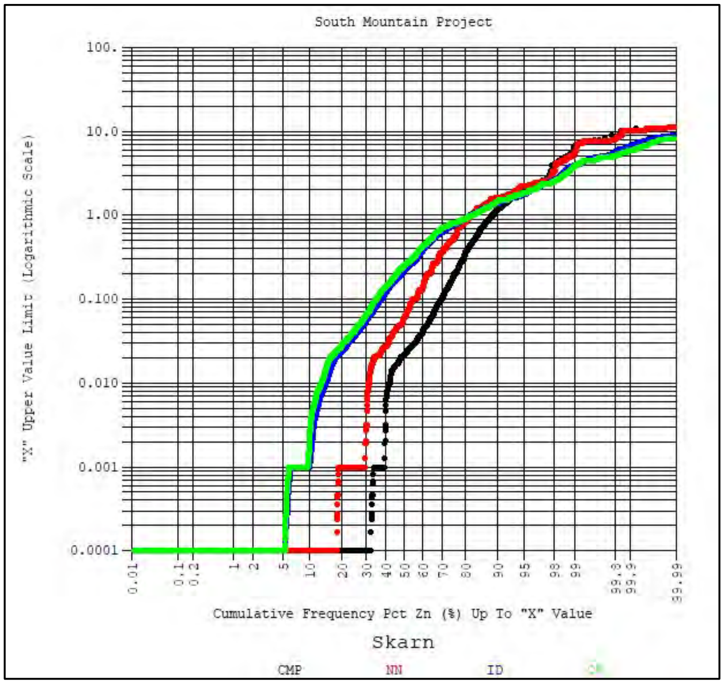



**Figure E - 19  Zinc in Skarn**

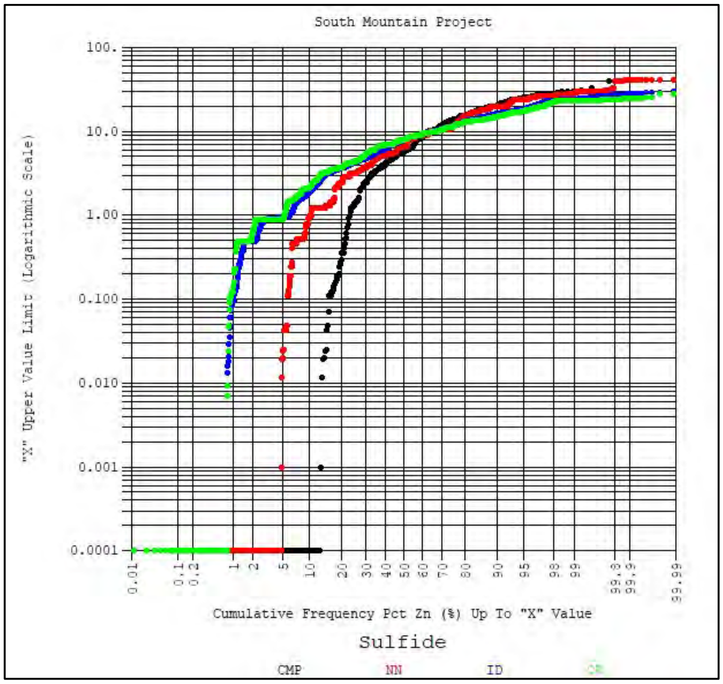
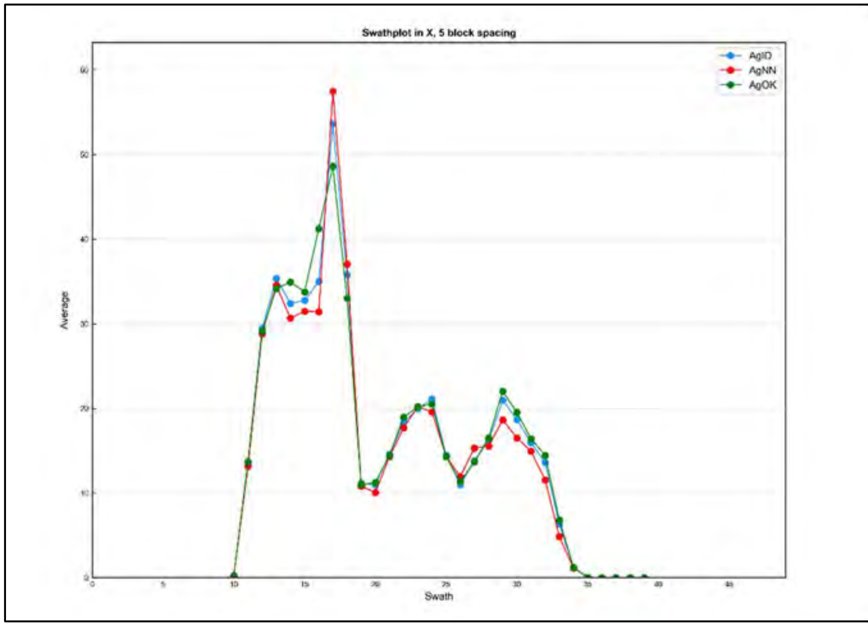
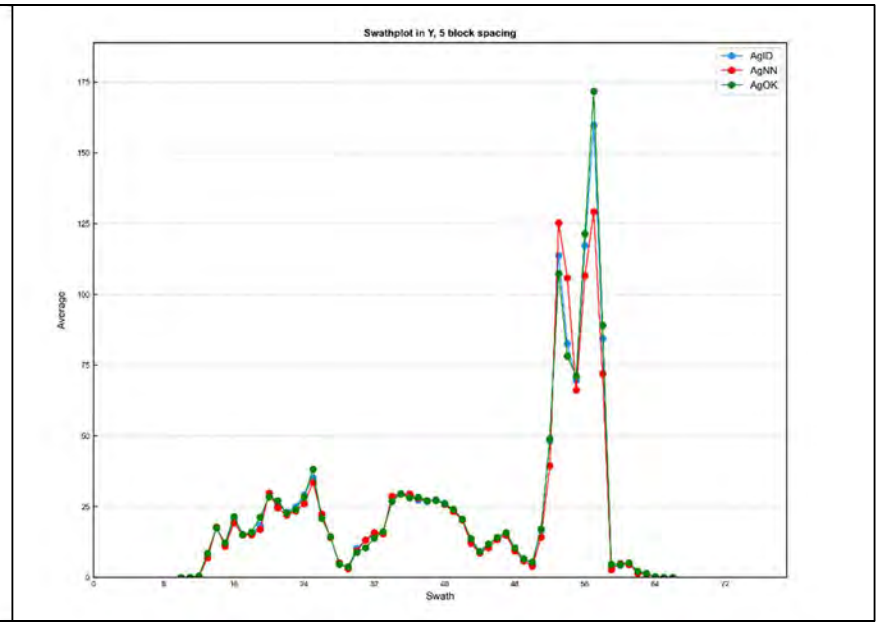


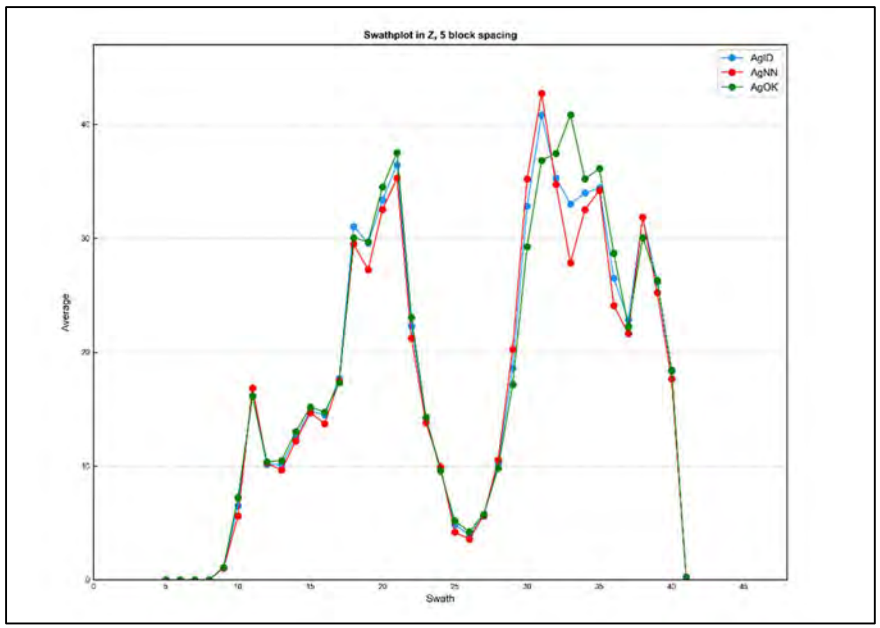

**Figure E - 20 Zinc in Massive Sulfide**

Swath plots using the NN, ID, OK interpolants by metal and domain are presented below. Swath plots are oriented in the rotated X-axis (across strike), rotated Y-axis (along strike), and Z-axis (down elevation).




**Silver: Laxey Marble Unit**



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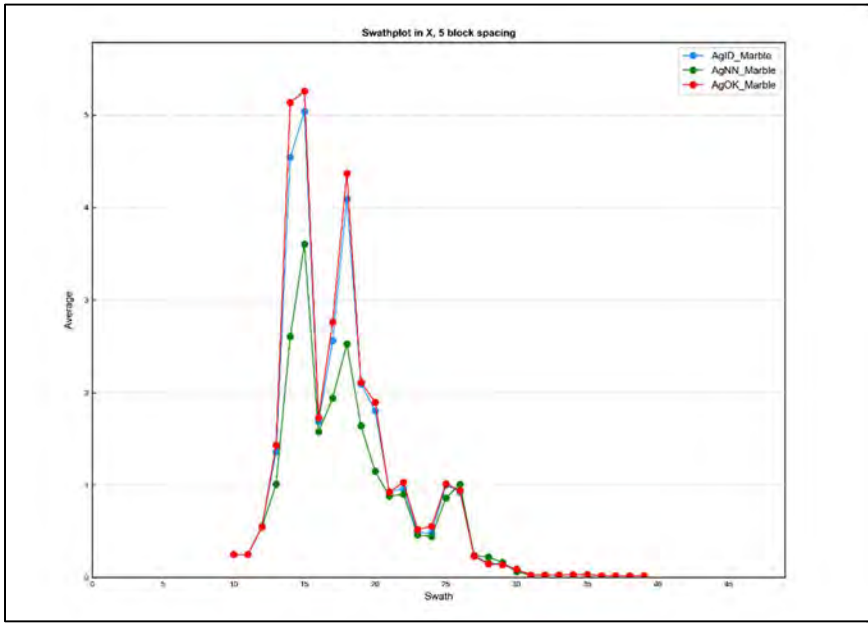
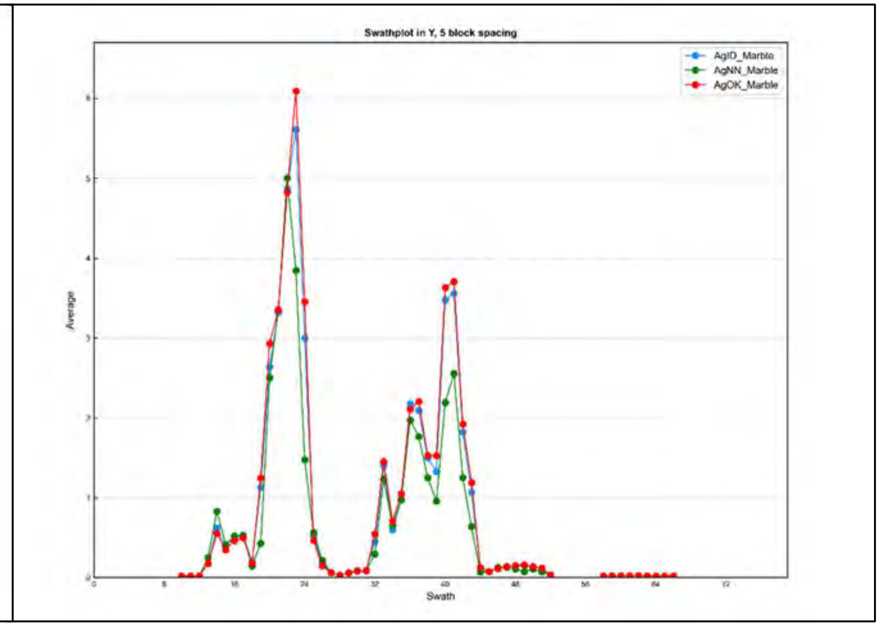
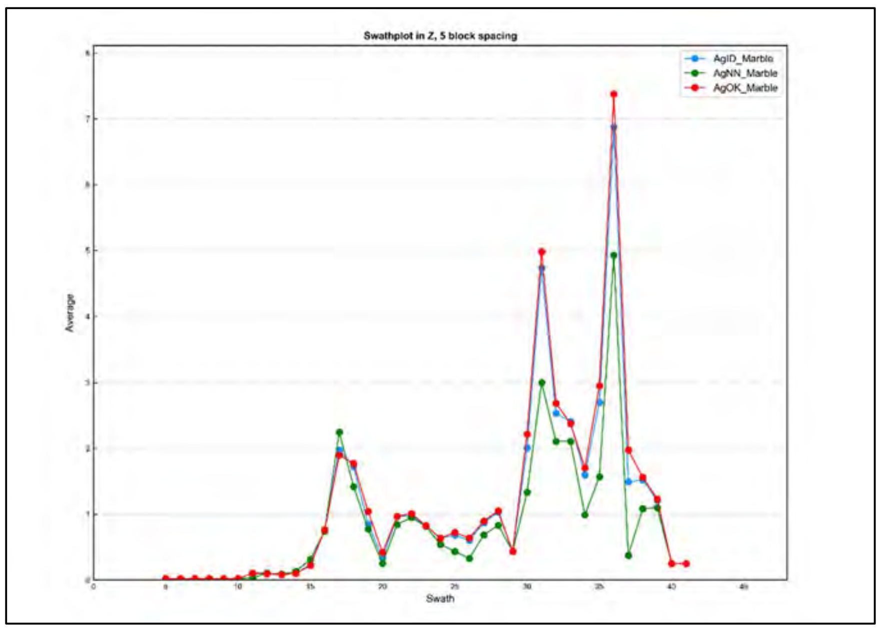
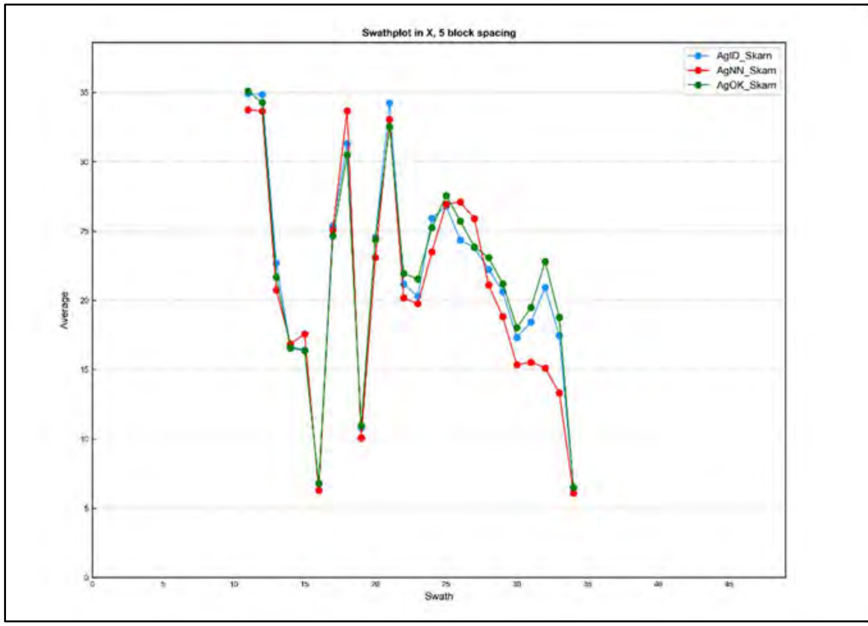
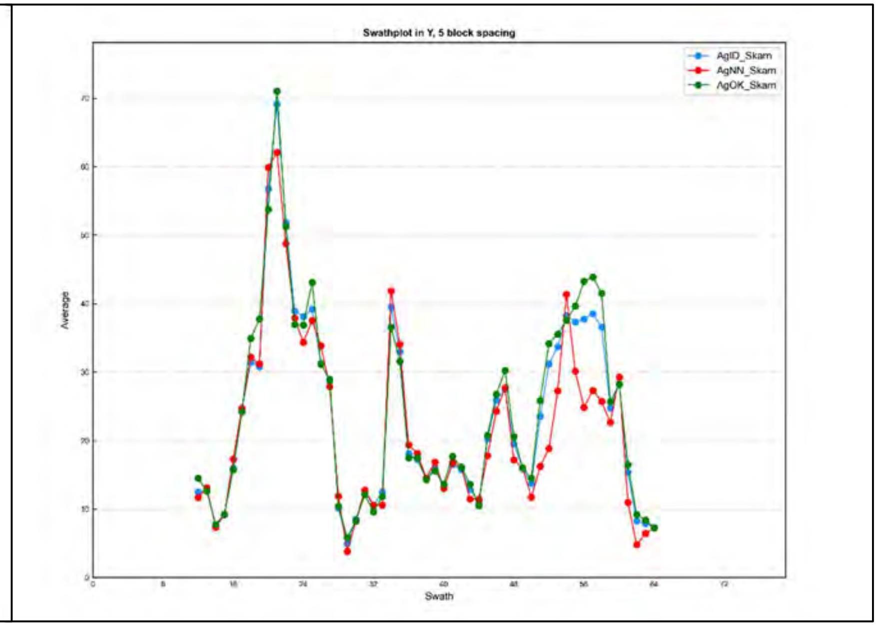


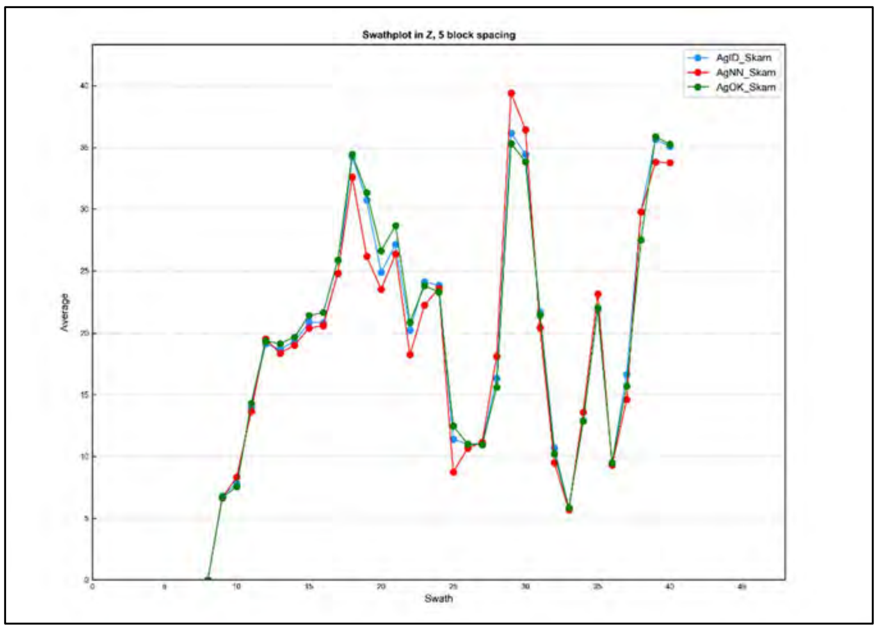

**Silver: Marble**

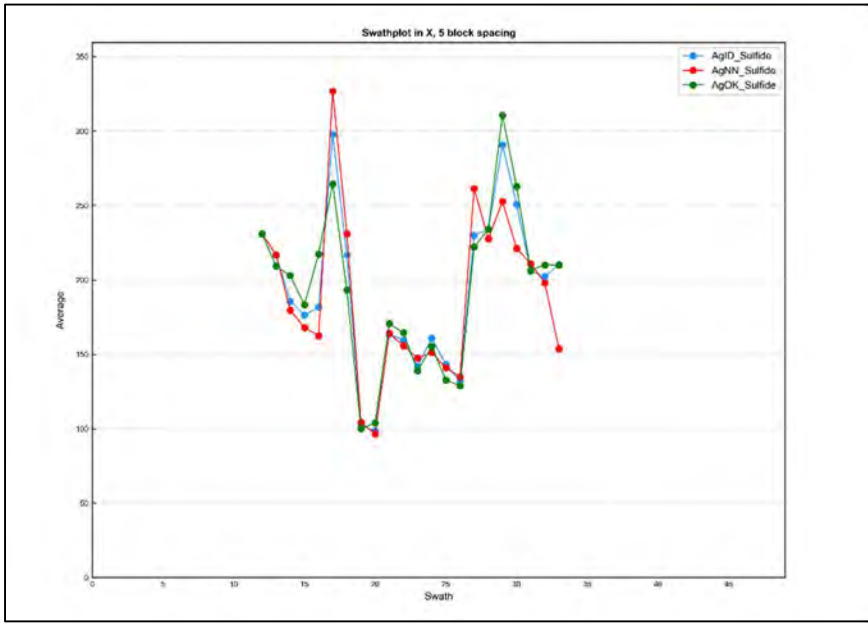


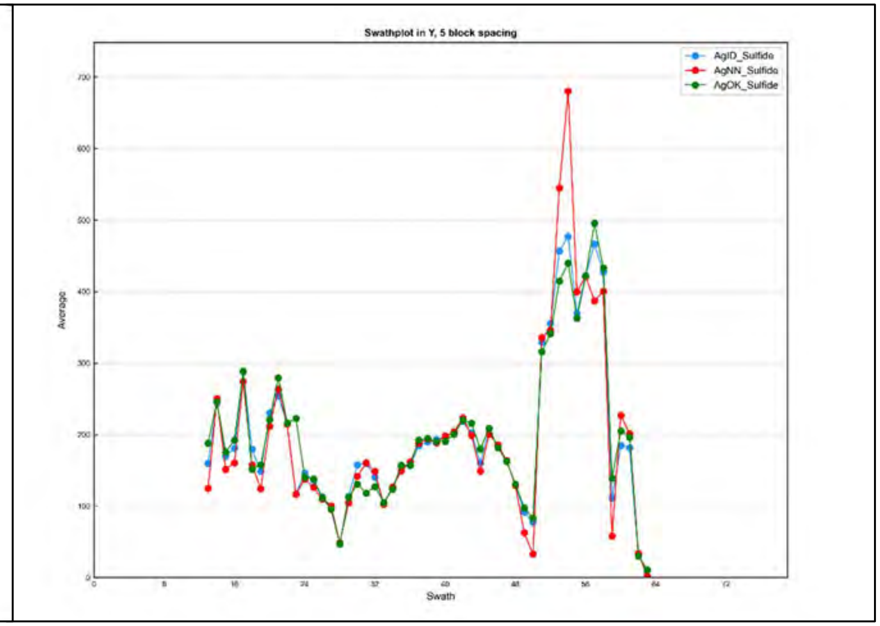


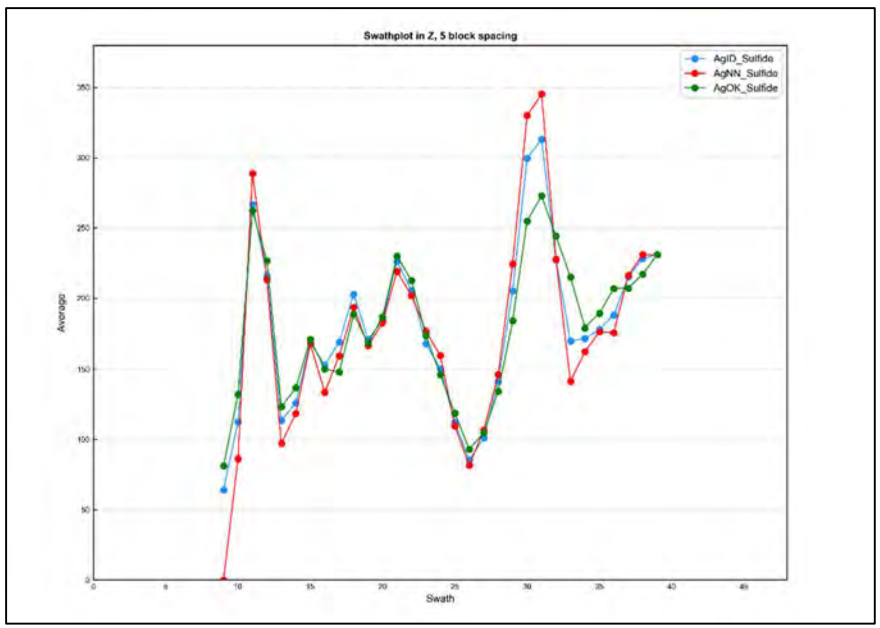

**Silver: Skarn**

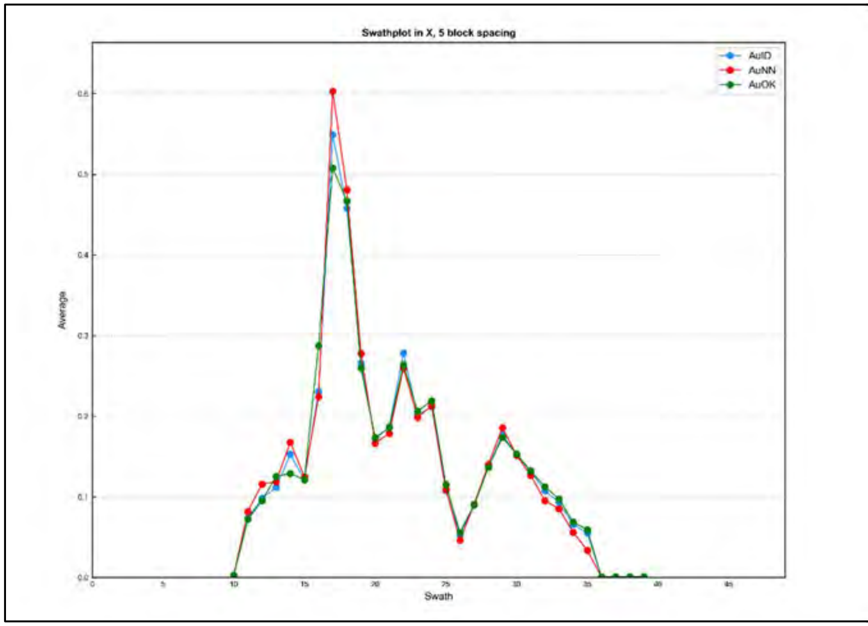


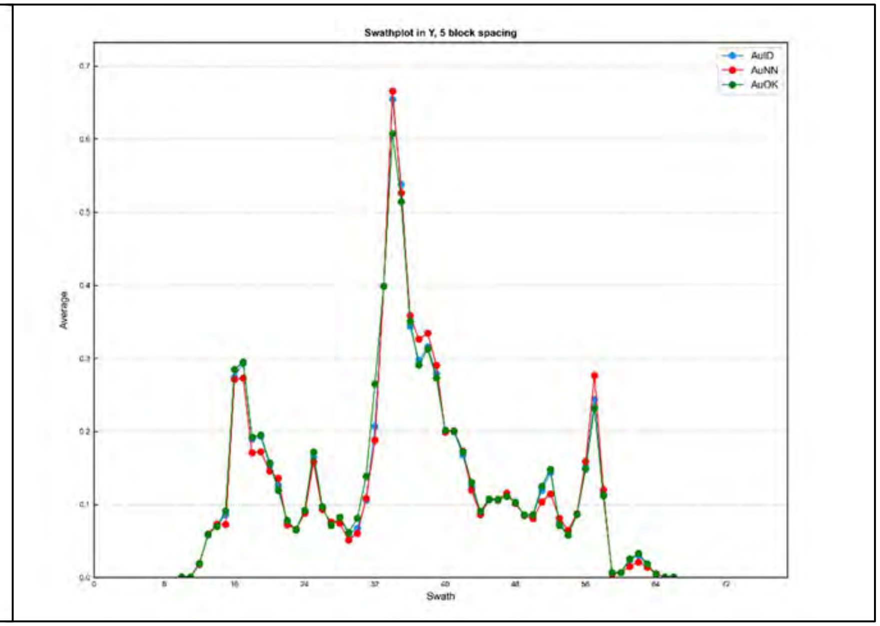


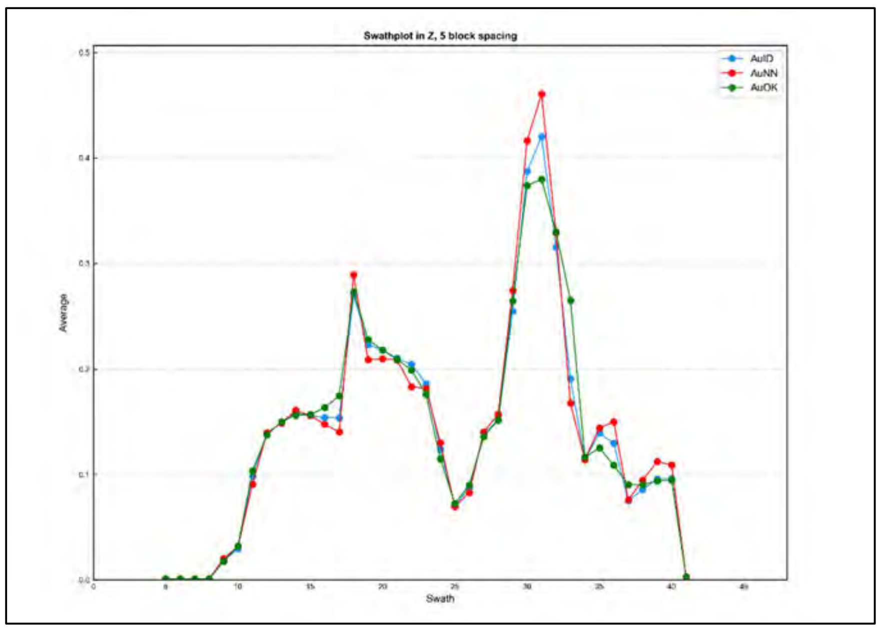

**Silver: Massive Sulfide**





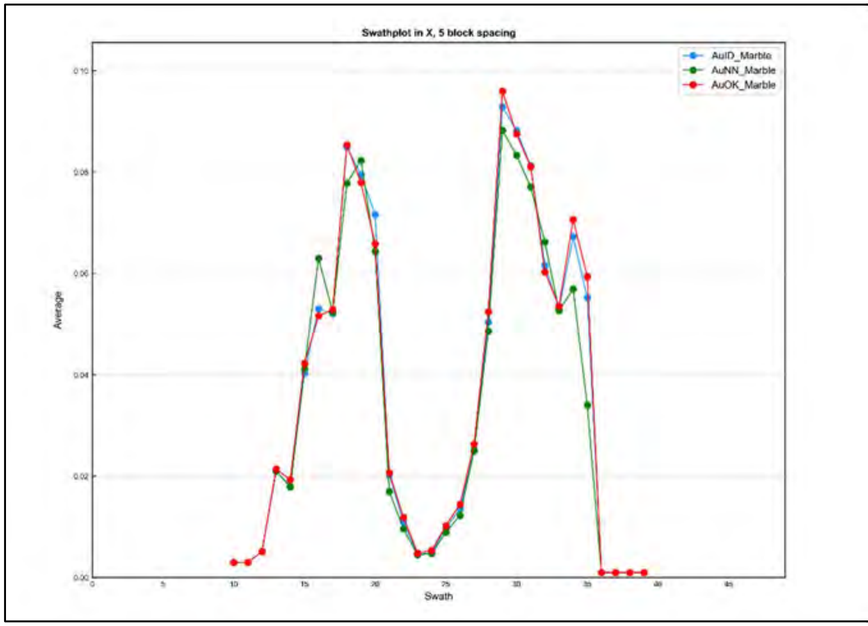



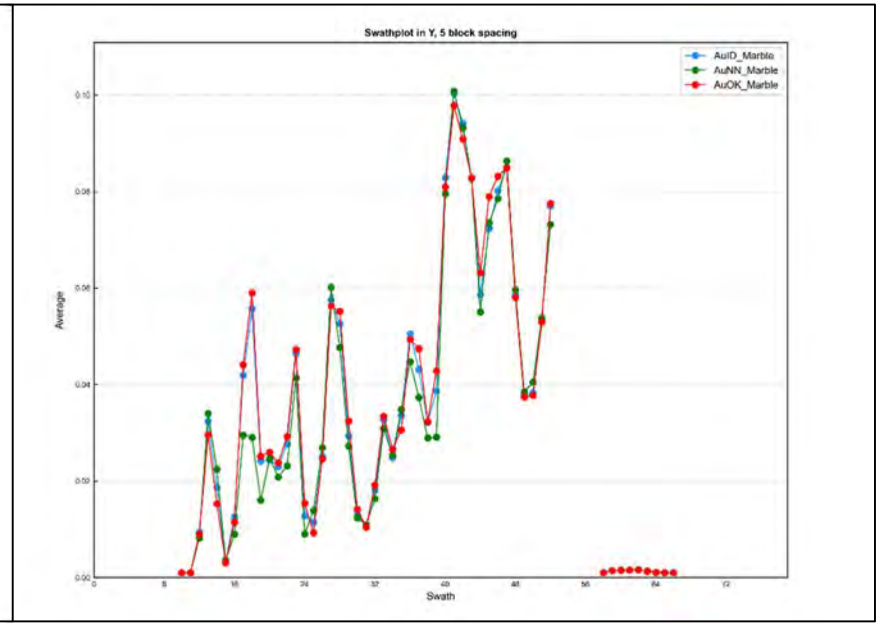

**Gold: Laxey Marble Unit**



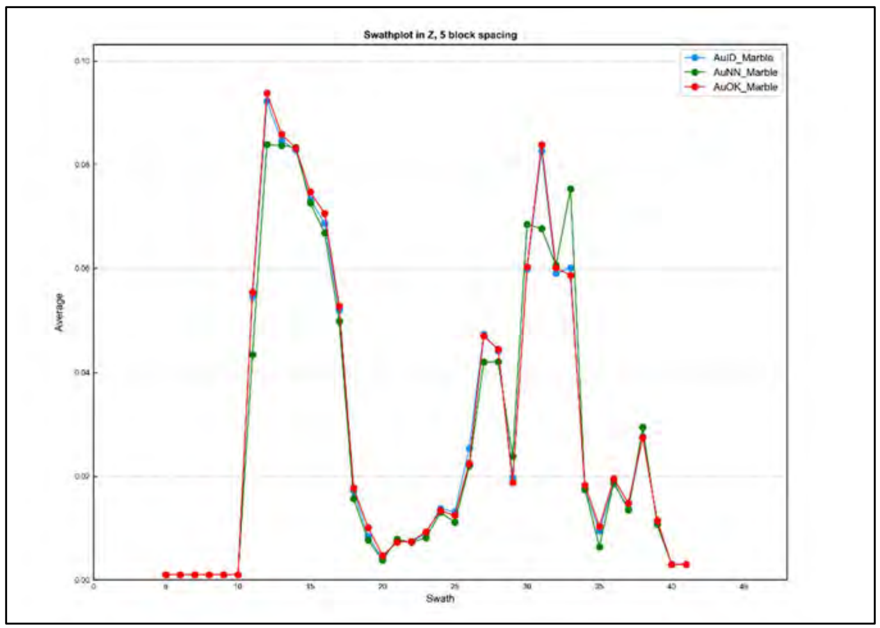


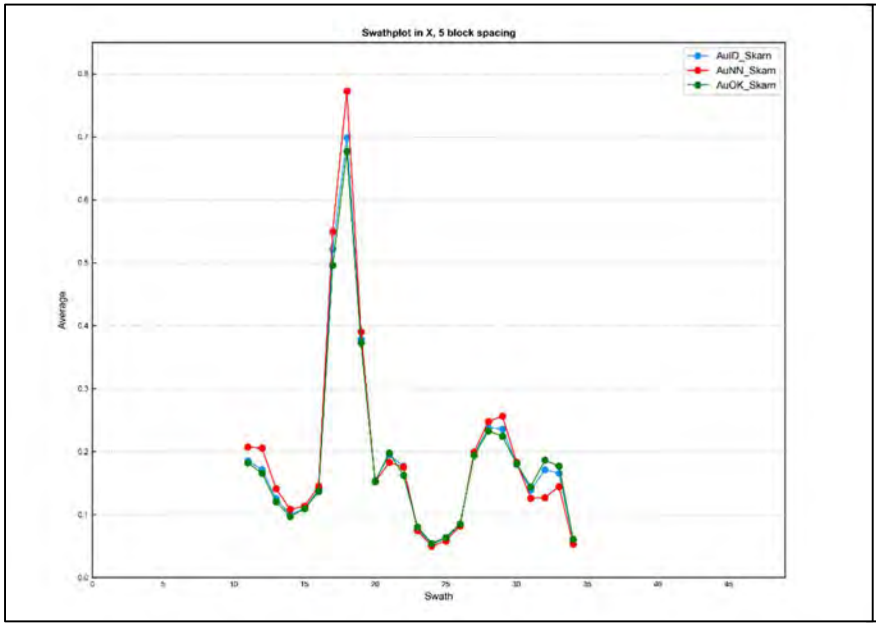

Hard Rock Consulting, LLC

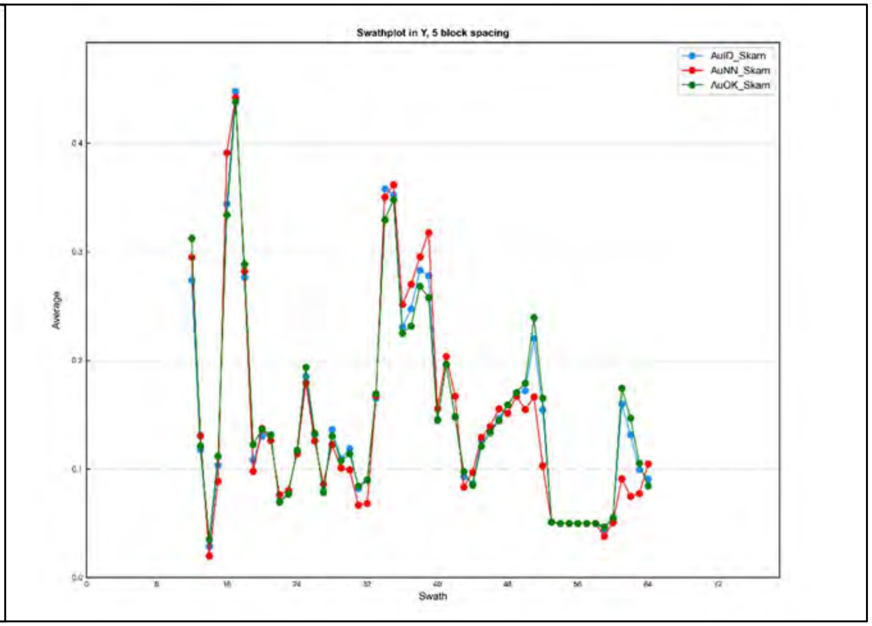

Swathplot in X, 5 block spacing
AuID_Marble
AuNN_Marble
AuOK_Marble
Average
Swath


Swathplot in Y, 5 block spacing
AuID_Marble
AuNN_Marble
AuOK_Marble
Average
Swath

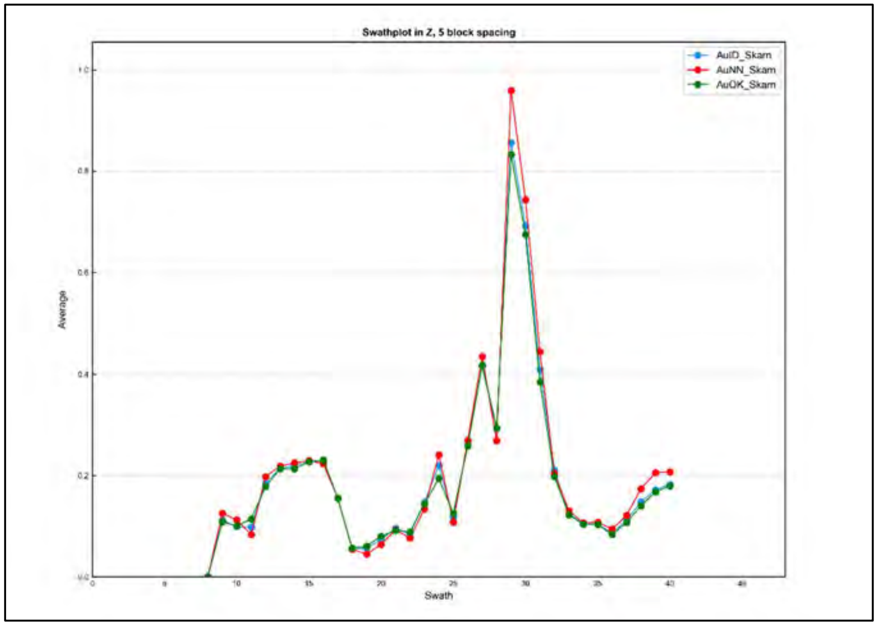
**Gold: Marble**

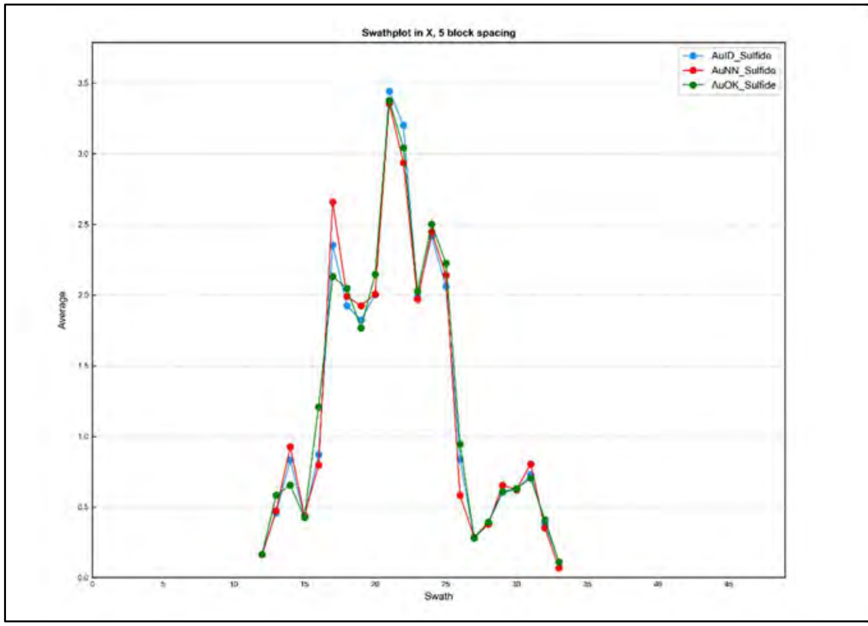

Swathplot in Z, 5 block spacing
AuID_Marble
AuNN_Marble
AuOK_Marble
Average
Swath

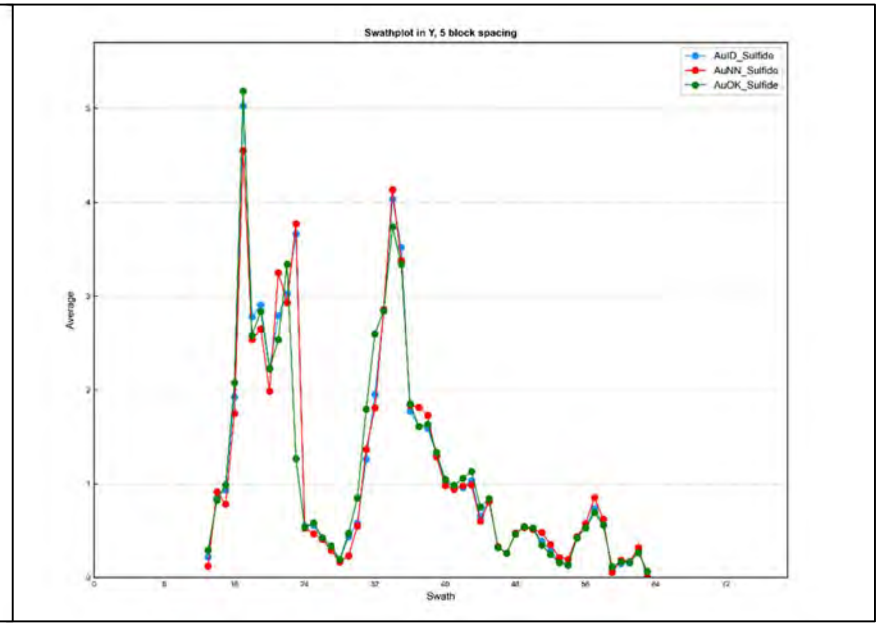

Swathplot in X, 5 block spacing
AuID_Skarn
AuNN_Skarn
AuOK_Skarn
Average
Swath


Swathplot in Y, 5 block spacing
AuID_Skarn
AuNN_Skarn
AuOK_Skarn
Average
Swath

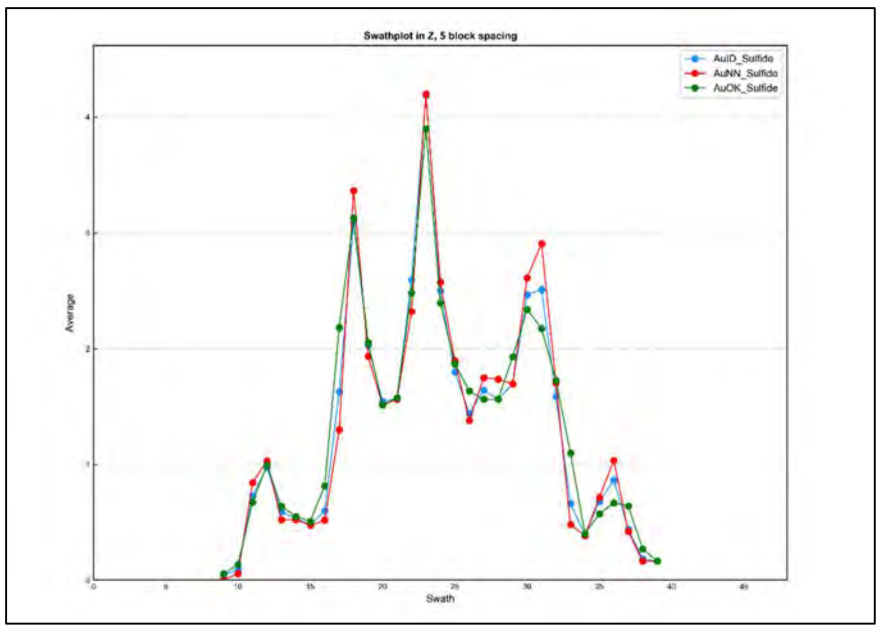
**Gold: Skarn**

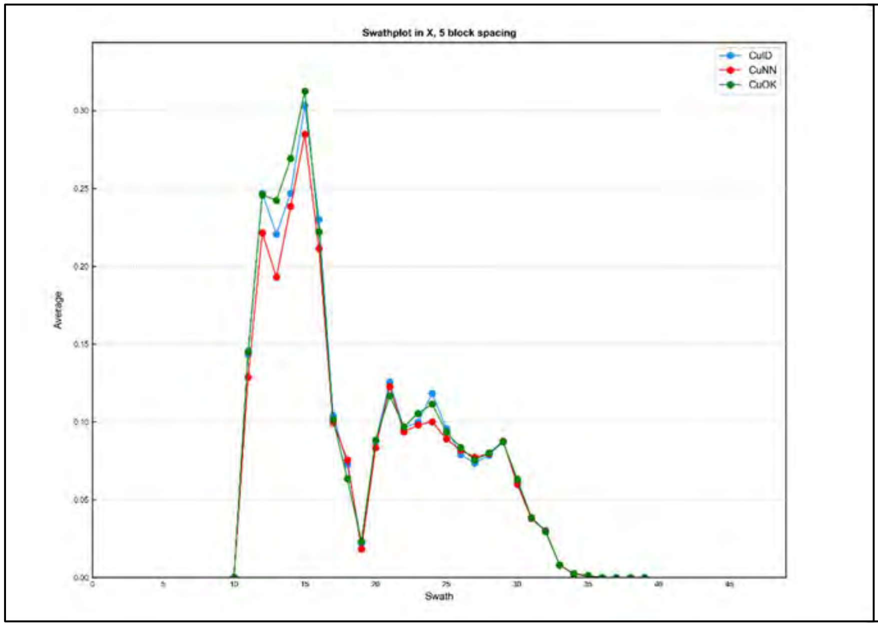

Swathplot in Z, 5 block spacing
AuID_Skarn
AuNN_Skarn
AuOK_Skarn
Average
Swath

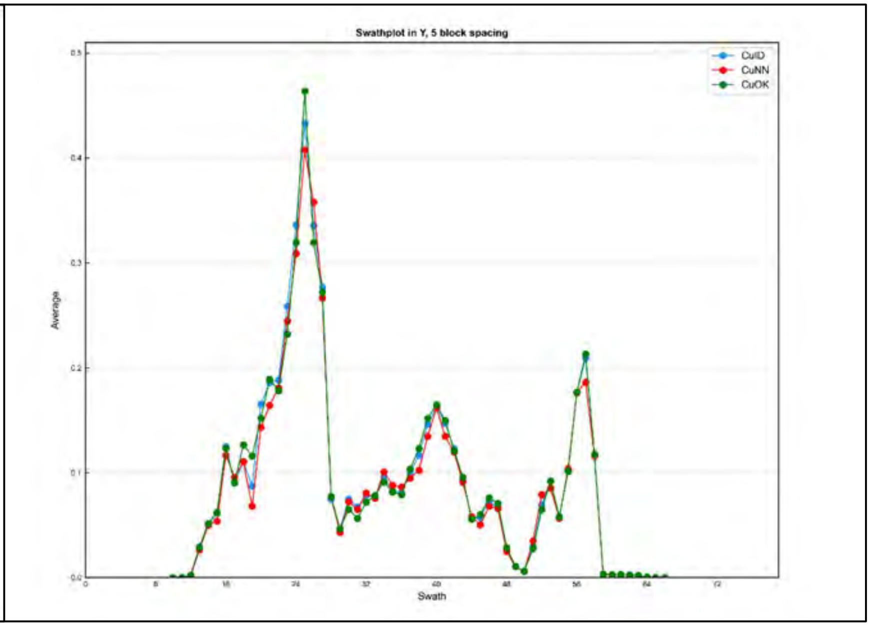


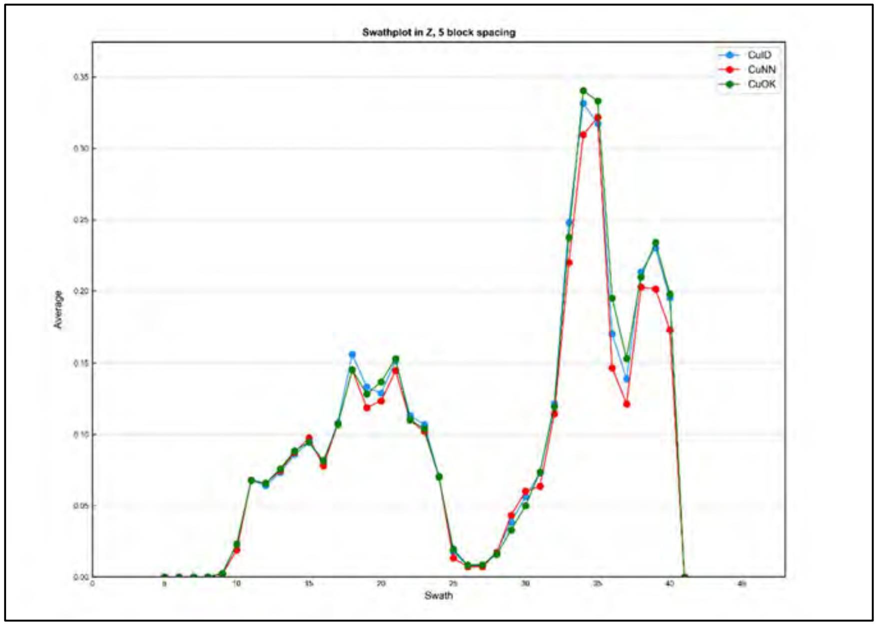

**Gold: Massive Sulfide**

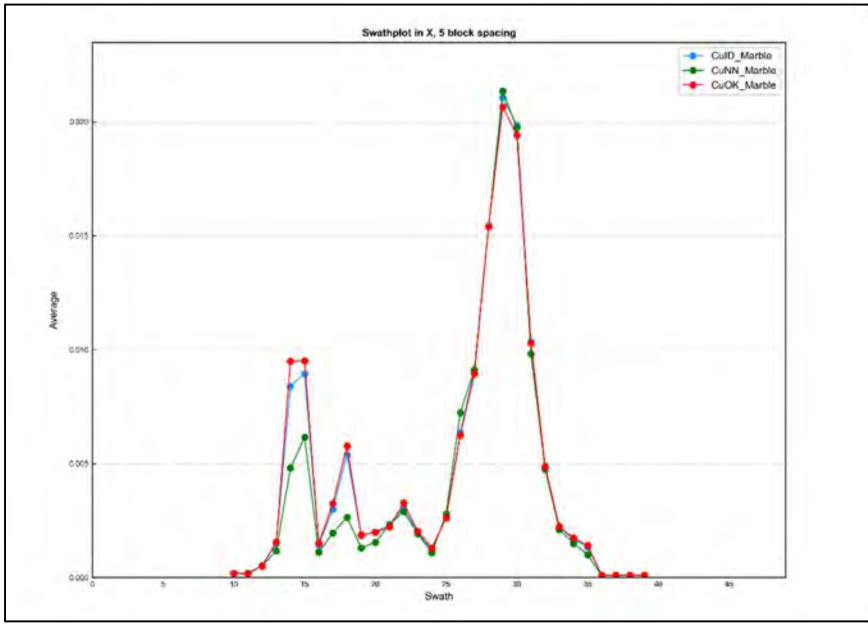


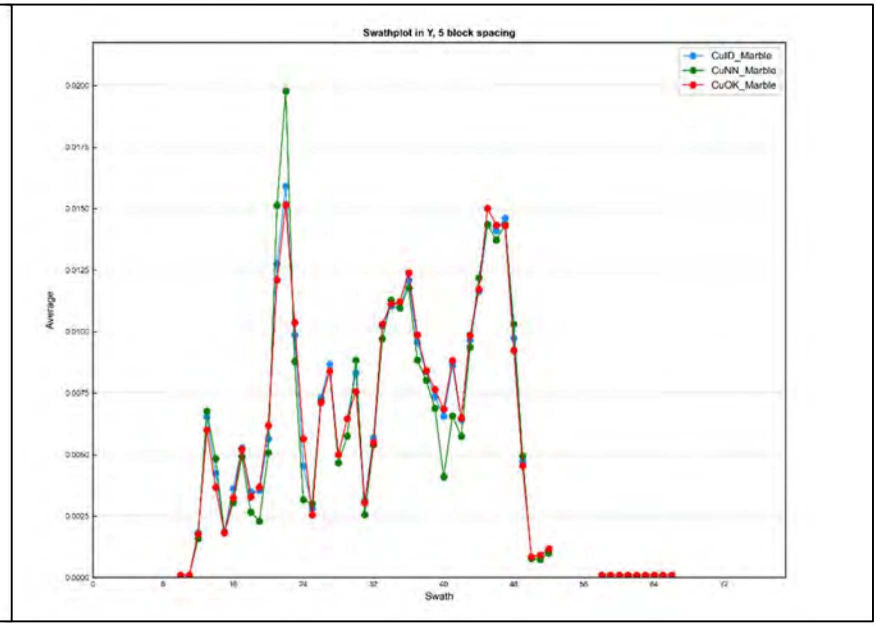


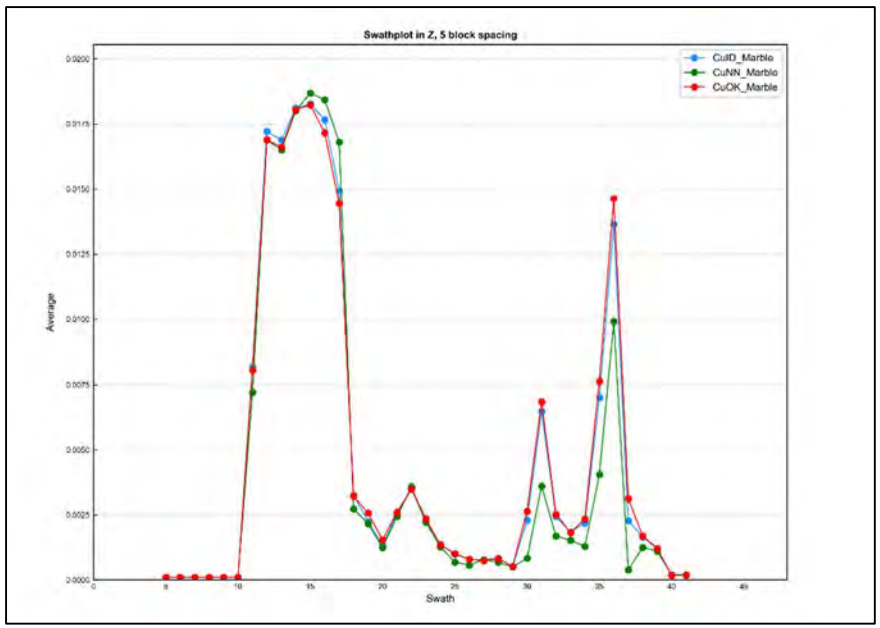

**Copper: Laxey Marble Unit**

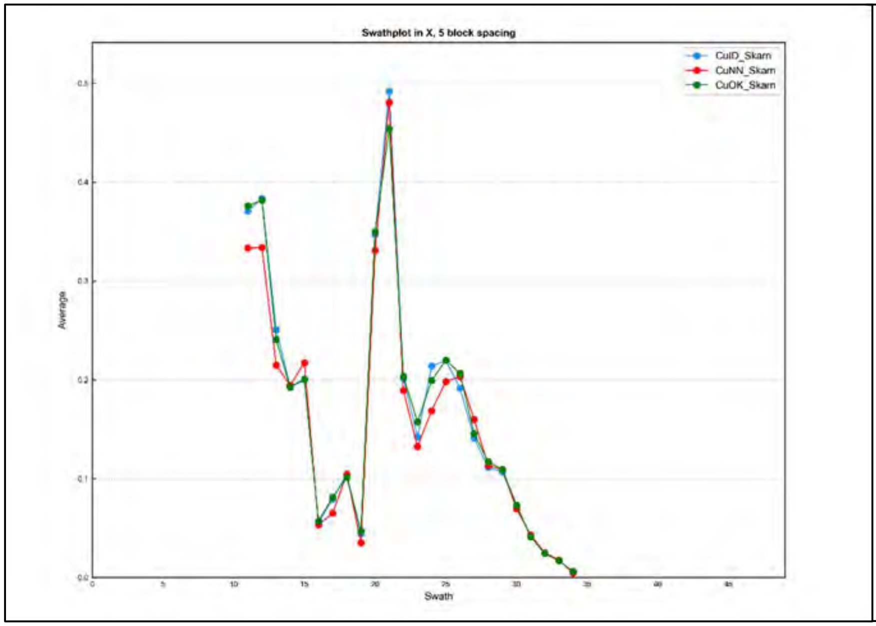


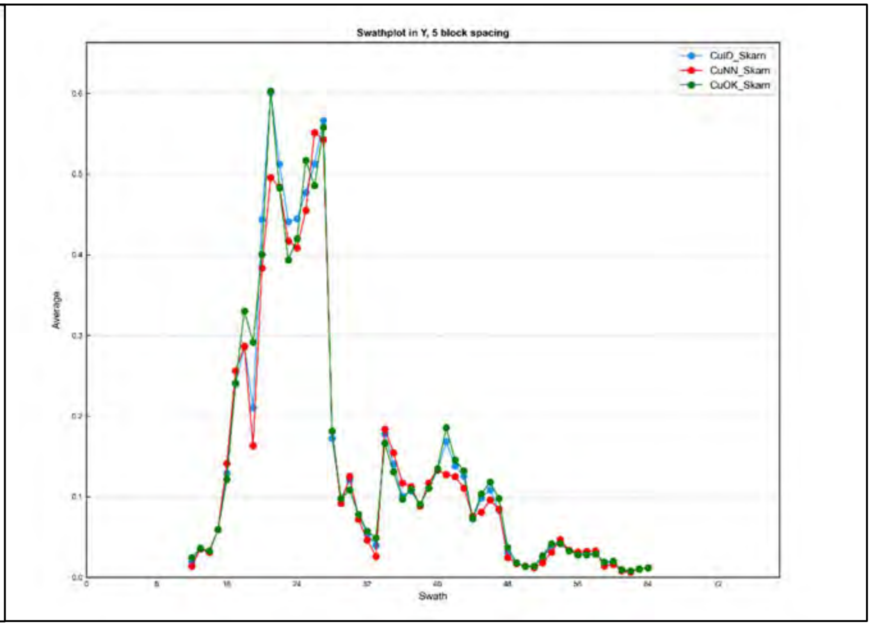


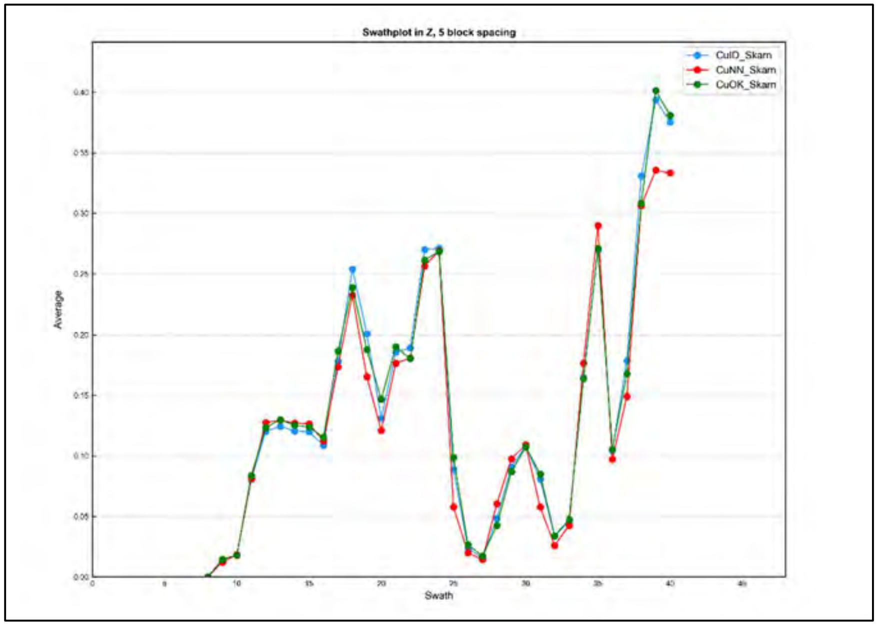

**Copper: Marble**

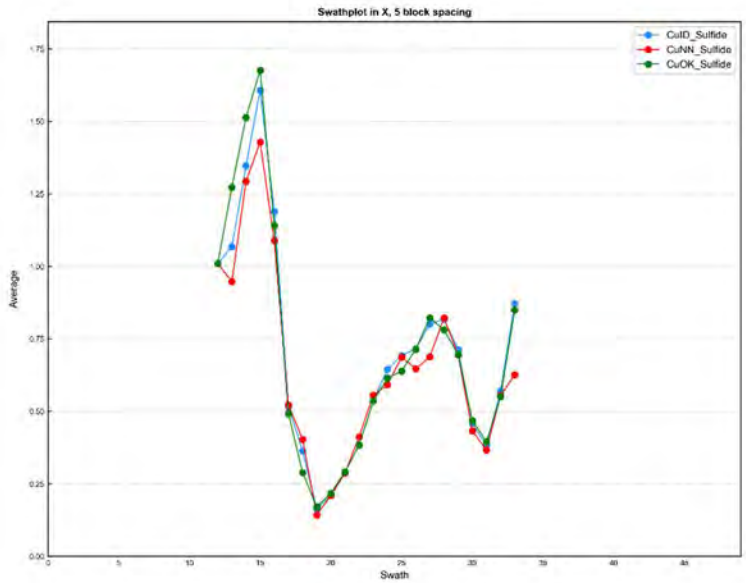


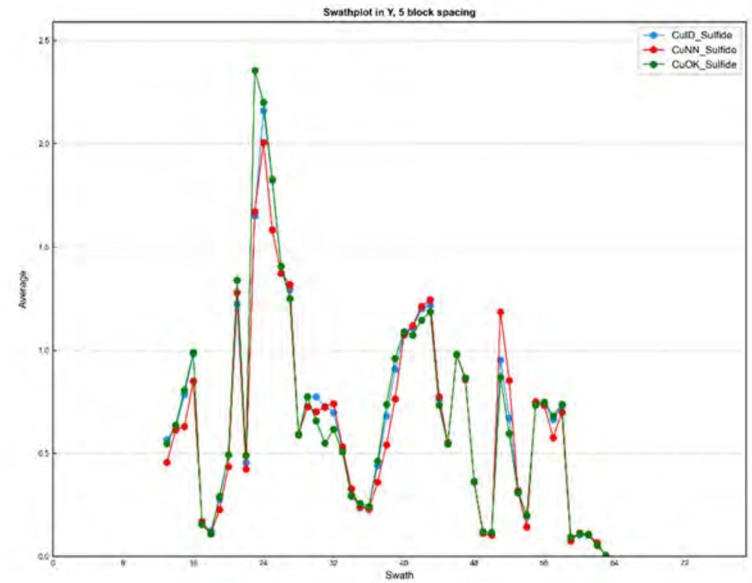


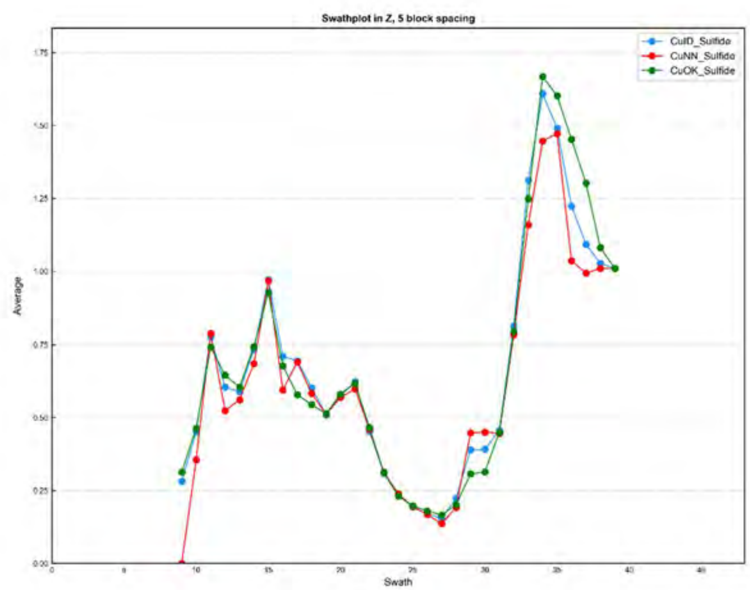

**Copper: Skarn**

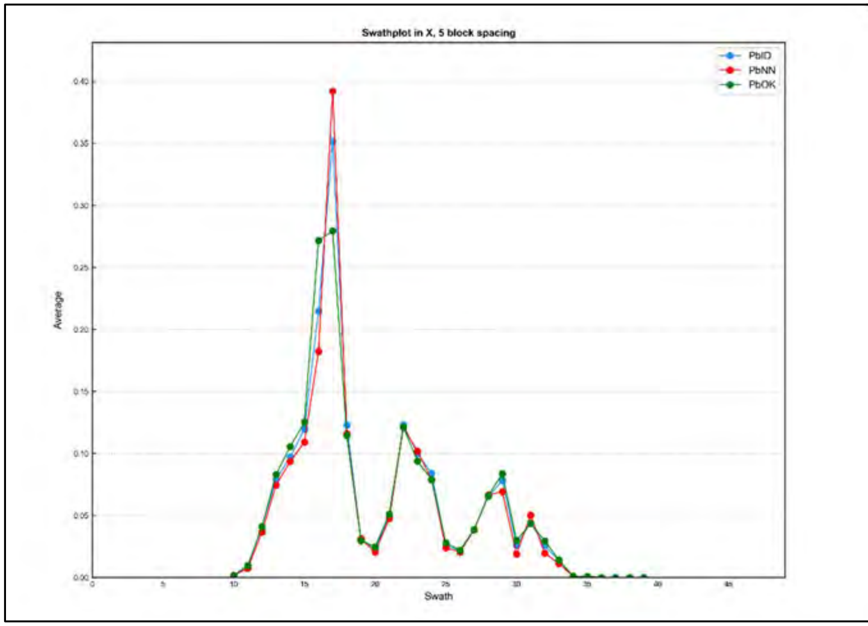


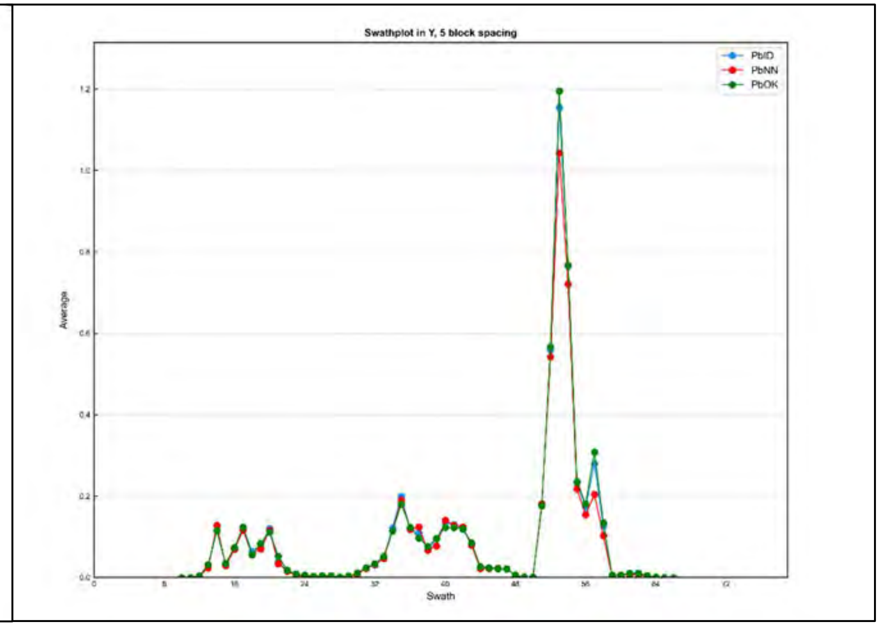


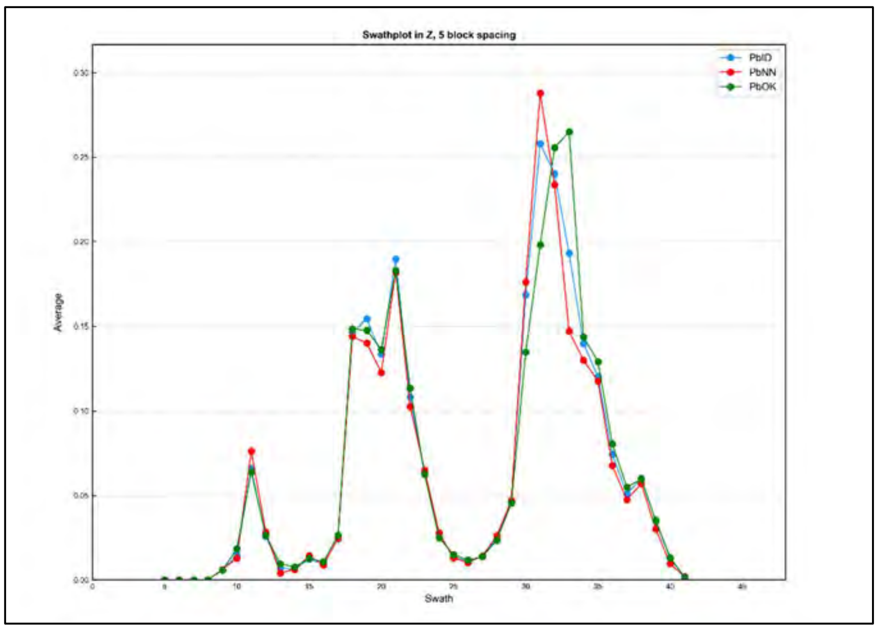

**Copper:  Massive Sulfide**

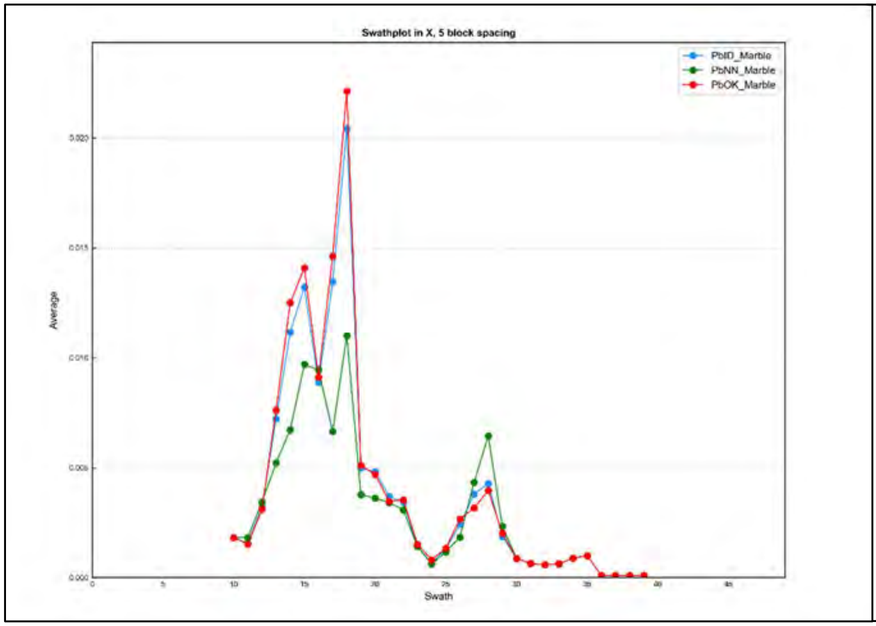


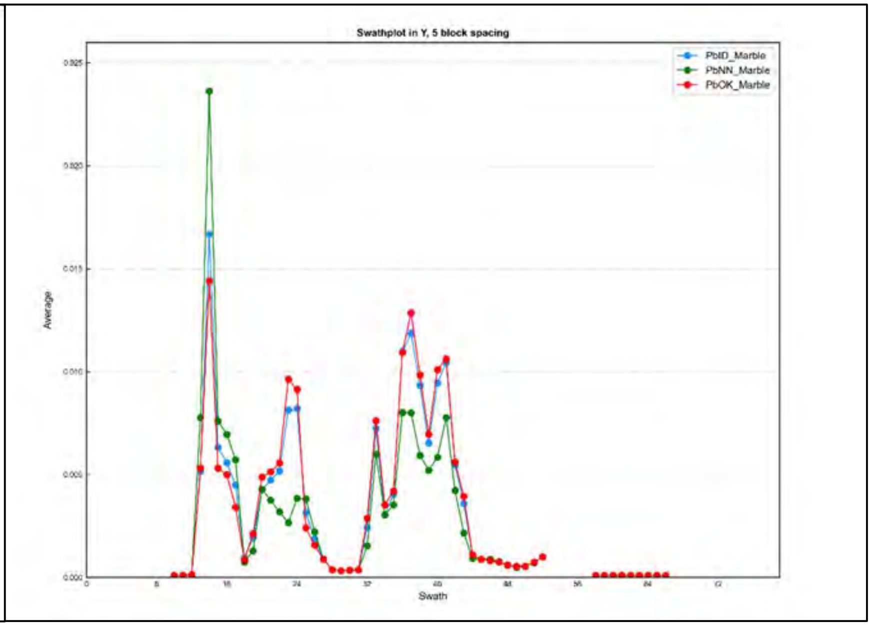


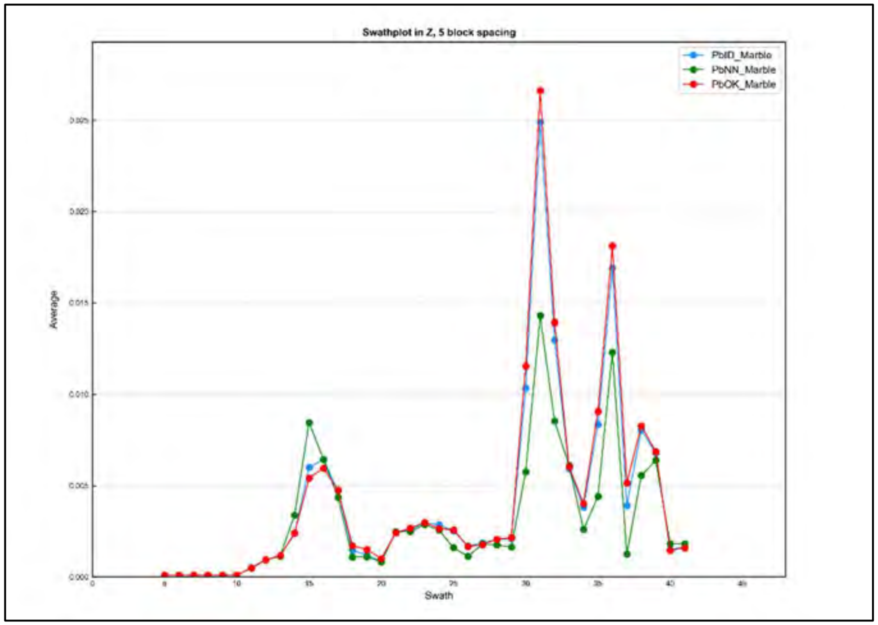

**Lead: Laxey Marble Unit**






**Lead: Marble**





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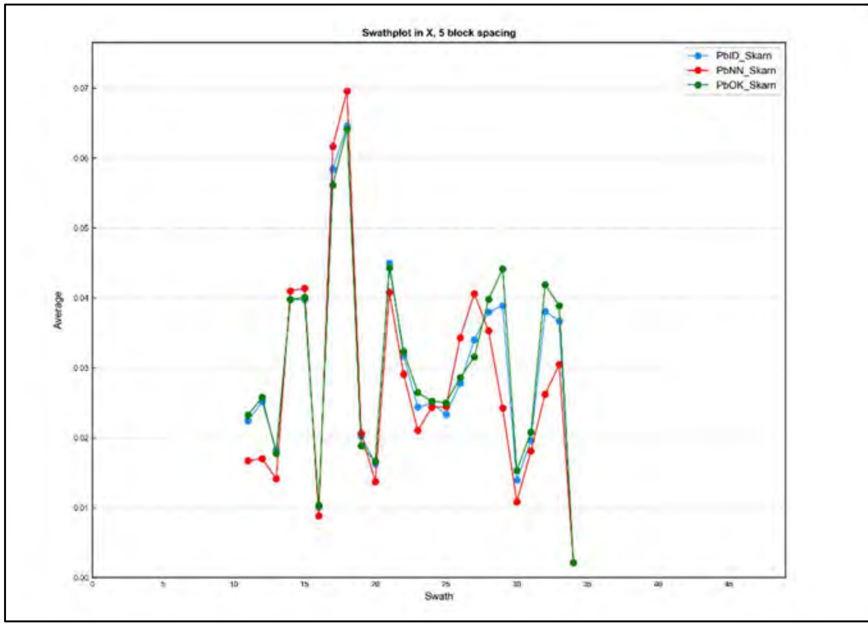
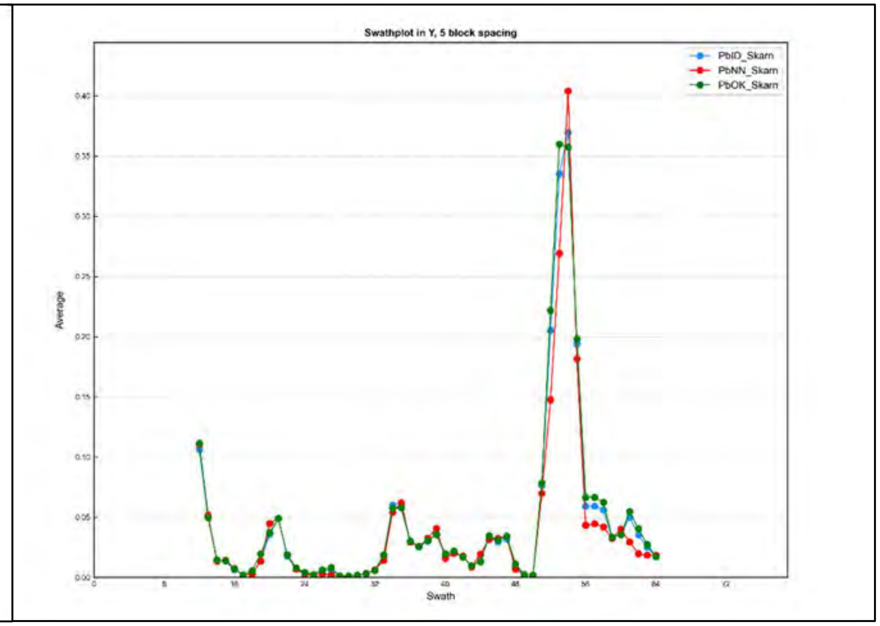
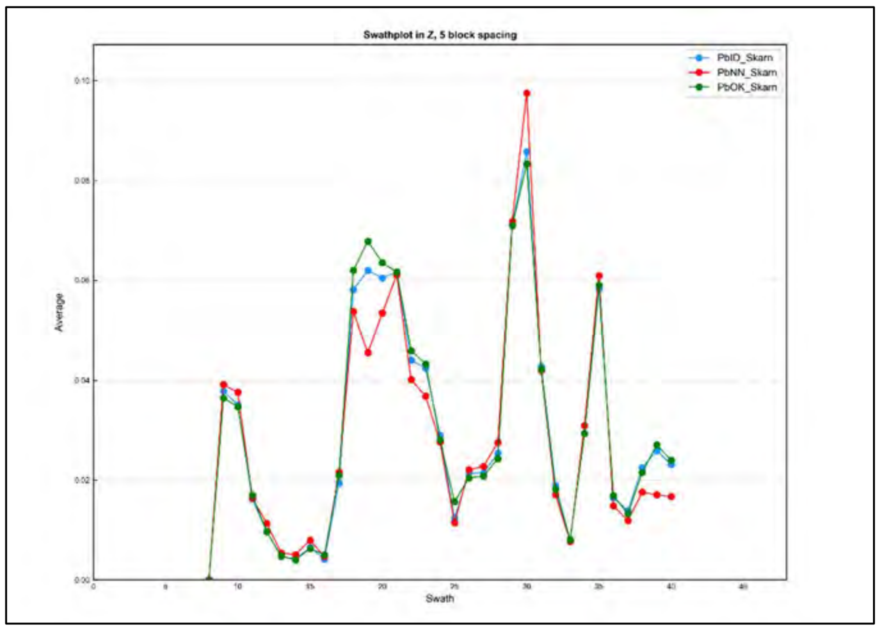
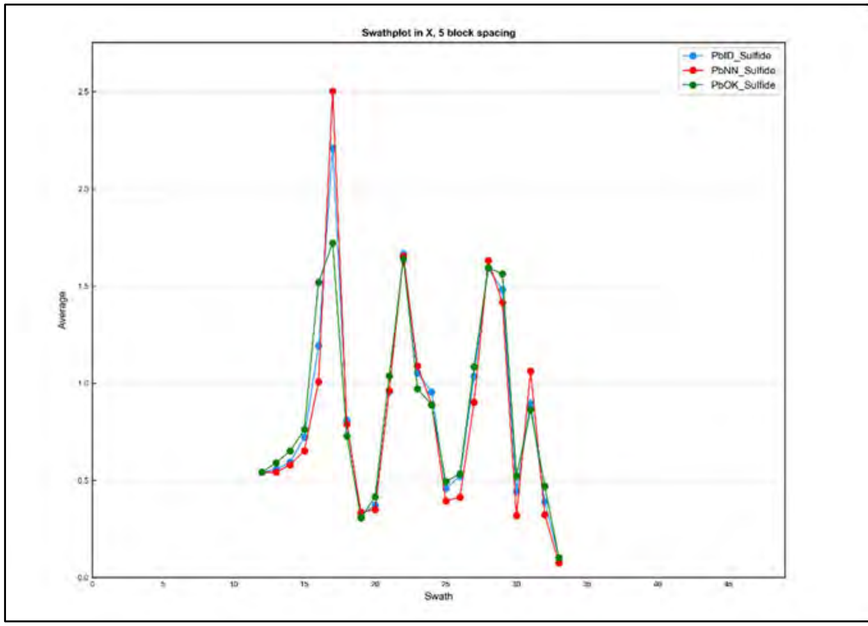
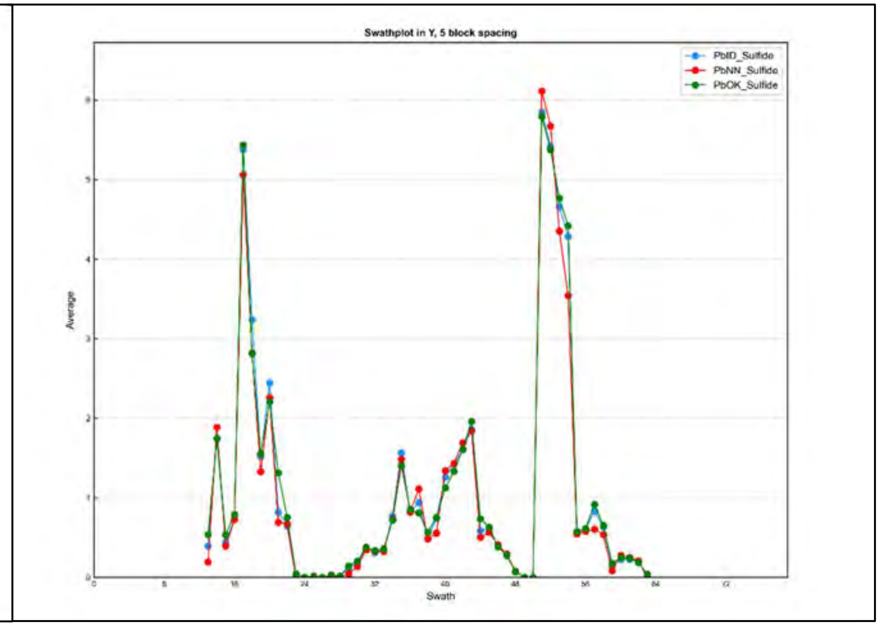

Swathplot in X, 5 block spacing
PbID_Skarn
PbNN_Skarn
PbOK_Skarn
Average
Swath


Swathplot in Y, 5 block spacing
PbID_Skarn
PbNN_Skarn
PbOK_Skarn
Average
Swath

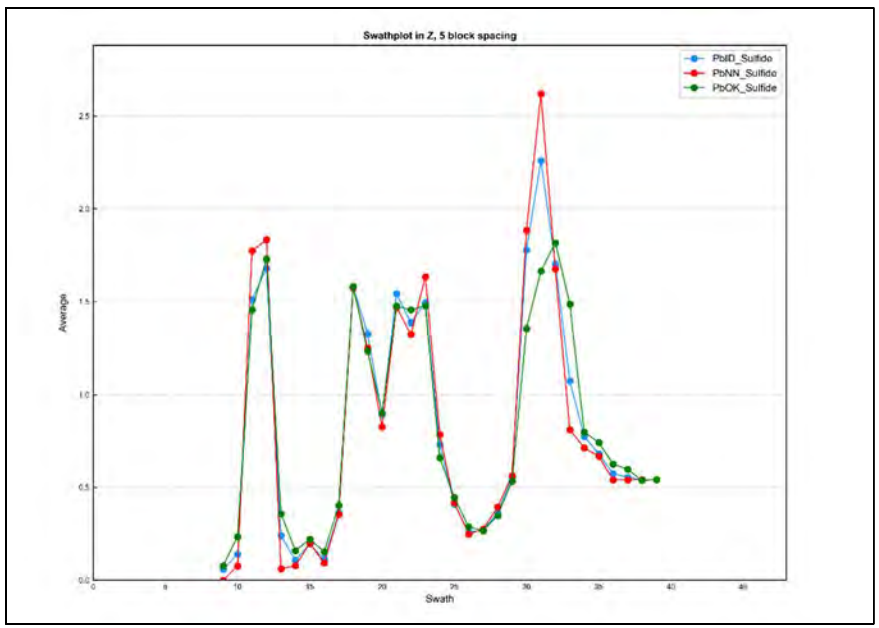
**Lead: Skarn**

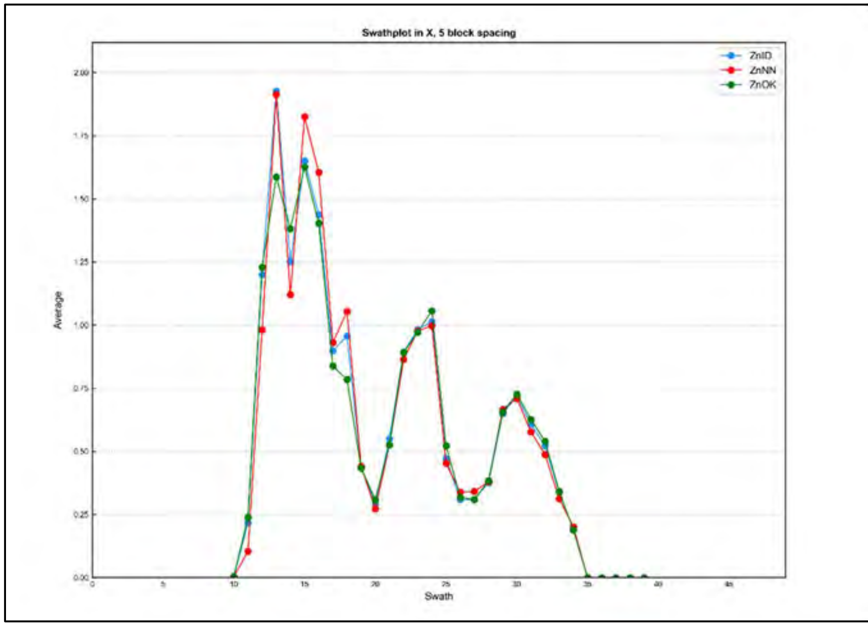

Swathplot in Z, 5 block spacing
PbID_Skarn
PbNN_Skarn
PbOK_Skarn
Average
Swath

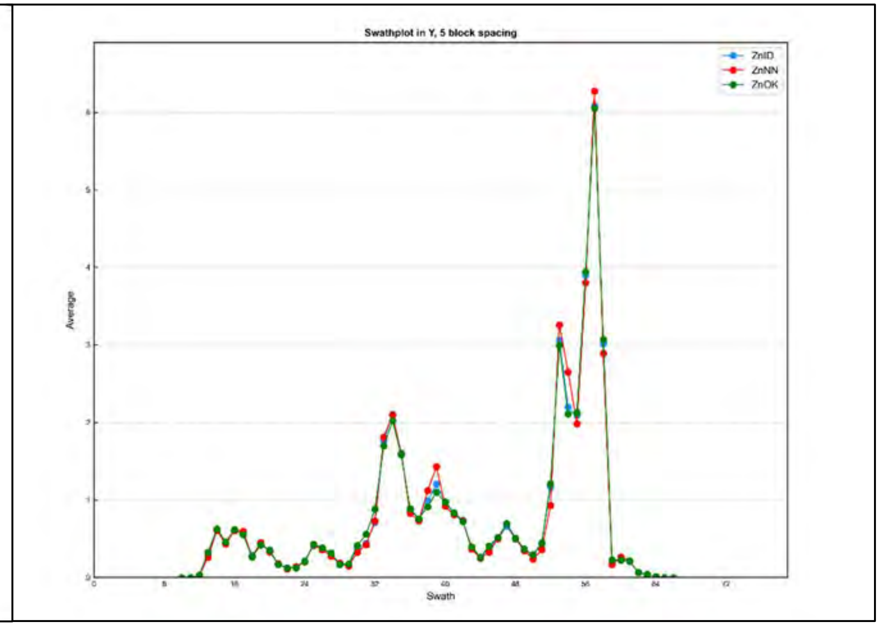


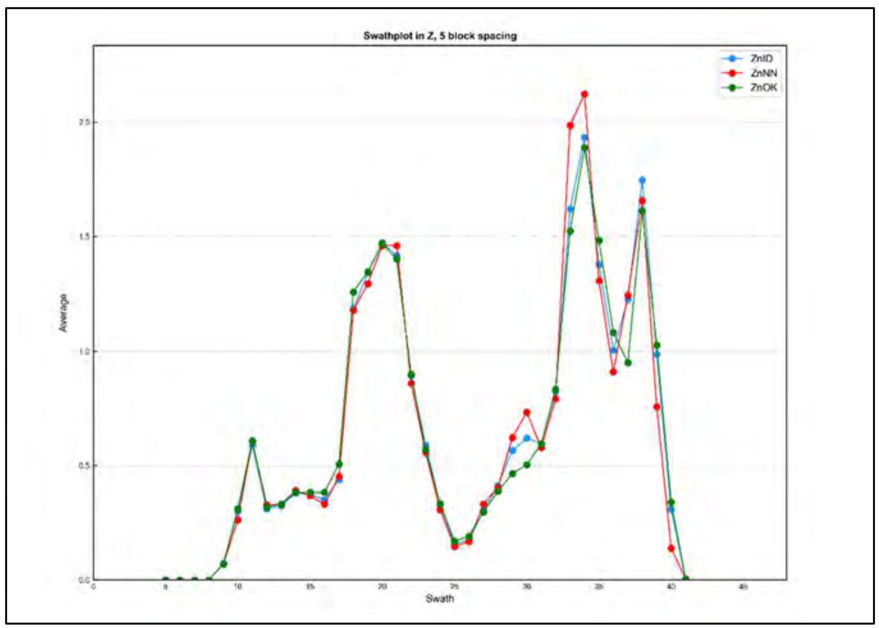

**Lead: Massive Sulfide**

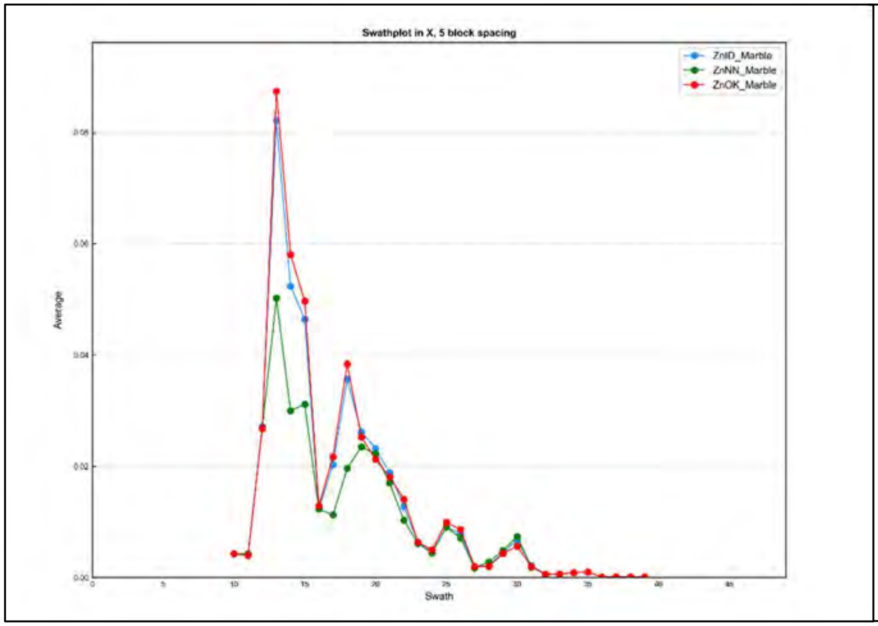


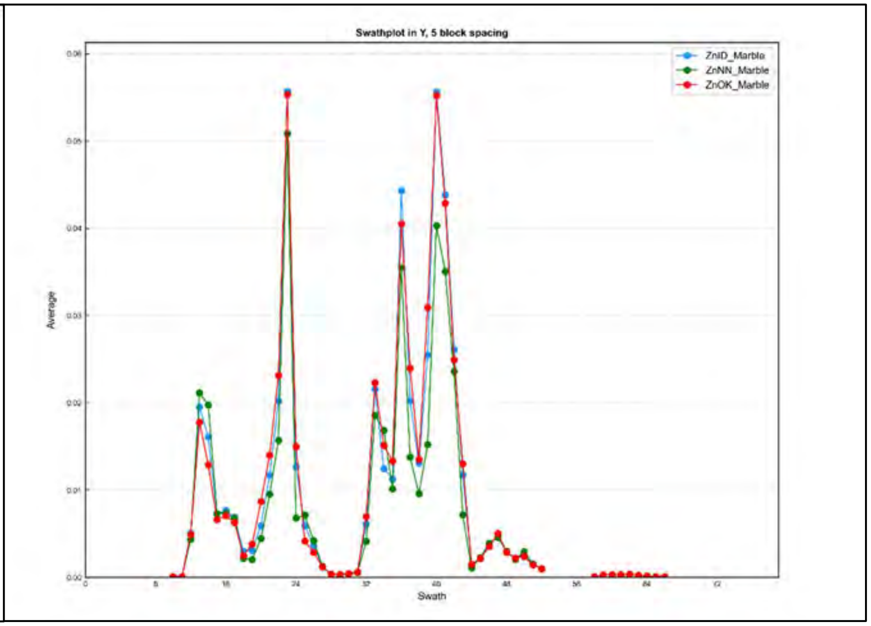


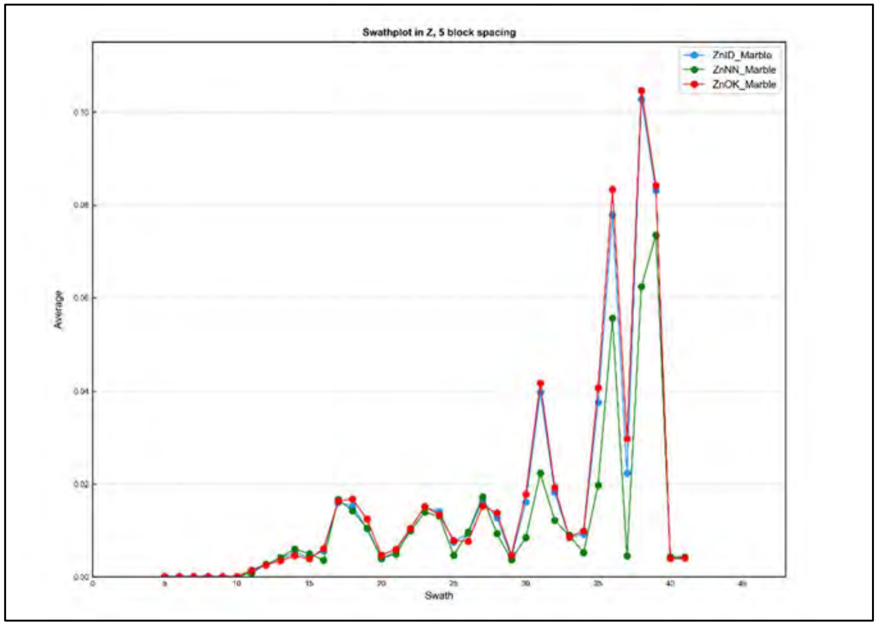

**Zinc: Laxey Marble Unit**

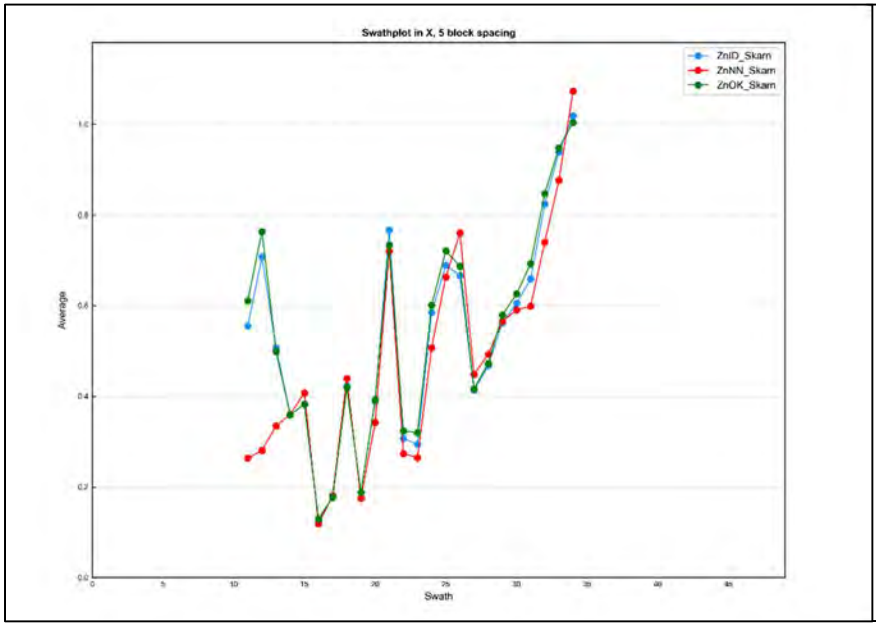


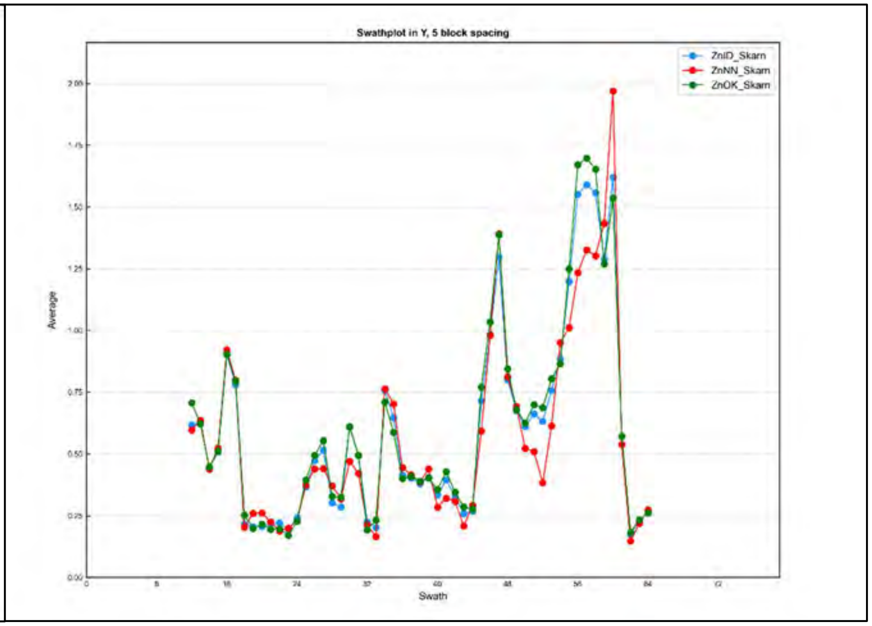

Swathplot in X, 5 block spacing
ZnID_Marble
ZnNN_Marble
ZnOK_Marble
Average
Swath


Swathplot in Y, 5 block spacing
ZnID_Marble
ZnNN_Marble
ZnOK_Marble
Average
Swath

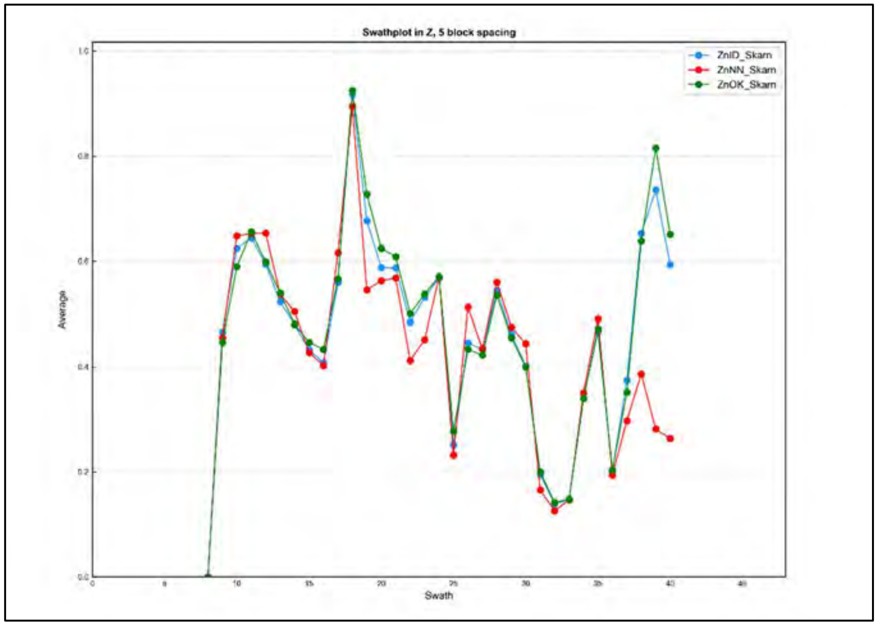
**Zinc: Marble**

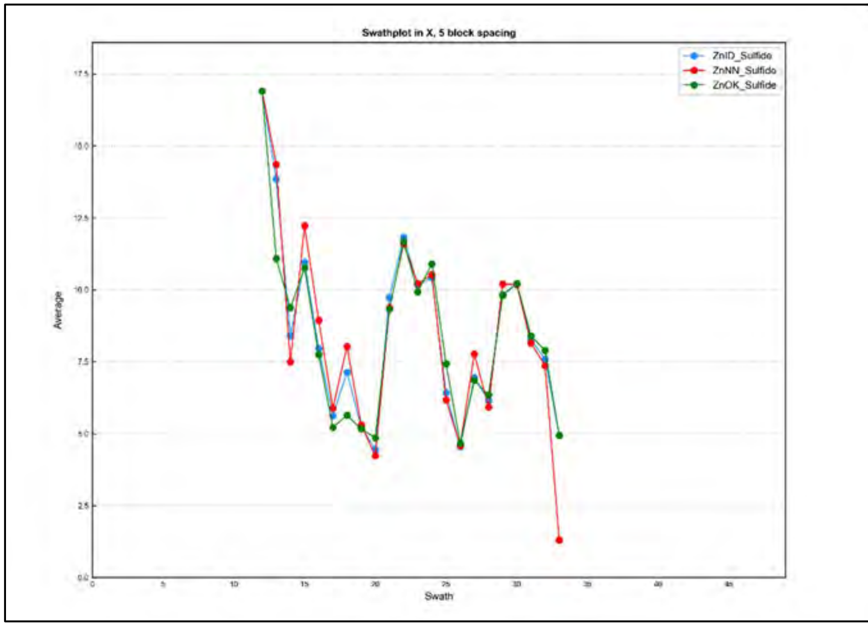

Swathplot in Z, 5 block spacing
ZnID_Marble
ZnNN_Marble
ZnOK_Marble
Average
Swath

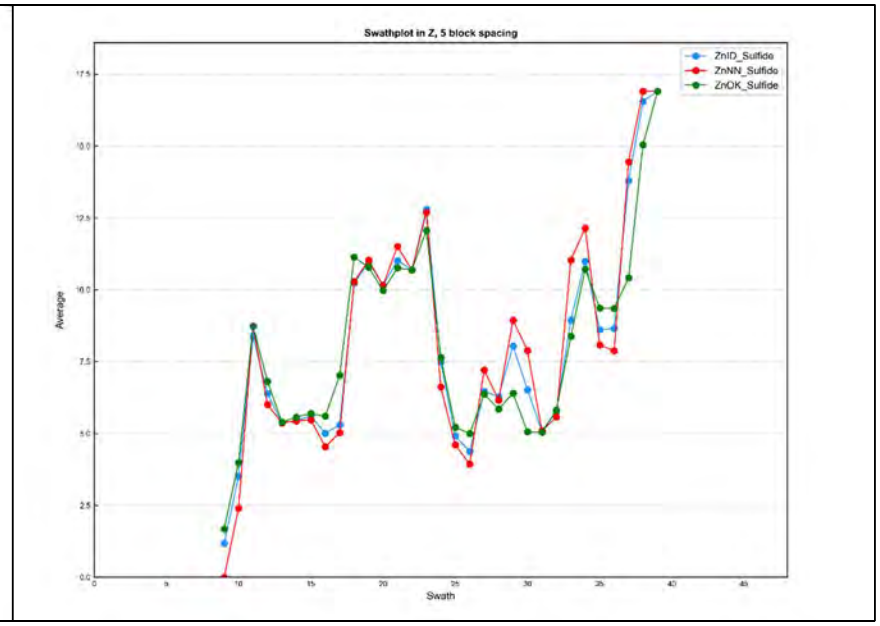

Swathplot in X, 5 block spacing
ZnID_Skarn
ZnNN_Skarn
ZnOK_Skarn
Average
Swath


Swathplot in Y, 5 block spacing
ZnID_Skarn
ZnNN_Skarn
ZnOK_Skarn
Average
Swath

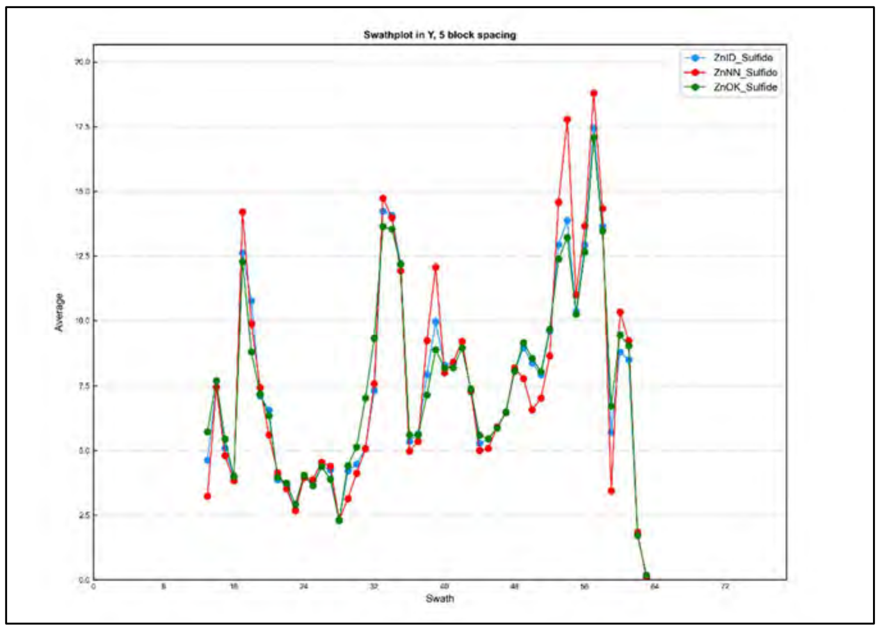
**Zinc: Skarn**


Swathplot in Z, 5 block spacing
ZnID_Skarn
ZnNN_Skarn
ZnOK_Skarn
Average
Swath




**Zinc: Massive Sulfide**



Views along strike of OK grade estimates compared to composite grades.

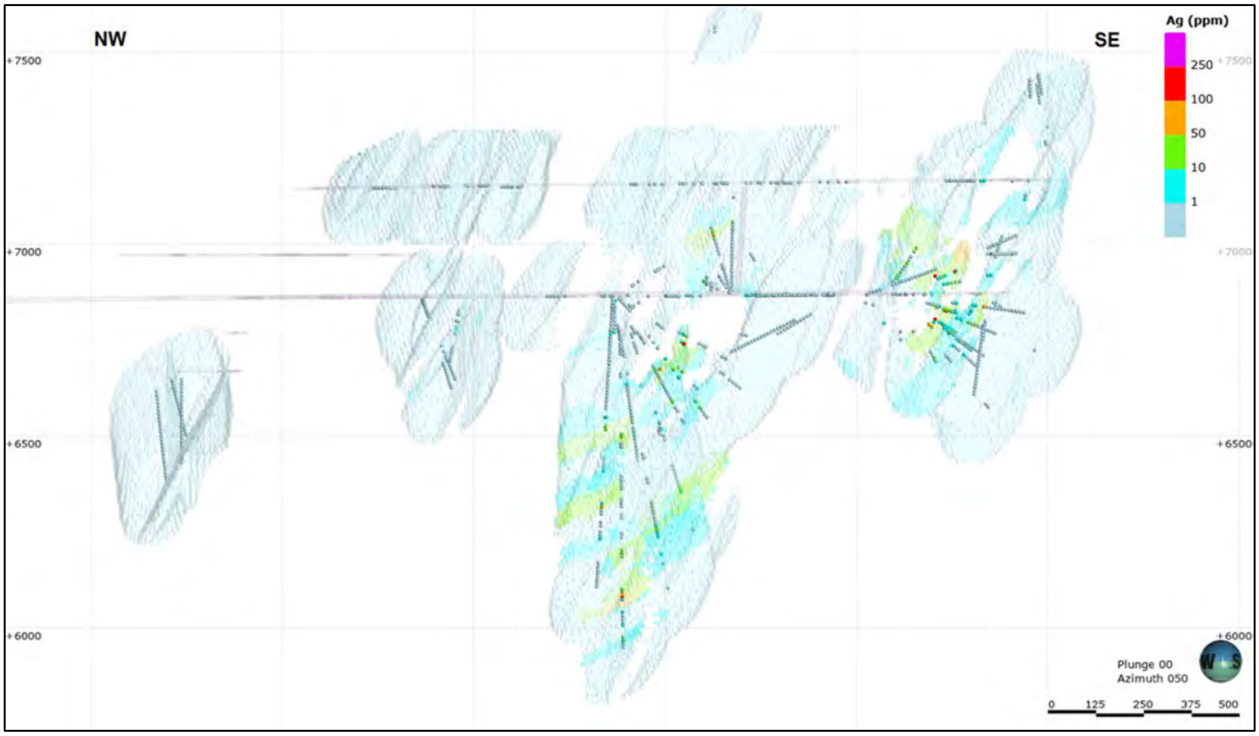



**Figure E - 21 Silver in Marble**

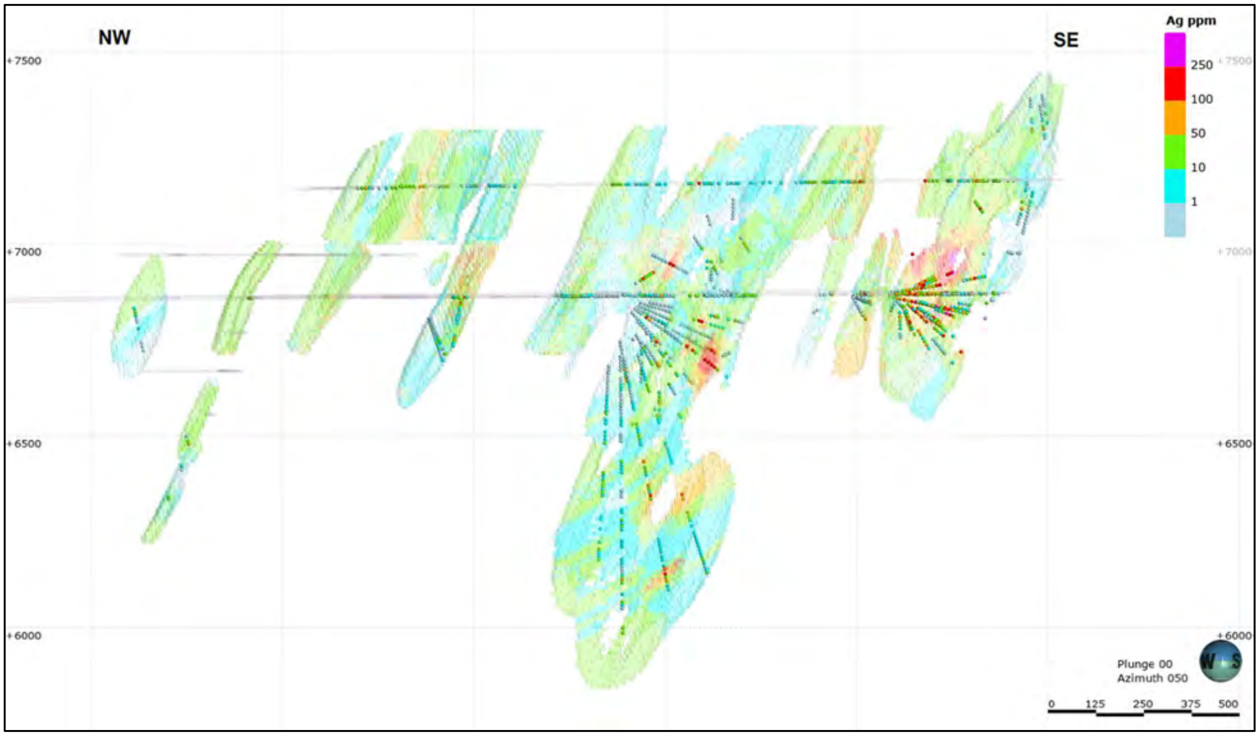



**Figure E - 22 Silver in Skarn**

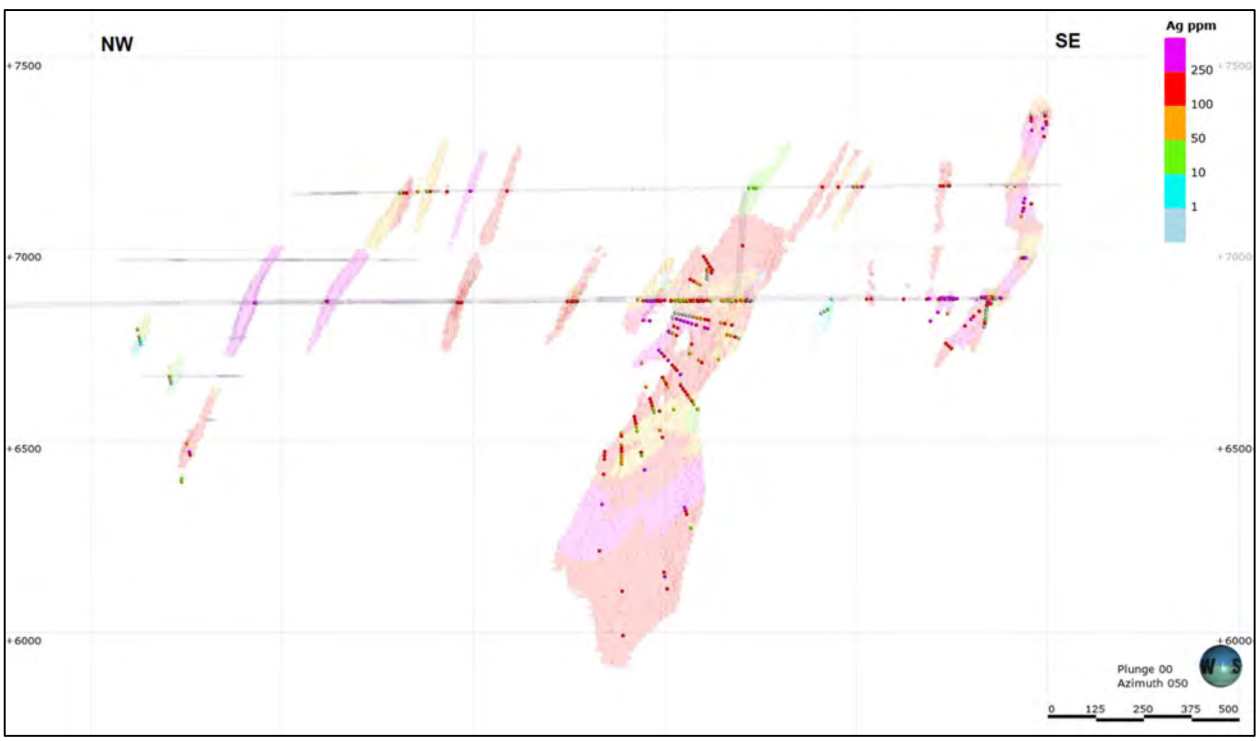



**Figure E - 23 Silver in Massive Sulfide**

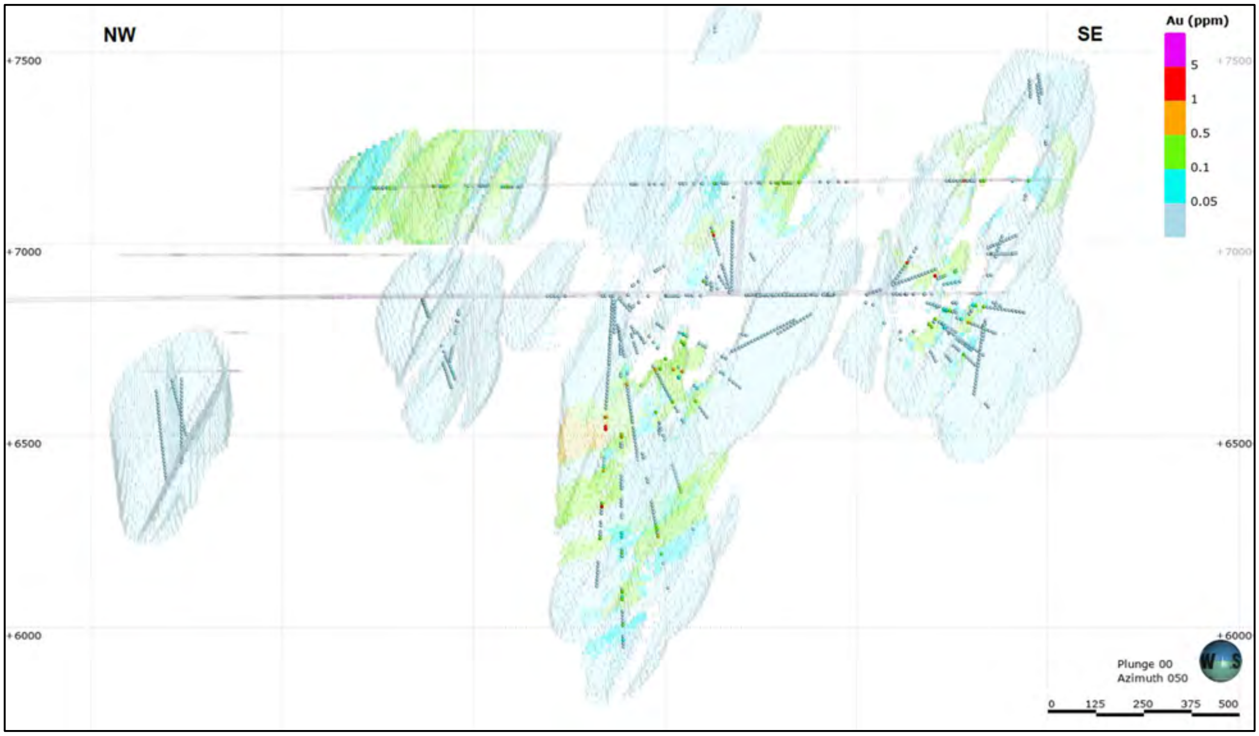



**Figure E - 24 Gold in Marble**

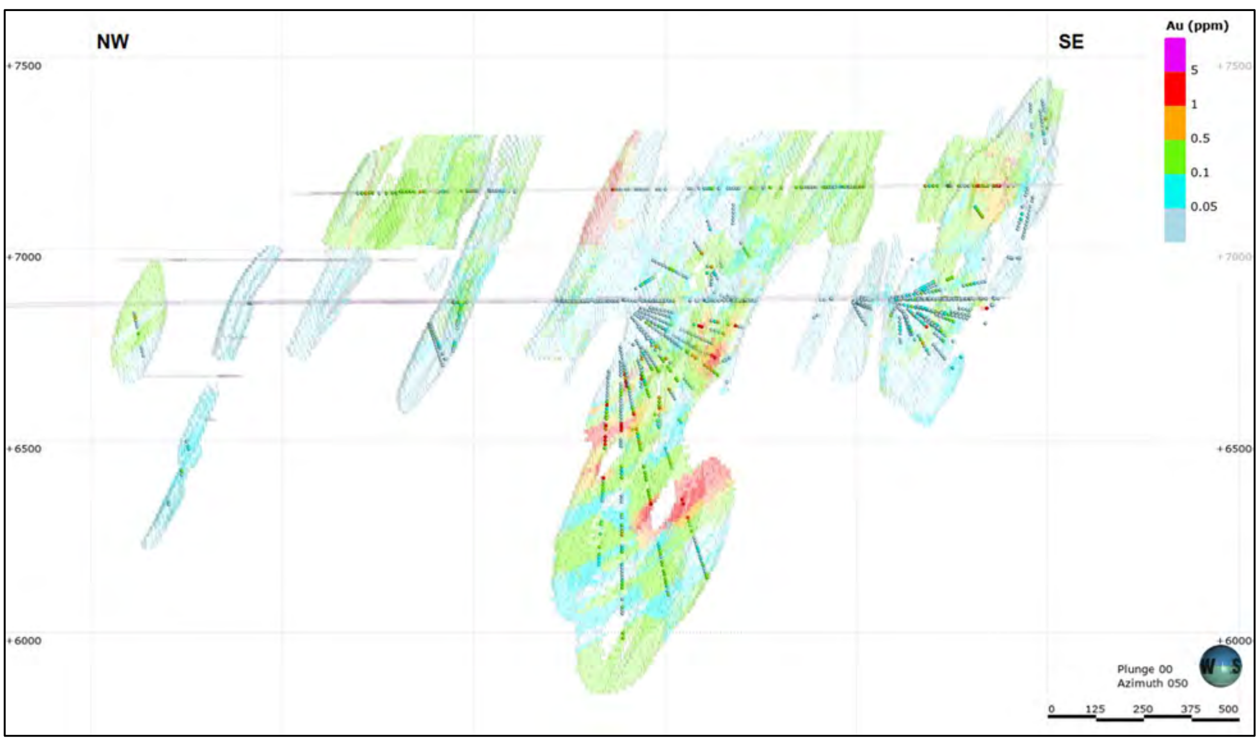



**Figure E - 25 Gold in Skarn**

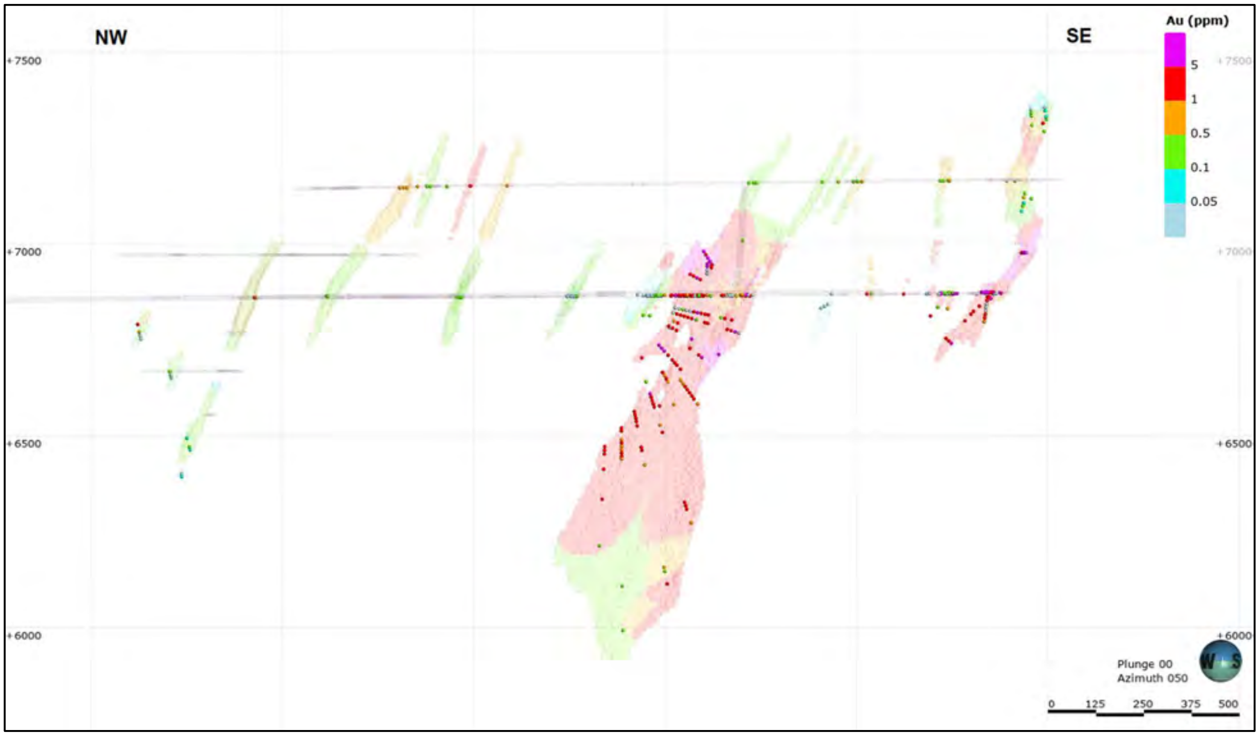



**Figure E - 26 Gold in Massive Sulfide**

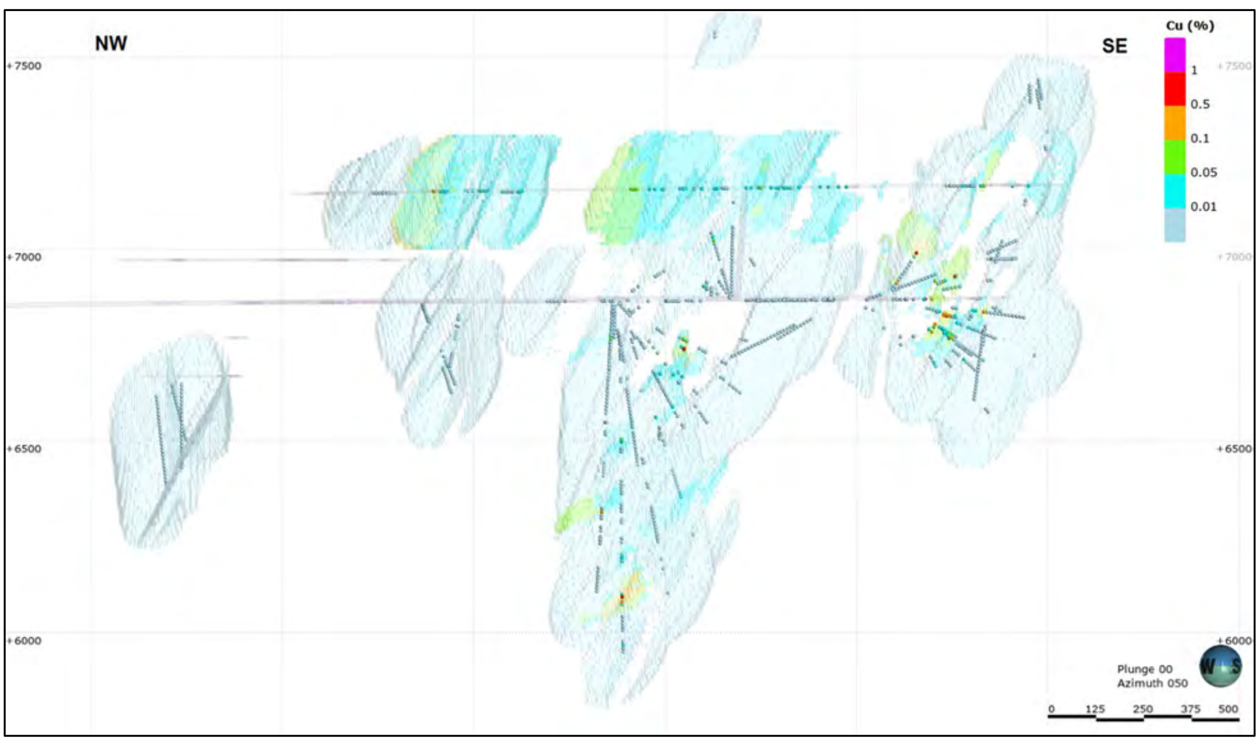



**Figure E - 27 Copper in Marble**

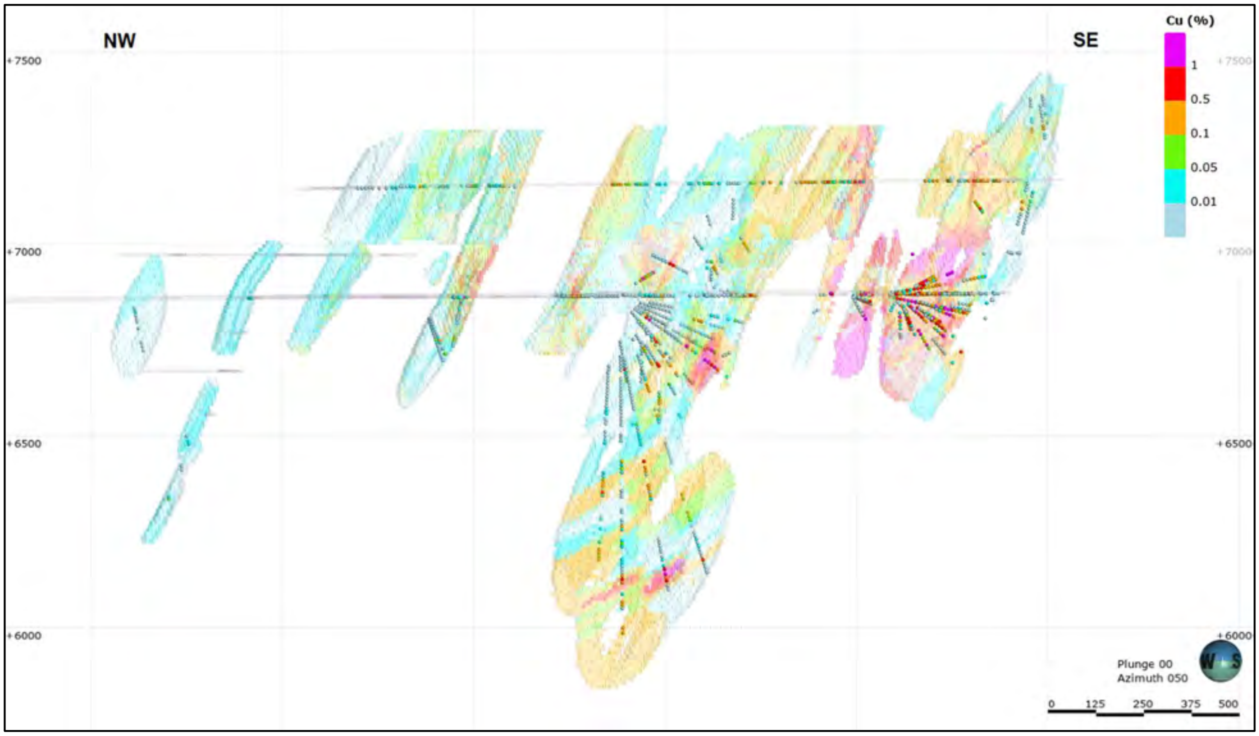



**Figure E - 28 Copper in Skarn**

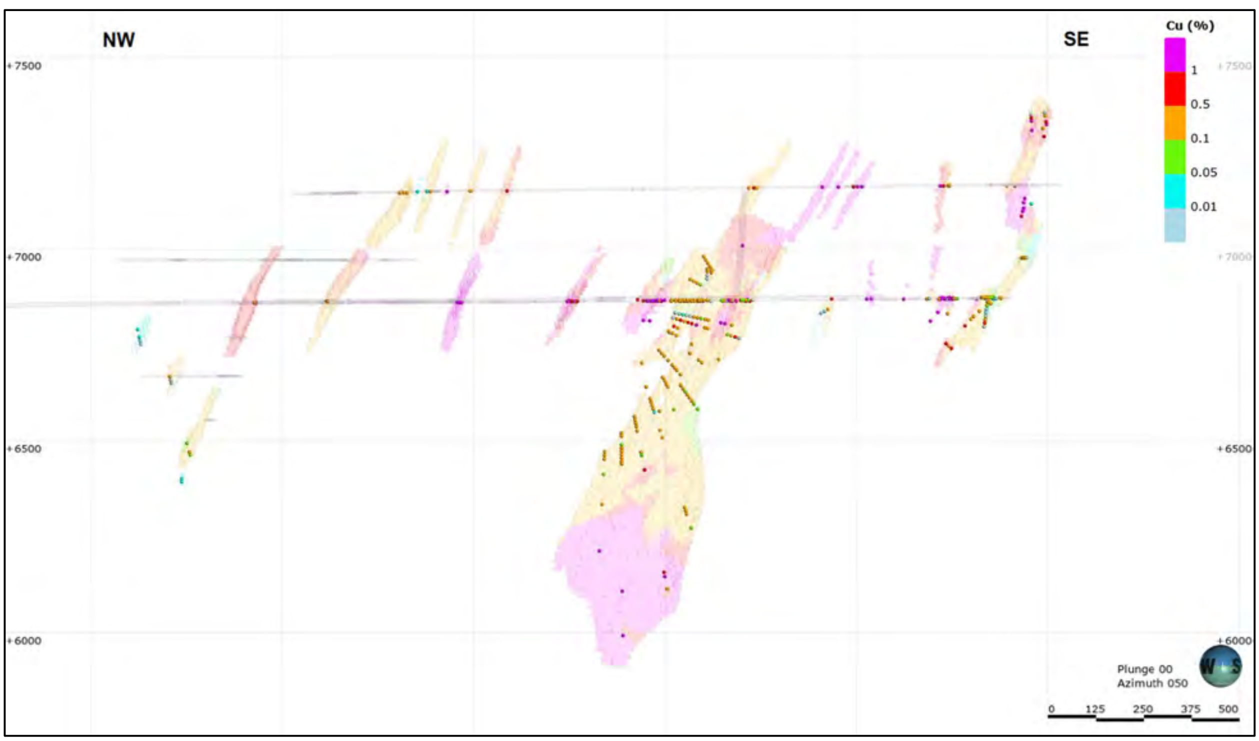



**Figure E - 29 Copper in Massive Sulfide**

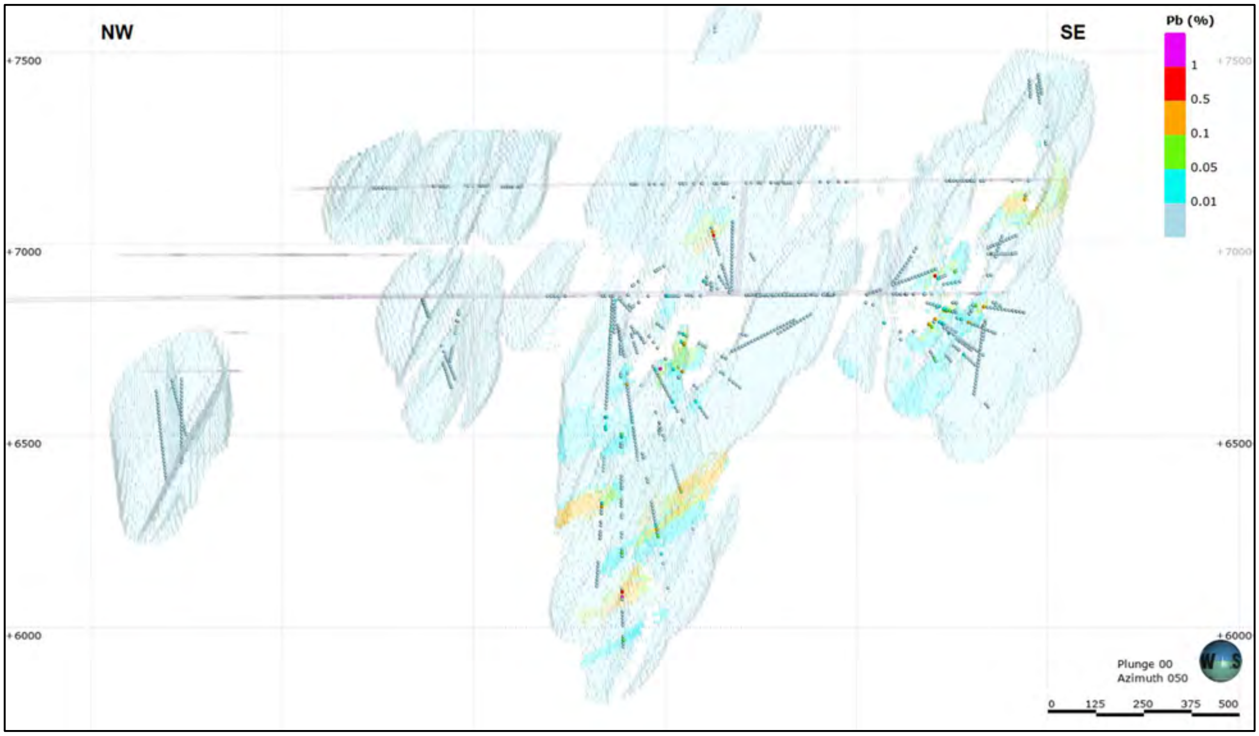



**Figure E - 30 Lead in Marble**

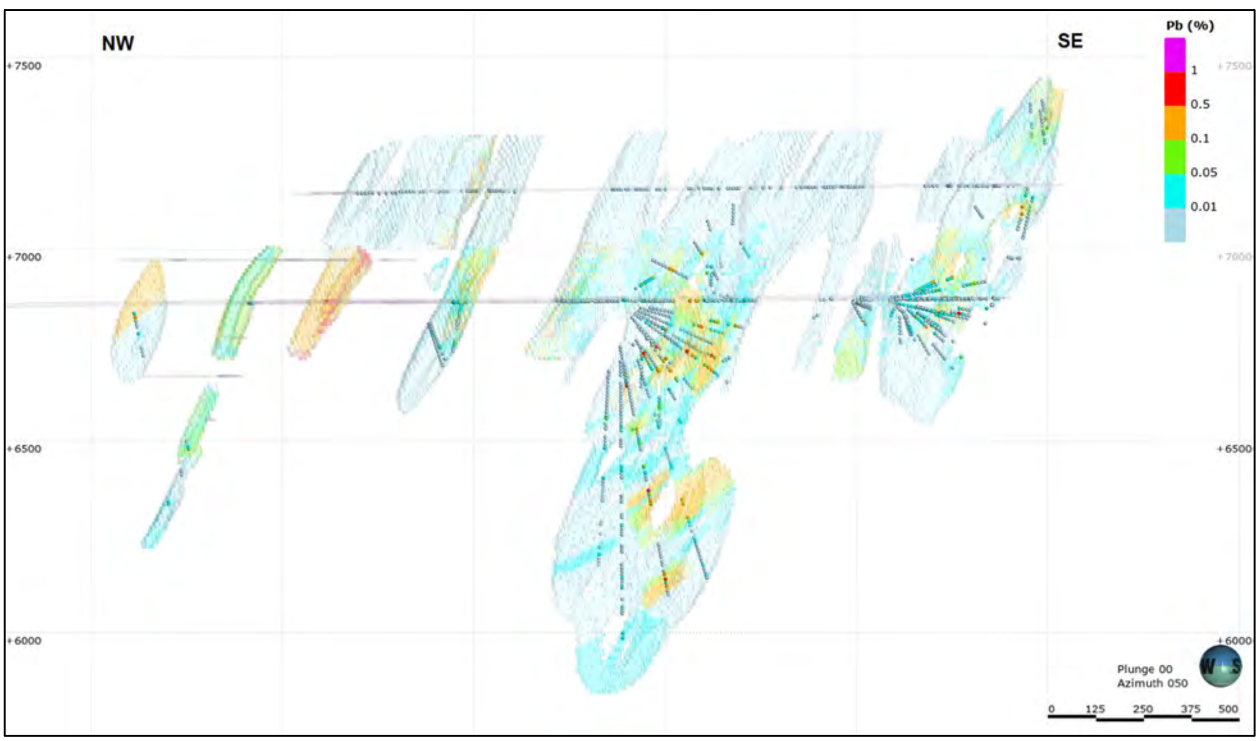



**Figure E - 31 Lead in Skarn**

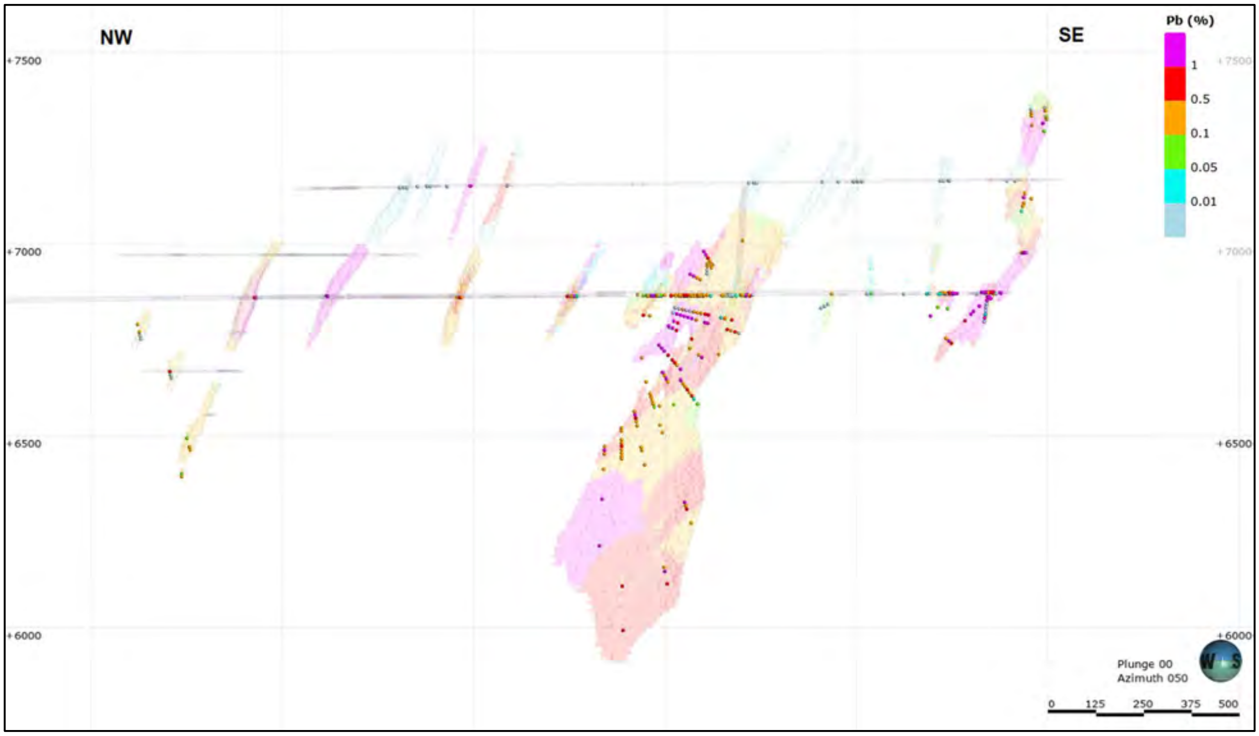



**Figure E - 32 Lead in Massive Sulfide**

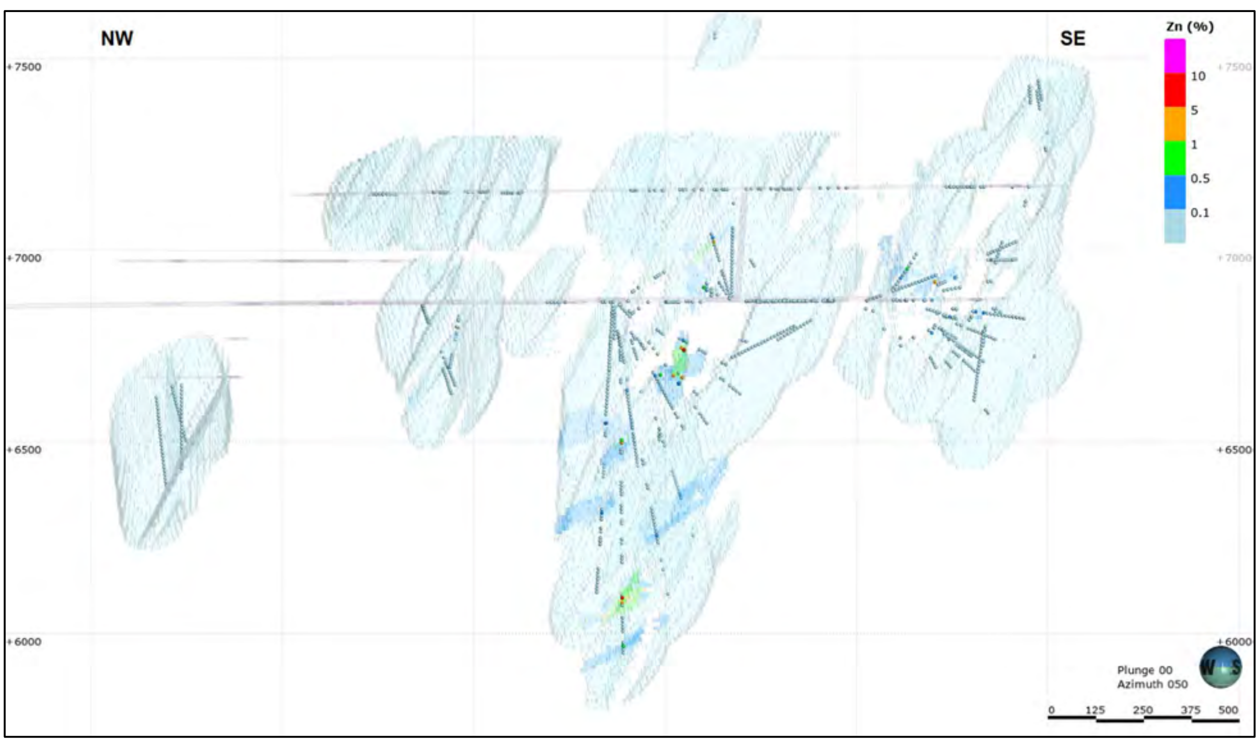



**Figure E - 33 Zinc in Marble**

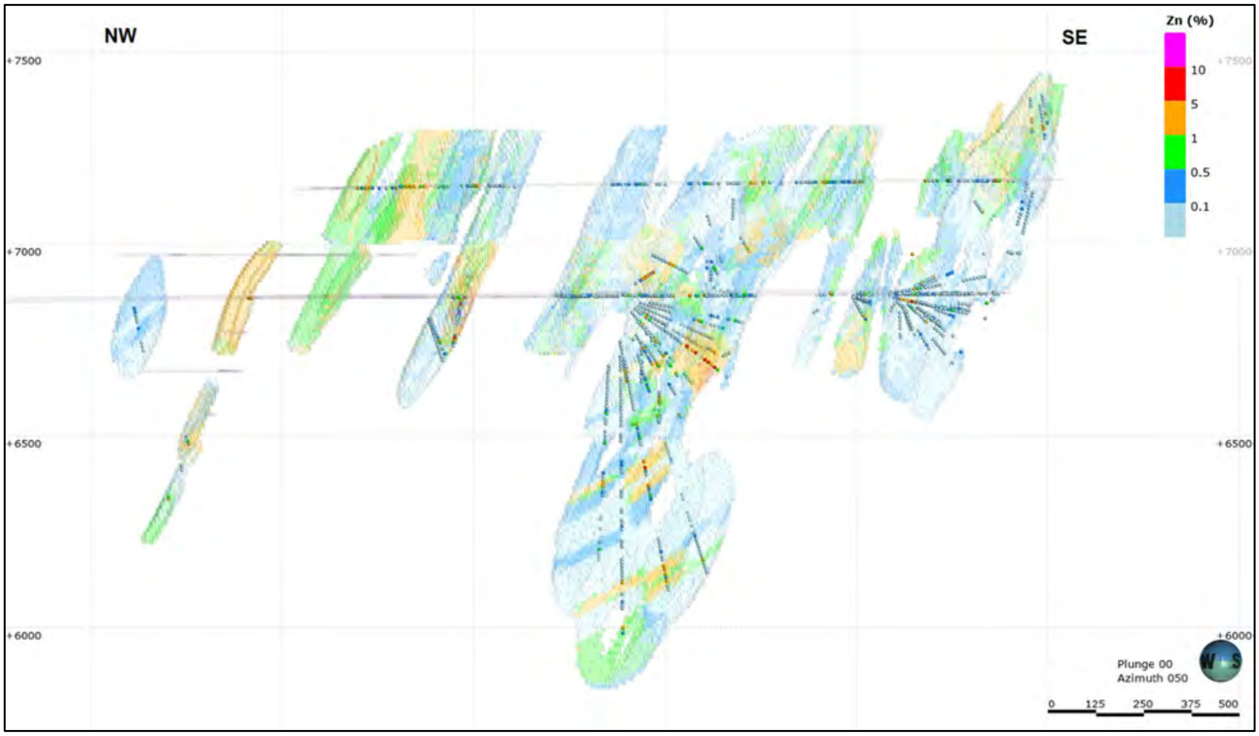



**Figure E - 34 Zinc in Skarn**

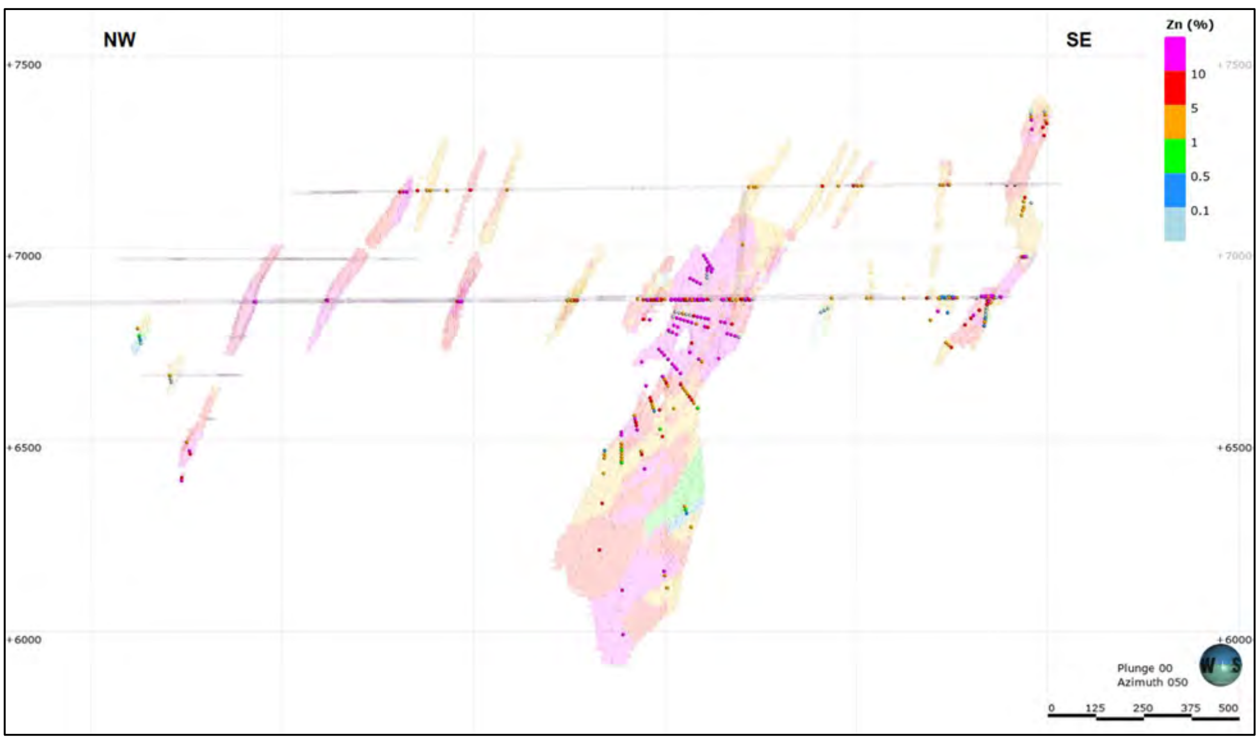



**Figure E - 35 Zinc in Massive Sulfide**