BC Geological Survey
Assessment Report
37574

ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: 2017 Geological and Geochemical Assessment Report on the Galore Creek Property

TOTAL COST:

AUTHOR(S): Courneyea, Jason
SIGNATURE(S):

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):
STATEMENT OF WORK EVENT NUMBER(S)/DATE(S): 5628237

YEAR OF WORK: 2017

PROPERTY NAME: Galore Creek

CLAIM NAME(S) (on which work was done): 516459 & 516165

COMMODITIES SOUGHT: Copper, Gold, Silver

MINERAL INVENTORY MINFILE NUMBER(S),IF KNOWN:

MINING DIVISION: Liard
NTS / BCGS: 104G01, 104G02, 104B16
LATITUDE: _____57_____° ___07_______' ____08______"
LONGITUDE: _____131_____° _____27_____' ____58______" (at centre of work)
UTM Zone: 9 EASTING: 351005 NORTHING: 6334025

OWNER(S): Galore Creek Mining Corporation

MAILING ADDRESS:
Suite 3300, 550 Burrard Street
Vancouver, BC
V6B 0B3

OPERATOR(S) [who paid for the work]: Galore Creek Mining Corporation

MAILING ADDRESS: Suite 3300, 550 Burrard Street, Vancouver, BC, V6B 0B3

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. (**Do not use abbreviations or codes**)

Porphyry, alkalic, alkali syenites, Late Triassic, Stuhini Group, Stikine Terrane, Galore Creek Property, Saddle zone, copper, gold, silver, volcanics, syenite, breccia, magnetite, K-feldspar, sericite, pyrite, malachite, chalcopyrite, quartz-carbonate, FeOx, epiclastic sediments

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:
2010 Diamond Drilling Assessment Report on the Galore Creek Property (AR 32119)
1990 Report on Soil, Rock Geochemical Sampling, VLF-EM, Magnetometer and Diamond Drill Surveys on (AR 20558A)
2014 Geochemical Assessment Report on the Galore Creek Property (AR 34980)
2015 Geochemical Assessment Report on the Galore Creek Property (AR 35835)
2016 Geochemical Assessment Report on the Galore Creek Property (AR 36427)

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (in metric units)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping	Geological characterization	516459 516165	27,590.01
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for …)			
Soil			
Silt			
Rock	76 four-acid ICP	516459 516165	5,550.53
Other			
DRILLING (total metres, number of holes, size, storage location)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling / Assaying			
Petrographic	10 thin sections	516459 516165	1,890.00
Mineralographic			
Metallurgic			
PROSPECTING (scale/area)			
PREPATORY / PHYSICAL			
Line/grid (km)			
Topo/Photogrammetric (scale, area)			
Legal Surveys (scale, area)			
Road, local access (km)/trail			
Trench (number/metres)			
Underground development (metres)			
Other	Report Prep 5% Project Management fee	516459 516165 516459 516165	4,500.00 1,976.52
		TOTAL COST	41,507.02

Print and Close Cancel

Mineral Titles Online

Mineral Claim Exploration and Development Work/Expiry Date Change

Confirmation

Recorder: GULAJEC, EUGENE JOHN (110550) **Submitter:** GULAJEC, EUGENE JOHN (110550)
Recorded: 2018/MAY/08 **Effective:** 2018/MAY/08
D/E Date: 2018/MAY/08

Confirmation

If you have not yet submitted your report for this work program, your technical work report is due in 90 days. The Exploration and Development Work/Expiry Date Change event number is required with your report submission. **Please attach a copy of this confirmation page to your report.** Contact Mineral Titles Branch for more information.

Event Number: **5696566**

Work Type: Technical Work
Technical Items: Geochemical, Geological, PAC Withdrawal (up to 30% of technical work required)

Work Start Date: 2017/SEP/07
Work Stop Date: 2017/SEP/22
Total Value of Work: $ 40325.00
Mine Permit No:

Summary of the work value:

Title Number	Claim Name/Property	Issue Date	Good To Date	New Good To Date	# of Days For-ward	Area in Ha	Applied Work Value	Sub-mission Fee
404921	GRACE 4	2003/SEP/07	2024/DEC/01	2024/DEC/01	0	500.00	$ 0.00	$ 0.00
404922	GRACE 5	2003/SEP/07	2024/DEC/01	2024/DEC/01	0	500.00	$ 0.00	$ 0.00
501738	SPC21	2005/JAN/12	2024/DEC/01	2024/DEC/01	0	420.22	$ 0.00	$ 0.00
501755	SPC22	2005/JAN/12	2024/JAN/12	2024/JAN/12	0	385.56	$ 0.00	$ 0.00
501775	SPC23	2005/JAN/12	2024/JAN/12	2024/JAN/12	0	437.90	$ 0.00	$ 0.00
501787	SPC24	2005/JAN/12	2024/JAN/12	2024/JAN/12	0	437.66	$ 0.00	$ 0.00
501829	SPC27	2005/JAN/12	2024/JAN/12	2024/JAN/12	0	210.07	$ 0.00	$ 0.00
501891	SPC32	2005/JAN/12	2024/JAN/12	2024/JAN/12	0	420.14	$ 0.00	$ 0.00
509261	ng 01	2005/MAR/18	2024/MAR/18	2024/MAR/18	0	420.83	$ 0.00	$ 0.00
509262	ng 02	2005/MAR/18	2024/MAR/18	2024/MAR/18	0	105.21	$ 0.00	$ 0.00
516459	GALORE 1 CELL CLAIM	2005/JUL/08	2024/DEC/01	2024/DEC/01	0	1721.25	$ 0.00	$ 0.00
516165		2005/JUL/06	2024/DEC/01	2024/DEC/01	0	667.54	$ 0.00	$ 0.00
516158		2005/JUL/06	2024/DEC/01	2024/DEC/01	0	772.24	$ 0.00	$ 0.00
516161		2005/JUL/06	2024/DEC/01	2024/DEC/01	0	543.84	$ 0.00	$ 0.00
516163		2005/JUL/06	2024/DEC/01	2024/DEC/01	0	1244.97	$ 0.00	$ 0.00
516284		2005/JUL/07	2024/DEC/01	2024/DEC/01	0	947.19	$ 0.00	$ 0.00
516286		2005/JUL/07	2024/DEC/01	2024/DEC/01	0	912.09	$ 0.00	$ 0.00
517480	GRACE G	2005/JUL/12	2024/JUL/12	2024/JUL/12	0	52.64	$ 0.00	$ 0.00
579479	LIN 10	2008/MAR/28	2024/DEC/01	2024/DEC/01	0	421.02	$ 0.00	$ 0.00
975953	HURON 004	2012/APR/02	2024/APR/02	2024/APR/02	0	385.58	$ 0.00	$ 0.00
1016352	MAC	2013/JAN/27	2024/JAN/27	2024/JAN/27	0	771.44	$ 0.00	$ 0.00
1017784	HURON201303	2013/MAR/14	2024/MAR/14	2024/MAR/14	0	157.86	$ 0.00	$ 0.00
1025944	HUR 1	2014/FEB/14	2019/APR/08	2020/APR/08	366	157.80	$ 2372.56	$ 0.00
1021815	SPC 37	2013/AUG/22	2019/DEC/01	2020/DEC/01	366	1154.52	$ 18928.26	$ 0.00
1021830	SPC 38	2013/AUG/23	2019/DEC/01	2020/DEC/01	366	419.91	$ 6878.55	$ 0.00
1032810	SPC 39	2014/DEC/18	2018/DEC/30	2020/DEC/30	731	701.19	$ 17645.04	$ 0.00
1034110	SPC 40	2015/FEB/15	2018/DEC/30	2020/DEC/30	731	52.61	$ 1281.70	$ 0.00
1040495	SPC 41	2015/DEC/12	2018/DEC/30	2020/NOV/30	701	315.60	$ 6052.93	$ 0.00
1040566	SPC 42	2015/DEC/16	2018/DEC/30	2020/AUG/30	609	263.00	$ 4383.09	$ 0.00

Financial Summary:

Total applied work value:$ 57542.13

PAC name: 211373
Debited PAC amount: $ 17217.13
Credited PAC amount: $ 0

Total Submission Fees: $ 0.0
Total Paid: **$ 0.0**

Galore Creek Mining Corporation
Suite 3300, 550 Burrard Street
Vancouver, BC V6C 0B3
Tel +1 (604) 699-4572
Toll-free 1-877-717-GCMC (4262)

2017 GEOLOGICAL AND GEOCHEMICAL ASSESSMENT REPORT ON THE GALORE CREEK PROPERTY

Event Number: 5696566
Claims Worked On: 516165 and 516459

Located in the Galore Creek Area
Liard Mining Division
British Columbia, Canada

NTS Map Sheet 104G/3 and 104G/4
BCGS Map Sheet 104G.013
57º 07’ 08” North Latitude
131º 27’ 58” West Longitude

Owned & Operated by
Galore Creek Mining Corporation
Suite 3300, 550 Burrard Street
Vancouver, B.C. V6C 0B3

Prepared by

Jason Courneyea, B.Sc.

Galore Creek Mining Corporation
Suite 3300, 550 Burrard Street
Vancouver, B.C. V6C 0B3

July, 2018

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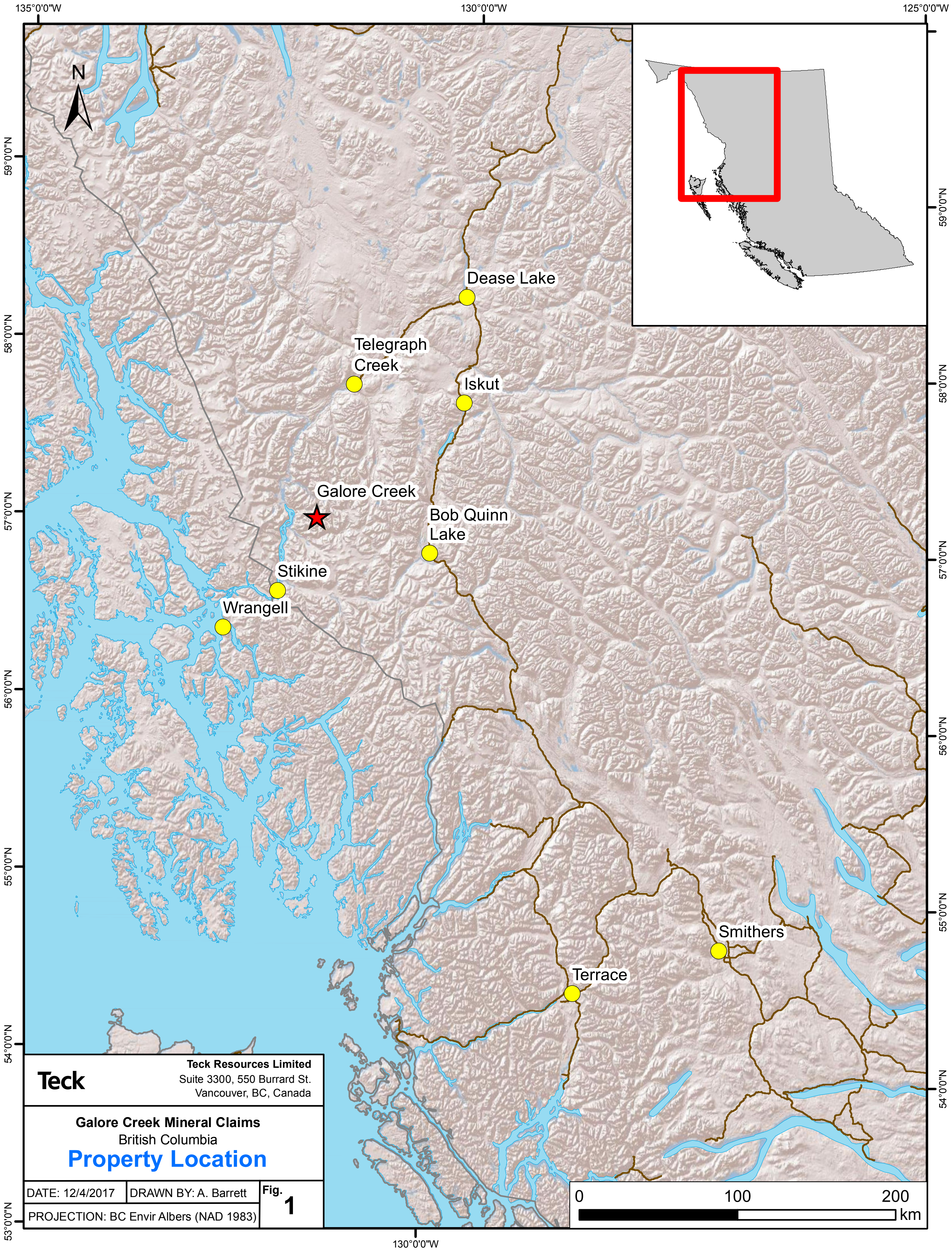
1.0 INTRODUCTION

The Galore Creek Property (Figure 1) is located within the historic Stikine Gold Belt of north-western British Columbia, approximately 157 kilometres southwest of Dease Lake. The property consists of 295 contiguous mineral claims, totaling 137,776.94 hectares registered in the name of Galore Creek Mining Corporation.

Galore Creek is characterized as an alkaline porphyry-style copper-gold-silver deposit. It consists of a number of mineralized zones including the Central Zone, comprised of Central–North (includes the Legacy Zone), Central-South and Bountiful, the Southwest Zone, the Junction and North Junction Zones, the Middle Creek Zone, and the West Fork Zone. The Galore Creek property is host to 6.8B pounds of Proven and Probable reserves grading 0.6% copper, 5.45 Moz. at 0.32 g/t gold and 102.0 Moz. at 6.0 g/t silver. Inclusive of Proven and Probable reserves Galore Creek is host to 8.9B pounds of Measured and Indicated resources grading 0.50% copper, 8.0 Moz. at 0.3 g/t gold and 136.0 Moz. at 5.2 g/t silver, as well as 346.6M tonnes of Inferred resources grading 0.42% copper, 0.24 g/t gold and 4.28 g/t silver. Mineral reserves and resources were estimated using an NSR cut-off grade of $10.08/t milled, and Mineral Reserves are reported using commodity prices of US$4.44/lb copper, US$1,613/oz gold, and US$40.34/oz silver (effective July 27, 2011) (AMEC, 2011).

In July 2003, SpectrumGold Inc. (now NovaGold Canada Inc.) entered into an option agreement to acquire a 100% interest in the Galore Creek property from Stikine Copper Limited. NovaGold carried out exploration programs on the property in years 2003 through 2007, and additional claims have been staked for the project. NovaGold Canada Inc. is a subsidiary wholly owned by NovaGold Resources Inc. On May 1, 2007, NovaGold and Teck Cominco Limited (Teck Cominco) announced the formation of a 50-50 partnership to develop the Galore Creek Mine. The Galore Creek Partnership was finalized on August 1, 2007 and the jointly controlled operating company, Galore Creek Mining Corporation (GCMC) was created to direct all aspects of project construction and operation. Galore Creek claims were subsequently transferred to GCMC in October 2007. In November 2007, NovaGold and Barrick Gold Corporation (Barrick) reached an agreement and announced that the Grace Property claims would be sold 100% to the Galore Creek Partnership. On December 3, 2007, all the Grace claims were transferred to GCMC. During March 2008, Galore Creek Mining Corporation acquired additional mineral claims in the Scud River area, Stikine River area and north of West More Creek. These claims are contiguous with the Galore Creek Property.

This report covers work completed on portions of the Galore Creek Property between September 7, 2017 and September 22, 2017. The work at Galore Creek was conducted entirely within the boundaries of mineral claims 516459, and 516165.



Teck

Teck Resources Limited
Suite 3300, 550 Burrard St.
Vancouver, BC, Canada

Galore Creek Mineral Claims
British Columbia
Property Location

DATE: 12/4/2017
DRAWN BY: A. Barrett
Fig. **1**
PROJECTION: BC Envir Albers (NAD 1983)

2.0 LOCATION, ACCESS & PHYSIOGRAPHY

The Galore Creek property (Figure 1) is located within the Liard Mining Division of northwestern British Columbia, approximately 70 kilometres west of the Bob Quinn airstrip and 90 kilometres northeast of Wrangell, Alaska. The property is situated at the headwaters of Galore Creek, a tributary of the Scud River, which in turn flows into the Stikine River. The property lies at latitude 57ºO7’08’’N and longitude 131º27’58”W, on NTS map sheets 104G/03 and 104G/04.

The town of Smithers, located 370 kilometres to the southeast, is the nearest major supply centre. An existing forest service road, and an access road built by GCMC provides access to the Chi’yone camp (km 36). During the 2017 program personnel, supplies, and equipment were staged from Uhtlān camp 50km to the west-northwest of Ch’iyōne camp with access by helicopter. The Saddle Zone is located on a ridge overlooking the west fork of the Galore Creek valley, approximately 2.5km to the southeast of Galore Creek’s main Central Zone deposit, and on the ridge east of the Bountiful deposit. The southern extent of the Saddle zone is marked by glacial ice.

Galore Creek is located in the humid continental climate zone of coastal BC. Summers are generally cool, and winters cold, with substantial snowfall. Property temperatures range from 20ºC in the summer to well below -20ºC in the winter. Annual precipitation is 76 centimetres with the majority (70%) falling as snow between September and February.

Physiographically, the Stikine-Iskut area is characterized by rugged mountains with elevations ranging between 500 to 2080 metres above sea level, active alpine glaciation and deep U-shaped valleys. Relief on the property varies from moderate to extreme. The tree line, located at an elevation of 1100 metres, divides forests of Balsam Fir, Sitka Spruce, Alder, Willow, Devils Club and Cedar from sparse grasses and brush above.

3.0 EXPLORATION HISTORY

Mineralization was first discovered in the upper Galore Creek valley in 1955 by M. Monson and W. Buchholz while prospecting for a subsidiary of Hudson Bay. Staking and sampling were completed in the area in 1955. Work in 1956 included mapping, trenching and diamond drilling. No further work was undertaken and most of the claims were allowed to expire.

In 1959, reconnaissance stream sediment surveys were carried out by Kennco Explorations (Western) Limited (the Canadian subsidiary of Kennecott Copper, now Rio Tinto Ltd.) in the Stikine River area. Results prompted Kennco to stake mineral claims around the remaining 16 Hudson Bay claims the following year. Four of the original claims were subsequently optioned by Consolidated Mining and Smelting Company of Canada Limited (Cominco) from W. Buchholz. Late in 1962, the three companies agreed to participate jointly in future exploration work. As a result, Stikine Copper Limited was incorporated in 1963, on the basis of the following interests: Kennco Explorations (Western) Limited (59%), Hudson Bay Mining and Smelting Company Limited (34%), and Consolidated Mining and Smelting Company of Canada Limited (5%).

Work conducted since discovery in 1955 outlined a significant copper-gold-silver mineralized zone in the Central Zone and identified several satellite mineralized zones, most importantly the Southwest, North Junction and Junction Zones. This work has included soil sampling, pole-dipole resistivity/induced polarization (IP), magnetics, electromagnetics (EM), radiometrics, very low frequency (VLF) and audio frequency magnetics (AFMAG) airborne geophysical surveys.

From 1960 to 1968, the property was operated by Kennco Exploration. Exploration work during this period included 53,164 metres of diamond drilling in 235 holes and 807 metres of underground development work in two adits. The Central Zone was the focus of most of this work. During the same period, a road was constructed from an airstrip at the confluence of the Stikine and Scud rivers along the Scud River and up Galore Creek to what was then an exploration camp.

No work was done between 1968 and 1972. In 1972, Hudson Bay became operator and in 1972 and 1973 an additional 25,352 metres of diamond drilling was completed in 111 holes. This work concentrated on the mineralization in the Central and North Junction Zones. A further 5,310 metres of diamond drilling was completed in 24 holes in 1976.

In 1989, Mingold Resources Inc. (an affiliated company of Hudson Bay) operated the property in order to investigate its gold potential. In 1990, Mingold completed 1,225 metres of diamond drilling in 18 holes.

Kennecott resumed as operator of the project in 1991 and completed 13,830 metres of diamond drilling in 49 holes. An airborne geophysics survey and over 90 line kilometres of IP survey were also completed. At the end of this initial exploration phase, a total of twelve prospects and deposits had been identified: Central, Junction, North Junction, West Rim, Butte, Southwest, Saddle, West Fork, South Butte, South 110, Middle Creek and North Rim.

3.1 SpectrumGold/NovaGold Exploration

In August 2003, SpectrumGold Inc. (now NovaGold Canada Inc.) entered into an option agreement to acquire a 100% interest in the Galore Creek property from Stikine Copper Limited, a company owned by QIT-FER et Titane Inc. (a wholly-owned subsidiary of Rio Tinto Ltd.) and Hudson Bay. In 2003, SpectrumGold carried out a 10 hole, 2,950 metre diamond drill program on the property. The work program was directed toward confirming grades of copper and gold mineralization defined by previous drilling in the Central and Southwest Zones.

In 2004, NovaGold Canada Inc. (NovaGold) carried out a 79 hole, 25,976 metre diamond drill program to upgrade and expand the existing resource, and to test several peripheral mineral occurrences and nearby properties. Extensive geophysical surveys were conducted to assist the exploratory drilling. The results of the 2004 drilling program provided the basis for geological modeling, resource estimation, preliminary mine planning and economic evaluation at Preliminary Assessment (PA) level.

In 2005, NovaGold completed a 260 hole, 63,190 metre diamond drill program on the Galore Creek property. The aim of the 2005 exploration program was to test for extensions of known mineralization and to explore for new targets within the Galore Creek valley. Additional drilling was utilized for engineering and environmental testing. Mapping focused on defining drill targets, major structures, and alteration assemblages. The geophysical program included a wide-spaced Vector IP reconnaissance program and IP surveys, conducted both south of the Central Zone and along the East Fork of Galore Creek.

In 2006, NovaGold completed 33,575 metres of diamond drilling in 57 holes. The 2006 drilling tested new exploration targets based on geophysical anomalies and new geological interpretations. The goal of the program was to upgrade the resource estimation categories.

In 2007, NovaGold completed 17 holes, totalling 4,547 metres on the Galore Creek property for the Galore Creek Mining Corporation (GCMC). Drilling focussed on the Southwest Zone, Central Replacement Zone, Butte Zone and reconnaissance targets.

3.2 Galore Creek Mining Corporation Exploration

In 2008, Galore Creek Mining Corporation (GCMC) completed nine diamond drill holes totalling 2,049.58 metres. The main objectives of the drill program were to obtain ABA (Acid Base Accounting) data in the Central, Southwest, North Junction and Junction pits, to confirm legacy grades in the Junction pit, and to collect metallurgical data in the Central pit.

In 2010, GCMC conducted a site investigation program of nine exploration diamond drill holes totalling 2,803.33 metres and four geotechnical boreholes totalling 240.70 metres. The main objectives of the exploration drilling were to obtain metallurgical and resource in-fill data in the Central deposit. A geotechnical borehole was drilled in an area under consideration for construction of a water-retaining dam. Three geotechnical boreholes were drilled in the Galore Valley to install standpipes to monitor drawdown associated with pump testing of nearby, previously installed, pump wells.

In 2011, GCMC's site investigation included a drilling program consisting of eighteen (18) exploration drill holes totalling 9,953.22 metres, and sixteen (16) geotechnical boreholes totalling 5,887.30 metres. The main objectives of the exploration drill program were to upgrade and possibly extend mineralization within the Central South and Bountiful zones. The SRK geotechnical site investigation program was undertaken to enable Feasibility-level design of the proposed open pits at Galore Creek.

In 2012, the GCMC site investigation included a diamond drilling program consisting of forty-seven (47) exploration drill holes totalling 23,369.2 metres, nine (9) geotechnical boreholes totalling 3,296.1 metres, six (6) hydrogeological holes totalling 835.0 metres, and sixteen (16) overburden-geotechnical holes totalling 589.5 metres. The main objective of the exploration drill program was to upgrade Inferred resources to Measured and Indicated classification. Exploration drilling successfully encountered copper mineralization.

In 2013, GCMC's site investigation included a diamond drilling program consisting of twenty-two (22) exploration drill holes totalling 11,649 metres. The main objective of the drill program was to upgrade the Legacy Zone to an inferred classification, and explore the continuity and extents of this mineralized zone.

In 2014, GCMC's site investigation included a geochemical sampling program consisting of fourteen (14) rock samples taken from outcrop for lithogeochemical sampling. The main objective of the geochemical sampling program was to characterize the intrusive, volcanic, and sedimentary rock types to the northeast of the Galore Creek valley.

In 2015, GCMC's exploration program was focused on the Saddle Zone, located to the southeast of the Bountiful deposit. Nine (9) ICP samples and one lithogeochem sample were collected. This sampling program highlighted an area of anomalous copper, silver and gold values at the southern end of the Saddle zone, with significant gold grades in an area newly exposed by retreating glacial ice.

In 2016, GCMC's exploration program was focused on the Saddle Zone, located to the southeast of the Bountiful deposit. Nine rock samples were collected for the purpose of following up on anomalous base and precious metal values discovered during the 2015 field season. The nine rock samples were collected for geochemical and petrographic analysis. Three of these samples returned anomalous gold values ranging from 1.055 to 5.52 g/t. A single high grade Cu sample was collected, containing 0.8% Cu. The petrographic analysis suggests the presence of a possible long lived, multi stage hydrothermal system with good exploration potential.

4.0 LAND TENURE AND CLAIM STATUS

In July 2003, SpectrumGold Inc. (now NovaGold Canada Inc.) entered into an option agreement to acquire a 100% interest in the Galore Creek property from Stikine Copper Limited, a company owned by QIT-FER et Titane Inc. and Hudson Bay Mining and Smelting Co. Limited.

The original Galore Creek property consisted of 292 two-post claims, of which 39 were fractions, all held in the name of Stikine Copper Limited. In July 2005, NovaGold converted the 292 claims into six cell claims to hold an area of 5,111 hectares and the claims are listed below in Table 1.

On March 28, 2007, NovaGold exercised the Stikine Copper Limited option and acquired 100% in the property as of June 1, 2007.

Table 1 - Galore Creek Property Claims

Tenure No.	Name	Owner	Area (ha.)
516158	Cell Claim	Galore Creek Mining Corporation (Client No. 211373)	772.237
516165	Cell Claim	Galore Creek Mining Corporation (Client No. 211373)	667.543
516177	Cell Claim	Galore Creek Mining Corporation (Client No. 211373)	175.777
516178	Cell Claim	Galore Creek Mining Corporation (Client No. 211373)	457.053
516179	Cell Claim	Galore Creek Mining Corporation (Client No. 211373).	1,317.270
516459	GALORE 1 CELL CLAIM	Galore Creek Mining Corporation (Client No. 211373)	1,721.252
Totals:	**6 claims**		**5,111.132**

Since the initial option agreement on the Galore Creek claims in 2003, NovaGold has acquired significant ground in the area through staking as well as purchase of mineral claims from other parties. All the claims are listed in Table 3.

On August 1, 2007, the Galore Creek Partnership (Teck Cominco Limited and NovaGold Canada Inc. 50/50) was established to develop the Galore Creek mine; the Partnership created the jointly controlled operating company called the Galore Creek Mining

Corporation (GCMC). In October 2007, all Galore Creek Property claims held by NovaGold Canada Inc. were transferred to the Galore Creek Mining Corporation.

In November 2007, NovaGold and Barrick Gold Corporation (Barrick) reached an agreement and announced the Grace property claims would be sold 100% to the Galore Creek Partnership. On December 3, 2007, all the Grace claims were transferred to Galore Creek Mining Corporation and Table 2 lists the Grace property mineral claims. These claims are now part of the Galore Creek Property and are listed in Table 3.

Table 2 – Grace Property Claims

Tenure No.	**Name**	**Owner**	**Area (ha.)**
404921	Grace 4	Galore Creek Mining Corporation (Client No. 211373)	500
404922	Grace 5	Galore Creek Mining Corporation (Client No. 211373)	500
516161	Cell Claim	Galore Creek Mining Corporation (Client No. 211373)	543.835
516163	Cell Claim	Galore Creek Mining Corporation (Client No. 211373)	1244.967
517480	Cell Claim	Galore Creek Mining Corporation (Client No. 211373)	52.637
Totals:	**5 claims**		**2,841.44**

Between March 2008 and December, 2015, Galore Creek Mining Corporation acquired additional mineral claims in the Scud River area, Stikine River area, and West More area. These claims are contiguous with the Galore Creek Property claims and are listed in Table 3.

Table 3 - Galore Creek Property Mineral Claims, Liard Mining Division, BC

Owner: Galore Creek Mining Corporation - Client No. 211373

Tenure No.	Claim Name	Owner	Tenure Type	Issue Date	Good To Date	Area (ha)
404921	GRACE 4	211373 (100%)	Mineral Claim	2003/sep/07	2024/dec/01	500
404922	GRACE 5	211373 (100%)	Mineral Claim	2003/sep/07	2024/dec/01	500
408613	VIA 32	211373 (100%)	Mineral Claim	2004/feb/29	2024/dec/01	450
410802	J3	211373 (100%)	Mineral Claim	2004/may/26	2024/dec/01	300
410810	CONTACT 5	211373 (100%)	Mineral Claim	2004/may/26	2024/dec/01	200
410812	CONTACT 7	211373 (100%)	Mineral Claim	2004/may/26	2024/dec/01	450
412228	GL 16	211373 (100%)	Mineral Claim	2004/jul/04	2024/dec/01	500
412241	GL 29	211373 (100%)	Mineral Claim	2004/jul/06	2024/dec/01	500
501126	SPC11	211373 (100%)	Mineral Claim	2005/jan/12	2024/dec/01	368.042
501150	SPC01	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	438.094
501166	SPC02	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	438.096
501212	SPC03	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	437.848
501276	SPC04	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	437.851
501341	SPC06	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	315.279
501401	SPC07	211373 (100%)	Mineral Claim	2005/jan/12	2024/dec/01	210.367
501428	SPC05	211373 (100%)	Mineral Claim	2005/jan/12	2024/dec/01	315.486
501454	SPC09	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	438.097
501496	SPC10	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	437.858
501524	SPC12	211373 (100%)	Mineral Claim	2005/jan/12	2024/dec/01	367.917
501560	SPC13	211373 (100%)	Mineral Claim	2005/jan/12	2024/dec/01	367.793
501583	SPC14	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	420.171
501603	SPC15	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	420.137
501634	SPC16	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	280.043
501660	SPC17	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	420.095
501669	SPC18	211373 (100%)	Mineral Claim	2005/jan/12	2024/dec/01	437.659
501685	SPC20	211373 (100%)	Mineral Claim	2005/jan/12	2024/dec/01	419.889
501726	SPC19	211373 (100%)	Mineral Claim	2005/jan/12	2024/dec/01	437.421
501738	SPC21	211373 (100%)	Mineral Claim	2005/jan/12	2024/dec/01	420.221
501755	SPC22	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	385.557
501775	SPC23	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	437.899
501787	SPC24	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	437.661
501798	SPC25	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	420.67
501815	SPC26	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	420.408
501829	SPC27	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	210.068
501839	SPC29	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	438.001
501857	SPC28	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	420.672
501865	SPC30	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	438.002
501882	SPC31	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	420.291
501891	SPC32	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	420.136
501905	SPC08	211373 (100%)	Mineral Claim	2005/jan/12	2024/dec/01	210.366
501931	PORC01	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	405.39
501965	PORC02	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	440.514
501999	PORC03	211373 (100%)	Mineral Claim	2005/jan/12	2024/jan/12	105.708

Table 3 - Galore Creek Property Mineral Claims - Continued

509232	tunnel	211373 (100%)	Mineral Claim	2005/mar/18	2024/dec/01	333.757
509234	porc 04	211373 (100%)	Mineral Claim	2005/mar/18	2024/mar/18	440.357
509235	porc 05	211373 (100%)	Mineral Claim	2005/mar/18	2024/mar/18	405.158
509250	porc 06	211373 (100%)	Mineral Claim	2005/mar/18	2024/mar/18	123.308
509253	sphaler 01	211373 (100%)	Mineral Claim	2005/mar/18	2024/mar/18	422.571
509259	sphaler 02	211373 (100%)	Mineral Claim	2005/mar/18	2024/mar/18	211.356
509261	ng 01	211373 (100%)	Mineral Claim	2005/mar/18	2024/mar/18	420.826
509262	ng 02	211373 (100%)	Mineral Claim	2005/mar/18	2024/mar/18	105.208
509893	NR 3	211373 (100%)	Mineral Claim	2005/mar/30	2024/dec/01	70.379
511868	SPHCR 01	211373 (100%)	Mineral Claim	2005/apr/30	2024/apr/30	405.262
511869	SPHCR02	211373 (100%)	Mineral Claim	2005/apr/30	2024/apr/30	422.876
511870	SPHCR03	211373 (100%)	Mineral Claim	2005/apr/30	2024/apr/30	422.878
512425		211373 (100%)	Mineral Claim	2005/may/11	2024/dec/01	700.818
512426		211373 (100%)	Mineral Claim	2005/may/11	2024/dec/01	473.235
512478	CONT 1	211373 (100%)	Mineral Claim	2005/may/12	2024/may/26	770.372
516158		211373 (100%)	Mineral Claim	2005/jul/06	2024/dec/01	772.237
516161		211373 (100%)	Mineral Claim	2005/jul/06	2024/dec/01	543.835
516163		211373 (100%)	Mineral Claim	2005/jul/06	2024/dec/01	1244.967
516165		211373 (100%)	Mineral Claim	2005/jul/06	2024/dec/01	667.543
516177		211373 (100%)	Mineral Claim	2005/jul/06	2024/dec/01	175.777
516178		211373 (100%)	Mineral Claim	2005/jul/06	2024/dec/01	457.053
516179		211373 (100%)	Mineral Claim	2005/jul/06	2024/dec/01	1317.27
516235		211373 (100%)	Mineral Claim	2005/jul/07	2024/dec/01	1161.63
516271		211373 (100%)	Mineral Claim	2005/jul/07	2024/dec/01	315.411
516275		211373 (100%)	Mineral Claim	2005/jul/07	2024/dec/01	1407.331
516284		211373 (100%)	Mineral Claim	2005/jul/07	2024/dec/01	947.189
516285		211373 (100%)	Mineral Claim	2005/jul/07	2024/dec/01	614.229
516286		211373 (100%)	Mineral Claim	2005/jul/07	2024/dec/01	912.089
516327		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	999.585
516335		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	1354.185
516340		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	1195.156
516342		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	1107.372
516345		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	949.18
516359		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	789.736
516367		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	1052.596
516377		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	1143.352
516433		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	1318.728
516441		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	1390.457
516443		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	880.157
516445		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	985.011
516448		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	862.311
516452		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	879.374
516458		211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	949.726
516459	GALORE 1 CELL CLAIM	211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	1721.252
516463	NR 4	211373 (100%)	Mineral Claim	2005/jul/08	2024/dec/01	140.84
516474	SPHCR 04	211373 (100%)	Mineral Claim	2005/jul/08	2024/jul/08	422.996

Table 3 - Galore Creek Property Mineral Claims - Continued

516475	SPHCR 05	211373 (100%)	Mineral Claim	2005/jul/08	2024/jul/08	422.996
516496		211373 (100%)	Mineral Claim	2005/jul/09	2024/dec/01	1299.197
516498		211373 (100%)	Mineral Claim	2005/jul/09	2024/dec/01	1105.922
516500		211373 (100%)	Mineral Claim	2005/jul/09	2024/dec/01	1527.806
516503		211373 (100%)	Mineral Claim	2005/jul/09	2024/dec/01	1178.494
516505		211373 (100%)	Mineral Claim	2005/jul/09	2024/dec/01	1126.672
516508		211373 (100%)	Mineral Claim	2005/jul/09	2024/dec/01	1020.993
516509		211373 (100%)	Mineral Claim	2005/jul/09	2024/dec/01	1039.113
516511		211373 (100%)	Mineral Claim	2005/jul/09	2024/dec/01	968.695
516674		211373 (100%)	Mineral Claim	2005/jul/11	2024/dec/01	157.819
516691		211373 (100%)	Mineral Claim	2005/jul/11	2024/dec/01	563.2
517480	GRACE G	211373 (100%)	Mineral Claim	2005/jul/12	2024/jul/12	52.637
522318	CONT 2	211373 (100%)	Mineral Claim	2005/nov/15	2024/dec/01	386.718
522319	CONT 3	211373 (100%)	Mineral Claim	2005/nov/15	2024/dec/01	245.815
556327		211373 (100%)	Mineral Claim	2007/apr/13	2024/dec/01	387.2667
556330		211373 (100%)	Mineral Claim	2007/apr/13	2024/dec/01	281.5297
556331		211373 (100%)	Mineral Claim	2007/apr/13	2024/dec/01	140.7942
556334		211373 (100%)	Mineral Claim	2007/apr/13	2024/dec/01	211.1915
579405	SCU 1	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.2202
579406	SCUD 1	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.9753
579407	SCUD 2	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	122.4604
579408	SCU 2	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.2223
579409	SCUD 3	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	349.8247
579410	SCU 3	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	436.9756
579411	SCUD 4	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.9061
579412	SCUD 5	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	349.7099
579413	SCU 3	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.0939
579414	SCUD 6	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	157.3518
579416	SCU 4	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	401.6306
579417	SCUD 7	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.9056
579418	SCU 5	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	436.9768
579420	SCUD 8	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.6281
579421	SCU 6	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	436.9789
579423	SCUD 9	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.1346
579424	SCU 7	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	436.9808
579426	SCU 8	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	436.9835
579428	SCUD 10	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	244.6974
579429	SCU 9	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.2886
579431	SCUD 11	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	366.949
579432	SCU 10	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.2913
579434	SCU 11	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.3084
579435	SCUD 12	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	209.7657
579436	SCU 12	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	436.7655
579437	SCUD 13	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.4795
579439	SCU 13	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.0121
579441	SCU 14	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.2245

Table 3 - Galore Creek Property Mineral Claims - Continued

579443	SCU 15	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.2253
579454	RDL 1	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	421.8799
579456	RDL 2	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	439.4831
579457	LIN 1	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	421.6811
579458	RDL 3	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	439.34
579459	LIN 2	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	421.7224
579461	RDL 4	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	421.6429
579462	LIN 3	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	298.7028
579463	RDL 5	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	421.6515
579467	RDL 6	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	421.5126
579469	RDL 7	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	421.512
579470	LIN 6	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	333.6831
579472	LIN 7	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	438.8378
579473	RDL 8	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	421.5266
579479	LIN 10	211373 (100%)	Mineral Claim	2008/mar/28	2024/dec/01	421.016
579517	SCUD S1	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.3757
579519	SCUD S2	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	420.114
579521	SCUD S3	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	350.0739
579523	SCUD S4	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	420.2729
579526	SCUD S5	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	420.2704
579528	SCUD S6	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.7174
579530	SCUD S7	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.7149
579532	SCUD S8	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.9041
579535	SCUD S9	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	420.0905
579537	SCUD S10	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	350.2287
579541	SCUD S11	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	385.4026
579542	SCUD S12	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	420.4623
579544	SCUD S13	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	419.9021
579545	SCUD S14	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	420.0891
579547	SCUD S15	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.4696
579548	SCUD S16	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.4701
579549	SCUD S17	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.4678
579550	SCUD S18	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.4649
579551	SCUD S19	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	420.2738
579552	SCUD S20	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.7128
579553	SCUD S21	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.7161
579554	SCUD S22	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.7156
579556	SCUD S22	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.7135
579557	SCUD S23	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	420.4638
579558	SCUD S24	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	420.4437
579559	SCUD S25	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.964
579560	SCUD S26	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.9651
579561	SCUD S27	211373 (100%)	Mineral Claim	2008/mar/28	2024/mar/28	437.9638
585412	RDL 21	211373 (100%)	Mineral Claim	2008/may/29	2024/dec/01	35.1912
662956	RLS 1	211373 (100%)	Mineral Claim	2009/oct/31	2024/dec/01	70.3864
662967	RLS 2	211373 (100%)	Mineral Claim	2009/oct/31	2024/dec/01	70.3828

Table 3 - Galore Creek Property Mineral Claims - Continued

662975	R 1	211373 (100%)	Mineral Claim	2009/oct/31	2024/dec/01	87.9738
662982	RLS 3	211373 (100%)	Mineral Claim	2009/oct/31	2024/dec/01	105.567
975932	HURON 001	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	420.5231
975933	HURON 002	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.8049
975952	HURON 003	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.5775
975953	HURON 004	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	385.5836
975954	HURON 005	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.9536
975955	HURON 006	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.723
975956	HURON 007	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	402.9514
975957	JAY001	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	403.5812
975972	HURON 008	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.7656
975993	JAY002	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	421.4118
975994	HURON 009	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	420.3235
975995	JAY003	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	386.3496
975996	HURON 010	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	420.4012
975997	HURON 011	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.573
975998	JAY004	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	438.8367
975999	HURON 012	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.5844
976000	JAY005	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	421.029
976002	HURON 013	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.3275
976003	JAY006	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	421.1768
976004	HURON 014	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.7743
976005	JAY007	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	438.9156
976006	HURON 015	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.9419
976007	HURON 016	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.7952
976008	JAY008	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	420.9761
976012	JAY009	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	438.6893
976032	HURON 017	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.4339
976052	HURON 018	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.4854
976053	JAY010	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	438.6839
976054	HURON 019	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.0853
976055	HURON 020	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.0788
976056	NAVO 001	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.795
976057	JAY011	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	438.5354
976060	JAY012	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	438.7231
976061	NAVO 002	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.0959
976062	JAY013	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	438.6981
976064	JAY014	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	421.3459
976065	JAY0015	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	438.8828
976066	HURON 024	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.5249
976067	JAY16	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	316.0291
976068	NAVO 003	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.4241
976070	JAY017	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	420.881
976072	JAY018	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	438.3879
976092	HURON 027	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.007
976112	NAVO 005	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.8963

Table 3 - Galore Creek Property Mineral Claims - Continued

976152	HURON 028	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.4041
976153	NAVO 006	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	349.2964
976154	HURON 029	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.7264
976156	HURON 030	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.6758
976157	NAVO 007	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.607
976159	NAVO 008	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.8969
976161	NAVO 009	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.141
976163	NAVO 010	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.8991
976172	NAVO 011	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.1368
976173	HURON 031	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.2289
976174	NAVO 012	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.1327
976175	HURON 032	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.0418
976176	NAVO 013	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.1266
976177	HURON 033	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	349.1978
976179	HURON 034	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	261.8845
976180	NAVO 14	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.8991
976212	NAVO 015	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.0713
976232	HURON 035	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.3596
976234	HURON 036	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.2952
976236	NAVO 016	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	314.2504
976239	NAVO 017	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.6337
976252	NAVO 018	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	349.3086
976412	HURON 050	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	349.9337
976452	HURON 051	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	349.926
976456	HURON 052	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.2404
976459	HURON 053	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	349.9377
976461	HURON 054	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	349.9392
976463	HURON 055	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	419.7249
976467	HURON 056	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.022
976469	HURON 057	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.0772
976472	HURON 058	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.1779
976532	HURON 059	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.1838
976554	HURON 060	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	437.1827
976556	HURON 061	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.942
976558	HURON 062	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.9441
976560	NAVO 029	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	349.3167
976561	HURON 063	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.9394
976572	HURON 064	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.7731
976593	HURON 065	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.526
976612	HURON 066	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.8678
976632	HURON 067	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.9275
976653	HURON 068	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.6217
976656	HURON 069	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	418.8978
976657	HURON 070	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.6796
976672	HURON 071	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.4646
976675	HURON_072	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.6764

Table 3 - Galore Creek Property Mineral Claims - Continued

976676	HURON_073	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.6678
976692	HURON_074	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.6657
976713	HURON_075	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.4147
976718	HURON_079	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	436.4558
976732	HURON_080	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	418.7387
976753	HURON_081	211373 (100%)	Mineral Claim	2012/apr/02	2024/apr/02	418.7768
1016352	MAC	211373 (100%)	Mineral Claim	2013/jan/27	2024/jan/27	771.4353
1017781	HURON201301	211373 (100%)	Mineral Claim	2013/mar/14	2024/mar/14	157.3895
1017782	HURON201302	211373 (100%)	Mineral Claim	2013/mar/14	2024/mar/14	104.9935
1017784	HURON201303	211373 (100%)	Mineral Claim	2013/mar/14	2024/mar/14	157.8589
1018229	SPC 33	211373 (100%)	Mineral Claim	2013/apr/03	2024/apr/03	104.9952
1018771	SPC 34	211373 (100%)	Mineral Claim	2013/apr/23	2024/apr/23	175.2671
1019238	SPC 35	211373 (100%)	Mineral Claim	2013/may/04	2024/may/04	87.858
1019756	SPC 36	211373 (100%)	Mineral Claim	2013/may/24	2024/may/24	281.0559
1021815	SPC 37	211373 (100%)	Mineral Claim	2013/aug/22	2019/dec/01	1154.5208
1021830	SPC 38	211373 (100%)	Mineral Claim	2013/aug/23	2019/dec/01	419.9081
1025793	HUR	211373 (100%)	Mineral Claim	2014/feb/08	2020/dec/01	157.4446
1025944	HUR 1	211373 (100%)	Mineral Claim	2014/feb/14	2019/apr/08	157.802
1032810	SPC 39	211373 (100%)	Mineral Claim	2014/dec/18	2018/dec/30	701.1912
1034110	SPC 40	211373 (100%)	Mineral Claim	2015/feb/15	2018/dec/30	52.612
1040495	SPC 41	211373 (100%)	Mineral Claim	2015/dec/12	2018/dec/30	315.6024
1040566	SPC 42	211373 (100%)	Mineral Claim	2015/dec/16	2018/dec/30	263.0019
295	**Mineral Claims**				**Hectares:**	**137,776.940**

This report covers re-logging, mapping, geochemical sampling, and petrographic work on the Galore Creek Property between September 7, 2017 and September 22, 2017. The sampling work at Galore Creek includes seventy-six (76) rock samples taken for geochemical analysis, and ten (10) samples taken for petrographic analysis within mineral claims 516165 and 516459 (Figure 3) and applied to selected and contiguous claims held by the Galore Creek Mining Corporation. Under Event Number 5696566, assessment work was applied to seven mineral claims listed in Table 4. The claim expiry dates will be advanced to Apr to Dec 2020, subject to government approval of this report.

Table 4 - Application of 2017 Assessment Work - Galore Creek Property Mineral Claims

Owner: Galore Creek Mining Corporation - Client No. 211373
Event No. 5696566 - May 8, 2018

Tenure No.	Claim Name	Owner	Tenure Type	Issue Date	Good To Date	Area (ha)
1025944	HUR 1	211373 (100%)	Mineral Claim	2014/feb/14	2020/apr/08	157.8020
1021815	SPC 37	211373 (100%)	Mineral Claim	2013/aug/22	2020/dec/01	1154.5208
1021830	SPC 38	211373 (100%)	Mineral Claim	2013/aug/23	2020/dec/01	419.9081
1032810	SPC 39	211373 (100%)	Mineral Claim	2014/dec/18	2020/dec/30	701.1912
1034110	SPC 40	211373 (100%)	Mineral Claim	2015/feb/15	2020/dec/30	52.6120
1040495	SPC 41	211373 (100%)	Mineral Claim	2015/dec/12	2020/nov/30	315.6024
1040566	SPC 42	211373 (100%)	Mineral Claim	2015/dec/16	2020/aug/30	263.0019
					Hectares	**3,064.64**

Note: **Good to Dates indicated above are subject to BCMEM approval of Assessment Report filed under Event No. 5696566**


Galore Creek Mining Corporation
Mineral Tenure Block
TenureJan22018_Legacy selection
Infrastructure
Camp Site
Access Road (2007-11-09)
(Road Km Marker)
Access Tunnel (2007-06-21)
Bridge
Power Line Proposal (2007-10-27)
Power Line Corridor (60m)
BC Legal Survey/District Lot No.
BC Highway/Road
Resource Road
Airfield
Aerial Runway
617G002 Guide Outfitter Area Number
TR0621T004 Regional Trapline Number
Topographic
Streams
Waterbody
River
Contour - 50m
Contour Index - 100m
Galore Creek Mining CORPORATION
Jan 4 2018
0 2,000 4,000 6,000 8,000 10,000
m
File: Galore_TenureStatus_AOI.mxd
Date: Jan 4 2018
Prepared By: S. Beckman
Coordinate System: NAD 1983 UTM Zone 9N
(Based on government mineral tenure records: Jan 2 2018)
N
W
E
S
Mount Edziza Provincial Park
Great Glacier Provincial Park
Ningunsaw Provincial Park
Scud River Property
Scud River
Galore Creek
JW Property
DL 7362
DL 7364
DL 7361
DL 7365
DL 7363
Copper Canyon Property
Galore Creek Property
Scotsimpson Creek Camp
Kim/Sphal Property
West More Property
Espaw Camp (km 89)
Trek Property
Porcupine River
Porcupine Camp (km 115)
NE Block
Round Lake
Hoon Camp (km 74.5)
West More Canyon Property
More Creek
More Creek Property
Chi'yone Camp
Iskut River
Tsesk'iye Camp
DL 7366
Main Staging Area
Forest Service Road
Stewart Cassiar Highway
Schaft Creek
Mess Creek
Stikine River
Iskut River
Forrest Kerr Creek
Forrest Kerr Property
Coast Mountain Camp
Newmont Lake
Eskay Creek Mine Road
Km 32 Gravel
Eskay Creek Mine
37
320000
330000
340000
350000
360000
370000
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6370000
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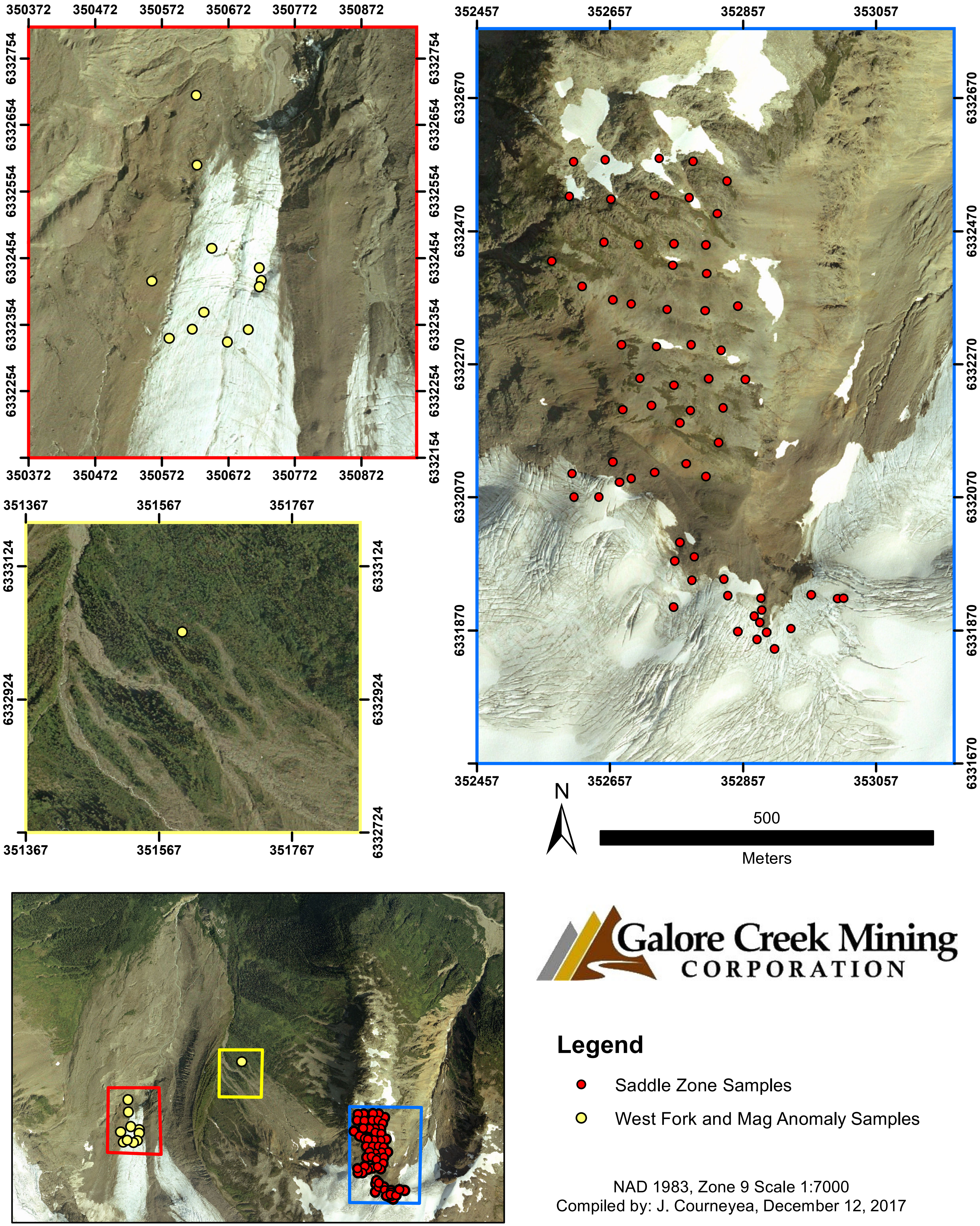
6320000
6310000
6300000
6290000
6280000

Figure 1



Figue 3. 2017 Geochemical Sample Location Map

5.0 2017 SUMMARY OF WORK

The 2017 Galore Creek Mining Corporation field program consisted of 6 days of mapping and sampling work conducted by geologists Jason Courneyea, Rex Turna, and Leia Edzerza between September 7th and September 14th; 5 days of work re-logging historic drill core conducted by geologist Jason Courneyea between September 15th and September 22nd 2017; 1 day of geochemical sampling carried out by geologists Jason Courneyea and Sarah Henderson on September 20th 2017; and 4 office preparation and compilation days, at a cost of $41,507.02. The main objectives of the program were to define the surface extents of a magnetite cemented breccia located within the Saddle Zone, to gain a better understanding of the breccia hosted mineralization and related alteration footprint, to get better sample coverage over the roughly east-west trending Au-Ag mineralization located in the south of Saddle Zone, and to understand the relationship between the magnetite breccia Cu-Au and the South Au-Ag zones. This was to be achieved primarily through rock, chip, and talus sampling on a roughly 50m by 50m grid, and re-logging of historic core to help vector towards mineralizaton in both new and old targets. One day of geochemical sampling was conducted south of the West Fork Zone to test newly exposed outcrop at the toe of the retreating West Fork glacier. The objective of sampling south of West Fork was to prospect for anomalous base and precious metals in newly exposed outcrop. One float sample was also collected over a magnetic anomaly located 1km east of the West Fork Zone. No outcrop was located near the anomaly as there was heavy brush and overburden; however one float sample with abundant pyrite mineralization was collected.

During the 6 days of mapping at the Saddle Zone targets, 66 rock, chip, and talus samples were taken for ICP four-acid multi-element analysis. From the 66 samples, 9 were chosen for petrographic analysis to improve understanding of the lithologies and alterations encountered. The purpose of the Saddle historic core re-logging program was to (along with the mapping) identify the geological controls on grade associated with the magnetite breccia, including the associated alteration assemblage of the host intrusive. One sample from the Saddle re-logging program was sent for petrographic work to aid in the lithological identification of the breccia host rock. During the one day of geochemical sampling at the toe of the West Fork glacier, 10 rock samples were collected for ICP multi-element analysis. These samples were collected to test for anomalous base and precious metals. This report discusses the work completed during September 7th to September 22nd 2017. Details of the report assessment work expenditures can be found in Appendix II.

6.0 GEOLOGY

6.1 Regional Geology

The following description of the regional geology is an excerpt from Simpson (2003). It has been divided into three parts: stratigraphy, intrusives, and structure.

> The Galore Creek deposits lie in Stikinia Terrane, an accreted package of Mesozoic volcanic and sedimentary rocks intruded by Cretaceous to Eocene plutonic and volcanic rocks. The eastern boundary of the Coast Plutonic complex lies about 7 kilometres to the west of the claims. The property lies within a regional transcurrent structure known as the Stikine Arch.
>
> **Stratigraphy**
>
> Stikine Terrane at this latitude can be grouped into four tectonostratigraphic successions. The first, and most important one in this area, is a Late Paleozoic to Middle Jurassic island arc suite represented by the Stikine assemblage of Monger (1970), the Stuhini Group (Kerr, 1948) and Hazelton Group equivalent rocks. The other successions are; Middle Jurassic to early Late Cretaceous successor-basin sediments of the Bowser Lake Group (Tipper and Richards, 1976); Late Cretaceous to Tertiary transtensional continental volcanic-arc assemblages of the Sloko Group (Aiken, 1959); and Late Tertiary to Recent post-orogenic plateau basalt bimodal volcanic rocks of the Edziza and Spectrum ranges.
>
> The oldest stratigraphy in the area is known as the Stikine assemblage and comprises Permian and older argillites, mafic to felsic flows and tuffs. These rocks grade upward into two distinctive Mississippian limestone members separated by intercalated volcanics and clastic sediments. The topmost stratigraphy consists of two regionally extensive Permian carbonate units which suggest a stable continental shelf depositional environment.
>
> The Middle to Upper Triassic Stuhini Group unconformably overlies the Stikine assemblage. Stuhini Group rocks comprise a variety of flows, tuffs, volcanic breccia and sediments, and are important host rocks to the alkaline-intrusive related gold-silver-copper mineralization at Galore Creek. They define a volcanic edifice centered on Galore Creek and represent an emergent Upper Triassic island arc characterized by shoshonitic and leucitic volcanics (de Rosen-Spence, 1985), distal volcaniclastics and sedimentary turbidites. The succession at Galore Creek

was divided by Panteleyev (1975) into a submarine basalt and andesite lower unit overlain by more differentiated, partly subaerial alkali-enriched flows and pyroclastic rocks.

Intrusives

Three intrusive episodes have been recognized in the region. The earliest and most important is the Middle Triassic to Middle Jurassic Hickman plutonic suite that is coeval with Upper Triassic Stuhini Group volcanic flows. The Mount Hickman batholith comprises three plutons known as Hickman, Yehinko and Nightout. The latter two are exposed north of the map area. The Schaft Creek porphyry copper deposit is associated with the Hickman stock, and is located 39 km northeast of Galore Creek. This stock is crudely zoned with a pyroxene diorite core and biotite granodiorite margins. These rocks are believed to be at least as old as Early Jurassic in age, based on K-Ar dating of hydrothermal biotite in the syenites intruding the sequences (Allen, 1966). An Ar-Ar age of 212 Ma (Logan et al., 1989) in syenite may give the time of crystallization of the intrusive rocks at Copper Canyon, to the east of Galore Creek. More recent U-Pb dates of Galore Creek syenites have given ages ranging from 205-210 Ma (Mortensen, 1995).

Coast Range intrusions comprise the large plutonic mass west of the map area. Three texturally and compositionally distinct intrusive phases were mapped by previous workers. From inferred oldest to youngest, they are potassium feldspar megacrystic granite to monzonite; biotite hornblende diorite to granodiorite; and biotite granite. Small tertiary intrusive stocks and dikes are structurally controlled in their distribution. At Galore Creek young post-mineral basalt and felsite dikes are abundant as a dike swarm in the northwest part of the property. Elsewhere, Tertiary intrusions may be important in their association with small gold occurrences.

Structure

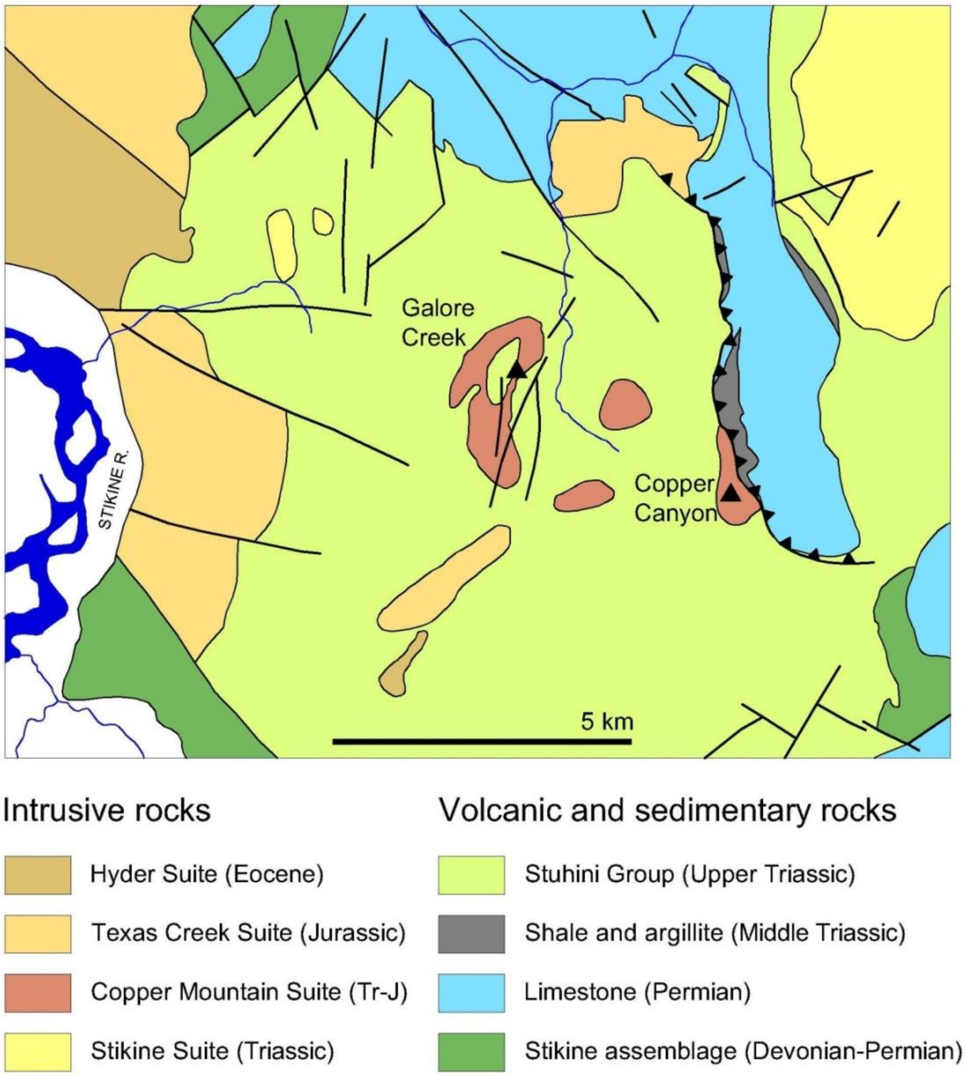
The regional geology has been affected by polyphase deformation and four main sets of faults. The oldest phase of folding is pre-Permian to post-Mississippian and affected the Paleozoic rocks between Round Lake and Sphaler Creek. This deformation is characterized by bedding plane parallel foliation in sediments and fragment flattening in volcaniclastics. Pre-Late Triassic folding is characterized by large, upright, tight to open folds with north to northwest trend of axial plane traces and westerly fold vergence. Metamorphism accompanying the first two phases of deformation reached greenschist facies. The third phase of folding is manifested as generally upright chevron folds with fold axes pointed west-northwesterly.

The oldest and longest-lived fault structures in the area have a north strike and sub-vertical dip. The best example occurs on the west flank of the Hickman batholith, where a major fault juxtaposes Permian limestone with a narrow belt of Stuhini Group volcanics. The second important fault type occurs at Copper Canyon as a west directed thrust fault with a north strike and east dip of 30 to 50 degrees. It juxtaposes overturned Permian limestone and Middle Triassic shale with Stuhini volcanics below. Early to Middle Jurassic syenite intrusions occupy this contact. A third important set of faults with north-west strike mark the boundary between Upper Triassic and Paleozoic rocks between Scud River and Jack Wilson Creek. The youngest faults have a northeast strike direction and are of great local importance. At Galore Creek, some of these faults show considerable post-mineral movement of up to 200 metres while others appear to control the emplacement of mineralized intrusive phases and breccia bodies.

6.2 Property Geology

The Galore Creek intrusive-volcanic complex is composed of multiple intrusions emplaced into volcanic and sedimentary rocks of similar composition. Country rocks to the syenite intrusions are volcanic flows and volcaniclastic sediments, with subordinate greywacke, siltstone and local conglomerate (Enns et al., 1995). Augite-bearing volcanic flows and tuffs underlie and are interbedded with the pseudoleucite-bearing and orthoclase-bearing flows, tuffaceous and fragmental units, which are prominent in the south and southwest parts of the complex (Enns et al., 1995). Multiple alkali syenite intrusive phases occur in the complex and are divided into the pre- to syn-mineralization intrusives (i1 to i4), syn- to post-mineralization intrusives (i5 to i9) and post-mineralization intrusives (i10 to i12). The complex is centered in the west fork of Galore Creek and is approximately 5 kilometres in length and 2 kilometres in width. To date, twelve copper-gold-silver mineralized zones have been identified on the property. Most zones, including the Central, North Junction, Junction, Middle Creek, West Rim, Butte and South 110, occur in highly altered volcanic rocks and to a lesser degree in syenite intrusions. The Southwest, Opulent, and Saddle zones are hosted by breccias and the North Rim and West Fork zones occur within syenite intrusions.

Figure 4: Geological map of the Copper Canyon and Galore Creek area (adapted from Enns et al., 1995, and Logan and Koyanagi, 1994, by Twelker, 2007).



6.3 Galore Creek Lithologic Descriptions

The following section is summarized from Workman (2011) to describe Galore Creek deposit lithologies encountered during the 2016 geochemical sampling program:

VOLCANIC ROCKS

(V1) AUGITE-BEARING VOLCANICS:

Augite-bearing flows contain porphyritic and, infrequently, amygdaloidal textures. Augite phenocrysts vary in size from 2-5 mm and are generally euhedral to subhedral, stubby and dark green to black. They comprise up to 30% of the rock and are supported in a medium to dark green, aphanitic groundmass. The augite phenocrysts are usually altered to biotite, epidote and chlorite. Locally, strong garnet-biotite-orthoclase alteration is also observed. Interbedded with the augite bearing flows are augite-bearing volcaniclastics in the form of fine and coarse lapilli tuffs, tuff breccias and flow breccias, containing subangular to subrounded fragments of augite porphyry. These volcaniclastics are generally matrix supported.

(V2) PSEUDOLEUCITE-BEARING VOLCANICS:

The original textures are often obliterated by intense orthoclase and sericite alteration. Copper/gold mineralization appears to occur preferentially in these rocks. In unaltered areas, euhedral and broken pseudoleucite phenocrysts up to 1.5 cm occur within a bluish grey to salmon pink groundmass. These phenocrysts often exhibit orthoclase-sericite altered cores. Rims are sometimes altered to sericite, magnetite and chlorite.

(V3) ORTHOCLASE-BEARING VOLCANICS:

Orthoclase-bearing volcanics are predominantly fine to coarse crystal lithic tuffs, with possible subordinate flows. They are often strongly mineralized with disseminated bornite, chalcopyrite and gold. They appear to be cogenetic and coeval with dark syenite porphyry intrusives, which may be their subvolcanic equivalents. The crystal fragments in the tuffs are broken orthoclase shards up to 7 mm across and are supported by a highly altered biotite-orthoclase +/- garnet-anhydrite matrix. Rare bedding is preserved locally.

UNDIFFERENTIATED VOLCANICS (V4, V5, V6)

In some areas, intense alteration has obliterated original textures resulting in the more vague classification of “undifferentiated volcanics”. Such rocks have been classified on the basis of colour and association.

(V4) MAFIC VOLCANICS:

Mafic volcanic rocks (V4) are dark green, chloritic flows and tuffs, common in the north part of the Central Zone. These are interbedded, and may in part be correlated with, unit V1 (augite-bearing volcanics). Porphyritic and amygdaloidal flow textures have been preserved locally and volcanic clasts are sometimes preserved in pyroclastic rocks.

(V5) INTERMEDIATE VOLCANICS:

Intermediate volcanic rocks (V5) are very common in the Central Zone. These rocks are medium greenish grey volcaniclastics and flows, and may be aphyric equivalents of the pseudoleucite bearing volcanic units. Included in this unit are possible trachy-andesites containing subrounded orthoclase phyric fragments. Aphanitic volcanic clasts up to 3 cm across have also been observed within a fine grained to aphanitic matrix. Secondary biotite occurs both as a spotted to patchy alteration and as coarse aggregates and veins.

(V6) FELSIC VOLCANICS:

Intense orthoclase flooding has resulted in pale grey, felsic volcanic rocks (V6) which are fine to medium grained volcaniclastics and flows. V6 rocks are present in the north and central part of the Central Zone, often interbedded with pseudoleucite volcanic rocks which may be their equivalent.

INTRUSIVE ROCKS

(i5) FINE GRAINED ORTHOCLASE SYENITE MEGAPORPHYRY:

Unit i5 is common as sub-horizontal, tabular dikes in the Central Zone. The largest masses of this unit are found in the west, from which tabular bodies emanate eastward. The unit is equivalent in large part to previously mapped "garnet syenite megaporphyry". Fine-grained orthoclase syenite megaporphyry is pale to medium brown, porphyritic with 10-15%, 0.4-1.0cm and rarely >3cm sub-, to euhedral orthoclase phenocrysts, and 5-7%, 2-3mm plagioclase phenocrysts. Also present, and characteristic of this rock, are 3-5%, euhedral 1-2mm, and rarely 7-10mm hornblende phenocrysts. The groundmass is finegrained, brownish grey, and hematite rich. Pale brown disseminated garnet is a common alteration product.

(i6/i8) EQUIGRANULAR AND PORPHYRITIC SYENITES:

This closely related family of syenites occur as tabular and irregular, anastomosing, steep dikes. They are distinguished primarily on matrix and phenocryst size differences.

Fine grained syenite (i6) is a medium green-grey, equigranular, fine grained intergrowth of orthoclase, altered hornblende and epidote.

Fine grained syenite porphyry (i7) is greenish grey, and composed of 2-5%, 2-10 millimetre, subhedral, tabular, and equant orthoclase phenocrysts set in a greenish, often epidote rich, fine grained groundmass of orthoclase, altered hornblende, and epidote. The rock is locally crystal poor, and texturally equivalent to i6 and i8.

Medium grained syenite (i8) is a medium green to grey, equigranular intergrowth of orthoclase, altered hornblende, epidote, and rare 2-5 millimetre orthoclase phenocrysts.

(WFP) WEST FORK PORPHYRY:

Porphyritic trachyte flow (WFP) is dark grey-green in colour. Aligned K-feldspar/plagioclase phenocrysts comprise 5-10% of the rock. Hornblende phenocrysts often altered to chlorite and epidote comprise 5% of the rock. Biotite, apatite and diopside (5%) comprise the rest of the phenocryst population set in a groundmass dominated by lathy K-feldspar/plagioclase.

SEDIMENTARY ROCKS

(S2) GREYWACKE:

Grey-green, poorly sorted, medium to coarse-grained greywackes are common in North Rim Creek, located north of the Central Zone. They also appear rarely in drill core within the Central Zone, as intercalations with lapilli tuffs. This unit is locally well bedded and graded. Fragments of argillite and volcanic material are sub-angular to subrounded.

(S6) EPICLASTIC SEDIMENTS:

Composite lithology consisting primarily of reworked volcanic material; includes clayrich (lacustrine) beds, siltstone, fine-, to course-grained sandstone, and conglomerate. Lithology should show clear evidence of fluvial reworking such as planar or cross bedding, sorting, normal or reverse-grading, etc.

BRECCIAS

(B1) DIATREME BRECCIA:

Diatremes are 1-2 kilometres deep, carrot-shaped bodies produced from the expansion of volatiles in the magma as the magma approaches the surface and the confining pressure is lowered. Rising magma infills the wall rock fractures, producing an intrusive-like matrix. This process continues to depths of 300-400 metres, where hydrovolcanic interaction with groundwater then produces violent gasses. Diatreme breccia wall rock clasts, at Galore Creek, are rounded to sub-angular, and form lapilli-sized fragments to fragments several tens of centimetres across. Clasts are generally orthoclase altered and sit in a matrix of sand and silt sized particles.

(B2) HYDROTHERMAL BRECCIA:

When hydrostatic pressure exceeds lithostatic pressure a rock will fracture, allowing for hydrothermal fluids to perpetrate. These circulating fluids precipitate minerals into the rock fractures, causing vein and/or stockwork brecciation. Hydrothermal breccias at Galore Creek are characterized by sub-angular, rotated clasts of pseudoleucite porphyry (i1 & i2), grey syenite porphyry (i3), and mafic to intermediate volcanics (V4 & V5). In most cases the breccias are matrix supported, with the primary composition being garnet, anhydrite, orthoclase, biotite +/- diopside. Hydrothermal breccias are often well mineralized, with the primary copper mineral, chalcopyrite, occurring as disseminations and stringers.

(B3) ORTHOMAGMATIC BRECCIA:

Orthomagmatic breccias, like the diatreme breccias above, form when hot volatiles fracture the wall rock around a pluton. Orthomagmatic breccia clasts are multi-lithic, unsorted, and rounded to angular. They are set in a magmatic, often porphyritic, matrix.

7.0 RE-LOGGING, MAPPING, GEOCHEMICAL SAMPLING AND PETROGRAPHIC ANALYSIS

7.1 Introduction

The 2017 GCMC field program consisted of 6 days of mapping and sampling work at the Saddle Zone conducted by geologists Jason Courneyea, Rex Turna, and Leia Edzerza between September 7th and September 14th; 5 days of work re-logging historic Saddle Zone drill core conducted by geologist Jason Courneyea between September 15th and September 22nd 2017; 1 day of geochemical sampling south of the West Fork deposit carried out by geologists Jason Courneyea and Sarah Henderson on September 20th 2017; and 4 office preparation and compilation days, at a cost of $39,530.50.

The main objectives of the 2017 Saddle geochemical sampling, mapping, and core-relogging program were to define the extent of the magnetite cemented breccia in the north of the Saddle Zone, and understand the breccia style mineralization and related alteration footprint. Additional objectives were to acquire more sample coverage over the roughly east-west trending Au-Ag mineralization located in the south of Saddle Zone, and to gain geological understanding of the relationship between the two zones.

The Saddle Zone is located on a ridge overlooking the west fork of the Galore Creek valley, approximately 2.5km to the southeast of Galore Creek’s main Central Zone deposit, and on the ridge to the southeast of the Bountiful deposit. The southern extent of the Saddle zone is marked by glacial ice.

The following description of the Saddle Zone is excerpted from Yarrow & Taylor (1990):

> The Saddle Zone occurs above treeline on a steep west facing slope near the southeast corner of the property. The zone is comprised of a magnetite cemented intrusive fragment breccia containing varying amounts of chalcopyrite, malachite and bornite with associated gold values. In plan it has a rough oval shape with approximate dimensions of 110 meters by 60 meters. Actual breccia-country rock contacts are obscured by rock scree and rubble.

The mapping and sampling program consisted of 57 rock outcrop samples, 5 rock subcrop samples, and 4 talus samples, taken for four-acid ICP multi-element analysis. Of these, nine (9) samples were chosen for petrographic analysis within the Saddle Zone.

The Saddle zone re-logging program consisted of 6 historical holes drilled between 1963-2004, totaling 499.11m. These holes were logged over five days with the objective of looking for broad lithological, alteration and mineralization changes that could be used in conjunction with field mapping understand the character of the hydrothermal breccia. One sample from GC63-0065 was sent for petrographic analysis.

The main objectives of the geochemical sampling program south of the West Fork zone were to test the newly exposed area for elevated base and precious metals and to check on a previously uninvestigated magnetic anomaly south of camp. One (1) day of geochemical sampling was done at the toe of the West Fork glacier and over the mag anomaly. The sampling consisted of 10 rock samples collected from newly exposed outcrop and one float sample from the area over a magnetic anomaly south of the Ut Lun camp. The ten samples were sent for ICP multi-element analysis.

In total over all areas, seventy-six (76) rock outcrop, sub-crop, or talus samples were collected during the 2017 geological and geochemical sampling program by geologists Jason Courneyea, Sarah Henderson, Rex Turna, and Leia Edzerza. All of the samples were collected for ICP multi-element analysis, and ten (10) samples were chosen for petrographic work including one from re-logged historic core.

At each ICP sample location, approximately 1 kg of rock was chipped using a hammer and collected for assay. A waypoint was taken at each sample location using a handheld GPS, pictures were taken and all samples were given field descriptions of lithology, alteration and mineralization where present. Samples were chosen from outcrop with favorable alteration or mineralization in previously un-sampled or under-sampled areas. Samples were bagged in poly sample bags, zap strapped, and flown to Ut Lun camp, where they were stored in a secure location until shipment.

All samples were shipped to ALS Minerals Laboratories in Terrace, BC, for preparation and analysis. Sample preparation consisted of typical drying, crushing, splitting, and pulverizing (Prep Code PREP-31). The seventy-eight samples were assayed using four acid digestion and 61-element ICP-MS, analytical package (ME-MS61). Gold assays were performed by fire assay and ICP-AES, analytical package (AuICP-21). Standards and Blanks were inserted into the sample batch to maintain geochemical quality control. Please see Appendix V for details of ALS analytical and QA/QC procedures.

The petrographic samples were shipped to Vancouver Petrographics Ltd. in Langley B.C, where polished thin sections were prepared, with the offcuts stained to identify the presence of K-feldspar. The prepared sections and offcuts were shipped to Exploration Petrology Inc. in Squamish BC, for thin section analysis.

Locations and types of all samples collected during the 2017 field program can be found in Table 5 below.

Table 5: 2017 Galore Creek Geochemical and Geological Sample Locations

Wpt #	UTM_E*	UTM_N*	Sample Type(s)	Sample tag #	Claim #
003	352834	6332545	ICP	3005501	516165
004	352783	6332575	ICP	3005502	516165
005	352732	6332579	ICP	3005503	516165
006	352651	6332577	ICP	3005504	516165
007	352603	6332574	ICP	3005505	516459
008	352597	6332522	ICP	3005506	516459
009	352659	6332518	ICP	3005507	516165
010	352725	6332523	ICP	3005508	516165
011	352777	6332520	ICP	3005509	516165
012	352819	6332496	ICP	3005510	516165
013	352802	6332449	ICP	3005511	516165
014	352754	6332451	ICP	3005512	516165
015	352701	6332450	ICP	3005513	516165
016	352649	6332453	ICP	3005515	516165
017	352570	6332425	ICP	3005516	516459
018	352616	6332387	ICP	3005517	516459
019	352662	6332367	ICP + Petrographic	3005518	516165
020	352752	6332418	ICP	3005520	516165
021	352803	6332406	ICP	3005521	516165
022	352850	6332357	ICP	3005522	516165
023	352801	6332350	ICP	3005524	516165
024	352744	6332352	ICP	3005525	516165
025	352690	6332360	ICP	3005526	516165
026	352675	6332299	ICP	3005528	516165
027	352728	6332296	ICP + Petrographic	3005529	516165
028	352780	6332299	ICP	3005530	516165
029	352825	6332291	ICP	3005531	516165
030	352861	6332247	ICP	3005532	516165
031	352806	6332248	ICP	3005533	516165

Wpt #	**UTM_E***	**UTM_N***	**Sample Type(s)**	**Sample tag #**	**Claim #**
032	352754	6332238	ICP	3005534	516165
033	352703	6332249	ICP	3005535	516165
034	352677	6332201	ICP	3005536	516165
035	352720	6332208	ICP	3005537	516165
036	352779	6332200	ICP	3005538	516165
037	352828	6332204	ICP	3005539	516165
038	352763	6332182	ICP	3005541	516165
039	352821	6332152	ICP	3005542	516165
040	352802	6332101	ICP	3005544	516165
041	352725	6332107	ICP + Petrographic	3005545	516165
042	352672	6332092	ICP + Petrographic	3005546	516165
042	352672	6332092	ICP + Petrographic	3005547	516165
043	352690	6332098	ICP + Petrographic	3005549	516165
044	352662	6332123	ICP	3005550	516165
044	352662	6332123	ICP	3005551	516165
045	352641	6332070	ICP	3005553	516165
046	352755	6331974	ICP	3005554	516165
047	352604	6332070	ICP	3005555	516459
048	352601	6332105	ICP	3005557	516459
049	352753	6331905	ICP	3005558	516165
050	352781	6331945	ICP	3005559	516165
051	352829	6331947	ICP	3005560	516165
052	352875	6331891	ICP	3005561	516165
053	352772	6332120	ICP	3005562	516165
054	352763	6332002	ICP	3005563	516165
055	352785	6331980	ICP	3005564	516165
056	352885	6331918	ICP	3005565	516165
057	352879	6331856	ICP	3005567	516165
058	352850	6331868	ICP + Petrographic	3005568	516165
059	352905	6331842	ICP	3005569	516165
060	352893	6331867	ICP + Petrographic	3005570	516165
061	352886	6331900	ICP	3005571	516165
061	352886	6331900	ICP	3005573	516165
063	352930	6331872	ICP	3005574	516165
063	352930	6331872	ICP	3005575	516165

Wpt #	UTM_E*	UTM_N*	Sample Type(s)	Sample tag #	Claim #
064	353009	6331918	ICP + Petrographic	3005577	516165
065	352960	6331923	ICP	3005578	516165
978	350624	6332698	ICP	3005579	516459
980	350625	6332593	ICP	3005580	516459
981	350719	6332439	ICP	3005581	516459
983	350719	6332411	ICP	3005582	516459
984	350702	6332346	ICP	3005583	516459
985	350671	6332328	ICP	3005584	516459
986	350583	6332333	ICP	3005585	516459
937	350647	6332468	ICP	3005586	516459
939	350618	6332347	ICP	3005588	516459
	351602	6333025	ICP	3005589	516459
941	350557	6332419	ICP	3005590	516459

***UTM NAD 83 Zone 9**

7.2 Summary of Geochemical Results

The following section describes the lithology, alteration and mineralization present for each sample taken, as well as the geochemical results of the rock samples taken on the GCMC claims (from Table 5). ALS assay certificates are located in Appendix IV. A map of the locations of the geochemical samples can be found in Figure 3.

The sixty-six samples taken from the Saddle zone represent the three main lithology types encountered during mapping, and generally show one of four different alteration styles. The majority of the samples were collected from an equigranular syenite (i8) as it is the most spatially extensive of the lithologies encountered in the Saddle Zone. Numerous samples were also taken from the strongly kspar altered, resistant outcrop containing elevated pyrite ± chalcopyrite. The fewest samples were taken from an epiclastic sedimentary unit, and the magnetite-cemented hydrothermal breccia, as their mineralization was weak and surface expression was limited.

The nine samples taken from the West Fork area represent intrusives, volcanics, breccias, and strongly altered (silica/kspar) lithologies. The samples were collected from areas showing strong oxidation or mineralization. Emphasis was placed on newly exposed outcrop at the toe of the glacier. One float sample was collect from an area over a strong magnetic anomaly east of the Bountiful Zone deposit. No outcrop was observed in the area but a piece of float with strong 10-20% pyrite was collected and sent in for analysis.

7.2.1 ICP Sampling

Sample descriptions and copper, gold, and silver assay results from the samples collected are presented below in Table 6.

Eleven samples collected during the 2017 field program returned significant gold values ranging between 0.48 g/t and 4.6 g/t Au. Three of these samples were taken directly from the surface footprint of the magnetite breccia, two of which returned high Au, samples 3005526, 3005518. These samples returned values of 3.22 g/t Au, 1.79% Cu and 2.95g/t Au, 1.64% Cu respectively. The third sample, sample 3005529, returned 0.48 g/t gold and 0.14% Cu. The remaining eight samples with elevated Au were taken from altered north-south trending spines at the toe of the Saddle Glacier. Samples ranged from 0.72g/t to 4.6g/t Au with minor associated Cu ranging from 0.01-0.06% Cu. 2017 sampling in this area extended mineralization along trend roughly 120m to the east and confirmed mineralization in the west. Both east and west along trend remain open and further sampling is warranted. Au mineralization found in these spines is associated with elevated pyrite and strong Kspar-Ser alteration. Between the altered spines barren epiclastic sediments occur suggesting a strong structural component and possible epithermal origin. Sampling at West Fork returned anomalous gold with three samples returning grades between 0.121g/t and 0.273g/t Au. Copper grades in West Fork were weakly anomalous with six samples ranging between 114ppm and 304 ppm Cu.

Figure 5. Sample location 3005574. Strongly oxidized and Kfeldspar-sericite altered epiclastic sediment with strong fine-grained disseminated pyrite mineralization. ICP assay returned significant values of 4.6 g/t Au, 161ppm Cu, and 5.31 g/t Ag. Location previously not sampled.

Table 6. ICP Results from 2017 Sampling

Sample	Litho	Sample type	Cu ppm	Au ppm	Ag ppm
3005501	Equigranular Porphyry	outcrop	221	0.014	0.31
3005502	Equigranular Porphyry	outcrop	60.8	0.003	0.08
3005503	Equigranular Porphyry	outcrop	115.5	0.003	0.2
3005504	Equigranular Porphyry	outcrop	172	0.008	0.23
3005505	Equigranular Porphyry	outcrop	1345	0.255	1.04
3005506	Equigranular Porphyry	outcrop	31.8	0.011	0.02
3005507	Equigranular Porphyry	outcrop	99.8	0.002	0.08
3005508	Equigranular Porphyry	outcrop	126.5	0.001	0.12
3005509	Equigranular Porphyry	outcrop	39.8	0.003	0.04
3005510	Equigranular Porphyry	outcrop	569	0.068	0.47
3005511	Equigranular Porphyry	subcrop	163	0.01	0.29
3005512	Equigranular Porphyry	outcrop	130	0.007	0.17
3005513	Equigranular Porphyry	outcrop	193.5	0.003	0.14
3005515	Equigranular Porphyry	outcrop	79.2	0.002	0.11
3005516	Equigranular Porphyry	outcrop	124.5	0.004	0.19
3005517	Equigranular Porphyry	outcrop	934	0.154	0.59
3005518	Hydrothermal Breccia	outcrop	16400	2.95	10.15
3005520	Equigranular Porphyry	outcrop	179	0.016	0.18

Sample	Litho	Sample type	Cu ppm	Au ppm	Ag ppm
3005521	Equigranular Porphyry	talus	688	0.224	1.17
3005522	Equigranular Porphyry	outcrop	882	0.04	0.83
3005524	Hydrothermal Breccia	talus	752	0.108	3.4
3005525	Hydrothermal Breccia	outcrop	6670	0.091	2.36
3005526	Hydrothermal Breccia	outcrop	17850	3.22	12.45
3005528	Equigranular Porphyry	subcrop	1360	0.035	1.48
3005529	Hydrothermal Breccia	talus	1450	0.476	3.05
3005530	Hydrothermal Breccia	subcrop	1890	0.065	2.72
3005531	Equigranular Porphyry	outcrop	570	0.027	0.54
3005532	Equigranular Porphyry	outcrop	292	0.006	0.3
3005533	Equigranular Porphyry	subcrop	272	0.003	0.92
3005534	Equigranular Porphyry	subcrop	74.6	0.011	0.08
3005535	Equigranular Porphyry	talus	570	0.018	0.48
3005536	Equigranular Porphyry	outcrop	1640	0.059	0.87
3005537	Equigranular Porphyry	outcrop	1320	0.064	0.96
3005538	Equigranular Porphyry	outcrop	951	0.023	0.43
3005539	Equigranular Porphyry	outcrop	484	0.088	0.27
3005541	Equigranular Porphyry	outcrop	566	0.054	0.79
3005542	Equigranular Porphyry	outcrop	273	0.02	0.33

Sample	**Litho**	**Sample type**	**Cu ppm**	**Au ppm**	**Ag ppm**
3005544	Equigranular Porphyry	outcrop	337	0.029	0.23
3005545	Equigranular Porphyry	outcrop	410	0.083	0.53
3005546	Equigranular Porphyry	outcrop	1535	0.067	1.19
3005547	K-Feldspar Sericite Altered Unit	outcrop	428	0.028	0.31
3005549	K-Feldspar Sericite Altered Unit	outcrop	189.5	0.077	0.25
3005550	K-Feldspar Sericite Altered Unit	outcrop	1130	0.03	6.71
3005551	Equigranular Porphyry	outcrop	1090	0.071	1.97
3005553	K-Feldspar Sericite Altered Unit	outcrop	432	0.041	0.27
3005554	K-Feldspar Sericite Altered Unit	outcrop	127	0.007	0.27
3005555	K-Feldspar Sericite Altered Unit	outcrop	385	0.039	0.78
3005557	Equigranular Porphyry	outcrop	544	0.033	0.72
3005558	K-Feldspar Sericite Altered Unit	outcrop	323	2.77	6.98
3005559	K-Feldspar Sericite Altered Unit	outcrop	429	1.05	6.83
3005560	K-Feldspar Sericite Altered Unit	outcrop	77.4	0.02	0.68

Sample	**Litho**	**Sample type**	**Cu ppm**	**Au ppm**	**Ag ppm**
3005561	K-Feldspar Sericite Altered Unit	outcrop	90.7	4.14	5.98
3005562	Equigranular Porphyry	outcrop	828	0.178	1.01
3005563	Equigranular Porphyry	outcrop	38.6	0.002	0.13
3005564	K-Feldspar Sericite Altered Unit	outcrop	183.5	0.264	1.21
3005565	K-Feldspar Sericite Altered Unit	outcrop	154.5	0.339	1.73
3005567	K-Feldspar Sericite Altered Unit	outcrop	170	0.894	6.8
3005568	Sediment	outcrop	77	0.001	0.17
3005569	Sediment	outcrop	166.5	0.009	0.33
3005570	K-Feldspar Sericite Altered Unit	outcrop	189.5	0.096	1.51
3005571	Sediment	outcrop	234	0.003	0.5
3005573	K-Feldspar Sericite Altered Unit	outcrop	70.3	2.08	5.38
3005574	Sediment	outcrop	161	4.6	5.31
3005575	Sediment	outcrop	120	0.017	0.24
3005577	Sediment	outcrop	614	0.264	9.53
3005578	K-Feldspar Sericite Altered Unit	outcrop	559	0.721	3.27
3005579	WFP	outcrop	304	0.196	4.34
3005580		outcrop	128	0.048	1.46
3005581		outcrop	144	0.273	2.52
3005582	i (i9/i5?)	outcrop	65.9	0.015	0.84
3005583	V3?	outcrop	246	0.02	0.84
3005584	V3	outcrop	278	0.013	0.27
3005585	B	outcrop	306	0.121	0.39
3005586		outcrop	114	0.078	1.52
3005588		outcrop	68.6	0.016	0.79

Sample	**Litho**	**Sample type**	**Cu ppm**	**Au ppm**	**Ag ppm**
3005589		float	470	0.722	4.49
3005590		outcrop	71.5	0.011	0.18

7.3 Mapping

Anaconda style mapping was conducted on the Saddle Zone over six days in September. Outcrops were mapped with lithology, alteration, and mineralogy described at each sampling station. Three main units were identified during the mapping: a crowded medium-grained equigranular porphyry, a hydrothermally-cemented breccia, and epiclastic sediments. Within the epiclastic sediment package are roughly north-south trending, strongly k-feldspar + sericite altered spines. These spines were mapped as a separate, distinct lithology due to texturally destructive alteration making the parent lithology hard to determine. The northern portion of the map area was dominated by a fairly unaltered equigranular porphyry. In the north of the mapping area the surface footprint of a hydrothermally cemented breccia outcrops, with an associated weak to moderate potassic alteration halo in the surrounding equigranular porphyry. The south is dominated by epiclastic sediments with north south trending strongly k-feldspar and sericite altered spines (Figure 6). 2017 mapping was able to better delineate the surface footprint of the breccia as well as extend the trend of the Au-Ag spines roughly 120m to the east. In conjunction with re-logging of historic core the mapping showed that there is a potassic alteration halo associated with the breccia and that it is most pronounced to the southeast. Talus and scree cover hindered the attempt to define the contact between the equigranular porphyry and the sediments in the south. There is one location where a sharp contact between the k-feldspar-sericite alteration and the equigranular porphyry was observed. This location was of special interest and samples were sent for petrographic analysis. Petrographic work concluded that this was an alteration boundary and not a lithological contact (Figure 6).

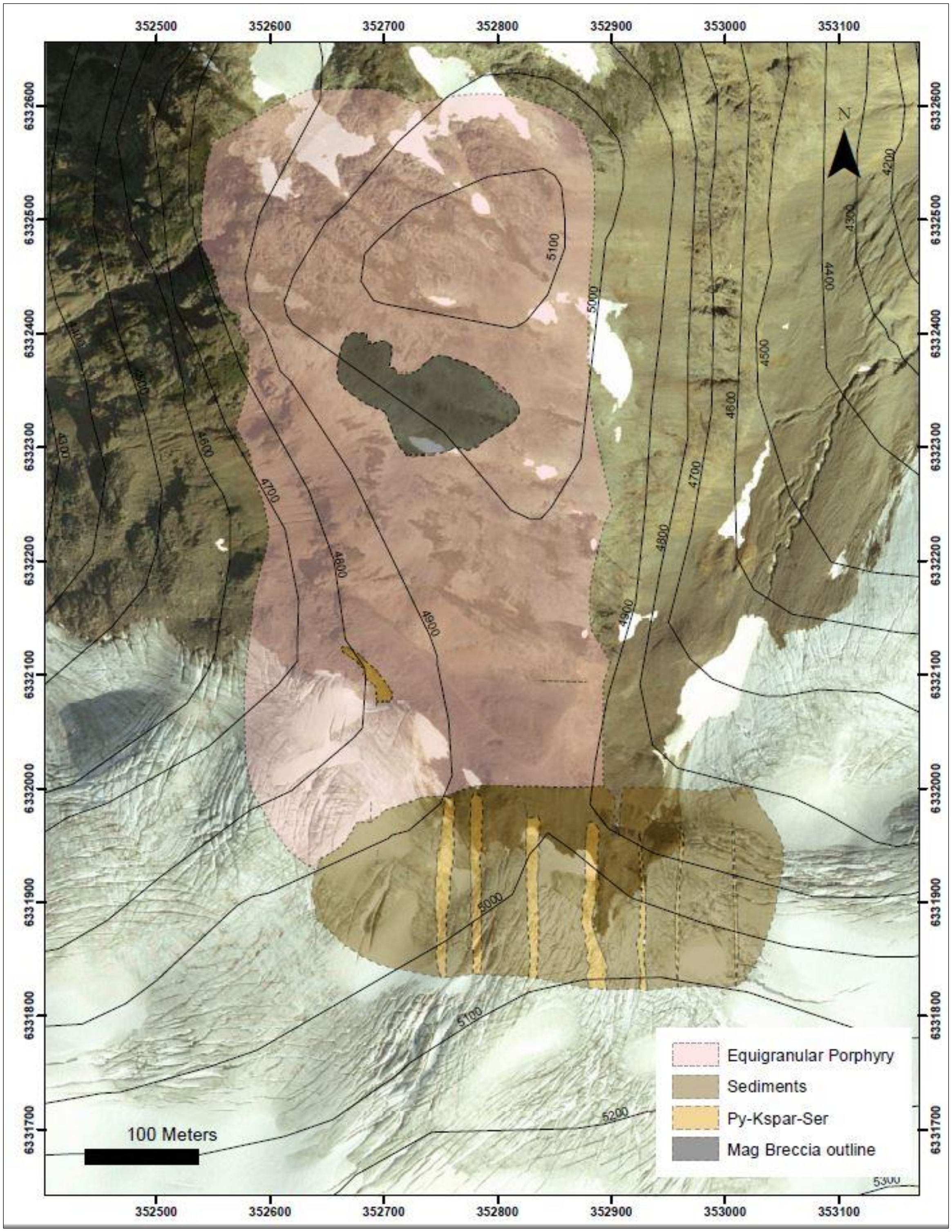


Figure 6. Interpreted geology of the Saddle Zone from 2017 mapping.

7.3 Petrographic Work

Ten samples were collected for petrographic analysis to support geological interpretation completed during the field program. Nine of the samples were collect from rocks encountered during the mapping program while one was taken from a historic drill hole. The purpose of the petrographic work varied by sample, but was generally meant to help characterize alteration, mineralization, and lithology. Hand samples of representative rock types were shipped to Vancouver Petrographics in Langley, B.C., where polished thin sections were prepared, then samples were shipped to Exploration Petrology Inc, in Squamish, BC, where petrographic descriptions were completed. Petrographic descriptions excerpted from Febbo's (2017) report are below:

> **Summary**: Samples include diorite to monzonite porphyry, a websterite (xenolith?) and sedimentary and volcaniclastic country rocks. All rocks are altered to a main stage copper-bearing potassic assemblages of sodic-potassic and calc-potassic. These alteration assemblages are overprinted by late stage propylitic, silica-carbonate and chlorite-sericite that are heterogeneously mineralized.
>
> **3005518**: The sample is a fine-grained websterite that is overprinted by two stages of copperbearing alteration. Early intense sodic-potassic alteration consists of K-feldspar, magnetite, epidote, clinozoisite, apatite, tremolite and minor chalcopyrite. A younger, less intense propylitic alteration assemblage includes epidote, chlorite and considerably higher amounts of chalcopyrite than early mineralization. Late stage weathering targets the youngest propylitic veins and altered chalcopyrite to copper-oxide minerals.
>
> **3005529:** The sample is a medium-grained hornblende diorite porphyry. Intense sodic-potassic alteration is expressed as magnetite stockwork veins that introduce K-feldspar, albite, epidote, apatite and minor chalcopyrite. Minor propylitic vein contains quartz-epidote that cuts sodicpotassic alteration.
>
> **3005545**: The sample is a medium-grained clinopyroxene-hornblende hypabyssal diorite porphyry. The sample is overprinted by one intense sodic-potassic alteration event that includes vein and pervasive alteration to K-feldspar, epidote, magnetite, apatite, titanite, titanium oxide, chlorite and chalcopyrite.
>
> **3005546**: The sample is a medium-grained, equigranular, biotite monzonite porphyry. The sample is overprinted by a pervasive sodic-calcic (propylitic)

alteration assemblage of epidote, chlorite, actinolite, apatite, calcite, tremolite, garnet and chalcopyrite.

3005547: The sample is a medium-grained biotite monzonite porphyry. Pervasive intense alteration to a silica-carbonate assemblage of carbonate, clay, sericite, quartz, apatite and chalcopyrite.

3005549: Sample is a monzonite intrusion breccia that is overprinted by texturally destruction alteration. Early calc-potassic assemblage consists of K-feldspar, carbonate, anhydrite, muscovite, hematite, chalcopyrite and tetrahedrite-tennantite. Later quartz-carbonate stockwork introduces quartz, carbonate, apatite and chalcopyrite.

3005568: The sample is a medium-grained latite flow breccia with mixed domains of coherent groundmass and other domains with a sedimentary clastic matrix. The rock is interpreted to be a flow breccia with incorporated sedimentary material from the paleosurface. The rock is overprinted by an intense calc-potassic alteration assemblage of K-feldspar, calcite, apatite, magnetite and pyrite. This is followed by the formation of jigsaw-fit breccia that is infilled by sericite-chlorite.

3005570: The sample is a volcanic conglomerate that is altered to an intense calc-potassic assemblage that includes K-feldspar, calcite, sericite, pyrite, magnetite, chalcopyrite and tetrahedrite-tennantite. This is overprinted by a vein-controlled quartz-calcite assemblage.

3005577: The rock is a medium-grained porphyry (?) intensely altered to a calc-potassic alteration assemblage. The secondary mineralogy in decreasing abundance is: K-feldspar, sericite, pyrite, carbonate, anhydrite, quartz, rutile, chalcopyrite, biotite and tetrahedrite-tennantite with late-stage calcite veins.

GC63-0065: The sample is of a medium-grained hornblende diorite porphyry. An intense and pervasive calc-potassic assemblage of K-feldspar, sericite, carbonate, ilmenite and pyrite overprints this. This is followed by a late, intense oxidation of carbonate and pyrite to goethite/lepidocrocite and hematite respectively.

Febbo's work (2017) identified three medium grained equigranular crowded intrusions and multiple stages of alteration. An excerpted summary from Febbo (2017) is below:

Main stage Potassic alteration

- All of the samples in this study are overprinted by intensely developed main stage potassic assemblages of either sodic-potassic (northern study area) or calc-potassic (southern study area), both of which are associated with copper mineralization.
- The sodic-potassic alteration overprints the northern porphyry and websterite and is expressed over an almost 300 m north-south strike length. The assemblage is defined by the following key minerals: Kfeldspar, magnetite, albite, epidote, clinozoisite, apatite and chalcopyrite. Other alteration minerals that are associated with the assemblage include tremolite and titanite (sphene). Coarse magnetite-albite matrix breccia is associated with the alteration assemblage. Low grade copper mineralization is associated with sodic-potassic alteration and very high chalcopyrite:pyrite ratios. The sodic-potassic alteration is overprinted by a copper-bearing propylitic assemblage and is interpreted to be transitional with calc-potassic alteration to the south.
- The calc-potassic alteration assemblage overprints the diorite, monzonite and syenite and is developed over an almost 500 m long northerly strike length. The assemblage is defined by the following key minerals: K-feldspar, carbonate and chalcopyrite. Other alteration minerals that are associated with the assemblage are anhydrite, apatite, magnetite, muscovite, tetrahedrite-tennantite and pyrite. The calcpotassic assemblage is overprinted by late stage quartz-carbonate, sericite-chlorite and quartz-anhydrite-sericite alteration assemblages.

Late stage quartz-carbonate alteration

- Quartz-carbonate alteration overprints the calc-potassic alteration assemblage (e.g., samples 3005549 and 3005570) as discrete veins that can contain quartz, calcite, apatite, clay and chalcopyrite. Un-mineralized anhydrite-quartz-sericite veins (sample 2016SA0908) and sericite-chlorite veins (sample 3005568) are of similar age and correlate with this alteration assemblage.

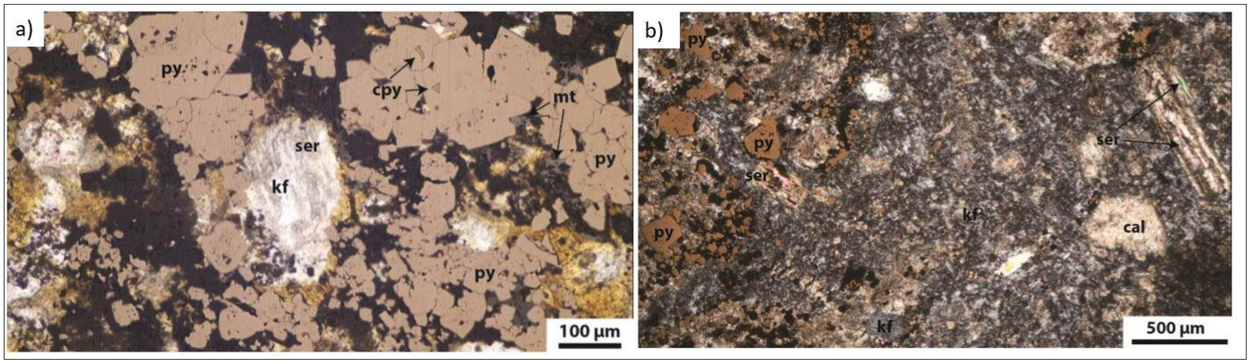


Figure 7. Photomicrographs of sample 3005570. a) Blocky pyrite (py) in Vein 1 contains inclusions of chalcopyrite (cpy) with magnetite (mt) at margins to vein; relict K-feldspar (kf) is replaced to sericite; reflected and cross polarized light. b) Calc-Potassic alteration. K-feldspar (kf) phenocryst is dusted with sericite, feldspar phenocryst is totally replaced to calcite (cal), feldspars and mafics are replaced to calcite-sericite and groundmass is replaced to secondary K-feldspar and disseminated pyrite; cross polarized and reflected light (Febbo, 2017).

7.4 SADDLE ZONE RE-LOGGING

The Saddle zone re-logging program consisted of re-logging 6 historical diamond drill holes drilled between 1963-2004, totaling 499.11m. These holes were logged over five days with the objective to look for broad lithological, alteration and mineralization changes that could be used in conjunction with field mapping to better understand the hydrothermal breccia. All historical drill holes in the Saddle Zone targeted the magnetite cemented breccia.

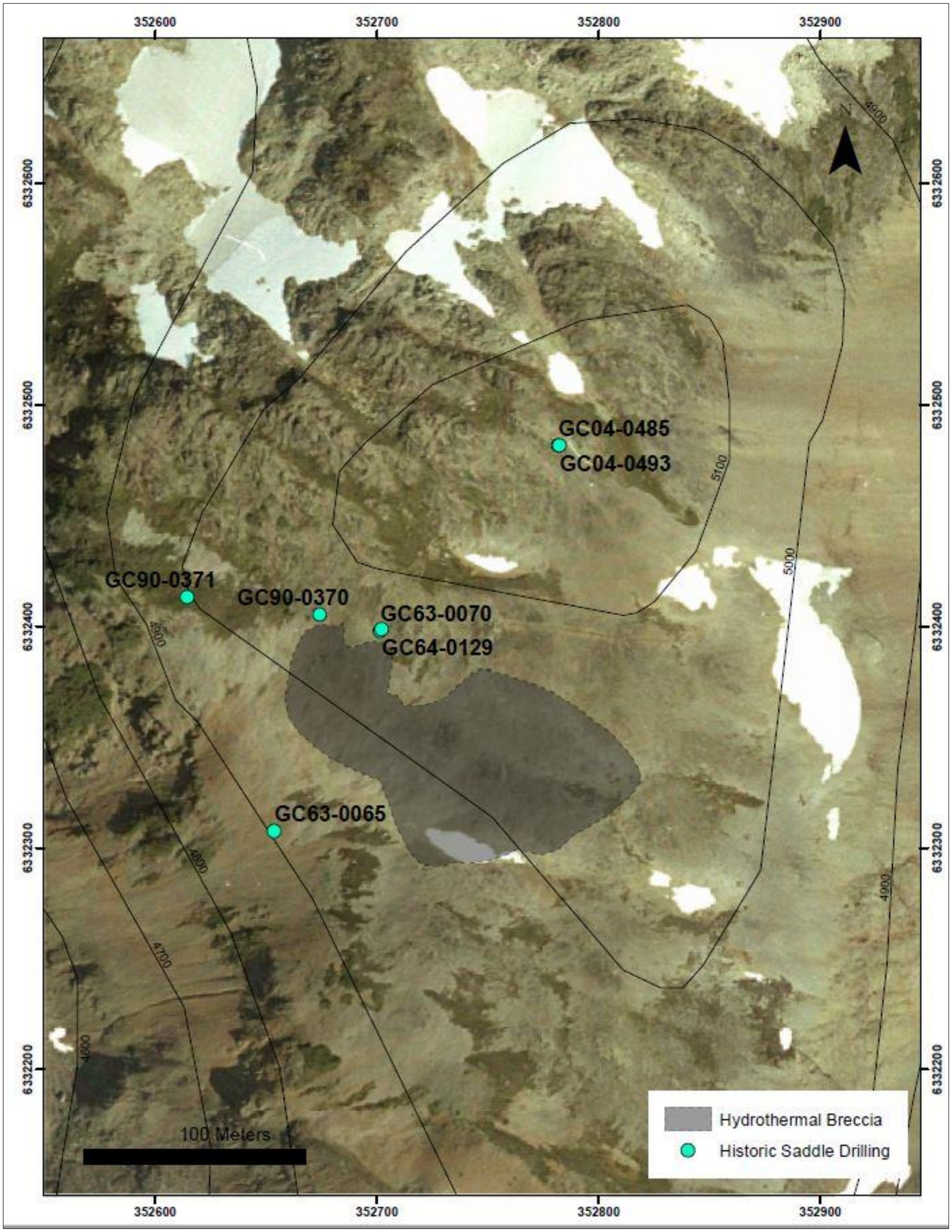


Figure 8. Plan Map of the historic drill holes from the Saddle Zone.

Saddle Zone Hole Summaries:

GC63-0065

0-85.34m

The hole was collared in bedrock in rusty orange FeOx stained equigranular medium-grained syenite (i8). The i8 is moderately magnetic and at times strongly oxidized. This unit continues down to 30.63m. From 30.63-39.93m is a possible buckshot porphyry. The "buckshot" porphyry is composed of lathe like hornblende and subhedral orthoclase phenos ranging in size from 0.1-0.3mm in an intensely oxidized aphanitic groundmass. For the remainder of the hole (39.93-85.34m) it is i8/B2 where the mag content and veining are not quite strong enough to be a breccia but are more prevalent than prior i8. These sections have increased kspar alteration and contain weak mineralization in the form of blebby chalcopyrite associated with magnetite. There are several sections of missing core and several sections of poor core preservation. This may mask actual brecciated sections within the hole.

GC63-0070

0-113.41m

The hole was collared in equigranular medium grained syenite (i8) from 1.8-35.05m. The i8 was moderately epidote and chlorite altered with magnetite increasing towards the contact with the following hydrothermal breccia. The i8 was followed by a magnetite cemented hydrothermal breccia from 35.05-91.44m. The magnetite cemented breccia is clast supported with i8 clasts composing roughly 75-85% of the unit. Alteration in the breccia shows an increase in kspar alteration with the clasts retaining some of their epi/chl alteration. Magnetite cement hosts chalcopyrite and malachite ± azurite in places. This section is strongly fractured to crushed at times making breccia textures hard to observe and may be associated with faults. From 91.44 the to the end of hole at 113.4m, the hole is composed of equigranular medium-grained syenite with patchy and veined magnetite that locally borders on breccia-like textures.

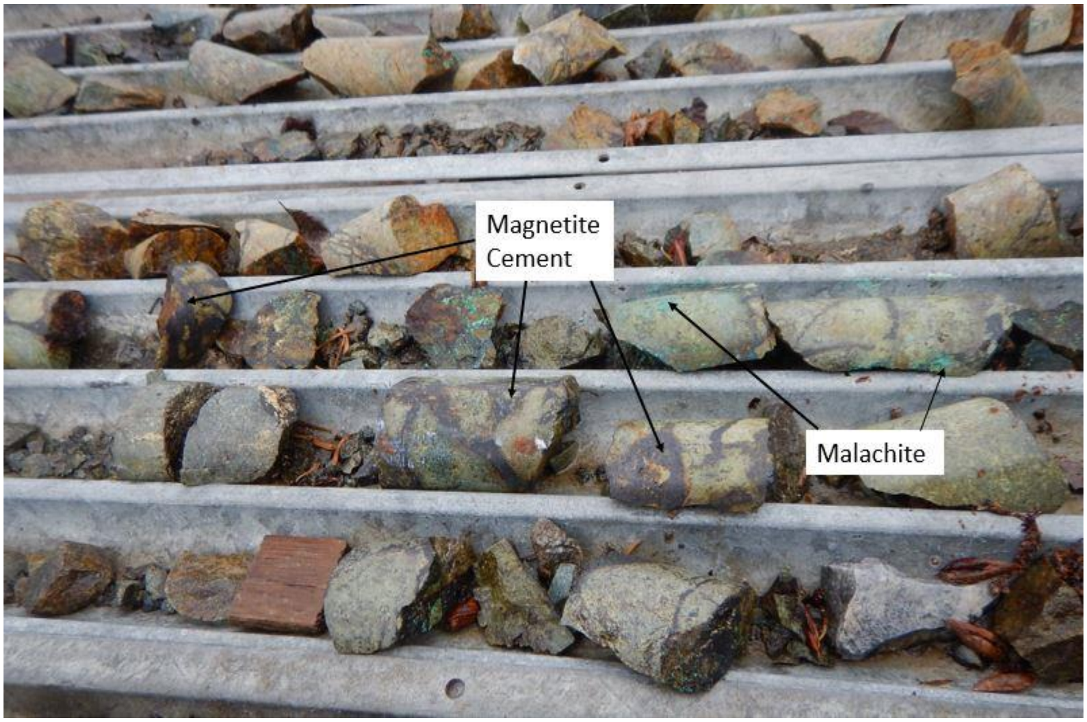


Figure 9. Magnetite cemented breccia with associated malachite in GC63-0070

GC64-0129

0-106.25m

The hole was collared in equigranular medium grained syenite (i8) from 1.54-44.56m. The i8 is grey-green to green-grey, and moderately epidote and chlorite altered with FeOx stained intervals. This interval contains small sections with trace malachite, but is otherwise barren of mineralization. The i8 is broken up by a very small dark green, fine-grained dike at 44.56-44.81m. From 44.81-71.32m the hole is characterized by i8 as previously described with increasing magnetite and minor chalcopyrite and malachite. Intervals within this are strongly FeOx altered which may be magnetite destructive. Kspar alteration intensity increases over this section nearing the proceeding hydrothermal breccia. From 71.32m to the end of hole at 106.25m is a hydrothermal breccia that is moderately kspar altered, with 5-15% magnetite cement (Figure 13). The breccia is weak to moderately mineralized with blebby chalcopyrite (0.2-0.5%) and malachite (0.1-1.5%) associated with the magnetite cement. Sections within the breccia are moderately to strongly FeOx altered.

Figure 10. Breccia textures and FeOx alteration in hole GC64-0129.

GC90-0371

0-109.42m

The hole was collared in equigranular medium grained syenite (i8) at 3.05-44.50m. This interval is moderately epidote altered with weak chlorite alteration. Weak, thin magnetite stringers (0.1-0.2cm) were observed throughout. From 44.50-50.60m the i8 continues but has strong hematite and moderate chlorite alteration. Magnetite increases to 2-3% as patchy blebs and stringers. Kspar alteration increases but it is difficult to quantify due to hem dusting of feldspars. Chalcopyrite and malachite are trace, and associated with magnetite. From 50.60-54.56m the section is rusty orange and FeOx stained with increased (3%) magnetite stringers and patches (weak B2?) as small rare sections. This is followed by typical i8 from 54.56-59.89m: this section has patchy magnetite and magnetite stringers with associated increased kspar alteration. From 59.89m to the end of hole at 109.42m the hole is dominated by an i8 with moderate magnetite as patches and stringers, at times close to breccia texture. The section shows increased chalcopyrite and malachite associated with sections of patchy mag and mag veinlets. This may suggest the hole is close to the breccia body.

GC04-0485

0-137.6m

The hole was collared in equigranular medium grained syenite (i8) at 4.28m-24.60m. This is followed by an i8(B?) from 24.6-55.56m with polylithic looking breccia sections as well as large patchy magnetite at 42.2m. A fault was observed at 54.86m but no orientation could be taken. Alteration in this interval was characterized by moderate epidote throughout and patches of bio in some clasts and veins. Trace chalcopyrite was observed in some mag stringers. An i8 was logged from 55.56-74m, typical looking until 64-74m where mag increases to 1-3%, chalcopyrite increases to 0.2%, and malachite to 0.3% as blebs associated with magnetite. This is leading into a magnetite-cemented hydrothermal breccia from 74-88m associated with increased kspar alteration, and minor chalcopyrite (0.1%) associated with magnetite. From 88-107.5m the hole is composed of i8, fairly typical with minor magnetite closest to 88m as a bleed out from the breccia. From 107.5-108m increased magnetite veining cutting strong epidote altered i8. From 108m to the end of hole at 137.6m the hole is characterized by i8 fairly typical with minor hem and some strongly fractured intervals.

GC04-0493

0-53.34m

The hole consisted entirely of equigranular medium grained syenite (i8) with small sections of FeOx staining. From 34-53.34m there is an increase in magnetite, with the magnetite over this interval ranging from 3-7%. This is associated with an increase in potassic alteration and may suggest that the hole was getting closer to the hydrothermal breccia. Overall the alteration is characterized by moderate epi/chl. No sulphides were observed in this hole, and mineralization was mainly magnetite and limonite.

8.0 DISCUSSION AND CONCLUSIONS

During the 2017 field season, a total of 76 rock samples were collected on the main GCMC claim package, for ICP-MS, and petrographic analysis.

The main objectives of the mapping program were to gain a improved understanding of the breccia hosted mineralization, the extent and potential of the Au-Ag mineralization to the south of the breccia, the relationship between the two zones, and through this understanding, be able to better vector and target future exploration. As well, determine if the surface footprint of the mineralized breccia, and the strike length of the Au-Ag mineralization can be extended to the east and west.

The 2017 Galore Creek mapping, sampling and re-logging program was successful in improving the definition of the surface footprint of the magnetite breccia and demonstrating an associated alteration relationship with the surrounding intrusive. ICP and petrographic work of the mineralized cement aided in the characterization of the breccia hosted mineralization, identifying chalcopyrite mineralization as inclusions within the magnetite cement. Numerous mineralized samples were taken from the roughly N-S trending spines at the foot of the glacier to the far south of Saddle. Several outcroppings showed strong k-feldspar-sericite alteration and increased pyrite mineralization ± chalcopyrite. The disseminated pyrite mineralization ranged from 1% to greater than 10%. Intensely pyrite mineralized outcrop sampled east of 2015-2016 sampling has extended high Au-Ag grades roughly 120m along the east-west trend. Au-Ag mineralization remains open to the east, west, south and at depth. The petrographic work has shown that the resistant spines are related to structures, and that alteration occurs within single liths, but also crosscuts multiple lithologies. The alteration and mineralization appears to be strongly associated with north-south trending structures observed during mapping. The re-logging of diamond drill holes from the Saddle zone demonstrated potassic alteration associated with the magnetite cement, increasing downhole as magnetite veinlets and stockwork increase. The petrographic work also demonstrates multi-stage alteration, with main-stage potassic alteration intensely overprinting all samples, main-stage to late propylitic alteration observed in samples 3005546 and 3005529, and late-stage quartz-carbonate alteration observed in samples 3005549, 3005570, and 3005568 (Febbo 2017). This suggests two possible scenarios at the Saddle Zone. One scenario is that the Saddle asrea is one large zone with the breccia body representing the central part of the system and the southern Au-Ag trend representing a lateral offset of that zone. A second possible scenario that explains the data and observations would be two separate and distinct porphyry cores where the southern Au-Ag represents a surface expression higher in the system.

Recommendations

A more directed and concentrated sampling program on the Au-Ag mineralization in the south of the Saddle Zone should be conducted. Increased sample density where possible as well as continued sampling to the east and west shows potential to expand both understanding and width of known mineralization. Analytical techniques such as PIMA should be considered to get a better understanding of the clay speciation present and to further understand the potential of an epithermal deposit. Adularia identification of the feldspars would also be helpful in gaining a better understanding of the epithermal potential of the Au-Ag mineralization. Robust petrographic work across the k-feldspar-sericite alteration would also be useful in understanding the mineralization and alteration present. A structural geologist could significantly add to the understanding of structural controls on this alteration and mineralization.

A ground mag survey across the hydrothermal breccia in the Saddle Zone would provide better geophysics to define the breccia body. This mag survey should be expanded down through West Fork and Southwest to provide a context for the potential of the hydrothermal breccia at Saddle in regards to size and grade. Drilling remains the best option for defining the breccia body in both size and grade. Historic drilling was primarily to the north of the surface footprint of the breccia, and most holes ended in good Cu-Au grades and potassic alteration suggesting high potential at depth. Drill holes with a minimum target depth of 300m should be considered with the possibility of continuing as long as grades and alteration remain encouraging. Drill holes should be considered to the south of the surface footprint to follow up on the hypogene copper mineralization observed in outcrops. This would help to test the potential of a large mineralized system located in the Saddle Zone.

APPENDIX I

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APPENDIX II

STATEMENT OF EXPENDITURES

Statement of Expenditures

Galore Creek Geochemical Mapping and Sampling Program

Period of field work Sept 7th-Sept 22nd, 2017

Helicopter Cost fuel- Lakelse Air Heilcopters Ltd. 206L Long Ranger	$1150/hr	6 hrs	$6,900.00
Helicopter fuel cost	$156.25/day	6 days	$937.50
Geologists Jason Courneyea, Rex Turna, And Leia Edzerza	$1450/day	5 days	$7,250.00
Geologists Rex and Leia Edzerza	$1050/day	1 day	$1,050.00
Assessment report preparation			$4,500.00
Geologist Jason Courneyea	$525/day	5 days	$2,625.00
Geologist Jason Courneyea and Sarah Henderson	$1050/day	1 day	$1050.00
Camp Cost per person (R&L, J&S)	$400/day	2 people	$1600.00
Camp Cost per person (5 R, L, & J)	$400/day	3 people	$6,000.00
Camp Cost Per person (J)	$400/day	1 person	$2,000.00
Sampling costs including shipping			$5,618.00
		Subtotal:	**$39,530.50**
Project Management Fee (5%)			**$1,976.52**
TOTAL WORK AVAILABLE FOR ASSESSMENT CREDIT			**$41,507.02**
FUNDS DEBITED FROM PAC			$16,035.11
Total Assessment Work Applied to Mineral Claims:			**$57,542.13**

Event Number: 5696566

APPENDIX III

STATEMENT OF QUALIFICATION

Statement of Qualification

I, Jason W Courneyea, do hereby certify that:

1. I am a geologist in the minerals exploration industry employed by:

   Galore Creek Mining Corporation
   3300-550 Burrard Street
   Vancouver, BC, V6C 0B3

2. I graduated from the University of Victoria, Victoria, British Columbia, with a Bachelor of Science degree in Earth and Ocean Science in 2003.

3. I have practiced my profession with exploration companies in British Columbia, Ontario, Yukon, Northwest Territory, and Nunavut, Canada for 13 years.

4. I am the author of the '2017 Geological and Geochemical Assessment Report on the Galore Creek Property', dated July, 2018.

5. The Assessment Report is based on mapping and sampling conducted by the author and Sarah L. Henderson, Rex Turna and Leia Edzerza of the Galore Creek Mining Corporation, historical reports, and from information available from public files.

6. I have no interest in the property herein.

Dated at Vancouver, British Columbia, Canada this 16th day of July, 2018.

Jason W Courneyea

APPENDIX IV

ASSAY CERTIFICATES

ALS Canada Ltd.

2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com/geochemistry

To: **GALORE CREEK MINING CORPORATION**
SUITE 3300, 550 BURRARD STREET
VANCOUVER BC V6C 0B3

CERTIFICATE TR17210448

Project: Galore Creek

P.O. No.: 13053

This report is for 91 Rock samples submitted to our lab in Terrace, BC, Canada on 25-SEP-2017.

The following have access to data associated with this certificate:

MICHAEL BUCHANAN	SARAH HENDERSON	SHELLEY OLIVER

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
LOG-24	Pulp Login - Rcd w/o Barcode
LOG-22d	Sample login - Rcd w/o BarCode dup
SPL-21d	Split sample - duplicate
PUL-32d	Pulverize Split -Dup 85% <75um
CRU-31	Fine crushing - 70% <2mm
BAG-01	Bulk Master for Storage
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-32	Pulverize 1000g to 85% < 75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME-OG62	Ore Grade Elements - Four Acid	ICP-AES
Cu-OG62	Ore Grade Cu - Four Acid	ICP-AES
Au-ICP21	Au 30g FA ICP-AES Finish	ICP-AES
ME-MS61	48 element four acid ICP-MS	

To: **GALORE CREEK MINING CORPORATION**
ATTN: SARAH HENDERSON
SUITE 3300, 550 BURRARD STREET
VANCOUVER BC V6C 0B3

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Canada Ltd.

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To: **GALORE CREEK MINING CORPORATION**
SUITE 3300, 550 BURRARD STREET
VANCOUVER BC V6C 0B3

Project: Galore Creek

CERTIFICATE OF ANALYSIS TR17210448

Sample Description	**Method** **Analyte** **Units** **LOR**	WEI-21 Recvd Wt. kg 0.02	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01	ME-MS61 Ca % 0.01	ME-MS61 Cd ppm 0.02	ME-MS61 Ce ppm 0.01	ME-MS61 Co ppm 0.1	ME-MS61 Cr ppm 1	ME-MS61 Cs ppm 0.05	ME-MS61 Cu ppm 0.2	ME-MS61 Fe % 0.01
3005501		1.81	0.31	8.42	31.6	1020	1.15	0.03	5.08	0.49	22.4	18.3	3	1.24	221	5.24
3005502		2.23	0.08	8.61	15.1	1100	1.19	0.03	4.07	0.05	20.7	18.3	3	1.52	60.8	5.64
3005503		2.44	0.20	7.84	16.6	640	1.15	0.03	5.57	0.15	22.1	17.7	6	0.60	115.5	4.96
3005504		2.17	0.23	8.46	4.1	980	1.39	0.03	4.41	0.36	25.0	19.8	4	2.15	172.0	5.37
3005505		2.29	1.04	8.31	12.3	880	1.29	0.05	4.62	0.64	23.4	16.3	4	0.88	1345	5.19
3005506		2.16	0.02	8.23	12.1	370	1.29	0.04	8.14	0.15	29.3	15.2	11	0.43	31.8	5.94
3005507		2.68	0.08	8.31	7.8	850	1.00	0.04	4.99	0.27	22.4	25.6	15	1.29	99.8	6.19
3005508		2.53	0.12	8.34	14.4	760	1.09	0.03	5.12	0.17	20.8	18.6	2	1.09	126.5	5.29
3005509		2.36	0.04	9.19	29.5	800	0.31	0.03	8.04	0.14	11.40	38.7	2	2.95	39.8	8.32
3005510		2.83	0.47	7.55	29.3	1230	1.74	0.05	6.20	0.72	40.1	35.7	8	1.35	569	10.20
3005511		3.34	0.29	8.38	8.2	1320	1.45	0.03	3.32	0.40	23.1	13.0	7	1.14	163.0	3.82
3005512		2.81	0.17	8.43	13.5	920	1.53	0.04	4.72	0.14	23.3	18.2	2	1.18	130.0	5.46
3005513		3.54	0.14	8.23	11.3	960	1.21	0.03	4.29	0.15	20.6	17.2	2	1.09	193.5	5.10
3005514		1.04	<0.01	0.16	<0.2	10	<0.05	0.02	35.2	<0.02	0.19	0.4	1	<0.05	1.4	0.09
3005515		2.10	0.11	8.49	10.4	1290	1.12	0.03	4.22	0.13	19.05	15.3	2	1.26	79.2	4.87
3005516		2.16	0.19	8.39	18.0	1030	1.16	0.04	4.82	0.30	22.8	19.4	2	0.78	124.5	5.39
3005517		2.47	0.59	8.34	23.5	1450	1.37	0.06	3.78	0.16	24.8	19.2	4	1.91	934	5.49
3005518		3.22	10.15	5.20	48.9	1570	2.13	1.06	1.97	1.00	54.0	75.3	9	0.91	>10000	26.3
3005519		0.08	0.76	7.54	19.7	1050	2.91	1.55	2.79	0.12	67.6	15.6	94	11.95	2600	4.51
3005520		2.47	0.18	8.48	16.7	1230	1.25	0.03	4.42	0.25	21.2	19.9	4	1.17	179.0	5.56
3005521		1.95	1.17	7.37	12.4	1970	2.86	0.05	4.22	1.36	51.0	34.9	13	1.20	688	9.48
3005522		2.22	0.83	8.05	6.1	890	1.16	0.07	2.57	0.05	21.7	12.2	6	0.98	882	3.69
3005523		1.49	<0.01	0.08	0.5	10	<0.05	0.01	34.6	<0.02	0.21	0.5	<1	<0.05	4.9	0.07
3005524		1.96	3.40	6.39	12.8	1350	1.00	0.05	5.02	0.48	34.1	27.2	7	1.33	752	14.35
3005525		2.71	2.36	5.48	12.4	1160	1.04	0.09	1.52	0.87	13.40	59.1	4	1.10	6670	25.7
3005526		2.65	12.45	4.83	41.3	890	1.40	0.55	6.18	2.44	72.9	63.0	7	0.45	>10000	22.8
3005527		0.09	0.75	7.30	19.2	990	2.82	1.50	2.59	0.17	68.6	14.8	87	10.90	2560	4.32
3005528		2.58	1.48	6.91	16.0	1730	2.73	0.10	5.06	0.66	62.8	26.2	13	1.06	1360	7.03
3005529		4.09	3.05	3.85	204	590	0.93	0.21	5.12	0.75	>500	51.9	3	0.55	1450	33.8
3005530		2.20	2.72	6.45	19.0	960	1.58	0.14	4.72	4.47	45.1	49.0	5	0.87	1890	18.10
3005531		2.21	0.54	8.00	10.3	1150	1.21	0.05	5.22	0.30	23.4	22.2	5	1.97	570	6.11
3005532		2.02	0.30	7.94	6.4	960	1.30	0.03	3.63	0.25	22.8	13.2	8	1.00	292	4.31
3005533		2.31	0.92	8.42	9.7	910	1.55	0.02	3.18	0.25	20.7	12.1	7	1.02	272	3.51
3005534		2.05	0.08	7.94	3.4	2100	1.69	0.08	1.77	0.24	65.7	10.6	29	1.22	74.6	2.95
3005535		2.95	0.48	8.06	7.4	910	1.32	0.04	3.48	0.53	21.7	12.0	6	0.84	570	3.68
3005536		2.18	0.87	8.44	14.2	1080	1.57	0.08	2.99	1.65	27.0	14.8	6	1.00	1640	3.73
3005537		2.23	0.96	8.57	17.1	1070	1.52	0.05	3.14	0.63	27.0	17.8	7	1.17	1320	4.43
3005538		2.36	0.43	8.50	13.0	1130	1.22	0.04	4.94	0.41	24.7	19.5	8	1.03	951	5.82
3005539		2.54	0.27	8.85	11.5	1240	1.39	0.04	5.30	0.30	28.9	18.9	11	1.26	484	6.08
3005540		<0.02	0.25	8.19	10.5	1160	1.41	0.03	5.03	0.29	26.9	17.5	11	1.15	450	5.71

CERTIFICATE OF ANALYSIS TR17210448

Sample Description	Method	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61
	Analyte	Ga	Ge	Hf	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm
	LOR	0.05	0.05	0.1	0.005	0.01	0.5	0.2	0.01	5	0.05	0.01	0.1	0.2	10	0.5
3005501		17.05	0.08	0.8	0.057	2.80	10.9	19.4	1.60	1730	0.77	2.87	5.4	2.4	2290	14.1
3005502		15.85	0.09	1.1	0.052	3.54	10.0	12.5	1.60	1560	0.96	2.67	7.4	2.4	2250	6.0
3005503		16.50	0.09	0.8	0.046	2.32	10.0	11.9	1.45	1760	0.72	2.62	5.8	2.6	2490	16.9
3005504		16.80	0.08	0.7	0.052	3.32	12.3	20.1	1.51	1640	0.60	2.76	9.6	4.7	1810	9.6
3005505		16.15	0.11	0.8	0.152	3.26	11.8	14.0	1.30	1620	2.16	2.95	9.1	2.9	1960	20.5
3005506		19.85	0.09	0.6	0.059	2.13	14.4	13.1	1.00	1700	0.59	1.20	11.4	7.7	2030	10.7
3005507		17.65	0.07	0.8	0.055	2.74	10.4	24.7	2.29	1700	0.66	2.52	7.2	15.3	1920	10.8
3005508		16.50	0.08	0.9	0.050	2.67	10.0	12.6	1.59	1570	1.33	2.62	7.6	2.3	2300	187.0
3005509		18.10	0.07	0.5	0.070	2.07	5.4	24.3	2.99	1740	0.43	1.11	0.8	9.7	2090	5.6
3005510		18.90	0.09	1.7	0.326	2.90	21.6	12.9	1.76	2790	3.23	1.89	17.4	9.1	2380	26.5
3005511		15.90	0.09	1.2	0.093	5.10	13.4	11.7	1.33	1460	2.42	2.60	7.2	4.2	1520	16.9
3005512		16.90	0.10	1.7	0.049	3.26	11.5	12.6	1.55	1640	1.04	2.65	10.0	2.7	2080	9.2
3005513		15.70	0.08	0.8	0.042	3.04	9.9	17.1	1.44	1500	0.74	2.67	7.6	2.1	2150	7.6
3005514		0.21	0.08	<0.1	<0.005	0.02	<0.5	0.4	2.00	34	0.11	0.01	0.1	0.2	70	<0.5
3005515		15.70	0.10	0.9	0.048	3.80	9.3	12.1	1.42	1520	0.72	2.45	7.0	2.0	2100	8.9
3005516		16.60	0.11	1.1	0.051	3.09	11.0	12.8	1.58	1940	1.20	2.70	6.4	2.8	2480	28.9
3005517		15.90	0.09	1.0	0.107	3.96	13.1	14.7	1.68	1480	1.17	2.60	8.2	6.0	1970	11.1
3005518		14.70	0.15	1.1	0.434	4.35	32.6	5.3	0.81	3370	14.50	0.56	13.1	15.1	1720	11.9
3005519		18.55	0.13	2.4	0.221	3.13	35.0	31.4	1.48	570	101.5	2.00	18.1	43.2	1110	22.6
3005520		16.35	0.08	1.4	0.040	3.99	10.2	10.1	1.69	1810	1.38	2.42	7.7	2.6	2190	21.6
3005521		20.1	0.14	2.1	0.464	4.99	29.6	9.3	1.27	3370	3.95	1.28	16.2	11.3	1160	44.4
3005522		16.00	0.17	0.9	0.092	3.78	11.8	10.8	0.99	1370	2.06	3.58	7.6	5.0	1090	9.8
3005523		0.14	0.08	<0.1	<0.005	0.01	<0.5	0.6	1.85	27	0.08	0.01	<0.1	0.3	50	<0.5
3005524		13.45	0.13	1.2	0.359	5.27	24.5	7.7	0.91	3870	5.84	0.75	6.3	9.6	1440	43.4
3005525		12.35	0.14	0.9	0.323	5.08	8.8	6.5	0.62	2690	6.31	0.61	4.2	17.3	550	20.5
3005526		15.10	0.21	1.4	0.639	3.16	45.4	7.3	1.05	5240	10.60	0.33	13.1	21.8	2470	61.1
3005527		18.90	0.18	2.7	0.219	3.00	35.1	31.6	1.40	538	102.0	1.97	17.1	40.4	1040	21.1
3005528		16.75	0.14	1.7	0.412	4.91	37.3	14.4	1.97	2830	3.23	1.50	16.4	14.7	3510	38.2
3005529		15.45	0.39	0.6	0.208	2.72	480	7.7	0.77	1920	9.57	0.44	3.4	23.1	>10000	168.5
3005530		14.55	0.14	1.1	0.362	3.93	34.8	12.6	1.31	4840	5.74	0.98	6.3	12.5	1380	251
3005531		17.50	0.13	0.9	0.087	3.88	10.7	19.7	1.83	2110	1.78	2.52	7.7	5.3	1980	13.7
3005532		17.10	0.19	1.2	0.094	3.49	11.7	8.0	1.14	1260	2.88	3.55	8.3	5.7	1200	9.5
3005533		17.25	0.20	1.1	0.080	3.09	10.9	8.2	1.14	1340	2.81	4.28	8.4	5.4	1180	5.2
3005534		21.7	0.26	3.6	0.049	3.26	35.8	28.0	1.20	910	0.25	2.63	6.4	18.8	1330	55.2
3005535		16.70	0.23	1.1	0.070	3.57	11.1	8.0	1.19	1170	2.67	3.75	8.2	5.6	1180	28.5
3005536		16.80	0.22	1.4	0.201	5.75	14.8	7.1	1.16	1660	2.36	2.81	9.3	5.1	1250	24.2
3005537		16.75	0.23	1.3	0.192	5.16	15.1	7.9	1.36	1460	1.86	2.95	8.5	6.0	1290	27.6
3005538		16.80	0.16	0.8	0.138	3.50	12.5	16.5	1.77	1730	3.01	2.88	7.2	8.2	1920	20.0
3005539		18.55	0.19	1.1	0.141	4.16	14.8	15.1	1.77	1540	2.00	2.48	8.7	8.7	2030	14.1
3005540		17.10	0.19	1.0	0.122	3.89	13.6	14.3	1.65	1440	1.93	2.35	8.1	8.0	1910	13.4

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To: **GALORE CREEK MINING CORPORATION**
SUITE 3300, 550 BURRARD STREET
VANCOUVER BC V6C 0B3

Project: Galore Creek

CERTIFICATE OF ANALYSIS TR17210448

Sample Description	**Method** **Analyte** **Units** **LOR**	ME-MS61 Rb ppm 0.1	ME-MS61 Re ppm 0.002	ME-MS61 S % 0.01	ME-MS61 Sb ppm 0.05	ME-MS61 Sc ppm 0.1	ME-MS61 Se ppm 1	ME-MS61 Sn ppm 0.2	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1
3005501		83.1	<0.002	0.01	2.96	17.7	<1	2.0	1305	0.30	<0.05	0.94	0.388	0.31	0.5	203
3005502		99.6	<0.002	<0.01	2.26	20.9	<1	0.8	1195	0.45	<0.05	1.63	0.410	0.30	0.9	249
3005503		43.3	<0.002	<0.01	3.45	19.0	<1	0.7	1485	0.32	<0.05	1.29	0.344	0.16	0.7	211
3005504		104.5	<0.002	0.01	0.45	18.8	<1	0.9	876	0.57	<0.05	2.11	0.393	0.23	0.9	195
3005505		86.1	0.002	0.05	1.54	15.6	1	1.3	949	0.60	<0.05	2.05	0.353	0.21	1.0	178
3005506		48.9	<0.002	<0.01	1.68	17.9	<1	1.0	1960	0.66	<0.05	2.49	0.423	0.17	1.3	199
3005507		87.7	<0.002	<0.01	0.45	25.2	<1	0.9	862	0.42	<0.05	1.42	0.575	0.25	0.6	256
3005508		65.8	<0.002	<0.01	1.71	20.4	<1	0.8	1075	0.45	<0.05	1.70	0.370	0.16	0.9	223
3005509		72.0	<0.002	<0.01	1.28	35.8	<1	0.5	1110	0.05	<0.05	0.15	0.567	0.22	0.1	389
3005510		86.6	0.004	0.02	4.38	24.4	<1	4.9	1700	0.65	<0.05	2.85	0.515	0.25	2.0	355
3005511		139.5	0.009	0.02	1.61	15.2	<1	1.0	1140	0.47	<0.05	1.92	0.278	0.31	1.0	156
3005512		85.3	<0.002	<0.01	1.82	20.5	<1	1.0	1120	0.61	<0.05	2.58	0.370	0.20	1.3	223
3005513		76.6	<0.002	0.01	1.24	16.8	<1	0.7	915	0.45	<0.05	1.96	0.326	0.20	0.9	191
3005514		0.4	<0.002	0.11	0.07	0.3	<1	<0.2	5300	<0.05	<0.05	0.03	0.007	<0.02	1.5	2
3005515		99.0	<0.002	<0.01	1.54	16.8	<1	0.8	1110	0.41	<0.05	1.43	0.330	0.27	0.7	190
3005516		75.6	<0.002	<0.01	4.04	20.1	<1	0.8	1235	0.39	<0.05	1.58	0.364	0.29	0.9	224
3005517		113.0	0.002	0.03	4.83	17.7	<1	1.6	1255	0.50	<0.05	1.99	0.392	0.31	1.1	221
3005518		124.5	0.007	0.03	101.0	10.8	4	8.0	711	0.73	0.11	2.76	0.393	0.33	4.3	641
3005519		190.5	0.002	0.36	1.06	13.5	3	5.4	342	1.31	0.05	19.40	0.474	1.01	5.1	126
3005520		108.0	<0.002	<0.01	3.14	20.9	<1	0.7	1130	0.47	<0.05	1.77	0.388	0.28	1.0	228
3005521		139.5	0.007	0.03	4.32	14.9	<1	9.1	1365	1.07	<0.05	3.52	0.485	0.26	5.2	310
3005522		113.0	0.006	0.02	1.85	11.6	<1	1.4	584	0.48	<0.05	2.16	0.288	0.31	1.6	137
3005523		0.3	<0.002	0.07	0.08	0.2	<1	<0.2	4710	<0.05	<0.05	0.02	<0.005	<0.02	1.4	2
3005524		167.0	0.012	0.02	8.73	12.4	1	6.6	946	0.42	<0.05	1.94	0.269	0.30	5.0	354
3005525		136.0	0.007	0.02	2.50	7.7	3	3.5	640	0.29	<0.05	1.19	0.203	0.40	1.6	432
3005526		97.4	0.002	0.07	12.25	19.8	7	12.3	799	0.66	0.18	2.47	0.376	0.29	8.8	547
3005527		184.5	0.002	0.35	0.85	12.5	3	5.3	338	1.28	0.07	16.40	0.452	0.93	4.7	119
3005528		139.5	0.006	0.03	2.73	27.9	1	5.6	787	0.84	<0.05	3.95	0.451	0.45	3.0	238
3005529		81.2	0.006	0.03	5.01	5.9	2	3.7	894	0.21	0.07	5.84	0.170	0.26	15.8	654
3005530		123.5	0.006	0.03	4.75	10.3	1	9.0	895	0.39	<0.05	1.75	0.240	0.34	7.2	329
3005531		131.0	0.002	0.01	2.34	22.7	<1	1.4	891	0.45	<0.05	1.42	0.492	0.28	1.1	251
3005532		104.5	0.025	0.01	1.49	13.4	1	1.9	949	0.52	<0.05	2.25	0.325	0.25	1.7	156
3005533		100.0	0.019	<0.01	5.47	12.7	1	1.3	811	0.52	<0.05	2.26	0.309	0.22	1.5	139
3005534		96.4	<0.002	<0.01	4.69	8.4	<1	1.1	842	0.34	<0.05	9.47	0.415	0.47	2.9	90
3005535		102.0	0.013	0.01	3.37	13.2	<1	1.4	906	0.53	<0.05	2.29	0.318	0.26	1.6	142
3005536		118.0	0.009	0.01	3.27	12.4	1	2.9	854	0.54	0.06	2.43	0.319	0.41	2.8	127
3005537		133.0	0.005	0.02	10.60	13.1	1	3.6	1060	0.52	<0.05	2.27	0.342	0.30	3.0	151
3005538		97.8	0.006	0.01	2.72	19.7	1	1.8	1200	0.43	<0.05	1.64	0.426	0.25	1.2	227
3005539		106.0	0.005	0.01	3.30	20.6	1	2.2	1175	0.48	<0.05	1.80	0.453	0.28	1.5	231
3005540		94.5	0.008	0.01	3.07	19.1	<1	2.1	1115	0.44	<0.05	1.64	0.426	0.27	1.4	220

Project: Galore Creek

CERTIFICATE OF ANALYSIS TR17210448

Method	ME-MS61	ME-MS61	ME-MS61	ME-MS61	Cu-OG62	Au-ICP21
Analyte	W	Y	Zn	Zr	Cu	Au
Units	ppm	ppm	ppm	ppm	%	ppm
Sample Description **LOR**	0.1	0.1	2	0.5	0.001	0.001
3005501	1.7	21.6	168	21.2		0.014
3005502	1.3	20.4	101	31.2		0.003
3005503	0.8	21.5	103	21.9		0.003
3005504	2.3	21.5	138	17.4		0.008
3005505	2.9	20.4	111	20.8		0.255
3005506	1.9	25.3	74	11.0		0.011
3005507	0.9	25.0	136	19.0		0.002
3005508	0.7	21.0	93	23.1		0.001
3005509	0.8	15.8	115	10.5		0.003
3005510	2.1	21.3	320	54.1		0.068
3005511	1.9	15.6	162	30.2		0.010
3005512	1.0	21.7	101	50.8		0.007
3005513	0.9	20.0	91	20.9		0.003
3005514	<0.1	0.3	<2	1.4		0.001
3005515	1.0	19.0	100	24.8		0.002
3005516	1.1	21.6	138	35.6		0.004
3005517	1.2	20.8	129	22.2		0.154
3005518	5.0	17.1	969	46.6	1.640	2.95
3005519	3.2	26.9	96	82.4		0.249
3005520	1.0	20.9	152	45.1		0.016
3005521	2.9	15.7	395	68.9		0.224
3005522	3.0	14.7	86	26.6		0.040
3005523	<0.1	0.3	<2	0.5		0.001
3005524	2.8	17.0	332	36.6		0.108
3005525	3.3	9.4	741	25.9		0.091
3005526	5.1	26.2	825	52.1	1.785	3.22
3005527	3.1	25.1	90	85.4		0.250
3005528	1.8	20.9	423	60.9		0.035
3005529	8.9	28.1	550	15.8		0.476
3005530	6.0	19.3	616	37.2		0.065
3005531	3.3	20.2	203	20.0		0.027
3005532	2.2	16.5	90	40.1		0.006
3005533	1.9	15.9	91	32.7		0.003
3005534	1.6	9.0	165	146.0		0.011
3005535	1.5	16.0	116	30.6		0.018
3005536	2.0	17.2	245	45.3		0.059
3005537	6.7	16.5	199	38.3		0.064
3005538	2.3	17.5	154	19.0		0.023
3005539	1.9	19.8	118	31.9		0.088
3005540	1.9	18.7	111	29.7		0.082

***** See Appendix Page for comments regarding this certificate *****

Sample Description	Method	WEI-21	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61
	Analyte	Recvd Wt.	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe
	Units	kg	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%
	LOR	0.02	0.01	0.01	0.2	10	0.05	0.01	0.01	0.02	0.01	0.1	1	0.05	0.2	0.01
3005541		1.39	0.79	8.54	7.7	1080	1.26	0.03	3.65	0.72	23.8	17.4	8	1.13	566	5.03
3005542		2.36	0.33	8.46	10.6	850	1.41	0.03	4.41	0.25	23.0	14.0	9	0.64	273	4.41
3005543		0.09	0.72	7.34	18.5	1030	2.79	1.48	2.67	0.12	62.3	14.4	90	10.90	2590	4.43
3005544		2.65	0.23	8.98	20.3	780	1.41	0.03	5.49	0.15	24.4	24.8	9	0.68	337	6.50
3005545		2.28	0.53	8.53	20.7	970	1.26	0.02	4.54	0.29	25.2	27.0	4	1.09	410	6.91
3005546		2.91	1.19	8.50	23.0	730	1.21	0.03	4.70	7.49	30.0	27.6	5	0.48	1535	6.70
3005547		2.61	0.31	7.54	14.5	780	1.29	0.01	5.60	0.28	21.6	23.8	3	2.92	428	5.84
3005548		<0.02	0.29	7.11	14.3	770	1.24	0.01	5.41	0.24	18.85	22.9	3	2.85	425	5.75
3005549		3.04	0.25	7.34	16.7	540	2.05	0.02	5.05	0.21	19.55	20.6	4	4.62	189.5	5.51
3005550		2.25	6.71	6.51	15.3	1050	1.48	0.05	3.95	2.16	15.70	12.1	6	1.65	1130	3.99
3005551		3.17	1.97	8.32	7.9	1210	1.64	0.05	3.33	0.15	25.2	15.1	9	1.55	1090	4.18
3005552		1.01	0.01	0.05	<0.2	10	<0.05	0.01	35.3	<0.02	0.17	0.4	1	<0.05	2.5	0.05
3005553		2.32	0.27	8.19	11.1	1010	1.18	0.02	2.42	0.10	21.5	17.9	4	1.94	432	5.25
3005554		3.01	0.27	7.46	10.9	1680	1.49	0.01	5.44	0.26	27.7	15.6	13	1.51	127.0	5.47
3005555		0.84	0.78	8.40	16.9	750	1.08	0.06	4.81	0.14	27.3	19.5	3	2.09	385	6.03
3005556		<0.02	0.70	8.21	15.9	750	1.03	0.05	4.72	0.14	25.8	18.9	3	2.00	381	6.04
3005557		2.38	0.72	7.83	14.0	890	1.43	0.04	5.33	1.06	25.7	22.4	8	0.57	544	6.44
3005558		2.33	6.98	6.80	272	280	1.76	0.06	3.25	16.30	22.4	24.6	12	1.41	323	7.98
3005559		2.64	6.83	7.51	319	350	1.64	0.06	3.14	10.60	24.3	24.0	14	1.53	429	6.67
3005560		1.48	0.68	7.97	17.7	1750	2.80	0.01	5.28	0.39	26.0	17.7	14	2.30	77.4	5.32
3005561		1.91	5.98	7.21	307	180	1.14	0.13	1.71	2.66	16.35	27.2	15	1.14	90.7	7.16
3005562		1.53	1.01	7.93	23.8	1200	1.74	0.05	3.77	0.10	31.8	22.7	10	2.59	828	6.61
3005563		2.94	0.13	7.63	8.8	1720	2.09	0.01	4.94	0.22	29.4	20.1	14	1.15	38.6	5.80
3005564		1.57	1.21	7.55	132.0	1660	1.68	0.01	3.99	2.13	27.2	21.6	14	1.30	183.5	5.85
3005565		2.26	1.73	6.79	102.5	590	1.56	0.03	4.53	9.41	23.7	27.0	18	1.26	154.5	7.04
3005566		1.48	0.01	0.13	0.2	10	<0.05	0.01	35.5	0.03	0.22	0.5	<1	<0.05	2.1	0.08
3005567		1.86	6.80	7.33	223	830	1.67	0.10	2.53	8.19	32.4	24.3	16	1.68	170.0	5.57
3005568		1.66	0.17	7.37	7.6	2420	3.48	0.01	5.40	0.23	27.6	16.3	10	3.86	77.0	5.16
3005569		2.11	0.33	7.62	14.3	1580	2.25	0.05	5.56	0.32	26.4	25.9	16	1.16	166.5	7.43
3005570		2.46	1.51	6.92	27.1	1210	2.00	0.40	4.01	3.63	26.6	26.8	17	2.33	189.5	6.54
3005571		2.13	0.50	7.40	11.7	1930	2.20	0.05	5.07	2.20	29.0	26.9	19	2.15	234	7.36
3005572		0.08	0.84	7.84	20.0	1090	3.54	1.63	2.80	0.16	75.0	16.7	92	13.00	2740	4.66
3005573		1.44	5.38	7.71	286	410	1.52	0.15	0.07	0.57	22.3	3.4	25	1.34	70.3	9.72
3005574		2.26	5.31	9.27	287	1710	2.83	0.05	0.07	0.11	20.4	8.7	19	3.25	161.0	6.93
3005575		2.88	0.24	7.70	14.5	1510	1.83	0.03	4.85	0.39	28.7	22.8	13	1.24	120.0	6.49
3005576		<0.02	0.22	7.89	12.9	1490	1.90	0.03	4.83	0.39	25.5	22.0	13	1.20	118.5	6.37
3005577		2.19	9.53	6.96	194.0	200	2.92	0.11	4.09	71.0	32.0	32.8	18	3.74	614	7.31
3005578		1.84	3.27	7.79	39.6	1850	1.65	0.15	1.68	2.14	31.6	23.7	18	3.78	559	7.53
3005579		2.62	4.34	8.75	89.9	530	2.77	1.31	0.45	0.33	74.7	22.3	8	1.83	304	8.14
3005580		1.70	1.46	6.61	30.0	170	2.64	0.97	5.04	0.46	23.5	26.2	40	3.98	128.0	8.91

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Sample Description	Method	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61
	Analyte	Ga	Ge	Hf	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm
	LOR	0.05	0.05	0.1	0.005	0.01	0.5	0.2	0.01	5	0.05	0.01	0.1	0.2	10	0.5
3005541		17.20	0.20	1.1	0.119	3.83	11.6	11.3	1.49	1540	1.63	3.10	8.1	6.7	1610	9.3
3005542		18.25	0.19	0.8	0.102	3.27	11.5	7.0	1.04	1500	6.41	2.99	8.0	5.6	1310	71.3
3005543		19.05	0.24	2.6	0.206	3.10	31.5	31.6	1.42	546	105.0	2.04	17.2	40.1	1090	21.1
3005544		17.55	0.19	0.8	0.087	2.39	11.8	18.6	2.21	1750	1.75	3.16	6.1	9.3	2430	11.5
3005545		18.45	0.10	0.9	0.115	3.01	12.7	19.9	2.18	1720	1.43	3.08	7.2	8.2	2400	9.7
3005546		18.00	0.09	0.8	0.144	2.62	15.3	15.5	1.90	1720	4.51	3.14	8.1	8.1	2490	270
3005547		16.10	0.11	0.5	0.090	4.71	10.6	7.9	1.77	1640	1.45	1.15	6.8	6.7	2010	33.9
3005548		15.35	0.09	0.5	0.092	4.59	9.3	7.6	1.69	1580	1.44	1.14	6.5	6.4	1960	32.6
3005549		15.10	0.18	0.4	0.093	4.17	8.4	3.9	1.69	1570	0.84	0.66	5.4	6.9	1950	13.2
3005550		14.45	0.18	1.0	0.181	3.93	7.8	5.9	0.42	1880	5.54	0.35	6.5	4.8	1070	22.5
3005551		16.60	0.22	1.2	0.220	6.10	12.3	7.7	1.37	1580	3.28	2.60	9.3	5.3	1070	11.1
3005552		0.11	0.07	<0.1	<0.005	0.01	<0.5	0.4	1.96	30	0.07	0.01	<0.1	0.3	50	<0.5
3005553		16.90	0.13	0.8	0.068	4.24	9.1	10.8	1.24	1450	4.14	3.16	8.1	5.5	2190	15.8
3005554		14.30	0.16	1.0	0.052	6.22	14.8	3.8	1.30	2540	3.29	1.32	11.5	8.4	2310	18.7
3005555		16.65	0.14	0.8	0.089	3.13	13.5	6.2	1.70	1660	3.44	3.17	6.4	6.5	2230	44.0
3005556		16.55	0.14	0.7	0.085	3.13	12.4	6.1	1.68	1630	3.14	3.16	6.0	6.4	2210	41.5
3005557		15.95	0.12	0.8	0.086	2.62	12.7	16.1	1.83	1740	4.19	2.87	6.9	10.6	2220	114.5
3005558		17.80	0.13	1.3	0.097	4.91	13.1	7.5	0.94	2490	107.0	0.34	10.1	12.1	1570	658
3005559		18.85	0.14	1.4	0.058	5.58	13.7	7.7	1.13	3900	52.5	0.12	9.4	12.8	2180	356
3005560		16.90	0.15	0.9	0.054	5.45	14.8	8.4	1.17	1910	1.76	1.17	12.8	10.2	2250	31.8
3005561		17.30	0.14	1.3	0.045	4.65	7.2	5.0	0.40	4110	16.75	0.20	9.0	13.0	2020	174.5
3005562		18.15	0.17	1.1	0.155	4.52	16.7	14.1	1.79	2520	2.63	2.45	11.1	9.3	1980	10.6
3005563		17.20	0.15	1.0	0.063	5.34	16.5	13.2	1.94	3100	1.09	2.02	13.1	11.6	2400	15.6
3005564		16.65	0.18	1.5	0.070	5.24	15.6	9.7	1.21	2370	2.58	0.31	11.3	12.0	2260	41.5
3005565		17.15	0.17	0.9	0.073	4.96	13.3	13.0	1.63	5130	2.74	0.37	9.1	14.0	2200	146.0
3005566		0.21	0.12	<0.1	<0.005	0.02	<0.5	0.7	1.80	35	0.11	0.01	0.1	0.6	50	<0.5
3005567		17.45	0.14	1.2	0.069	4.89	16.9	13.0	0.73	4420	9.08	0.23	9.5	14.7	2220	88.5
3005568		15.95	0.15	0.9	0.066	4.45	14.8	22.5	1.59	2670	0.42	0.82	14.9	9.3	2180	35.9
3005569		17.60	0.15	1.0	0.080	4.65	13.8	18.8	3.10	2650	1.01	1.48	10.3	13.8	2580	23.8
3005570		19.35	0.16	0.9	0.093	4.50	13.7	20.6	1.69	6930	4.52	0.41	7.1	12.5	2420	184.0
3005571		18.60	0.15	0.8	0.097	5.17	15.7	16.9	1.36	3070	3.99	1.13	11.3	15.1	2440	31.8
3005572		20.9	0.20	2.8	0.243	3.26	38.1	35.8	1.49	581	110.0	2.15	20.2	44.3	1120	24.7
3005573		23.4	0.13	1.3	0.076	4.61	13.2	6.8	0.12	252	25.3	0.18	6.9	2.7	2040	1215
3005574		27.4	0.12	1.6	0.084	5.10	12.6	14.2	0.31	219	21.7	0.17	13.0	5.2	2180	136.5
3005575		17.55	0.16	0.9	0.067	5.14	16.3	18.7	2.17	3410	2.00	1.58	12.1	12.8	2460	21.7
3005576		16.95	0.17	0.9	0.075	5.55	14.4	17.7	2.09	3420	2.07	1.53	11.8	12.8	2460	19.9
3005577		18.80	0.15	1.8	0.123	4.97	18.3	42.6	1.23	4840	23.2	0.12	11.6	14.0	2080	1220
3005578		20.2	0.18	1.2	0.094	4.96	19.4	51.2	2.11	2950	12.75	0.15	11.2	12.3	2710	116.0
3005579		19.25	0.18	1.1	0.035	5.02	53.9	23.2	0.49	1370	96.0	0.96	13.3	4.9	1190	155.0
3005580		15.35	0.21	1.0	0.051	4.98	12.8	8.4	1.63	3300	8.87	0.66	10.6	15.0	2410	264

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Method	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61
Analyte	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V
Units	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
Sample Description **LOR**	0.1	0.002	0.01	0.05	0.1	1	0.2	0.2	0.05	0.05	0.01	0.005	0.02	0.1	1
3005541	106.0	0.004	0.01	2.59	15.2	<1	1.9	992	0.49	<0.05	1.95	0.372	0.28	1.4	183
3005542	76.8	0.002	0.01	8.32	12.2	<1	1.5	1690	0.50	<0.05	2.23	0.316	0.23	1.5	157
3005543	175.5	<0.002	0.36	0.83	12.4	3	5.5	350	1.25	0.08	15.75	0.464	0.92	4.3	123
3005544	56.5	0.003	0.01	4.71	23.2	<1	1.4	1435	0.35	<0.05	1.29	0.495	0.19	0.9	267
3005545	65.2	0.003	0.01	4.30	23.5	<1	1.6	1115	0.37	<0.05	1.46	0.479	0.28	1.0	266
3005546	50.7	0.006	0.09	4.53	23.1	1	2.0	1315	0.40	<0.05	2.69	0.483	0.21	1.2	241
3005547	140.5	0.002	0.05	8.85	20.2	<1	1.3	427	0.34	<0.05	1.19	0.418	0.63	0.9	218
3005548	133.0	0.003	0.05	8.57	18.2	<1	1.2	422	0.32	<0.05	1.07	0.393	0.62	0.8	217
3005549	124.5	<0.002	0.02	25.7	18.7	<1	1.0	288	0.29	<0.05	0.96	0.371	0.68	0.7	211
3005550	93.5	0.008	0.08	52.4	9.9	1	2.3	120.0	0.38	0.08	1.57	0.252	0.46	1.6	150
3005551	137.5	0.010	0.03	3.11	12.3	1	2.6	702	0.52	<0.05	2.34	0.302	0.49	2.1	131
3005552	0.4	<0.002	0.05	0.09	0.2	<1	<0.2	5050	<0.05	<0.05	0.01	<0.005	<0.02	1.2	2
3005553	96.3	0.006	0.03	3.60	16.3	<1	0.9	396	0.46	<0.05	1.47	0.420	0.37	1.0	207
3005554	117.5	<0.002	0.08	2.57	24.1	<1	0.9	501	0.63	<0.05	2.42	0.310	1.48	1.2	289
3005555	95.3	0.008	0.23	7.16	18.3	1	1.2	413	0.35	0.10	1.39	0.445	0.39	1.0	223
3005556	90.7	0.008	0.21	6.68	17.7	1	1.1	411	0.35	0.10	1.25	0.445	0.36	0.9	222
3005557	78.1	0.003	0.03	4.01	23.2	1	1.2	1310	0.39	0.06	1.66	0.431	0.19	1.2	252
3005558	110.5	0.013	5.99	16.35	21.3	3	1.0	349	0.59	1.93	2.61	0.234	6.05	2.1	330
3005559	114.5	0.004	5.33	7.67	25.4	2	0.9	306	0.60	2.03	2.68	0.238	5.10	2.0	356
3005560	135.5	<0.002	0.40	4.80	25.7	<1	0.9	514	0.76	0.21	2.92	0.304	2.02	1.3	292
3005561	83.9	0.002	6.86	16.70	16.0	2	1.0	348	0.59	2.43	2.16	0.202	4.26	1.4	255
3005562	144.5	0.006	0.05	8.91	22.2	1	2.0	1030	0.59	0.06	2.49	0.430	0.47	1.9	245
3005563	110.0	<0.002	0.02	1.59	27.7	<1	1.1	525	0.74	<0.05	2.89	0.324	1.45	1.6	320
3005564	111.0	<0.002	1.28	4.50	26.0	1	1.1	421	0.71	0.11	2.99	0.289	3.81	1.7	287
3005565	115.5	<0.002	2.93	10.50	38.3	1	1.2	770	0.53	0.30	2.02	0.307	3.05	1.2	345
3005566	0.6	<0.002	0.09	0.08	0.2	1	<0.2	5060	<0.05	<0.05	0.02	0.005	0.03	1.5	3
3005567	110.5	0.008	4.57	20.7	28.1	1	1.5	280	0.60	1.48	2.55	0.274	5.89	1.6	319
3005568	121.5	<0.002	0.02	2.64	25.3	<1	1.1	906	0.88	<0.05	3.00	0.337	1.94	1.5	298
3005569	102.5	<0.002	0.14	1.82	40.0	1	1.2	880	0.60	0.14	2.02	0.376	1.06	1.2	404
3005570	130.0	0.004	2.62	4.83	40.9	9	1.2	391	0.43	<0.05	2.25	0.238	4.84	1.2	392
3005571	121.5	<0.002	0.03	2.91	43.1	1	1.4	544	0.65	<0.05	2.33	0.376	2.69	1.3	402
3005572	195.5	0.002	0.38	0.96	13.7	3	6.4	374	1.51	0.13	18.50	0.488	0.99	5.3	132
3005573	80.5	<0.002	2.80	11.05	17.4	5	1.2	850	0.40	1.25	2.28	0.219	5.00	1.4	432
3005574	111.0	0.002	2.47	16.25	35.4	3	1.4	400	0.76	0.93	2.64	0.401	3.93	1.3	574
3005575	112.0	<0.002	0.24	1.69	31.8	1	1.1	569	0.70	0.06	2.54	0.344	1.56	1.5	353
3005576	128.0	<0.002	0.21	1.70	29.1	<1	1.0	551	0.69	0.06	2.27	0.345	1.50	1.3	344
3005577	153.0	0.018	7.29	8.51	34.0	3	1.4	474	0.71	1.42	2.96	0.346	1.78	3.3	397
3005578	137.5	0.011	2.02	3.95	40.2	6	1.4	408	0.65	0.23	2.66	0.355	1.98	2.7	420
3005579	122.0	0.043	7.30	7.83	14.1	9	1.8	217	0.73	1.97	5.98	0.269	1.85	3.9	286
3005580	129.0	0.007	7.50	5.62	25.6	14	1.3	460	0.62	1.04	2.05	0.366	2.39	2.9	256

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Sample Description / Method Analyte Units LOR	ME-MS61 W ppm 0.1	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5	Cu-OG62 Cu % 0.001	Au-ICP21 Au ppm 0.001
3005541	1.5	16.5	142	32.9		0.054
3005542	2.3	16.1	94	20.1		0.020
3005543	3.5	24.7	91	83.5		0.247
3005544	3.1	18.9	200	20.7		0.029
3005545	1.7	20.6	157	20.9		0.083
3005546	5.0	21.9	546	17.4		0.067
3005547	4.3	14.4	163	11.8		0.028
3005548	4.1	13.2	159	11.5		0.027
3005549	12.0	11.4	120	8.5		0.077
3005550	16.8	5.9	251	31.5		0.030
3005551	2.4	16.1	96	34.1		0.071
3005552	<0.1	0.3	<2	<0.5		0.001
3005553	3.1	14.6	129	16.3		0.041
3005554	3.8	12.3	259	32.9		0.007
3005555	2.5	17.6	183	18.3		0.039
3005556	2.5	16.7	183	17.6		0.037
3005557	2.2	20.1	216	17.3		0.033
3005558	18.5	11.2	1560	46.2		2.77
3005559	24.3	11.7	982	48.7		1.050
3005560	3.5	13.9	187	32.1		0.020
3005561	30.2	9.5	191	45.1		4.14
3005562	3.2	22.0	136	28.6		0.178
3005563	4.6	15.7	299	35.9		0.002
3005564	12.2	13.9	380	50.4		0.264
3005565	27.4	12.2	1090	32.7		0.339
3005566	<0.1	0.3	4	1.2		0.002
3005567	28.1	12.2	700	41.9		0.894
3005568	1.7	15.8	151	32.9		0.001
3005569	2.4	18.0	201	31.6		0.009
3005570	19.8	13.0	278	33.9		0.096
3005571	4.4	15.7	344	28.2		0.003
3005572	3.5	28.3	97	92.8		0.248
3005573	26.1	4.7	394	41.8		2.08
3005574	23.6	6.5	76	50.2		4.60
3005575	3.9	17.5	279	32.5		0.017
3005576	4.1	16.2	270	32.7		0.040
3005577	9.3	13.7	3060	60.6		0.264
3005578	15.0	16.7	443	41.7		0.721
3005579	47.3	8.3	66	36.2		0.196
3005580	44.7	13.2	210	27.3		0.048

CERTIFICATE OF ANALYSIS TR17210448

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg 0.02	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01	ME-MS61 Ca % 0.01	ME-MS61 Cd ppm 0.02	ME-MS61 Ce ppm 0.01	ME-MS61 Co ppm 0.1	ME-MS61 Cr ppm 1	ME-MS61 Cs ppm 0.05	ME-MS61 Cu ppm 0.2	ME-MS61 Fe % 0.01
3005581		1.55	2.52	5.59	38.2	840	2.02	0.37	3.58	0.98	30.8	26.1	31	7.31	144.0	6.30
3005582		2.25	0.84	7.96	41.7	1360	2.07	0.19	5.80	5.03	32.0	20.5	17	3.41	65.9	5.56
3005583		2.01	0.84	7.22	111.5	1400	2.33	0.07	4.46	0.35	32.6	17.7	18	2.70	246	5.17
3005584		2.27	0.27	8.30	6.5	2630	3.71	0.04	3.37	0.14	52.9	18.2	7	7.06	278	4.68
3005585		2.54	0.39	7.44	22.2	2540	4.41	0.16	4.85	0.28	48.6	57.0	2	6.76	306	5.16
3005586		1.14	1.52	6.95	27.8	190	1.61	0.62	2.54	0.19	32.0	21.6	22	2.54	114.0	6.42
3005587		1.29	0.01	0.05	<0.2	10	<0.05	0.01	34.5	<0.02	0.21	0.5	<1	<0.05	1.8	0.04
3005588		1.99	0.79	4.92	66.9	320	1.10	0.15	7.81	1.30	30.5	19.6	21	1.55	68.6	5.68
3005589		2.64	4.49	6.49	361	290	0.77	0.07	3.56	2.57	29.1	32.7	18	1.18	470	7.53
3005590		1.49	0.18	8.59	10.0	3670	2.96	0.09	2.55	0.83	49.8	12.5	3	2.11	71.5	3.79
3005591		0.09	0.73	7.57	17.7	1050	3.12	1.53	2.69	0.14	68.6	15.4	103	11.80	2640	4.46

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Method Analyte Units LOR	ME-MS61 Ga ppm 0.05	ME-MS61 Ge ppm 0.05	ME-MS61 Hf ppm 0.1	ME-MS61 In ppm 0.005	ME-MS61 K % 0.01	ME-MS61 La ppm 0.5	ME-MS61 Li ppm 0.2	ME-MS61 Mg % 0.01	ME-MS61 Mn ppm 5	ME-MS61 Mo ppm 0.05	ME-MS61 Na % 0.01	ME-MS61 Nb ppm 0.1	ME-MS61 Ni ppm 0.2	ME-MS61 P ppm 10	ME-MS61 Pb ppm 0.5
Sample Description															
3005581	14.35	0.15	1.2	0.066	4.65	22.4	38.1	2.05	2970	72.1	0.58	9.3	17.0	2200	285
3005582	16.55	0.15	1.3	0.063	5.13	20.3	16.8	1.87	2260	21.4	1.43	14.1	11.8	2200	459
3005583	16.55	0.17	1.0	0.070	4.59	17.8	6.8	2.14	1950	4.59	1.40	12.3	12.6	2420	38.2
3005584	18.65	0.18	1.6	0.046	4.77	31.2	23.3	1.35	1740	7.44	1.12	28.7	6.2	1920	21.4
3005585	27.3	0.19	0.9	0.071	4.68	27.4	47.0	1.49	2870	15.90	0.16	12.2	2.7	1560	23.4
3005586	18.50	0.15	0.9	0.046	4.52	18.7	3.8	0.91	2330	8.36	0.29	12.7	12.6	2650	68.6
3005587	0.15	0.11	<0.1	<0.005	0.02	<0.5	0.4	1.70	30	0.10	<0.01	<0.1	0.5	50	<0.5
3005588	10.80	0.14	0.4	0.084	5.17	17.3	6.4	2.25	4620	9.36	0.09	8.1	13.5	2290	270
3005589	15.80	0.16	1.5	0.080	4.71	16.7	6.0	1.19	5240	216	0.12	7.7	16.2	2090	70.6
3005590	21.0	0.17	1.0	0.055	5.22	28.3	21.8	1.12	3480	27.4	0.14	13.6	2.1	1400	16.8
3005591	19.45	0.18	2.5	0.223	3.07	35.4	32.1	1.43	567	101.5	2.05	18.4	47.7	1090	22.9

CERTIFICATE OF ANALYSIS TR17210448

Sample Description	**Method** **Analyte** **Units** **LOR**	ME-MS61 Rb ppm 0.1	ME-MS61 Re ppm 0.002	ME-MS61 S % 0.01	ME-MS61 Sb ppm 0.05	ME-MS61 Sc ppm 0.1	ME-MS61 Se ppm 1	ME-MS61 Sn ppm 0.2	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1
3005581		188.5	0.023	2.38	45.4	34.6	<1	1.3	532	0.54	0.28	1.90	0.406	1.67	1.8	286
3005582		106.5	0.004	2.44	3.63	26.2	<1	1.4	1045	0.81	0.11	2.87	0.397	1.83	1.6	290
3005583		99.0	<0.002	2.31	3.54	29.0	1	1.2	964	0.73	0.69	2.85	0.346	1.48	1.3	294
3005584		132.0	0.008	1.05	1.38	14.3	1	1.4	1710	1.49	0.07	7.38	0.314	0.53	4.2	216
3005585		154.5	0.029	1.60	1.50	6.7	2	1.4	777	0.67	0.14	6.27	0.287	1.05	6.3	340
3005586		97.2	0.009	6.08	2.43	25.2	5	1.2	549	0.73	1.09	2.71	0.349	2.24	1.2	310
3005587		0.5	<0.002	0.06	0.06	0.2	1	<0.2	4860	<0.05	<0.05	0.02	<0.005	0.02	1.4	2
3005588		118.0	<0.002	4.22	7.32	39.2	1	1.3	1375	0.47	0.60	1.30	0.362	1.75	1.5	271
3005589		107.0	0.010	6.23	18.75	42.5	1	0.9	427	0.45	0.15	2.07	0.260	4.94	3.1	345
3005590		140.0	0.155	1.52	2.32	6.9	1	1.4	1030	0.75	0.05	6.86	0.223	0.91	4.1	449
3005591		196.0	0.004	0.36	0.91	12.5	3	5.7	357	1.39	0.11	18.05	0.470	0.89	5.1	126

***** See Appendix Page for comments regarding this certificate *****

Project: Galore Creek

CERTIFICATE OF ANALYSIS TR17210448

Sample Description	Method Analyte Units LOR	ME-MS61 W ppm 0.1	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5	Cu-OG62 Cu % 0.001	Au-ICP21 Au ppm 0.001
3005581		16.8	13.5	243	32.9		0.273
3005582		5.0	16.9	282	38.3		0.015
3005583		5.4	13.7	139	32.7		0.020
3005584		7.6	19.8	145	55.6		0.013
3005585		26.6	18.2	139	32.0		0.121
3005586		8.5	9.2	104	24.0		0.078
3005587		<0.1	0.3	<2	0.5		0.011
3005588		18.0	14.2	227	11.3		0.016
3005589		20.8	13.9	279	48.2		0.722
3005590		18.9	15.2	121	28.2		0.011
3005591		4.5	26.8	93	84.2		0.247

To: **GALORE CREEK MINING CORPORATION**
SUITE 3300, 550 BURRARD STREET
VANCOUVER BC V6C 0B3

Project: Galore Creek

CERTIFICATE OF ANALYSIS TR17210448

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

REE's may not be totally soluble in this method.

Applies to Method: ME-MS61

LABORATORY ADDRESSES

Processed at ALS Terrace located at 2912 Molitor Street, Terrace, BC, Canada.

Applies to Method:
BAG-01 CRU-31 CRU-QC LOG-22
LOG-22d LOG-24 PUL-32 PUL-32d
PUL-QC SPL-21 SPL-21d WEI-21

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method:
Au-ICP21 Cu-OG62 ME-MS61 ME-OG62

APPENDIX V

ANALYTICAL PROCEDURES

Sample Preparation Package

PREP-31
Standard Sample Preparation: Dry, Crush, Split and Pulverize

Sample preparation is the most critical step in the entire laboratory operation. The purpose of preparation is to produce a homogeneous analytical sub-sample that is fully representative of the material submitted to the laboratory.

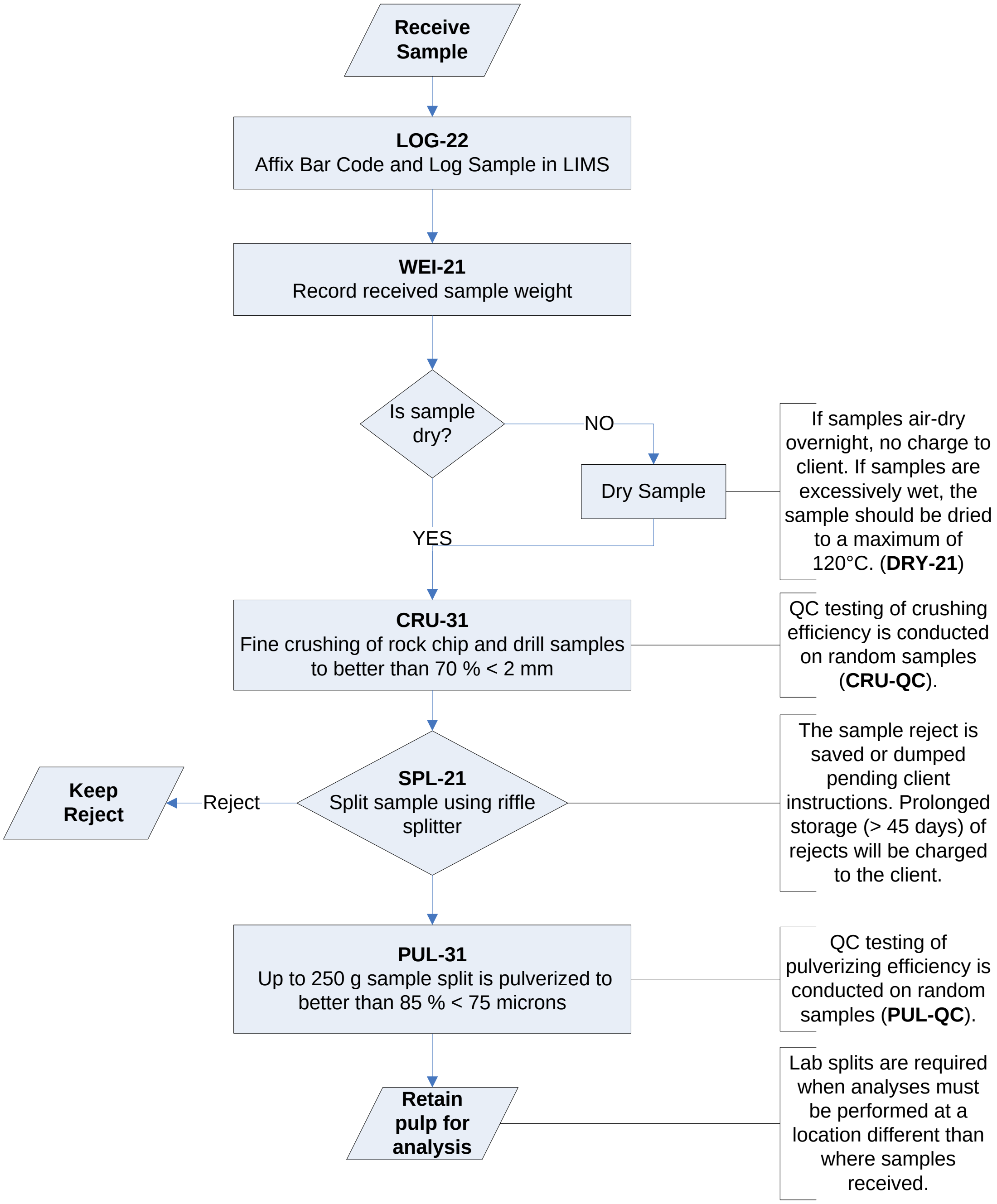
The sample is logged in the tracking system, weighed, dried and finely crushed to better than 70 % passing a 2 mm (Tyler 9 mesh, US Std. No.10) screen. A split of up to 250 g is taken and pulverized to better than 85 % passing a 75 micron (Tyler 200 mesh, US Std. No. 200) screen. This method is appropriate for rock chip or drill samples.

Method Code	**Description**
LOG-22	Sample is logged in tracking system and a bar code label is attached.
CRU-31	Fine crushing of rock chip and drill samples to better than 70 % of the sample passing 2 mm.
SPL-21	Split sample using riffle splitter.
PUL-31	A sample split of up to 250 g is pulverized to better than 85 % of the sample passing 75 microns.

Flow Chart -

Sample Preparation Package – PREP-31

Standard Sample Preparation: Dry, Crush, Split and Pulverize



If samples air-dry overnight, no charge to client. If samples are excessively wet, the sample should be dried to a maximum of 120°C. (**DRY-21**)

QC testing of crushing efficiency is conducted on random samples (**CRU-QC**).

The sample reject is saved or dumped pending client instructions. Prolonged storage (> 45 days) of rejects will be charged to the client.

QC testing of pulverizing efficiency is conducted on random samples (**PUL-QC**).

Lab splits are required when analyses must be performed at a location different than where samples received.

ME-MS61: Ultra-Trace Level Method Using ICP MS and ICP-AES

Sample Decomposition:

HF-HNO3-HClO4 acid digestion, HCl leach (GEO-4A01)

Analytical Method:

Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP-AES)
Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

The ME-MS61 Ultra Trace method combines a four-acid digestion with ICP-MS instrumentation. A four acid digestion quantitatively dissolves nearly all minerals in the majority of geological materials.

A prepared sample (0.25 g) is digested with perchloric, nitric and hydrofluoric acids. The residue is leached with dilute hydrochloric acid and diluted to volume.

The final solution is then analyzed by inductively coupled plasma-atomic emission spectrometry and inductively coupled plasma-mass spectrometry. Results are corrected for spectral inter-element interferences.

List of Reportable Analytes:

Analyte	Symbol	Units	Lower Limit	Upper Limit
Silver	Ag	ppm	0.01	100
Aluminum	Al	%	0.01	50
Arsenic	As	ppm	0.2	10000
Barium	Ba	ppm	10	10000
Beryllium	Be	ppm	0.05	1000
Bismuth	Bi	ppm	0.01	10000
Calcium	Ca	%	0.01	50
Cadmium	Cd	ppm	0.02	1000
Cerium	Ce	ppm	0.01	500
Cobalt	Co	ppm	0.1	10000
Chromium	Cr	ppm	1	10000
Cesium	Cs	ppm	0.05	500
Copper	Cu	ppm	0.2	10000
Iron	Fe	%	0.01	50
Gallium	Ga	ppm	0.05	10000
Germanium	Ge	ppm	0.05	500
Hafnium	Hf	ppm	0.1	500
Indium	In	ppm	0.005	500
Potassium	K	%	0.01	10
Lanthanum	La	ppm	0.5	10000
Lithium	Li	ppm	0.2	10000
Magnesium	Mg	%	0.01	50
Manganese	Mn	ppm	5	100000
Molybdenum	Mo	ppm	0.05	10000
Sodium	Na	%	0.01	10
Niobium	Nb	ppm	0.1	500
Nickel	Ni	ppm	0.2	10000

Analyte	Symbol	Units	Lower Limit	Upper Limit
Phosphorous	P	ppm	10	10000
Lead	Pb	ppm	0.5	10000
Rubidium	Rb	ppm	0.1	10000
Rhenium	Re	ppm	0.002	50
Sulphur	S	%	0.01	10
Antimony	Sb	ppm	0.05	10000
Scandium	Sc	ppm	0.1	10000
Selenium	Se	ppm	1	1000
Tin	Sn	ppm	0.2	500
Strontium	Sr	ppm	0.2	10000
Tantalum	Ta	ppm	0.05	100
Tellurium	Te	ppm	0.05	500
Thorium	Th	ppm	0.01	10000
Titanium	Ti	%	0.005	10
Thallium	Tl	ppm	0.02	10000
Uranium	U	ppm	0.1	10000
Vanadium	V	ppm	1	10000
Tungsten	W	ppm	0.1	10000
Yttrium	Y	ppm	0.1	500
Zinc	Zn	ppm	2	10000
Zirconium	Zr	ppm	0.5	500

NOTE: Four acid digestions are able to dissolve most minerals. However, depending on the sample matrix, not all elements are quantitatively extracted. For example:

- *This digestion may not be complete for minerals such as corundum (Al_2O_3), kyanite (Al_2SiO_5) and more complex silicates such as garnet, staurolite, topaz and tourmaline.*
- *Potassium may bias low due to the formation of the insoluble perchlorate, which may not be completely decomposed during the leaching process.*
- *Low recoveries of Al and Ca may occur if their insoluble fluorides are not completely decomposed during the leaching process.*
- *Scandium may not be fully solubilized and may show lower recovery by this digestion. Sc-ICP06 (Lithium Metaborate Fusion, ICP-AES Finish), a method developed for Scandium, can be used as an alternative for this analyte.*
- *Four acid digestions can also volatilize certain exploration pathfinder elements, in particular mercury. Mercury is better analyzed by an aqua regia digestion and can be added as a package to this analysis (Package: ME-MS61m).*

Au-ICP21/Au-ICP22 – Fire Assay Fusion – ICP-AES Finish

Sample Decomposition:

Fire Assay Fusion (FA-FUSPG1 & FA-FUSPG2)

Analytical Method:

Inductively Couple Plasma - Atomic Emission Spectrometry

A prepared sample is fused with a mixture of lead oxide, sodium carbonate, borax, silica and other reagents as required, inquarted with 6 mg of gold-free silver and then cupelled to yield a precious metal bead.

The bead is digested in 0.5 mL dilute nitric acid in the microwave oven. 0.5 mL concentrated hydrochloric acid is then added and the bead is further digested in the microwave at a lower power setting. The digested solution is cooled, diluted to a total volume of 4 mL with de-mineralized water, and analyzed by inductively coupled plasma atomic emission spectrometry against matrix-matched standards.

Method Code	Element	Symbol	Units	Sample Weight (g)	Lower Limit	Upper Limit	Default Overlimit Method
Au-ICP21	Gold	Au	ppm	30	0.001	10	Au-GRA21
Au-ICP22	Gold	Au	ppm	50	0.001	10	Au-GRA22

ME-OG62- Ore Grade Elements by Four Acid Digestion Using Conventional ICP-AES Analysis

Sample Decomposition:

HNO_3-$HClO_4$-HF-HCl Digestion (ASY-4A01)

Sample Decomposition:

Inductively Coupled Plasma – Atomic Emission Spectroscopy (ICP-AES)

Assays for the evaluation of ores and high-grade materials are optimized for accuracy and precision at high concentrations. Ultra high concentration samples (> 15 -20%) may require the use of methods such as titrimetric and gravimetric analysis, in order to achieve maximum accuracy.

A prepared sample is digested with nitric, perchloric, hydrofluoric, and hydrochloric acids, and then evaporated to incipient dryness. Hydrochloric acid and de-ionized water is added for further digestion, and the sample is heated for an additional allotted time. The sample is cooled to room temperature and transferred to a volumetric flask (100 mL). The resulting solution is diluted to volume with de-ionized water, homogenized and the solution is analyzed by inductively coupled plasma - atomic emission spectroscopy or by atomic absorption spectrometry. Results are corrected for spectral interelement interferences.

*NOTE: ICP-AES is the default finish technique for ME-OG62. However, under some conditions and at the discretion of the laboratory an AA finish may be substituted. The certificate will clearly reflect which instrument finish was used.

Element	Symbol	Units	Lower Limit	Upper Limit
Silver	Ag	ppm	1	1500
Arsenic	As	%	0.001	30
Bismuth	Bi	%	0.001	30
Cadmium	Cd	%	0.0001	10
Cobalt	Co	%	0.0005	30
Chromium	Cr	%	0.002	30
Copper	Cu	%	0.001	50
Iron	Fe	%	0.01	100
Magnesium	Mg	%	0.01	50
Manganese	Mn	%	0.01	60
Molybdenum	Mo	%	0.001	10
Nickel	Ni	%	0.001	30
Lead	Pb	%	0.001	20
Sulphur	S	%	0.01	50
Zinc	Zn	%	0.001	30

TRSPEC-20 - Spectral Scan with Hand Held for VNIR and SWIR

Instrument:

Spectral data in the visible/near-infrared (VNIR) and short-wave infrared (SWIR) portions of the electromagnetic spectrum is collected with a TerraSpec® 4 Hi-Res mineral spectrometer manufactured by PANalytical “NIR Excellence Center”. This state-of-the-art mineral spectrometer offers enhanced performance in the SWIR 1 and 2 regions. Spectra are collected in the wavelength range of 350-2500nm with resolutions of 3 nm @ 700 nm and 6 nm @ 1400/2100nm.

Acquisition:

For each sample, one spectrum is saved that is an average of fifty 0.1 second scans of the sample. If the sample is very dark and very low noise is needed, the scan count can be increased; typically to no more than 100. It should be noted that the TS4 Hi Res scan count of 50 is equivalent to TS3 Hi Res scan count of 200 due to improvements in the instrument.

The spectrum is taken by placing the contact probe flush with the sample material. Sufficient material is placed in the sample vessel to allow for a 10-15 mm minimum distance between the bottom of the container and the probe. This is to ensure reflectance from the bottom of the container does not affect the captured spectra.

Prior to data capture, daily calibration verification is performed using a Mylar sheet. This scan is available as part of the data package. The spectralon disc is read next to take a white reference spectrum and a dark current scan. The spectralon disc acquisition is repeated whenever conditions change or the spectrum is saturating, or no less often than every 20 minutes.

Spectra are collected from the samples sequentially. A duplicate spectrum is taken of a sample every forty samples.

Deliverables

Electronic files of the spectra for each sample are provided to the client through a file sharing site. A number of formats are available including standard *.ASD, ASCII txt, JCAMP, UNSCAMBLER ASCII and GRAMS SPC.

APPENDIX VI

PETROGRAPHIC REPORT

Sarah Henderson,
Galore Creek Mining Corp.,
3300-550 Burrard Street,
Vancouver BC, V6C0B3
E-mail: sarah.henderson@gcmc.ca
Tel: 604-699-4738

December, 2017

Samples: 3005518, 3005529, 3005545, 3005546, 3005547, 3005549, 3005568, 3005570, GC63-0065 and 3005577

Summary: Samples include diorite to monzonite porphyry, a websterite (?xenolith) and sedimentary and volcaniclastic country rocks. All rocks are altered to a main stage copper-bearing potassic assemblages of sodic-potassic and calc-potassic. These alteration assemblages are overprinted by late stage propylitic, silica-carbonate and chlorite-sericite that are heterogeneously mineralized.

3005518: The sample is a fine-grained websterite that is overprinted by two stages of copper-bearing alteration. Early intense sodic-potassic alteration consists of K-feldspar, magnetite, epidote, clinozoisite, apatite, tremolite and minor chalcopyrite. A younger, less intense propylitic alteration assemblage includes epidote, chlorite and considerably higher amounts of chalcopyrite than early mineralization. Late stage weathering targets the youngest propylitic veins and altered chalcopyrite to copper-oxide minerals.

3005529: The sample is a medium-grained hornblende diorite porphyry. Intense sodic-potassic alteration is expressed as magnetite stockwork veins that introduce K-feldspar, albite, epidote, apatite and minor chalcopyrite. Minor propylitic vein contains quartz-epidote that cuts sodic-potassic alteration.

3005545: The sample is a medium-grained clinopyroxene-hornblende hypabyssal diorite porphyry. The sample is overprinted by one intense sodic-potassic alteration event that includes vein and pervasive alteration to K-feldspar, epidote, magnetite, apatite, titanite, titanium oxide, chlorite and chalcopyrite.

3005546: The sample is a medium-grained, equigranular, biotite monzonite porphyry. The sample is overprinted by a pervasive sodic-calcic (propylitic) alteration assemblage of epidote, chlorite, actinolite, apatite, calcite, tremolite, garnet and chalcopyrite.

3005547: The sample is a medium-grained biotite monzonite porphyry. Pervasive intense alteration to a silica-carbonate assemblage of carbonate, clay, sericite, quartz, apatite and chalcopyrite.

3005549: Sample is a monzonite intrusion breccia that is overprinted by texturally destruction alteration. Early calc-potassic assemblage consists of K-feldspar, carbonate, anhydrite, muscovite, hematite, chalcopyrite and tetrahedrite-tennantite. Later quartz-carbonate stockwork introduces quartz, carbonate, apatite and chalcopyrite.

3005568: The sample is a medium-grained latite flow breccia with mixed domains of coherent groundmass and other domains with a sedimentary clastic matrix. The rock is interpreted to be a flow breccia with incorporated sedimentary material from the paleosurface. The rock is overprinted by an intense calc-potassic alteration assemblage of K-feldspar, calcite, apatite, magnetite and pyrite. This is followed by the formation of jigsaw-fit breccia that is infilled by sericite-chlorite.

3005570: The sample is a volcanic conglomerate that is altered to an intense calc-potassic assemblage that includes K-feldspar, calcite, sericite, pyrite, magnetite, chalcopyrite and tetrahedrite-tennantite. This is overprinted by a vein-controlled quartz-calcite assemblage.

GC63-0065: The sample is of a medium-grained hornblende diorite porphyry. An intense and pervasive calc-potassic assemblage of K-feldspar, sericite, carbonate, ilmenite and pyrite overprints this. This is followed by a late, intense oxidation of carbonate and pyrite to goethite/lepidocrocite and hematite respectively.

3005577: The rock is a medium-grained porphyry (?) intensely altered to a calc-potassic alteration assemblage. The secondary mineralogy in decreasing abundance is: K-feldspar, sericite, pyrite, carbonate, anhydrite, quartz, rutile, chalcopyrite, biotite and tetrahedrite-tennantite with late-stage calcite veins.

Gayle E. Febbo
Exploration Petrology Inc.
E-mail: gayle.febbo@gmail.com
Tel: 250-837-1606

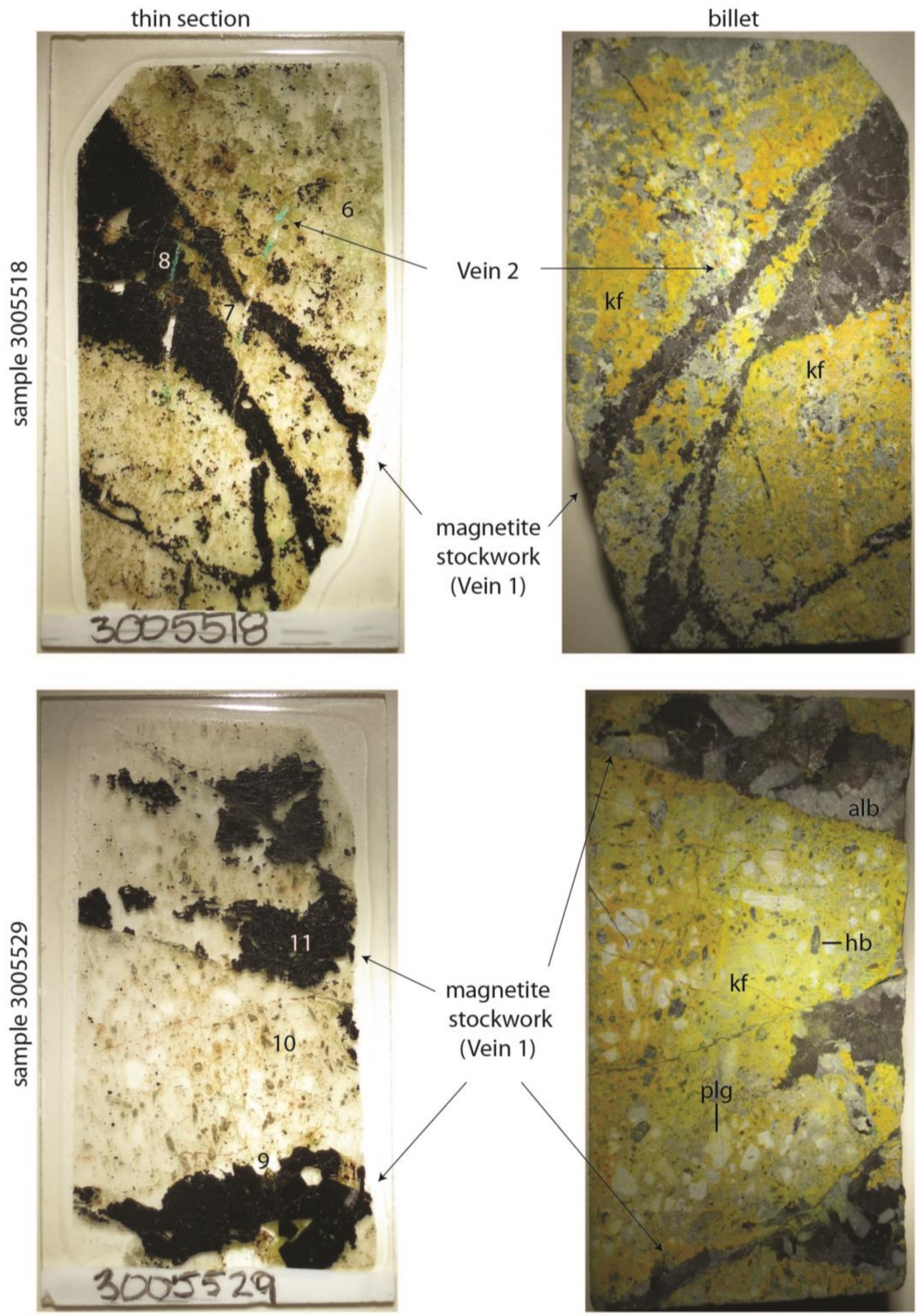


Figure 1. Photographs of thin sections and billets for samples 3005518 and 3005529 with locations of veins referred to in descriptions and locations of thin section photos from Figure 8-11 indicated on the thin section. Yellow stain on billet is K-feldspar. Abbreviations: kf- K-feldspar, plg-plagioclase, hb-hornblende.

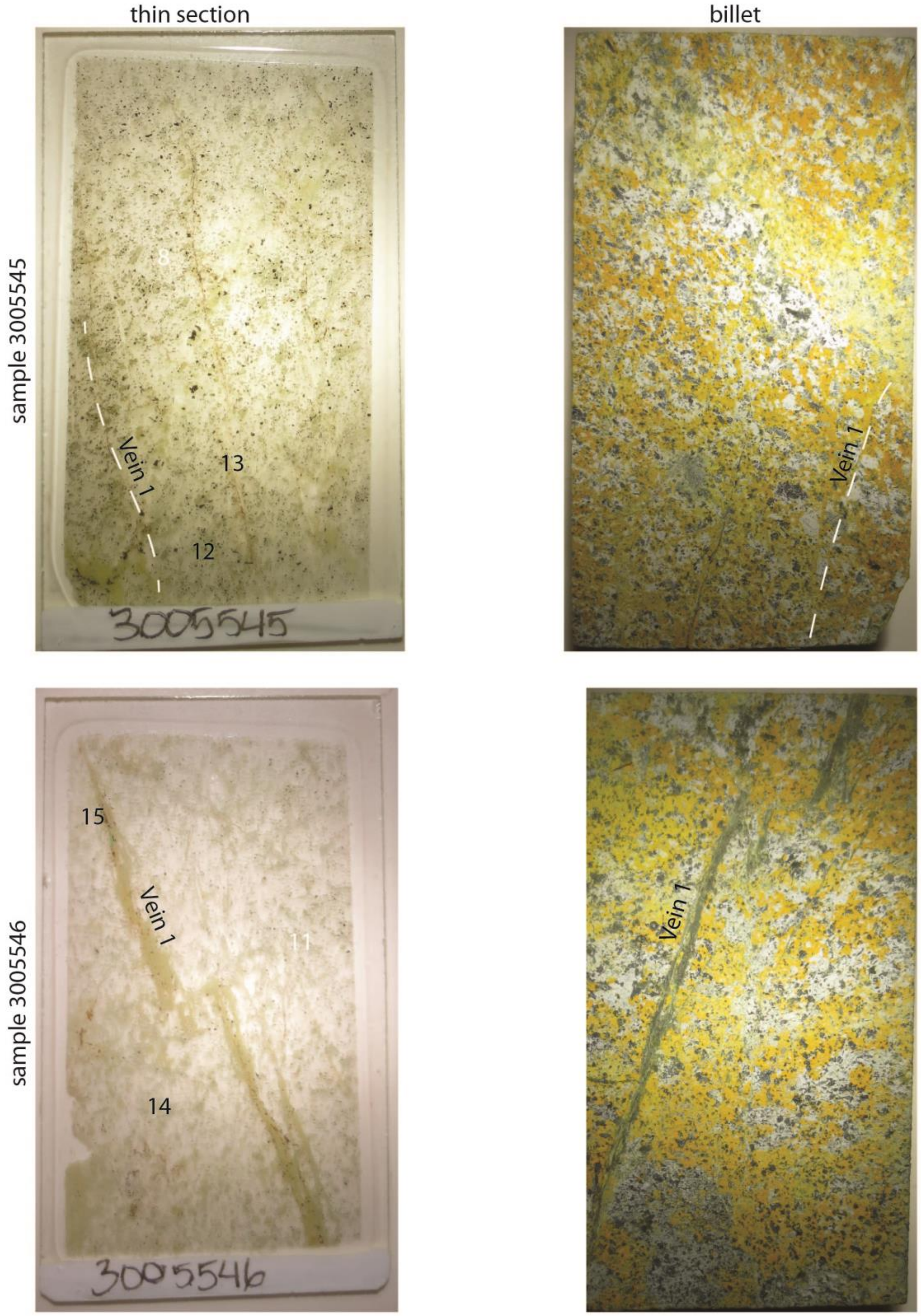


Figure 2. Photographs of thin sections and billets for samples 3005545 and 3005546 with locations of veins referred to in descriptions and locations of Figures 12-15 on the thin section. Yellow stain on billet is K-feldspar.

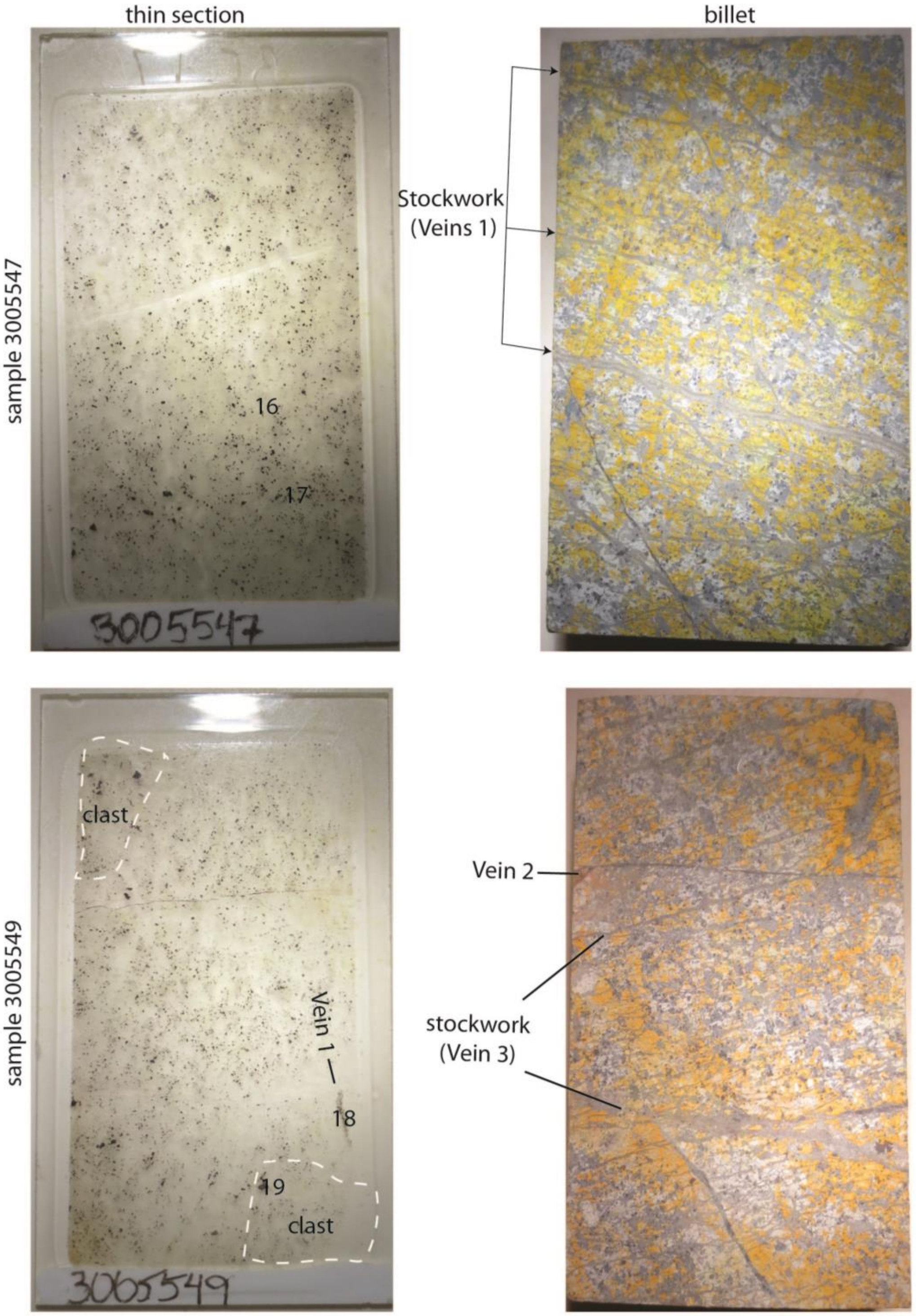


Figure 3. Photographs of thin sections and billets for samples 3005547 and 3005549 with locations of veins referred to in descriptions and locations of Figures 16-19 on the thin section. Yellow stain on billet is K-feldspar.

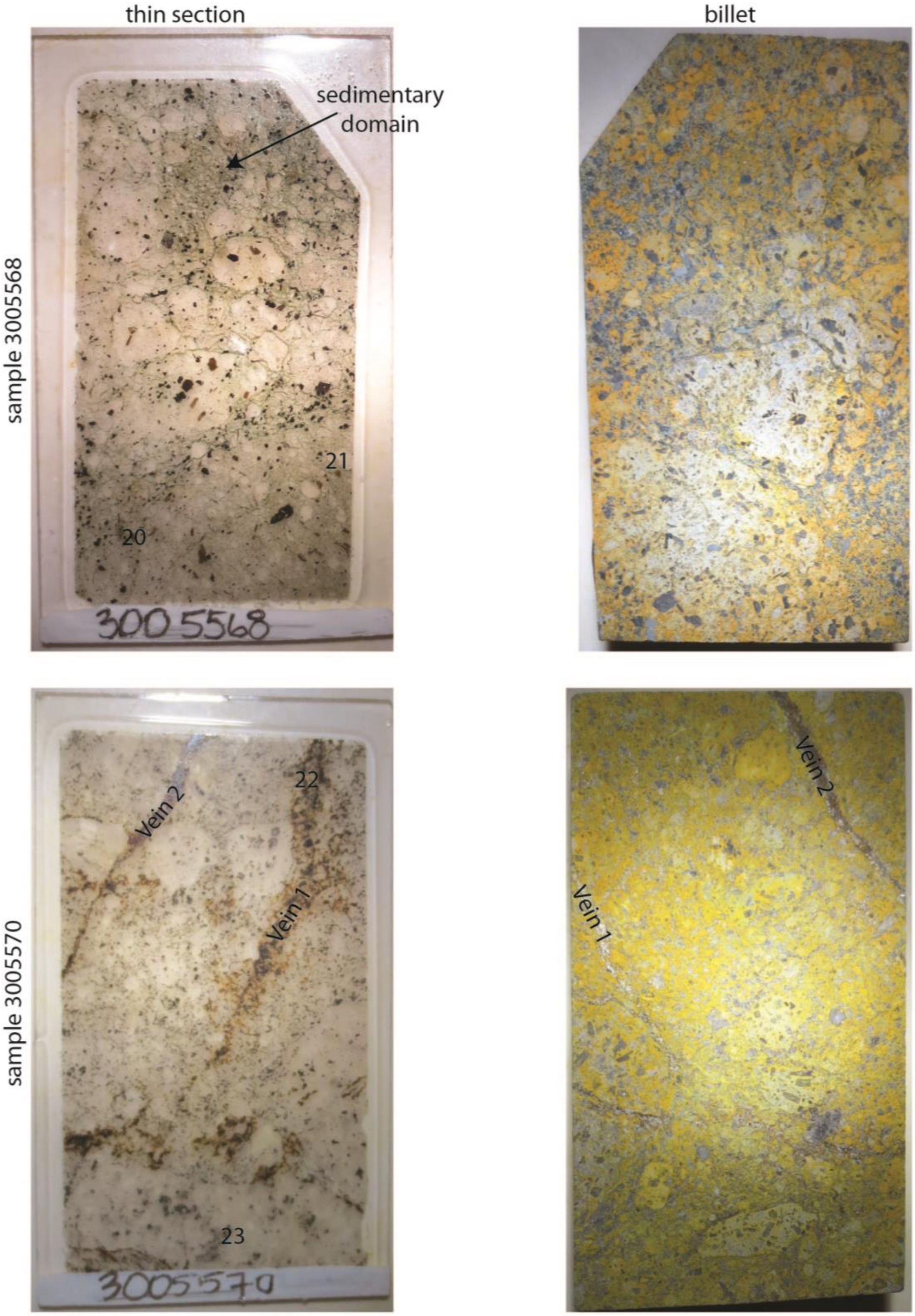


Figure 4. Photographs of thin sections and billets for samples 3005568 and 3005570 with locations of veins referred to in descriptions and locations of Figures 20-23 on the thin section. Yellow stain on billet is K-feldspar.

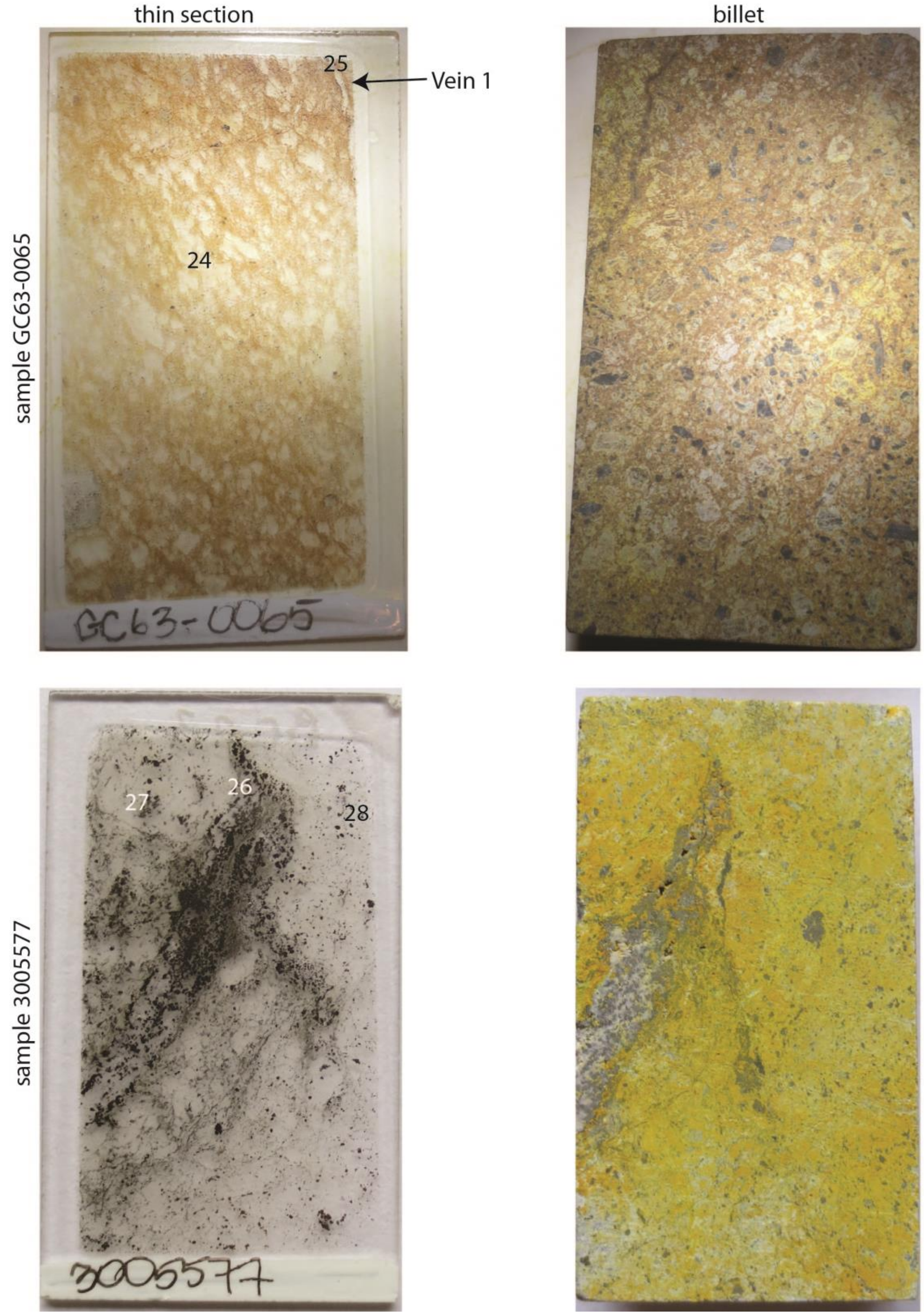


Figure 5. Photographs of thin sections and billets for sample GC63-0065 and 3005577 with locations of Figures 24-28 on the thin section. Yellow stain on billet is K-feldspar.

		3005518	3005529	3005545	3005546	3005547
Primary Minerals	**Kf**	-	-	-	40%; 200-500 µm	30%; 200-500 µm
	Plg	-	55%; 1-5 mm	40%; 50 µm-1 mm	55%; 500 µm-1.2 mm	50%; 500 µm-1.5 mm
	Hb	-	9%; 500 µm-1.3 mm	5%; 0.5-2 mm	-	-
	Cpx	60%; 200-500 µm	-	15%; 100-500 µm	-	-
	Opx	40%; 100-300 µm	1%; 1 mm	-	-	-
	Bt	-	-	-	4%; 500 µm	5%; 600 µm-1 mm
	Mt	-	-	-	1%; 100 µm	4%; 100 µm
Secondary Minerals	**Cb**	-	-	-	-	17%; 5-20 µm
	Kf	25%; 100-200 µm	25%; 10-50 µm	30%; 50-200 µm	-	-
	Anh	-	-	-	-	-
	Ap	2%; 20-200 µm	1%; 20-50 µm	-2%; 10-30 µm	1%; 20-200 µm	Tr; 50-100 µm
	Gt	-	-	-	Tr; 200 µm	-
	Ser		-	-	-	2%; 5-20 µm
	Ms	-	-	-	-	-
	Tit	-	-	1%; 100-300 µm	1%; 100-200 µm	-
	Qz	-	Tr; 50 µm	-	-	2%; 50-100 µm
	Ep	7%; 20-100 µm	5%; 50-300 µm	-	12%; 50-100 µm	-
	Cz	1%; 20-200 µm	-	-	-	-
	Hem	Tr; 30-100 µm	Tr; 50 µm	Tr; 10-50 µm		
	Trem	Tr; 100-150 µm	-	-	Tr; 200 µm	-
	Fe-ox	Tr; 10-50 µm	-	-	-	-
	Cu-ox	Tr; 10-100 µm	-	-	-	-
	Chl	Tr; 10-30 µm	Tr; 30 µm	Tr; 100-200 µm	3%; 5-20 µm	-
	Clay	Tr; < 5 µm	-	Tr; < 10 µm	-	5%; < 5 µm
	Act	-	-	Tr; 100-300 µm	1%; 50-500 µm	-
	Ti-ox	-	-	Tr; 10-40 µm	-	-
Secondary Opaque	**Mt**	30%; 200-600 µm	18%; 200-600 µm	3%; 100-150 µm	-	-
	Py	-	-	-	-	Tr; 5-20 µm
	Cpy	Tr; 5-10 µm	Tr; < 5 µm	Tr; 10 µm	Tr; 10-50 µm	Tr; 10-20 µm
	Ilm	Tr; 20-50 µm	-	1%; 50 µm	-	-
	Leu	-	-	-	Tr; 50-10 µm	-
	Tet-ten	-	-	-	-	-

Table 1. Estimated mineral abundance of primary and secondary minerals (%) and average dimensions. Abbreviations: Kf: K-feldpsar, Plg: plagioclase, Hb: hornblende, Cpx: clinopyroxene, Opx: orthopyroxene, Bt: biotite, Mt: Magnetite, Cb: carbonate, Anh: anhydrite, Ap: apatite, Gt: garnet, Ser: sericite, Ms: muscovite, Tit: titanite (sphene), Qz: quartz, Ep: epidote, Cz: clinozoisite, Hem: hematite, Trem: tremolite, Fe-ox: iron oxide, Cu-ox: copper oxide, Chl: chlorite, Act: actinolite, Ti-ox: titanium oxide, Py: pyrite, Cpy: chalcopyrite, Ilm: ilmenite, Leu: leucoxene and Tet-ten: tetrahedrite-tennantite.

		3005549	**3005568**	**3005570**	**GC63-0065**	**3005577**
Primary Minerals	**Kf**	-	-	-	-	-
	Plg	-	-	-	87%; 0.5-2 mm	-
	Hb	-	-	-	10%; 1-2 mm	-
	Cpx	-	-	-	-	-
	Opx	-	-	-	-	-
	Bt	1%; 1 mm	-	-	-	-
	Mt	-	-	-	3%; 300-500 µm	-
Secondary Minerals	**Cb**	10%; < 20 µm	7%; 10-50 µm	15%; 10-50 µm	8%; 50-100 µm	8%; 100-400 µm
	Kf	12%; 200-400 µm	15%; 20-50 µm	20%; 10-100 µm	13%; 50-200 µm	45%; 5-50 µm
	Anh	4%; 20-50 µm	-	-	-	2%; 10-50 µm
	Ap	1%; 100-300 µm	Tr; 10 µm	-	-	-
	Bt	-	-	-	-	Tr; 100 µm
	Ser	-	3%; 10-20 µm	10%; 10-30 µm	18%; 50 µm	25%; 10-30 µm
	Ms	7%; 100-500 µm	-	-	-	-
	Tit	Tr; 20 µm	-	-	-	-
	Qz	2%; 10-30 µm	-	2%; 20 µm	-	2%; 10-50 µm
	Ep	-	-	-	-	-
	Rut	-	-	-	-	1%; 10-100 µm
	Hem	1%; 20-50 µm	-	-	1%; 5 µm	-
	Trem	-	-	-	-	-
	Fe-ox	-	-	-	10%; 5-10 µm	-
	Cu-ox	-	-	-	-	-
	Chl	3%; 20-30 µm	5%; 5-20 µm	-	-	-
	Clay	-	-	-	-	-
	Act	-	-	-	-	-
	Ti-ox	-	-	-	-	-
Secondary Opaque	**Mt**	30%; 200-600 µm	3%; 500 µm-1 mm	2%; 100-200 µm	-	-
	Py	-	1%; 100-200 µm	5%; 100-500 µm	Tr; 300 µm	8%; 20-500 µm
	Cpy	Tr; 5-10 µm	-	Tr; 5-20 µm	-	1%; 10-100 µm
	Ilm	Tr; 20-50 µm	1%; 10-100 µm	-	5%; 100-200 µm	-
	Leu	-	-	1%; 10-50 µm	-	-
	Tet-ten	-	-	Tr; 20 µm	-	Tr; 5-50 µm

(Table 1 cont.)

Sample 3005518: Websterite

Description: The sample is a fine-grained websterite that is overprinted by two stages of copper-bearing alteration. Early intense sodic-potassic alteration consists of K-feldspar, magnetite, epidote, clinozoisite, apatite, tremolite and minor chalcopyrite. A younger, less intense propylitic alteration assemblage includes epidote, chlorite and considerably higher amounts of chalcopyrite than early mineralization. Late stage weathering targets the youngest propylitic veins and altered chalcopyrite to copper-oxide minerals.

Estimated primary mineralogy

60% Clinopyroxene: 200-500 µm anhedral and irregular crystals are faintly pleochroic brown-green, have inclined extinction and low 2nd order interference colours (Fig. 6). Cleavage is moderately developed with orthogonal geometries. Clinopyroxene is embayed by secondary K-feldspar and contains overgrowths of apatite prisms that mimic the orthogonal cleavage orientations.

40% Orthopyroxene: 100-300 µm anhedral to subhedral blocky crystals are colourless to very faint green in PPL, parallel extinction and have low 1st order interference colours (Fig. 6). Poorly developed cleavage has subtle orthogonal geometries in some grains and in others parallel cleavage is observed only. Fluid inclusion trails parallel the cleavage and grain boundaries are embayed adjacent to secondary K-feldspar.

Secondary minerals

25% K-feldspar: 100-200 µm highly irregular, interlocking and anhedral masses are colourless, have moderate relief and low 1st order interference colours (Fig. 7). Secondary K-feldspar encloses secondary apatite and is intergrown with epidote-clinozoisite and is riddled with inclusions of epidote. Clinopyroxene is preferentially replaced to K-feldspar and orthopyroxene remains as isolated, embayed crystals.

7% Epidote-clinozoisite: 20-100 µm anhedral mineral aggregates are faintly yellow pleochroic to colourless in PPL, have 2nd order interference colours and high relief (Fig. 7). One strong cleavage is observed and two subtle cleavages. Composition is variable from clinozoisite domains that are colourless in PPL and have low 1st order interference colours (~1%) and epidote domains that are pleochroic yellow in PPL and have vivid upper 1st and lower 2nd order interference colours (~6%).

2% Apatite: 20-200 µm diameter euhedral prisms and subhedral disseminations in the host rock are colourless in PPL, have very high relief and low 1st order interference colours. Orthogonal cleavages are observed in larger grains that define elongate prisms with apexes that are slightly subrounded; cross-sections of the c-axis are hexagonal. The apatite is concentrated at margins to magnetite veins and as inclusions in secondary K-feldspar and overgrowths on clinopyroxene.

1% Fe-rich epidote: 50-100 µm anhedral to subhedral prisms are vivid pistachio green pleochroic in PPL and have vivid 2nd order interference colours. The mineral commonly rims less altered domains adjacent to secondary K-feldspar. Epidote contains inclusions of chalcopyrite and hematite.

Tr Albite: 200-300 µm diameter equant anhedral disseminations have low relief, low 1st order interference colours and are colourless in PPL. The grains are in Vein 1 enclosed by magnetite.

Tr Hematite: 30-100 µm anhedral disseminations are blood red in plane polarized light and are partially dull grey reflective in reflected light. Hematite rims and replaces chalcopyrite that is embayed in contact with hematite. Some hematite contains botroidal texture where it is intergrown with epidote-clinozoisite.

Tr Tremolite: 100-150 µm subhedral needles and laths are colourless, have inclined extinction and low 2nd order interference colours. The mineral is included in isolated K-feldspar crystal surrounded by epidote-clinozoisite.

Tr Iron-oxide: 10-50 µm pleochroic yellow, brown and orange amorphous, radiating needles to botroidal masses have high relief, are not reflective and are distributed in and near Vein 2.

Tr Copper-oxide: 10-100 µm pleochroic green to pastel blue amorphous mineral masses are distributed throughout Vein 2 (Fig. 8). In one location in the offcut chalcopyrite can be observed on strike with a thin vein composed entirely of copper oxide that is interpreted to replace chalcopyrite.

Tr Chlorite: 10-30 µm pleochroic pale green fibrous radiating masses infill Vein 2 as intergrowths with epidote.

Tr Clay: < 5 µm amorphous anhedral masses are deep brown pleochroic, have high relief and have low 2nd order interference colours. Clay alteration defines pseudomorphs to an unknown mineral (?feldspar) in Vein 2.

Secondary opaque minerals

30% Magnetite: 200-600 µm anhedral masses are dull grey reflective and have three strong cleavage geometries that appear pyramidal in cross section (Fig. 7). Magnetite defines nearly monomineralic fracture fill to Vein 1 and contains very fine inclusions of chalcopyrite. Disseminated magnetite defines irregular to blocky shapes that may reflect pseudomorphs of clinopyroxene. Magnetite is intergrown with secondary epidote and K-feldspar.

Tr Chacopyrite: 5-10 µm anhedral rounded to subrounded shaped inclusions are bright yellow reflective (Fig. 7). The inclusions can have elongate geometries that are at a high angle to the vein wall. One dissemination of chalcopyrite is observed in Vein 2 in the offcut slab.

Tr Ilmenite: 20-50 µm anhedral and irregular-shaped replacement zones are pale-white grey reflective and are distributed at margins to magnetite grains and along cleavage planes as magnetite pseudomorphs.

Vein 1: 1-1.3 mm wide vein and stockwork is described at the outcrop scale as jigsaw-fit magnetite breccia. The vein contains coarse-grained, blocky growths of magnetite that comprises more than 95% of vein material (Fig. 1, 7). Fine inclusions of K-feldspar are interstitial to magnetite grains and fine chalcopyrite inclusions are elongate parallel to the vein wall. Patchy fluid inclusion trails are perpendicular to vein wall and centerline epidote and K-feldspar are parallel to the vein boundary. At margin to veins epidote, apatite, K-feldspar, epidote and magnetite are in higher abundance. Two grains of albite in vein.

Vein 2: 500-800 µm wide vein has sharp boundaries and cuts Vein 1 (Fig. 1). Several similar narrow veins cut the host rock with mineralogy that is limited to vein fill and narrow replacement margins. The veins are composed of abundant oxide minerals and numerous weathered cavities now define regions of the vein trace. The vein contains chlorite, Fe-rich epidote, Fe-oxide, Cu-oxide, titanium oxide and clay (Fig. 8). One region in the offcut contains chalcopyrite on strike of narrow vein that is only partially weathered. The mineralogy of the vein is interpreted to reflect high degrees of weathering of chalcopyrite-chlorite-epidote±albite stringers, part of a propylitic assemblage.

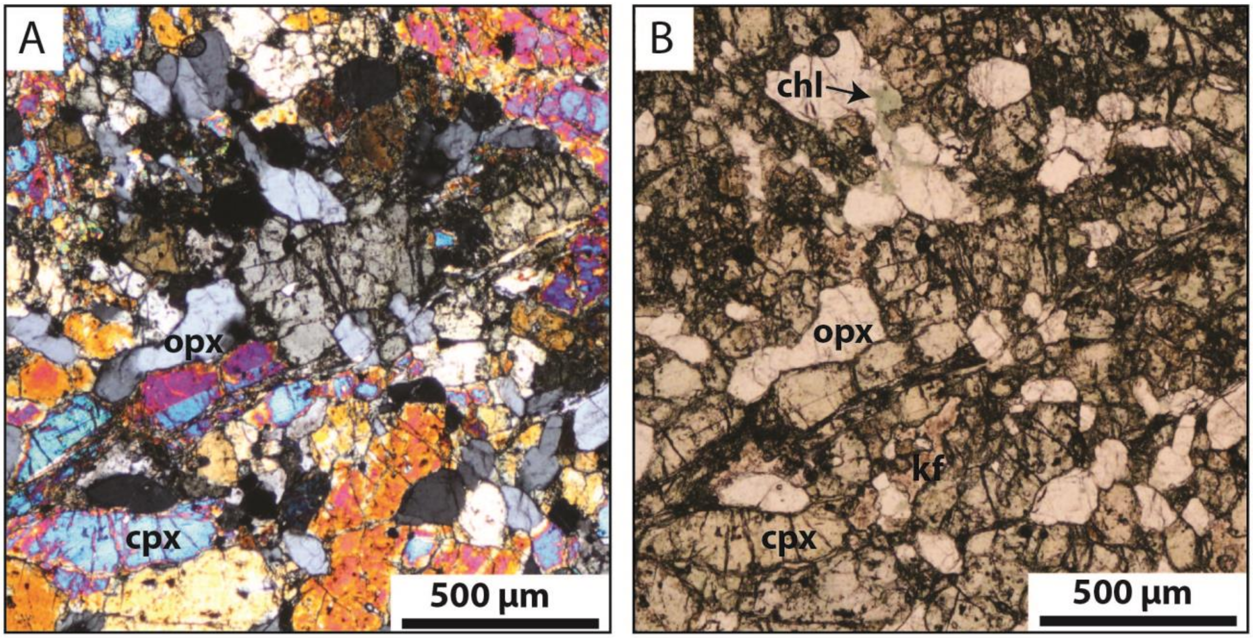


Figure 6. Photomicrograph of primary rock textures in sample 30055318. Interlocking orthopyroxene (opx) and clinopyroxene (cpx) are altered to pleocrhoic green chlorite and pale brown K-feldspar; cross polarized (A) and plane polarized (B) light.

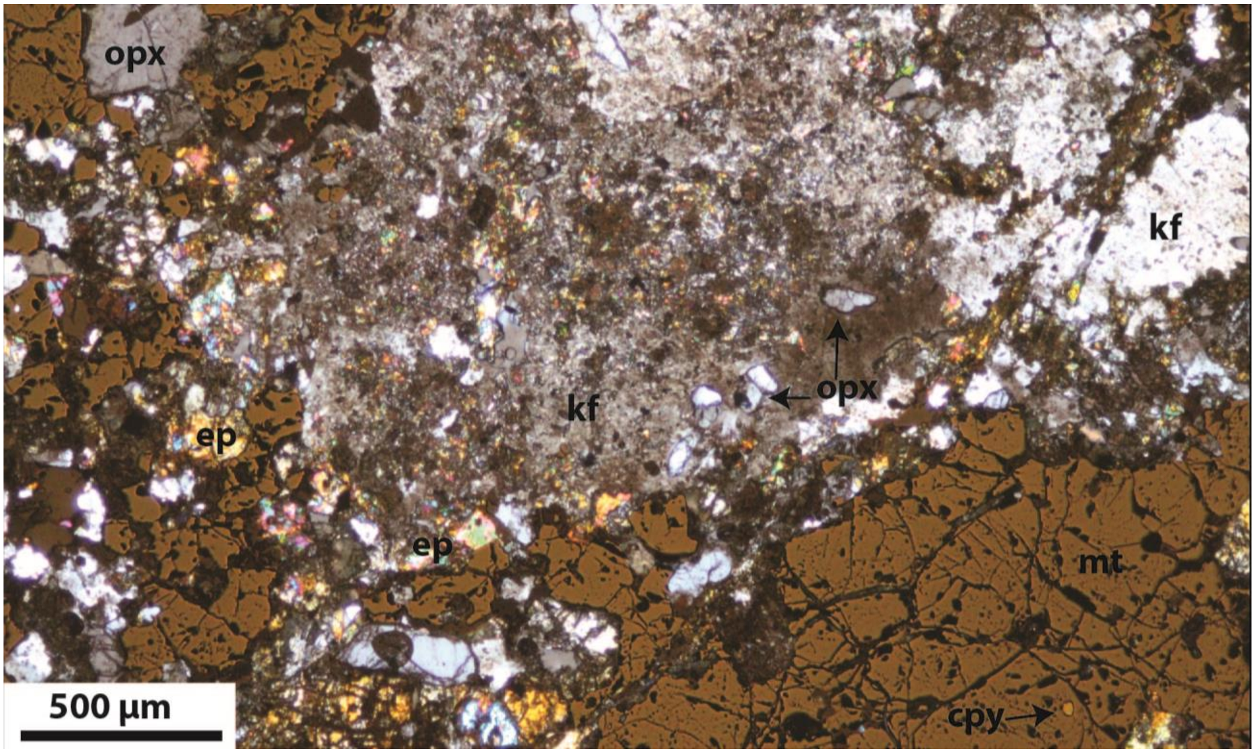


Figure 7. Photomicrograph of sodic-potassic alteration and Vein 1 in sample 30055318. Relict primary orthopyroxene (opx) are isolated crystals in domain that is intensely altered to K-feldspar (kf) that is intergrown with and riddled with inclusions of epidote-clinozoisite (ep). Magnetite (mt) vein contains subrounded inclusion of chalcopyrite (cpy) and vein halo of magnetite intergrown with K-feldspar and epidote-clinozoisite; cross polarized and reflected light.

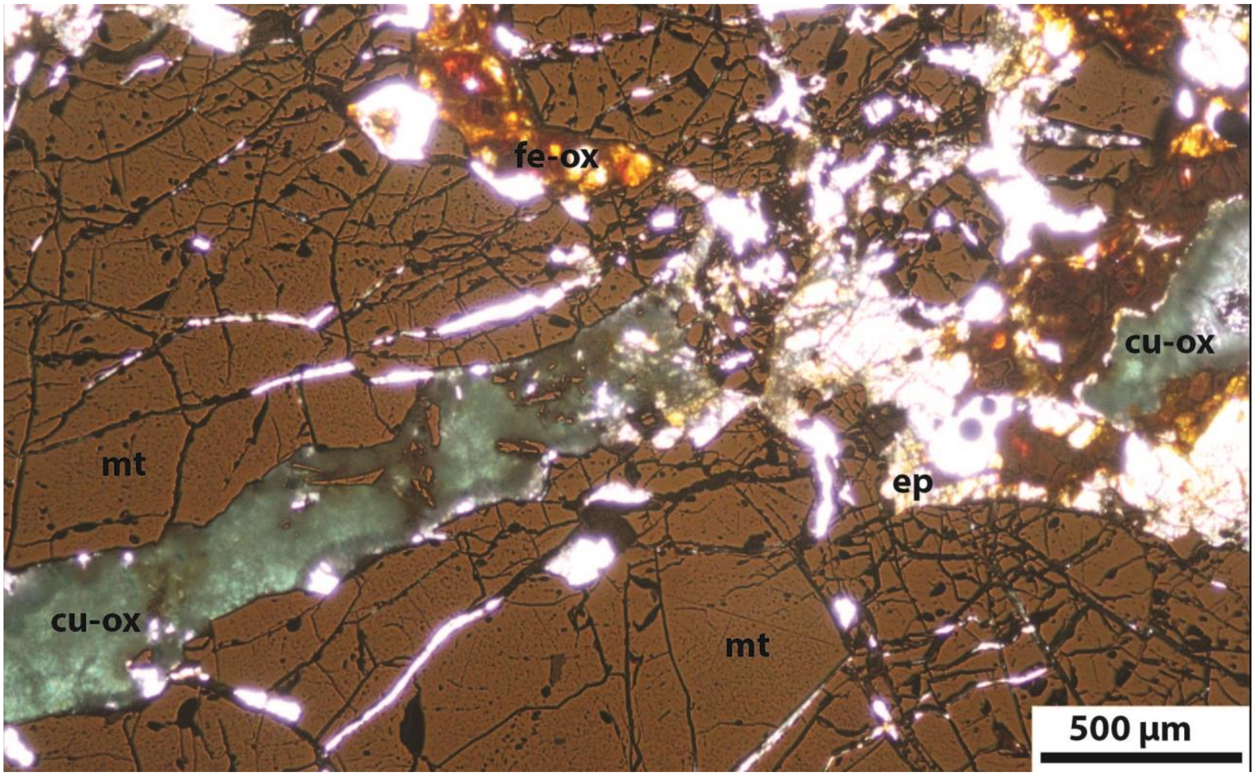


Figure 8. Photomicrograph of Vein 1 cut by Vein 2 in sample 30055318. Massive magnetite (mt) in Vein 1 is cut by green copper-oxide (cu-ox) and epidote (ep) and iron-oxide minerals (fe-ox); cross polarized and reflected light.

Sample 3005529: Diorite porphyry

Description: The sample is a medium-grained hornblende diorite porphyry. Intense sodic-potassic alteration is expressed as magnetite stockwork veins that introduce K-feldspar, albite, epidote, apatite and minor chalcopyrite. Minor propylitic vein contains quartz-epidote that cuts sodic-potassic alteration.

Estimated primary mineralogy

55% Plagioclase phenocrysts: 1-5 mm diameter euhedral and subhedral laths are white in offcut, colourless in PPL and have low 1st order interference colours. Phenocrysts have polysynthetic twins, albite twins and simple twins. Plagioclase is cloudy coloured with replacements to apatite, chlorite, epidote and hematite. The composition of plagioclase is estimated at An_0-An_{10}.

9% Hornblende phenocrysts: 500 µm-1.3 mm subhedral and euhedral laths are green-brown pleochroic, and have 2nd order yellow interference colours (Fig. 10). The laths are rhombohedral shaped to very elongate tabular and have amphibole cleavage. The mineral is replaced to fine magnetite grains that follow cleavage and is dusted with iron oxides.

1% Pyroxene phenocryst: 1 mm diameter euhedral mafic mineral contains eight-sided cross-section of equant mafic mineral, not observed in thin section.

35% Groundmass: 100-300 µm groundmass is totally replaced to secondary K-feldspar, epidote, apatite and magnetite (Fig. 10). The mineralogy is interpreted to be analogous to phenocryst composition.

Secondary minerals

25% K-feldspar: 10-50 µm diameter anhedral blocky crystals are low relief, colourless in PPL and have low 1st order interference colours. The K-feldspar rims plagioclase phenocrysts and totally alters groundmass where it encloses secondary apatite and epidote. K-feldspar inclusions in magnetite and albite in vein indicates pervasive alteration is coeval with stockwork.

8% Albite: 500 µm-1 cm diameter subhedral to euhedral prisms are buff white in offcut, colourless in PPL, have low relief and have low 1st order interference colours. In offcut, the crystals have euhedral form with elongate six-sided geometries in sections parallel to the c-axis and equant six-sided geometries in cuts that are perpendicular to the c-axis. The grains are riddled with inclusions including chalcopyrite, epidote, apatite, magnetite and Fe-Ti oxide.

5% Epidote: 50-300 µm diameter anhedral masses and isolated subhedral prisms are deep green in offcut, pale green in PPL and have 2nd order interference colours. The mineral is disseminated throughout groundmass of host rock, at boundaries to Vein 1 and also within Vein 1 (Fig. 9).

1% Apatite: 20-50 µm diameter subhedral to euhedral columns are colourless in PPL, have low 1st order interference colours and have very high relief. The mineral is disseminated throughout groundmass.

Tr Hematite: 50 µm diameter interstitial amorphous masses are blood red in PPL and are dull grey reflective. Hematite encloses epidote prisms.

Tr Chlorite: 30 µm diameter fibrous aggregates are pleochroic green growths that replace plagioclase.

Tr Quartz: 50 µm diameter anhedral vein fill is colourless in PPL and contains epidote inclusions.

Secondary opaque minerals

18% Magnetite: 200-600 µm anhedral masses are dull grey reflective and have three strong cleavage geometries that appear pyramidal in cross section (Fig. 1). Magnetite defines nearly monomineralic fracture fill in Veins 1-3 and contains very fine inclusions of chalcopyrite. Magnetite is also disseminated in groundmass and as overgrowths on feldspar; most disseminations are < 100 µm in diameter.

Tr Chalcopyrite: < 5 µm subrounded anhedral inclusions in magnetite are bright yellow reflective. Chalcopyrite inclusions are identified in both magnetite disseminations in groundmass and within the magnetite veins (Fig. 11).

Vein 1: ~1 cm wide stockwork is intercepted in three places on the thin section. The veins contain predominantly magnetite, albite, epidote, K-feldspar and chalcopyrite. The vein is coarse-grained in many areas in the offcut where albite exceeds 1 cm in length. Pervasive groundmass alteration is interpreted as an extensive halo to the stockwork that has relatively sharp vein boundaries (Fig. 4).

Vein 2: 100 µm wide quartz-epidote vein cuts Vein 1.

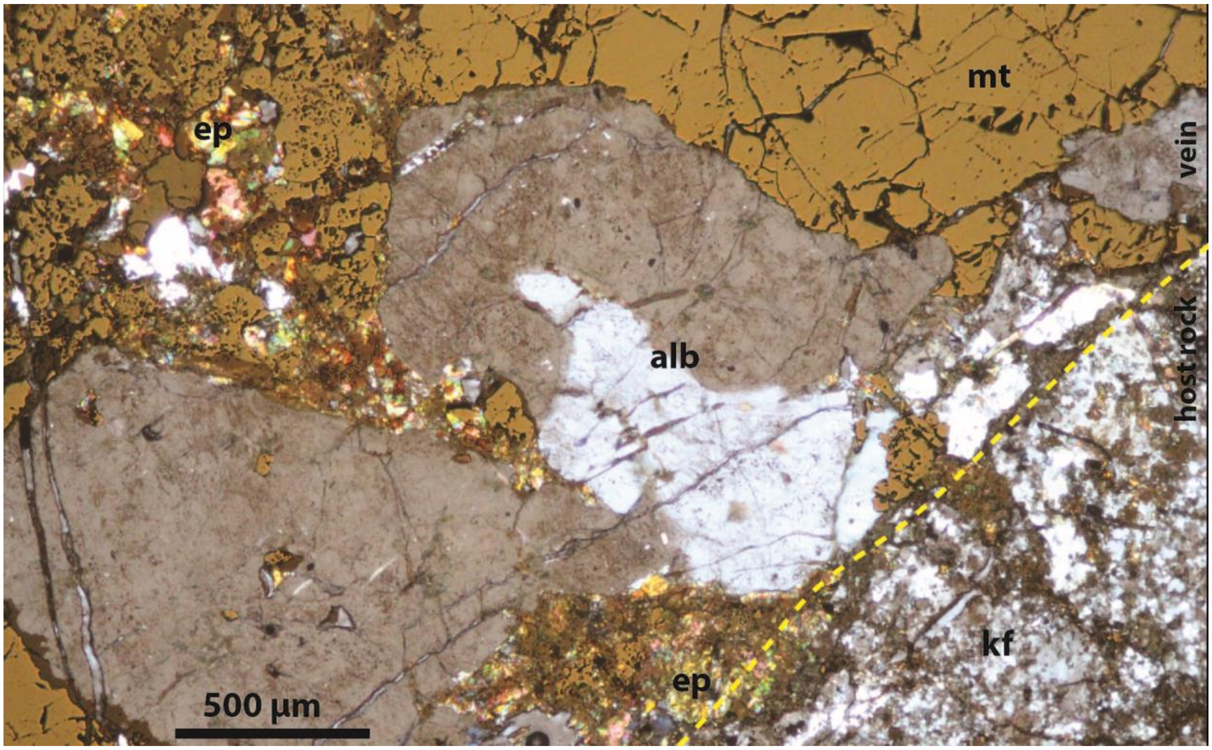


Figure 9. Microphotograph of sodic-potassic alteration in sample 3005529. Albite (alb), magnetite (mt) and epidote (ep) in Vein 1 and groundmass of host rock is altered to secondary K-feldspar; cross polarized and reflected light.

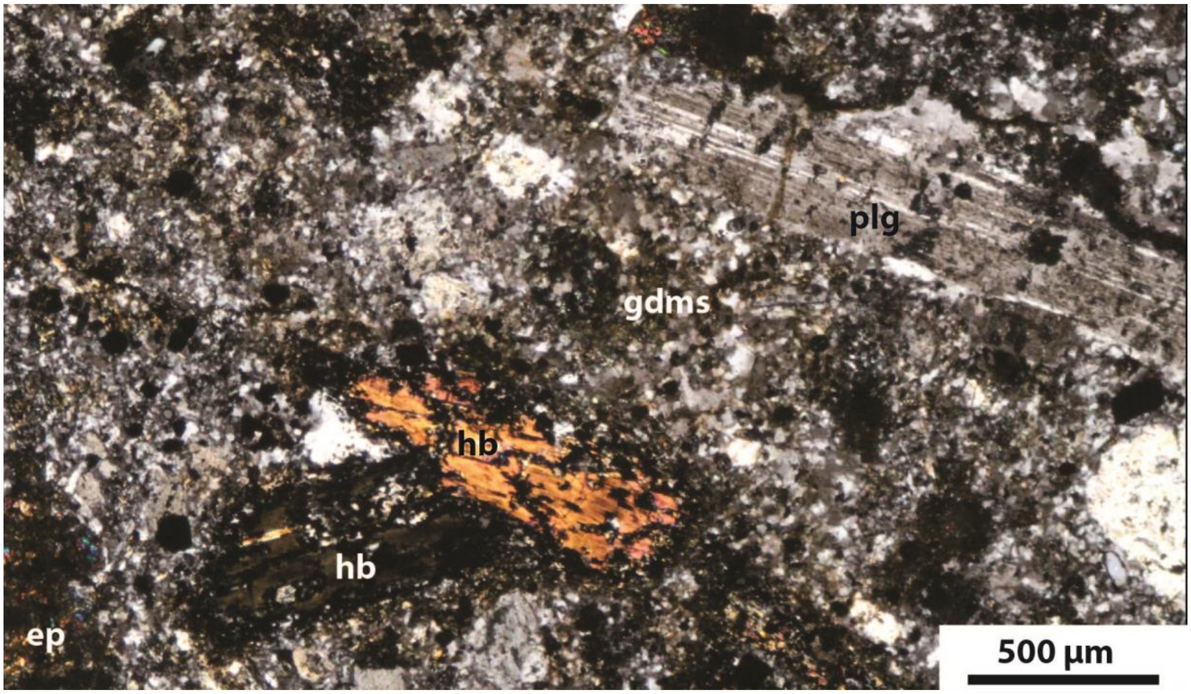


Figure 10. Microphotograph of primary mineralogy in sample 3005529. Plagioclase phenocryst (plg) and two hornblende phenocrysts (hb) in a fine groundmass (gdms) that is altered to patchy epidote (ep); cross polarized light.

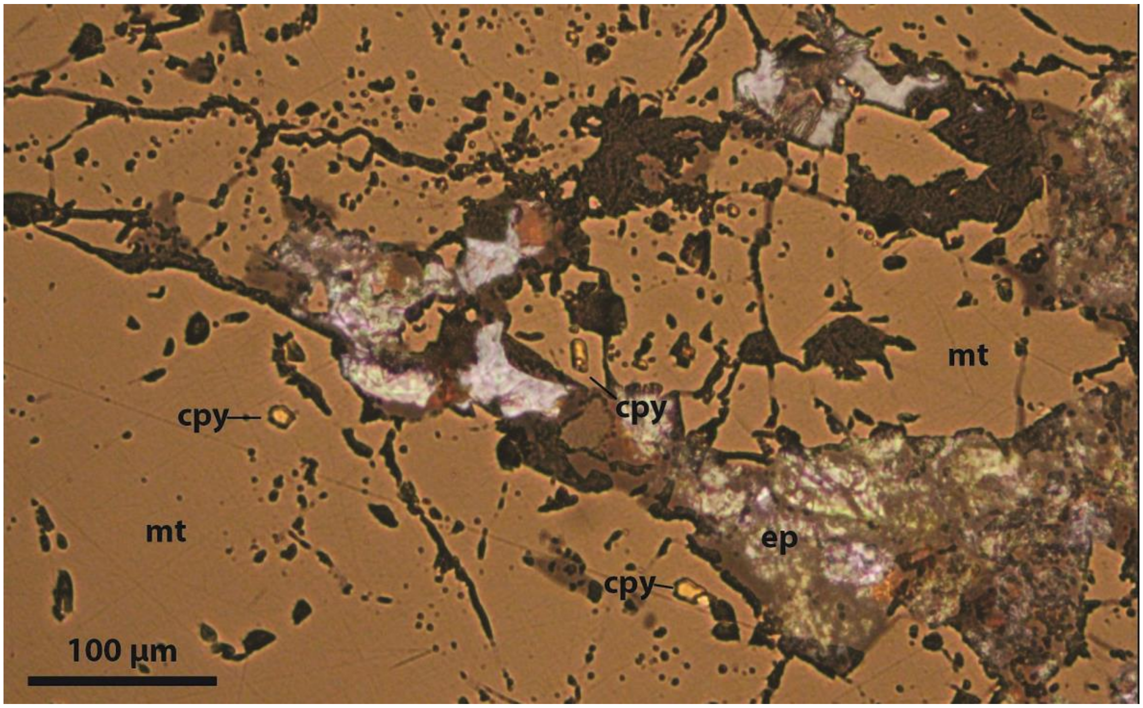


Figure 11. Microphotograph of copper mineralization in sample 3005529. Magnetite (mt) in vein contains numerous chalcopyrite (cpy) inclusions and encloses epidote (ep); reflected and cross polarized light.

Sample 3005545: Diorite porphyry

Description: The sample is a medium-grained clinopyroxene-hornblende hypabyssal diorite porphyry. The sample is overprinted by one intense sodic-potassic alteration event that includes vein and pervasive alteration to K-feldspar, epidote, magnetite, apatite, titanite, titanium oxide, chlorite and chalcopyrite.

Estimated primary mineralogy

40% Plagioclase phenocrysts: 50 µm-1 mm diameter square and rectangular laths are low relief, are colourless in PPL and have low 1st order interference. Crystals have polysynthetic twins that are blurred by replacement to apatite and epidote and many have oscillatory zoning and are rimmed by secondary K-feldspar. Embayments and cleavage parallel replacements to K-feldspar are common.

5% Hornblende phenocrysts: 0.5-2 mm mafic laths have 1:5 aspect ratios and are completely replaced to secondary epidote, actinolite and magnetite. Inferred to be hornblende due to unique geometry, preferential replacement compared to clinopyroxene and the presence of secondary actinolite pseudomorphs.

15% Clinopyroxene: 100-500 µm diameter subhedral octahedrons are colourless, have high relief, upper 1st order interference colours. Mineral is replaced along cleavage planes to K-feldspar, rimmed by titanite and replaced to magnetite.

40% Groundmass: completely replaced to secondary minerals and in many domains the groundmass is defined by monomineralic K-feldspar replacement domains where one continuous K-feldspar mineral encloses phenocrysts (Fig. 12).

Secondary minerals

30% K-feldspar: 50-200 µm diameter irregular replacement bodies and granular masses have low relief, 1st order grey interference and are colourless in PPL. K-feldspar defines monomineralic replacement domains (Fig. 13), can have inclusions of epidote and apatite and also embays and rims plagioclase phenocrysts.

8% Epidote: 50-200 µm amorphous masses and subhedral prisms are pleochroic yellow-green, have vivid 2nd order interference colours and high relief. Epidote replaces primary phenocrysts (Fig. 13), embays titanite and contains inclusions of apatite.

2% Apatite: 10-30 µm subhedral and euhedral hexagonal prisms are colourless in PPL, have low 1st order interference colours and are very high relief. The mineral is disseminated through the groundmass and commonly has high aspect ratios of 1:5.

1% Titanite (sphene): 10 µm diameter subhedral wedge-shaped disseminations that are colourless in PPL, have dull grey reflectivity, have very high relief and very high birefringence.

Tr Actinolite: 100-300 µm pleochroic green fibrous replacement bodies have high 1st order interference colours and inclined extinction. The mineral has lath-like geometry and is interpreted to be a pseudomorph after hormblende that is in turn replaced to epidote.

Tr Chlorite: 100-200 µm pleochroic green fibrous aggregates have brown interference colours and enclose secondary magnetite.

Tr Hematite: 10-50 µm diameter pleochroic deep red 4-sided poorly formed habits with high relief. The mineral forms disseminations at margins to epidote and as overgrowths.

Tr Titanium oxide (anatase or rutile): 10-40 µm diameter euhedral cube to tetrahedrons are lilac purple in PPL, and have masked interference colours due to pleochroism. In larger grains extinction is parallel to the long axis and one of two cleavages that are nearly orthogonal. Anatase has extremely low reflectivity, higher than background. The mineral has extreme high relief and the pyramidal points appear three dimensional in thin section. The mineral is identified in Vein 1.

Tr Clay: < 10 µm pleochroic brown masses (PPL) are nearly opaque and define margins to narrow K-feldspar stringers.

Secondary opaque minerals

3% Magnetite: 100-150 µm diameter anhedral to subhedral 4-sided sections of octahedrons are dull grey reflective (Fig. 12, 13). Magnetite is disseminated throughout groundmass and is enclosed by epidote.

1% Ilmenite: 50 µm diameter anhedral pseudomorphs are white-grey reflective replacements magnetite.

Tr Chalcopyrite: 10 µm yellow highly reflective subrounded inclusions in epidote and in magnetite (Fig. 13)

Vein 1: 100-200 µm wide vein contains blocky K-feldspar, apatite, epidote and anatase. The vein boundaries are diffuse and the pervasive K-feldspar alteration in the rock appears to be related to these stringers.

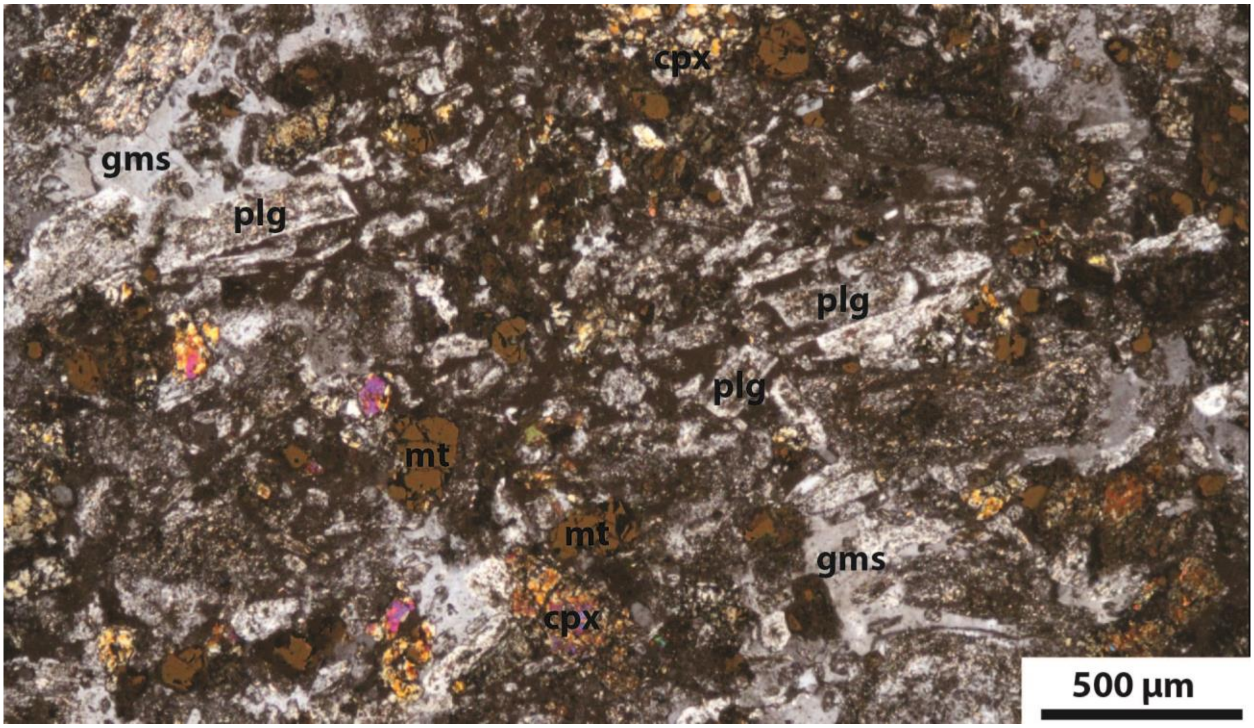


Figure 12. Photomicrograph of primary mineral textures in sample 3005545. Phenocrysts of plagioclase (plg) are zoned and euhedral, clinopyroxene (cpx) phenocrysts are anhedral and groundmass (gms) is replaced to K-feldspar; disseminated magnetite (mt) is interpreted to be secondary; cross polarized and reflected light.

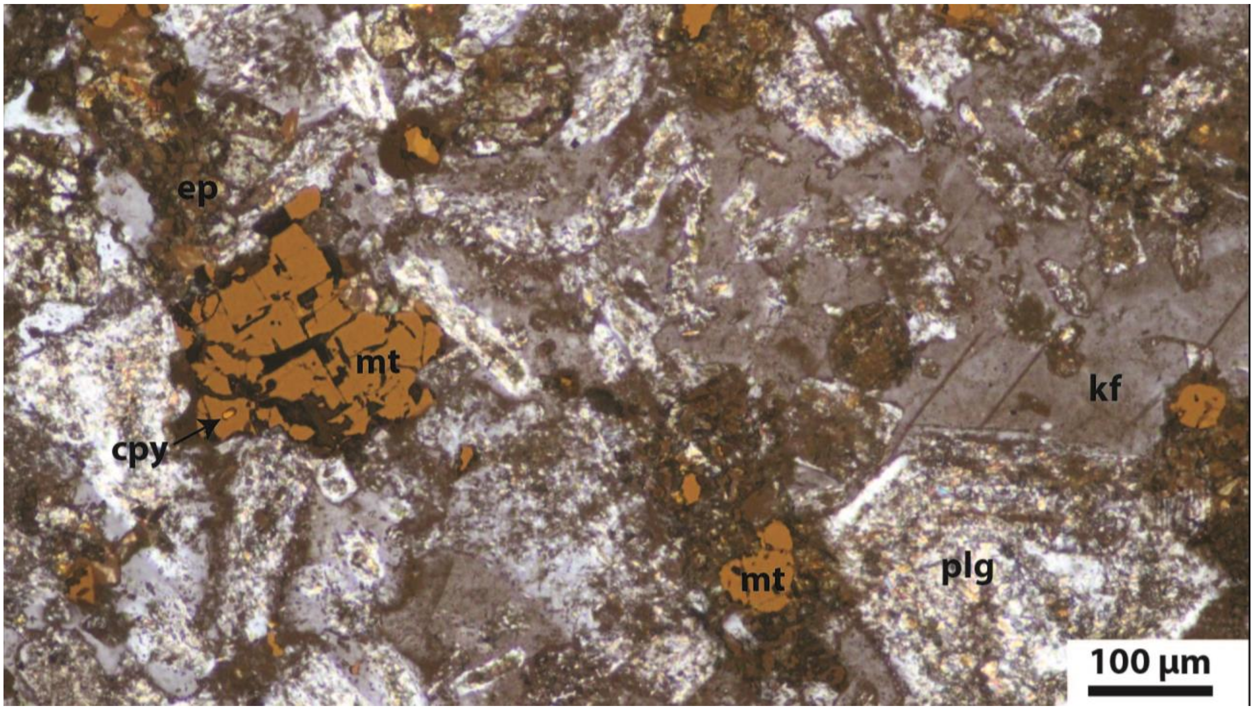


Figure 13. Photomicrograph of sodic-potassic alteration in sample 3005545. Groundmass replaced to K-feldspar (kf) with fine apatite inclusions (not visible at this scale), plagioclase phenocrysts (plg) are partially replaced to epidote (ep) and secondary magnetite (mt) with inclusions of chalcopyrite (cpy); reflected and cross polarized light.

Sample 3005546: Monzonite porphyry

Description: The sample is a medium-grained, equigranular, biotite monzonite porphyry. The sample is overprinted by a pervasive sodic-calcic (propylitic) alteration assemblage of epidote, chlorite, actinolite, apatite, calcite, tremolite, garnet and chalcopyrite.

Estimated primary mineralogy

> 55% Plagioclase: 500 µm-1.2 mm diameter subhedral and euhedral laths are colourless, have low relief and low 1st order interference colours. The crystals are broadly equigranular in size (Fig. , hipidiomorphic granular textured and characterized well developed polysynthetic and albite twins. The composition of the plagioclase is approximately An 10 (examples of calculated compositions: An_{12}, An_{10}, An_{10}, An_{11}). Plagioclase is altered to epidote at margins, epidote-apatite along cleavage planes and has patchy calcite replacement domains.
>
> 40% K-feldspar: 200-500 µm diameter anhedral rectangular cross sections are colourless, have low relief and low 1st order interference colours. The mineral is distinguished from plagioclase on the stained billet and by the absence of polysynthetic twins. K-feldspar is altered at the margins and partially replaced to epidote, calcite and apatite.
>
> 4% Biotite: 500 µm diameter relict mafic domains are blocky to elongate in shape and are completely replaced to secondary tremolite, chlorite and titanite. Secondary minerals retain characteristic biotite cleavage parallel to elongation of mineral.
>
> 1% Magnetite: 100 µm diameter relict opaque domains are completely replaced to leucoxene and other non-reflective, opaque minerals.

Secondary minerals

> 12% Iron-rich epidote: 50-100 µm anhedral to subhedral prisms are strongly coloured yellow-green (PPL), have high relief and 3rd order interference colours. The mineral is interpreted to be iron-rich due to the deep colouration and high interference colours. Epidote is disseminated throughout at grain boundaries, as cleavage parallel replacements and as vein fill and in the vein halo. Epidote is intergrown with chlorite, epidote, titanite and encloses chalcopyrite.
>
> 3% Chlorite: 5-20 µm fibrous elongate masses have moderate relief, are pleochroic green, have nearly parallel extinction and have low 1st order interference colours. Chlorite preferentially replaces and pseudomorphs biotite as cleavage parallel fibrous masses.
>
> 1% Actinolite: 50-500 µm pleochroic green needles have moderate relief, high 1st order interference colours and inclined extinction. Actinolite replaces relict biotite domains as pseudomorphs and is distinguished from tremolite by green plochroism.
>
> 1% Apatite: 20-200 µm diameter euhedral prisms are colourless, have very high relief, 1:10 aspect ratios in long section and hexagonal cross sections and low 1st order interference colours. Apatite is disseminated along cleavage planes in feldspar and can be both cleavage parallel and radiating; many crystals are at margins to mafic domains.

1% Titanite (sphene): 100-200 µm pleochroic pale brown subhedral wedge-shaped and subhedral irregular cross sections are pleochrois brown, have very high relief, interference colours masked by colouration and dull grey reflectivity. Titanite occupies mafic replacement domains with chlorite and actinolite.

1% Calcite: 50-100 µm blocky, nearly equigranular masses are colourless to pastel pleochroic and have extreme birefringence. Calcite is distributed at margins to Vein 1 as discontinuous lenses, replacement zones at margins to feldspar and as partial replacements to K-feldspar and plagioclase.

Tr Tremolite: 200 µm colourless acicular crystals have moderate relief, inclined extinction (low angle) and high 1st order interference colours.

Tr Garnet: 200 µm euhedral hexagonal cross sections are colourless in PPL, have high relief, are isotropic and have titanite distributed at the margins.

Secondary opaque minerals

Tr Chalcopyrite: 10-50 µm anhedral and irregular, interstitial replacements are deep yellow reflective. Chalcopyrite lines Vein 1, is disseminated at margin to Vein 1 with epidote and is disseminated throughout the rock as inclusions to epidote and as intergrowths with epidote.

Tr Leucoxene: 50-10 µm anhedral partial pseudomorphs after magnetite are dull grey reflective and opaque. The leucoxene comprises a partial replacement of opaque domains interpreted to be magnetite.

Vein 1: 500 µm-1.5 mm wide vein is braided and anastomosing through host rock with relatively sharp boundaries. The vein contains 95% epidote that is banded and can be dusty brown due pleochroic due to ?clay dusting. Epidote is banded and contains disseminated chalcopyrite within and at margins to epidote in vein. The margin of the vein extends several millimeters as increased epidote-titanite-calcite. Pervasive alteration in the rock is consistent with introduction along vein systems like Vein 1.

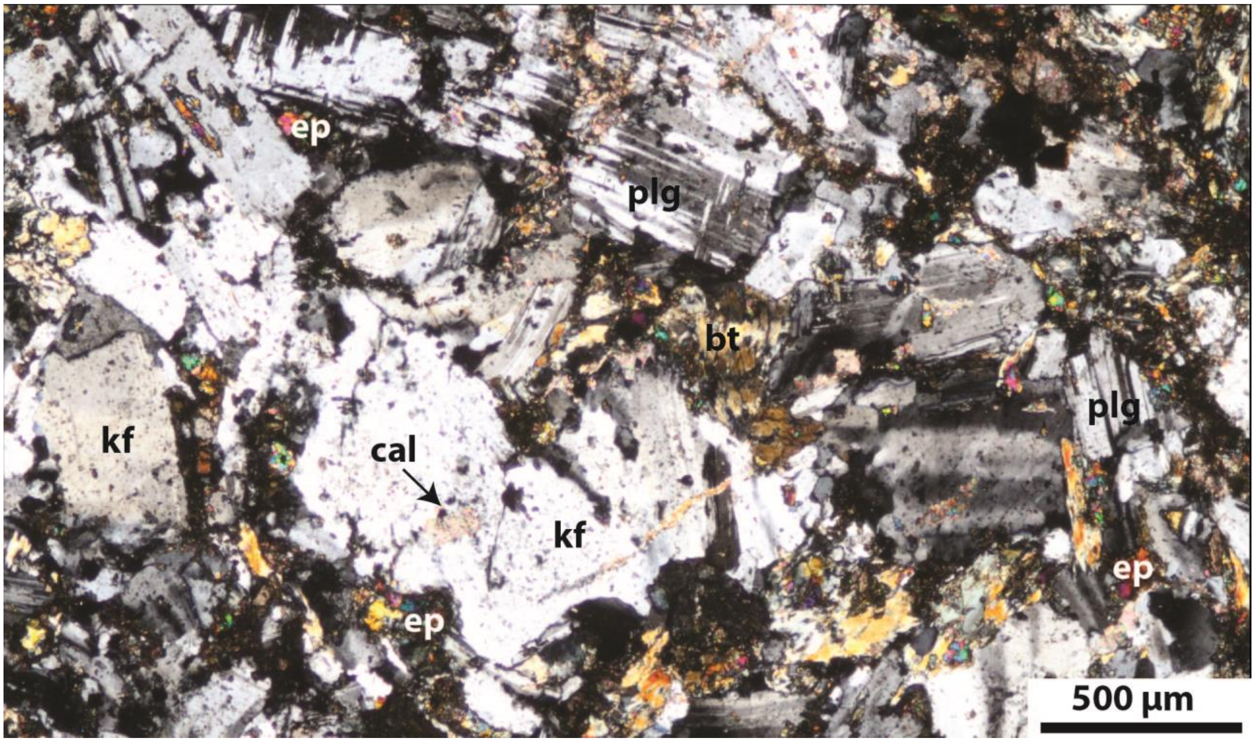


Figure 14. Photomicrograph of primary mineralogy of sample 3005546. Primary K-feldspar (kf), plagioclase (plg) and biotite (bt) are altered to calcite (cal), epidote (ep) and chlorite respectively; cross polarized light.

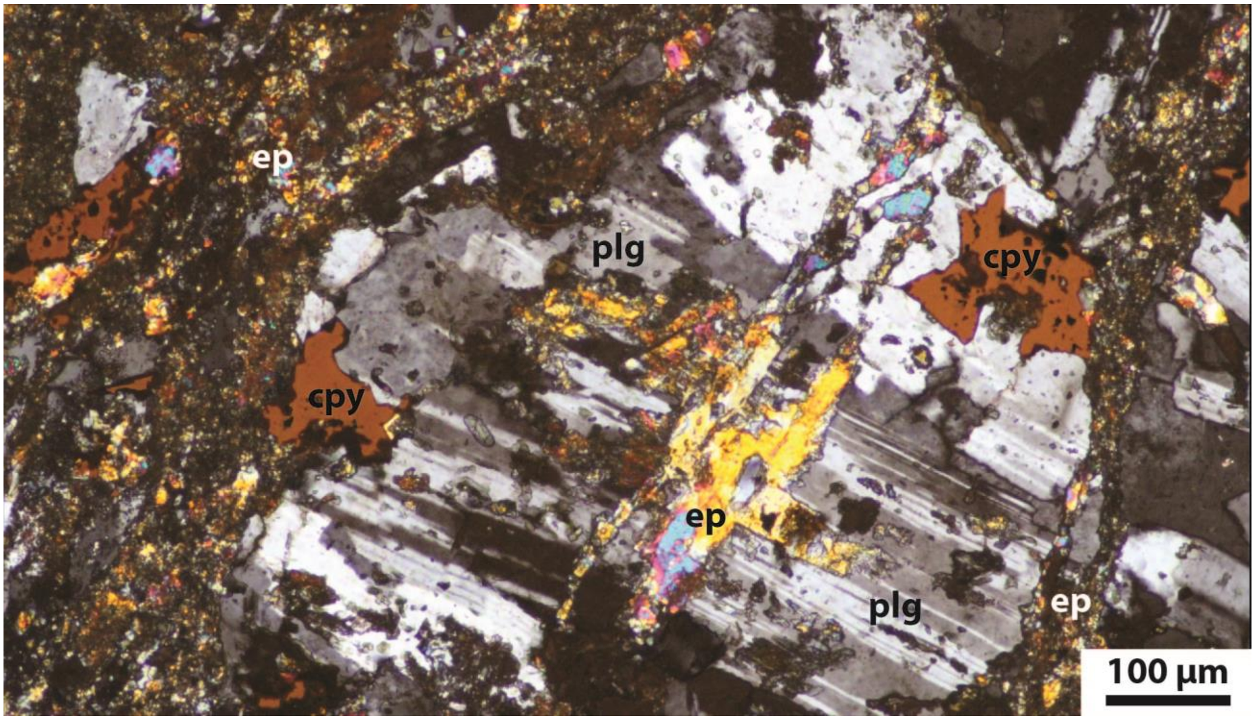


Figure 15. Photomicrograph of sodic-calcic alteration of sample 3005546. Primary plagioclase (plg) cut by several branches of epidote (ep) related to Vein 1 and replaced to chalcopyrite (cpy); reflected and cross polarized light.

Sample 3005547: Monzonite porphyry

Description: The sample is a medium-grained biotite monzonite porphyry. Pervasive intense alteration to a silica-carbonate assemblage of carbonate, clay, sericite, quartz, apatite and chalcopyrite.

Estimated primary mineralogy

> 50% Plagioclase phenocrysts: 500 µm-1.5 mm subhedral and euhedral relict laths are completely replaced to secondary minerals (Fig. 16). The feldspar domains have high aspect ratios typically 1:5 and, can have subtle trachytic texture and are preferentially replaced to carbonate alteration.
>
> 30% K-feldspar: 200-500 µm diameter anhedral and irregular grains reflect finer groundmass fill and overgrowths that contain large plagioclase inclusions and concave boundaries with plagioclase. K-feldspar is the only primary mineral that appears resistive to secondary alteration.
>
> 5% Biotite: 600 µm-1 mm wide relict grains are completely pseudomorphed to clay and fibrous phyllosilicate minerals that appear to be cleavage-parallel replacements of biotite (Fig. 16).
>
> 4% Magnetite: 100 µm diameter equant, anhedral to euhedral grains are grey reflective, have well developed three cleavages and are evenly distributed throughout.

Secondary minerals

> 17% Carbonate: 5-20 µm anhedral and amorphous masses and sparse euhedral rhombs have high relief, high birefringence and poorly developed cleavage. In many domains the carbonate is colourless and other domains it is brown dusted coloured. The billet does not effervesce suggesting that the composition may include ankerite-dolomite but positive identification is not possible due to the fine grain size and lack of twins or well developed cleavage. Carbonate is vein hosted and preferentially replaces plagioclase (Fig. 16).
>
> 5% Clay: < 5 µm amorphous masses are pleochroic brown, have high relief and high birefringence. The clay is spatially correlated with carbonate alteration as phenocryst replacements and is most intense at margins to the vein.
>
> 2% Sericite: 5-20 µm fibrous masses are colourless, have moderate relief, parallel extinction and 2nd order interference colours. Sericite infills sparse stringers and defines replacement domains of biotite and K-feldspar.
>
> 2% Quartz: 50-100 µm elongate prisms are colourless, have moderate relief and low 1st order interference colours. Quartz contains abundant inclusions of apatite and is intergrown with carbonate in vein.
>
> Tr Apatite: 50-100 µm long colourless euhedral columns are disseminated throughout and have high relief, parallel extinction and low 1st order interference colours. Apatite occurs as inclusions in K-feldspar (Fig. 16).

Secondary opaque minerals

Tr Chalcopyrite: 10-30 µm disseminated anhedral grains are bright yellow reflective and are commonly adjacent to sericite, quartz and quartz-carbonate veins (Fig. 17).

Tr Pyrite: 5-20 µm diameter brassy yellow reflective semi-cubic cross sections are distributed at margins to sheeted veins.

Veins 1: Numerous (~20) veins are 100-300 µm wide sheeted to stockwork and have millimeter spacing and are composed of quartz and carbonate. Veins contain numerous epithermal textures including open space growth of both carbonate and quartz and compositional banding. Fibrous quartz grains are at a high angle to vein wall. Pervasive alteration is interpreted to be halo alteration to veins of this generation.

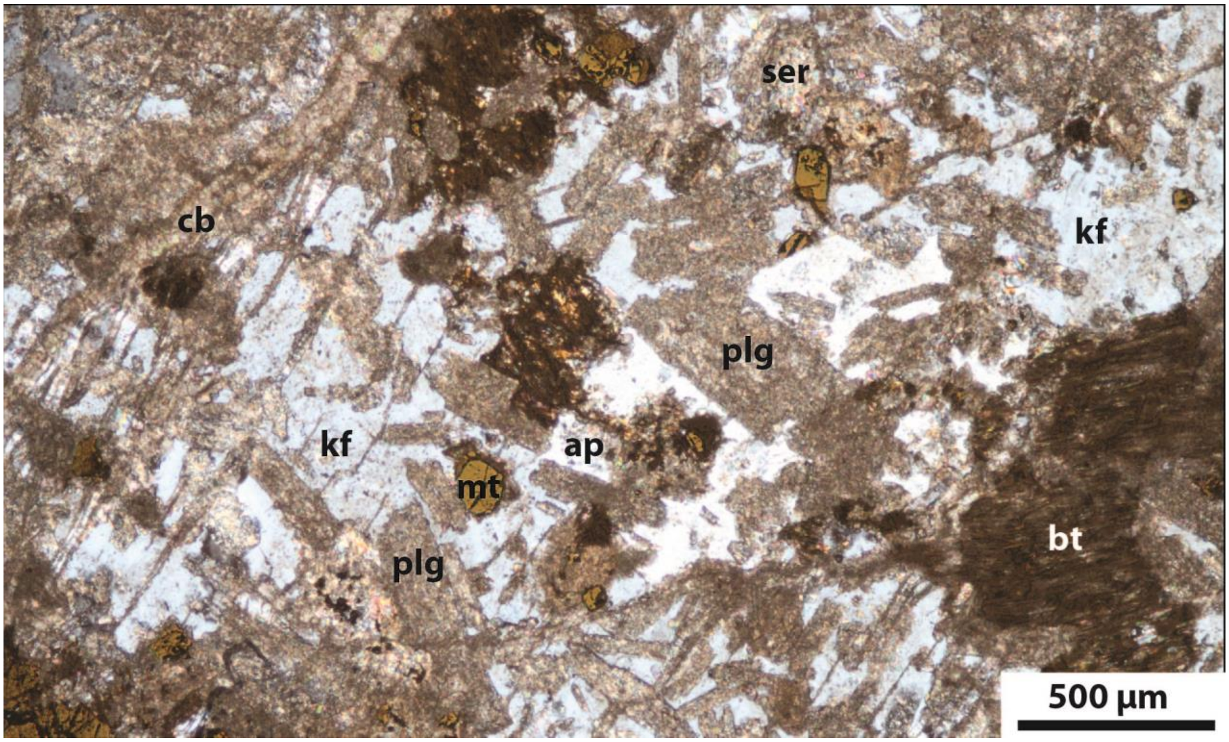


Figure 16. Photomicrograph of silica-carbonate alteration in sample 3005547. Primary plagioclase (plg) phenocrysts and primary K-feldspar that is interstitial and magnetite are cut by several carbonate stringers (cb), part of Vein 1. Most plagioclase is altered to carbonate and minor sericite (ser), K-feldspar is altered to apatite and biotite (bt) is altered to clays and sericite; cross polarized and reflected light.

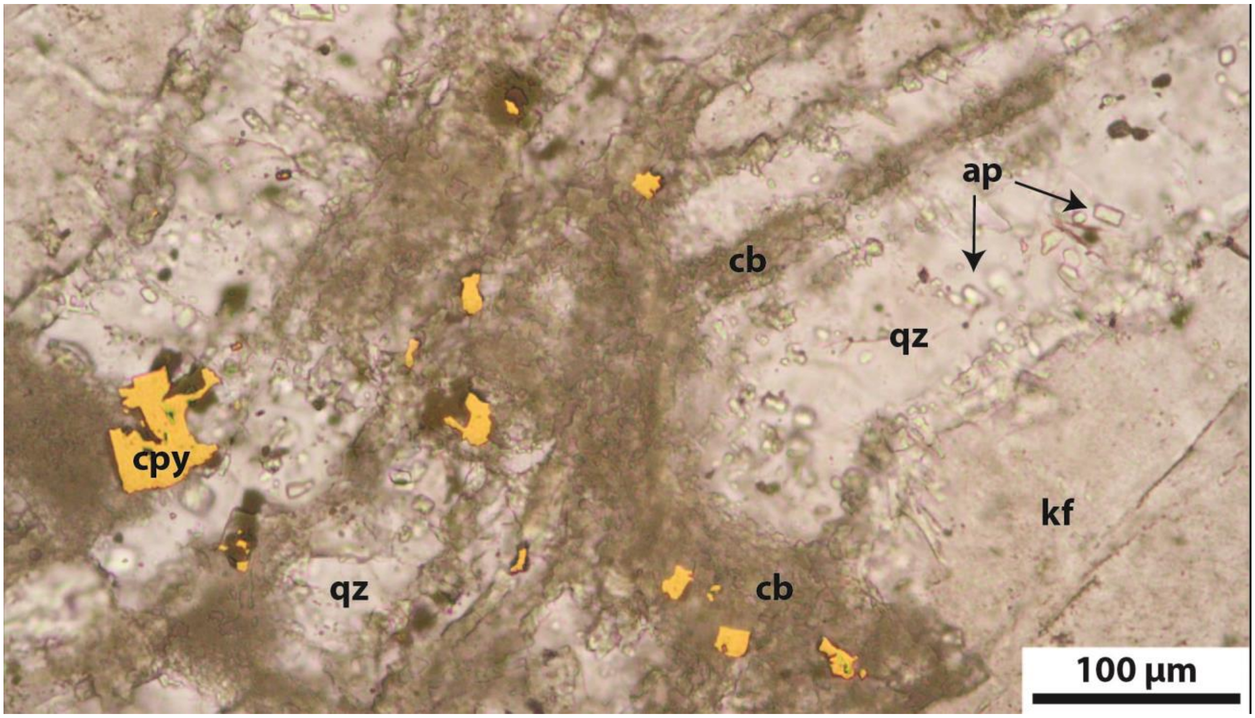


Figure 17. Photomicrograph of Vein 1 mineralization in sample 3005547. Quartz (qz) with apatite inclusions (ap), carbonate (cb) and chalcopyrite (cpy) are introduced along Vein 1 and cut primary K-feldspar; plane polarized and reflected light.

Sample 3005549: Monzonite intrusion breccia

Description: Sample is a monzonite intrusion breccia that is overprinted by texturally destruction alteration. Early calc-potassic assemblage consists of K-feldspar, carbonate, anhydrite, muscovite, hematite, chalcopyrite and tetrahedrite-tennantite. Later quartz-carbonate stockwork introduces quartz, carbonate, apatite and chalcopyrite.

Estimated primary mineralogy: The sample is intensely altered and texturally destroyed such that estimation of primary minerals and componentry is extremely difficult. Phenocrysts are indicated on the billet by white rectangular shapes that comprise ~1% of the rock; in thin section these domains are analogous to groundmass mineralogy except for the absence of K-feldspar. Biotite domains are interpreted for domains that are completely replaced to phyllosilicate minerals (~3%; 1 mm diameter). The determination of the composition and abundance of feldspar mineralogy is not possible for this sample. Two clast domains (Fig. 3) are comparable in texture and composition to the monzonite from sample 3005547. The sample is highly heterogeneous in texture and may reflect a volcaniclastic intermediate (?) or a monzonite intrusion breccia.

Secondary minerals

12% K-feldspar: 200-400 µm diameter anhedral replacements are identified from billet as yellow stained patchy domains and on the unstained domains as reddish coloured patchy domains at margins to early veins. Primary and secondary K-feldspar alteration is not easily distinguished in thin section, however near veins K-feldspar is clearly intergrown with anhydrite and contains inclusions of carbonate and of apatite and is flanked by sericite at margins to vein. Coarse K-feldspar in clasts (Fig. 3) may be primary or potentially a clast of secondary K-feldspar in the sample.

10% Carbonate: < 20 µm diameter amorphous masses in groundmass and somewhat coarser grains in veins are colourless, have high relief, somewhat rhombic cross sections, extreme birefringence and are intergrown with and inclusions to K-feldspar. In finer areas it is difficult to distinguish anhydrite and carbonate minerals where replacement domains may reflect both.

7% Muscovite: 100 -500 µm long high elongate fibrous replacements are colourless (PPL), have parallel extinction, vivid 2nd order interference colours and define replacements of primary phyllosilicate minerals with cleavage paralle leucoxene. Minor fine colourless phyllosilicate is disseminated in groundmass and interpreted to be muscovite also. Numerous stringers of colourless phyllosilicates define tension gashes and cleavage parallel replacements in K-feldspar that are inferred to be muscovite.

4% Anhydrite: 20-50 µm diameter grains are anhedral, colourless, have very high birefringence and are both vein hosted and pervasive. Anhydrite is disseminated in groundmass with quartz and carbonate.

3% Chlorite: 20-30 µm diameter fibrous grains are faintly green coloured, have low relief, low 1st order interference colours and are distributed in veins and as patchy, pervasive alteration throughout.

2% Quartz: 10-30 µm diameter anhedral masses are colourless, have moderate relief and are distributed throughout groundmass with carbonate and anhydrite.

1% Apatite: 100-300 µm diameter euhedral and subhedral prisms are colourless in PPL, have high relief, low 1st order interference colours and elongate column to equant hexagonal cross sections. Apatite occurs as overgrowths or inclusions in K-feldspar.

Tr Titanite: 20 µm anhedral and elongate grains have very high relief, are brownish coloured, have interference colours masked by colouration and are dull grey reflective. Titanite is disseminated at margin to Vein 1.

1% Hematite: 20-50 µm diameter anhedral grains are blood red pleochroic, have very high relief (PPL) and are dull grey reflective. Hematite rims and replaces chalcopyrite where embayments in chalcopyrite are common (Fig. 18).

Secondary opaque minerals

3% Leucoxene: 100-200 µm diameter replacement domains are dull grey reflective, have feathery morphologies and define partial replacement masses after magnetite and/or ilmenite. Subtle triangular cleavages are preserved in some cases that are interpreted to reflect magnetite cleavage. Luecoxene is identified outside of clasts that contain magnetite. Some of the leucoxene may be intergrown with ilmenite

1% Magnetite: 500 µm-1.2 mm diameter subhedral grains in clasts are irregular in shape and have well developed triangular cleavages in cross sections. Magnetite in clasts contain inclusions of chalcopyrite and are intergrown with K-feldspar.

0.5% Chalcopyrite: 20-100 µm wide concave shaped irregular anhedral grains are bright yellow reflective. Chalcopyrite is commonly rimmed and replaced by hematite both in vein and as disseminations (Fig. 18). The margins of one chalcopyrite grain in Vein 2 contains tetrahedrite-tennantite.

Tr Tetrahedrite-tennantite: 20 µm diameter silver-grey reflective grain is anhedral at the margin of chalcopyrite grain in Vein 2. Both chalcopyrite and tetrahedrite-tennantite have similar polishing hardness, relief and smooth boundary between grains that are interpreted to have precipitated simultaneously (Fig. 18)

Vein 1: 500 µm wide vein has vey diffuse boundaries and irregular trace. The vein contains K-feldspar, specular hematite, chalcopyrite, chlorite and anhydrite and is interpreted to be an earlier generation. Titanite is disseminated in margin to vein.

Vein 2: 800 µm wide vein has diffuse margins with quartz and hematite at margins and is cored by anhydrite.

Vein 3: 300-600 µm wide stockwork throughout the rock are composed of anhedral quartz, rhombs of carbonate, fine apatite inclusions and fine chalcopyrite.

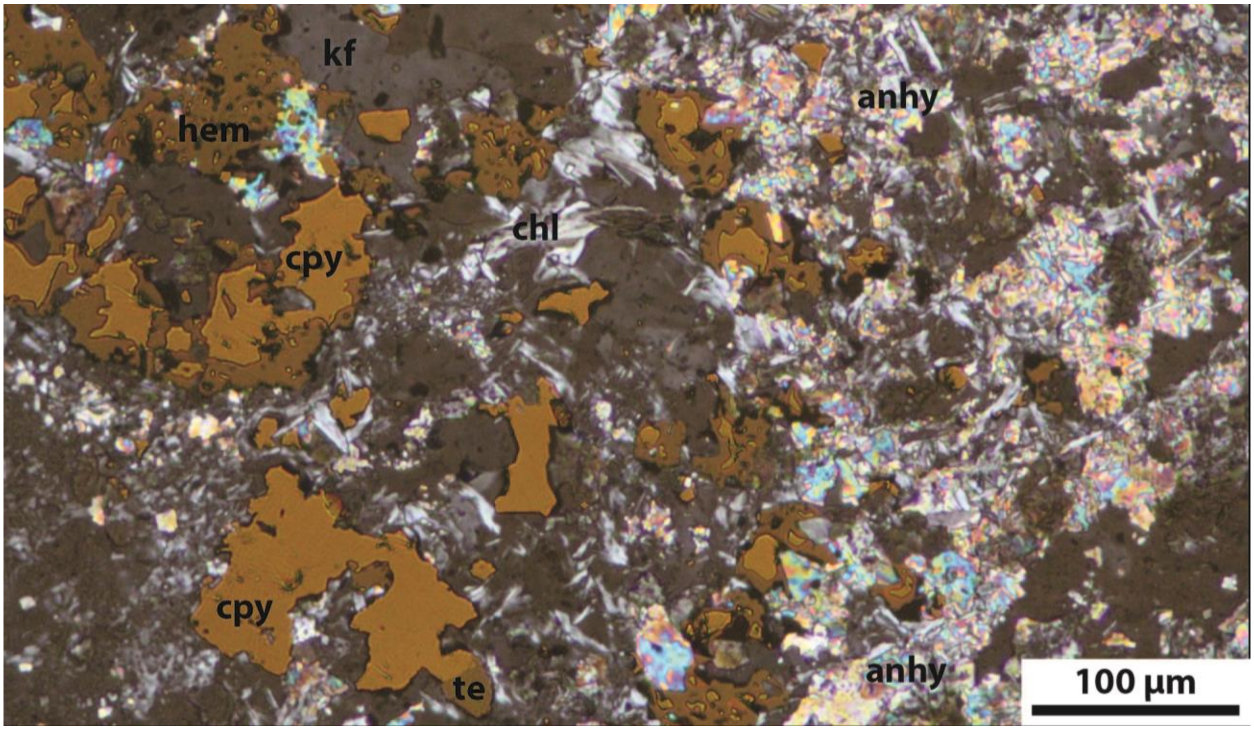


Figure 18. Photomicrograph of Vein 1 mineralization in sample 3005549. Diffuse boundaried Vein 2 trace (photo left) contains K-feldspar (kf), chlorite (chl), chalcopyrite (cpy), hematite (hem) and tetrahedrite-tennantite (te); vein margin contains anhydrite; cross polarized and reflected light.

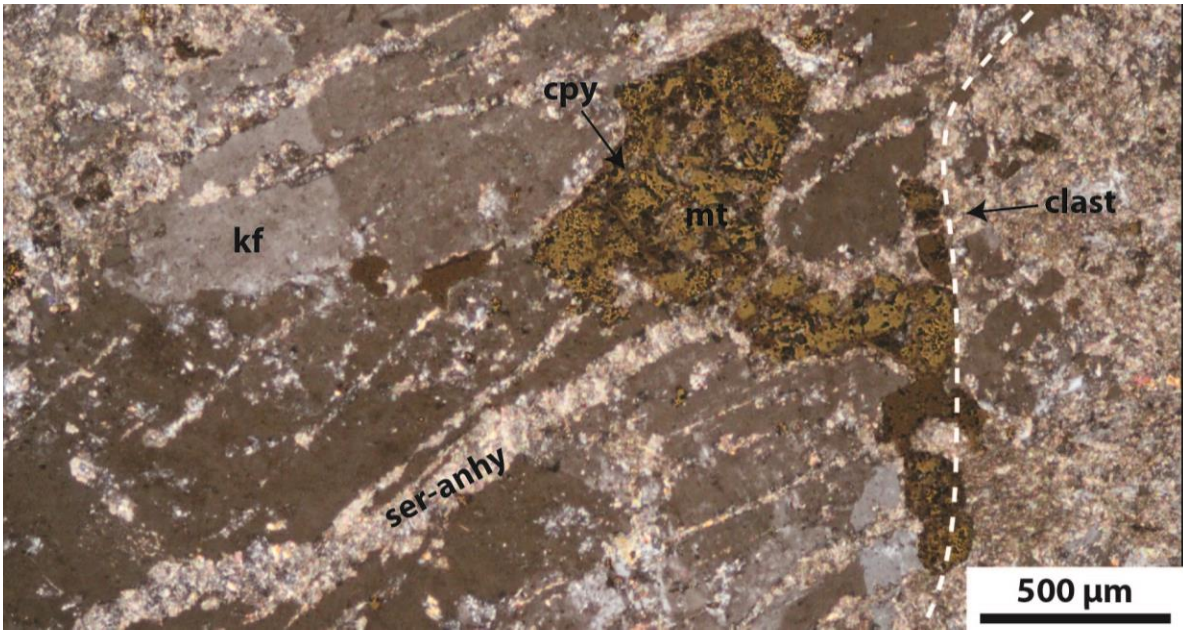


Figure 19. Photomicrograph of mineralized clast in sample 3005549. Coarse K-feldspar (kf), coarse magnetite (mt) with chalcopyrite inclusions (cpy) in clast are cut by sericite and anhydrite stringers (ser-anhy); cross polarized and reflected light.

Sample 3005568: Latite flow breccia

Description: The sample is a medium-grained latite flow breccia with mixed domains of coherent groundmass and other domains with a sedimentary clastic matrix. The rock is interpreted to be a flow breccia with incorporated sedimentary material from the paleosurface. The rock is overprinted by an intense calc-potassic alteration assemblage of K-feldspar, calcite, apatite, magnetite and pyrite. This is followed by the formation of jigsaw-fit breccia that is infilled by sericite-chlorite.

Estimated componentry:

> 70% Volcanic clasts (latite): 1-2mm phenocrysts of biotite, plagioclase and K-feldspar (Fig. 21) in a groundmass of feathery textured plagioclase feldspar (~10 µm long). The ratio of plagioclase:K-feldspar is ~2:1. Many clasts are composed of feldspar or biotite with a minor selvage of groundmass material and others are isolated crystal clasts. The lack of abrasion on volcanic clasts and on the biotite grains indicates little to no mechanical milling or erosion of clastic material.
>
> 20% Matrix/groundmass: heterogeneous composition that ranges from domains of predominantely calcite cement to other domains of fine feldspar (<20 µm) and calcite. Abundant chlorite in the matrix is interpreted to be post deposition hydrothermal and is described below with secondary minerals. In many domains the finer domains are interpreted as coherent volcanic groundmass and in other calcite-rich domains with sedimentary lenses it reflects volcaniclastic matrix material.
>
> 5% Sandstone lenses: ~5 mm wide domain of sedimentary material may reflect an unconsolidated lense or an irregular clast. The grains are ~ 300 µm wide subrounded feldspar that comprise ~60% of the material and the matrix is pleochroic brown aphanitic clays. The isolated domain of what appears to be unconsolidated sedimentary material indicates it is incorporated from the paleosurface during deposition.
>
> 5% Calcite clasts: 300-500 µm diameter subrounded clasts of calcite are most abundant near the sedimentary lense. These clasts may reflect deposition from a limestone source, hydrothermal material or potentially total replacement of feldspar.

Secondary minerals

> 15% K-feldspar: 20-50 µm diameter grains are colourless, have low 1st order interference and are yellow stained in offcut. K-feldspar is concentrated in the matrix, at rims of clasts and is spatially correlated with magnetite. K-feldspar defines cleavage-parallel replaces in biotite and is intergrown with calcite.
>
> 7% Calcite: 10-50 µm colourless anhedral masses are pleochroic (pastel colours), have twinning and very high birefringence. Calcite defines patchy partial replacements of feldspar and also cleavage parallel replacements. Calcite is widespread in the matrix material as intergrowths with K-feldspar and secondary replacement domains on clast boundaries.

5% Chlorite: 5-20 µm diameter pleocrhoic deep green fibrous masses define poorly developed jig-saw fit breccia. Chlorite is intergrown with sericite and replaces magnetite.

3% Sericite: 10-20 µm colourless fibrous masses have moderate relief, 2nd order interference colours and parallel extinction. Sericite is intergrown with chlorite and shares the same space in matrix to jigsaw-fit breccia.

Tr Apatite: ~10 µm diameter colourless euhedral prisms have parallel extinction, high relief and low 1st order interference colours. Apatite occurs as inclusions to secondary K-feldspar.

Secondary opaque minerals

3% Magnetite: 500 µm-1 mm diameter grey reflective disseminations are anhedral, subrounded (Fig. 20) and distributed in highest concentrations in the breccia matrix. Magnetite is rimmed by pyrite and is has patchy replacements to ilmenite. The anhedral geometries and the association with the breccia matrix are interpreted to indicate that all of the magnetite is introduced with the matrix material.

1% Pyrite: 100-200 µm diameter anhedral brassy yellow reflective grains are disseminated throughout, at rims to magnetite (Fig. 20), as inclusions to magnetite and as cleavage parallel replacements to biotite. Pyrite is spatially associated with magnetite and is interpreted to pre-date chlorite-sericite alteration.

1% Ilmenite: 10-100 µm diameter grains are pale grey reflective grains define magnetite replacement domains that range from partial to complete pseudomorphs (Fig. 20).

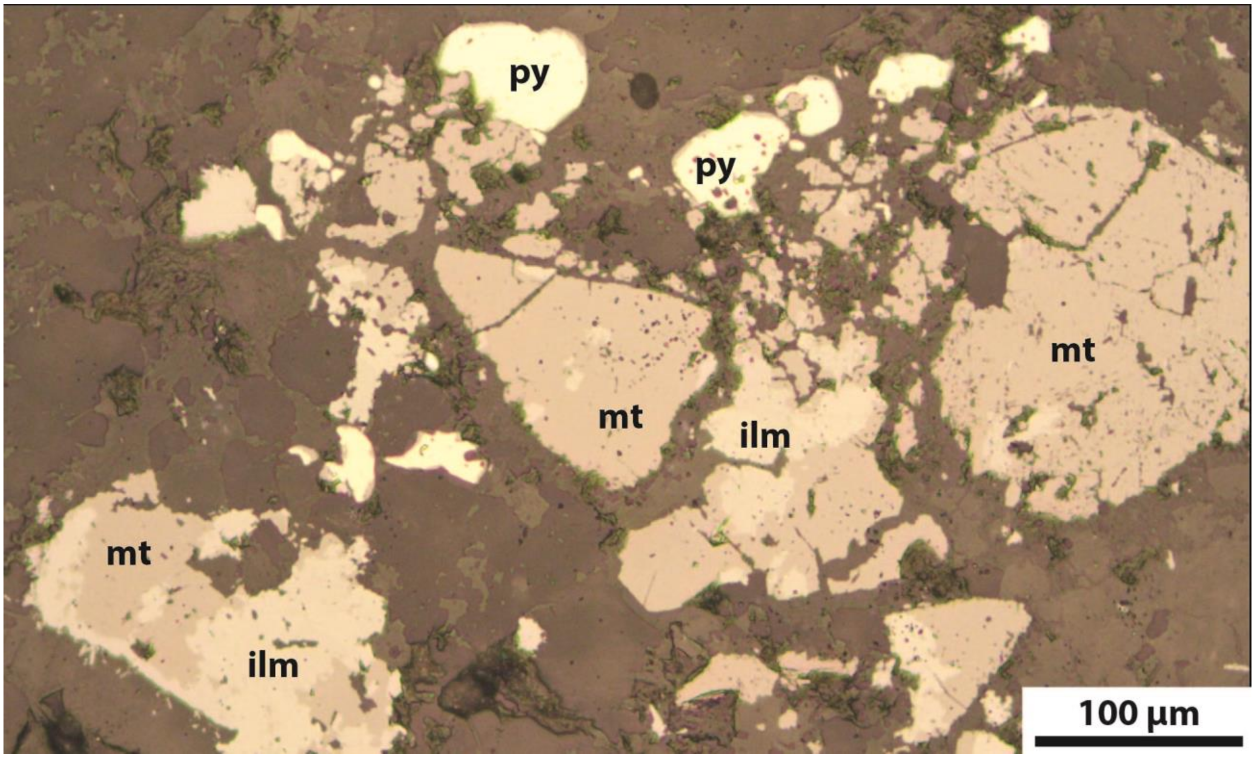


Figure 20. Photomicrograph of opaque minerals in sample 3005568. Magnetite (mt) and pyrite (py) are disseminated in the matrix and magnetite is partially replaced to ilmenite (ilm); reflected light.

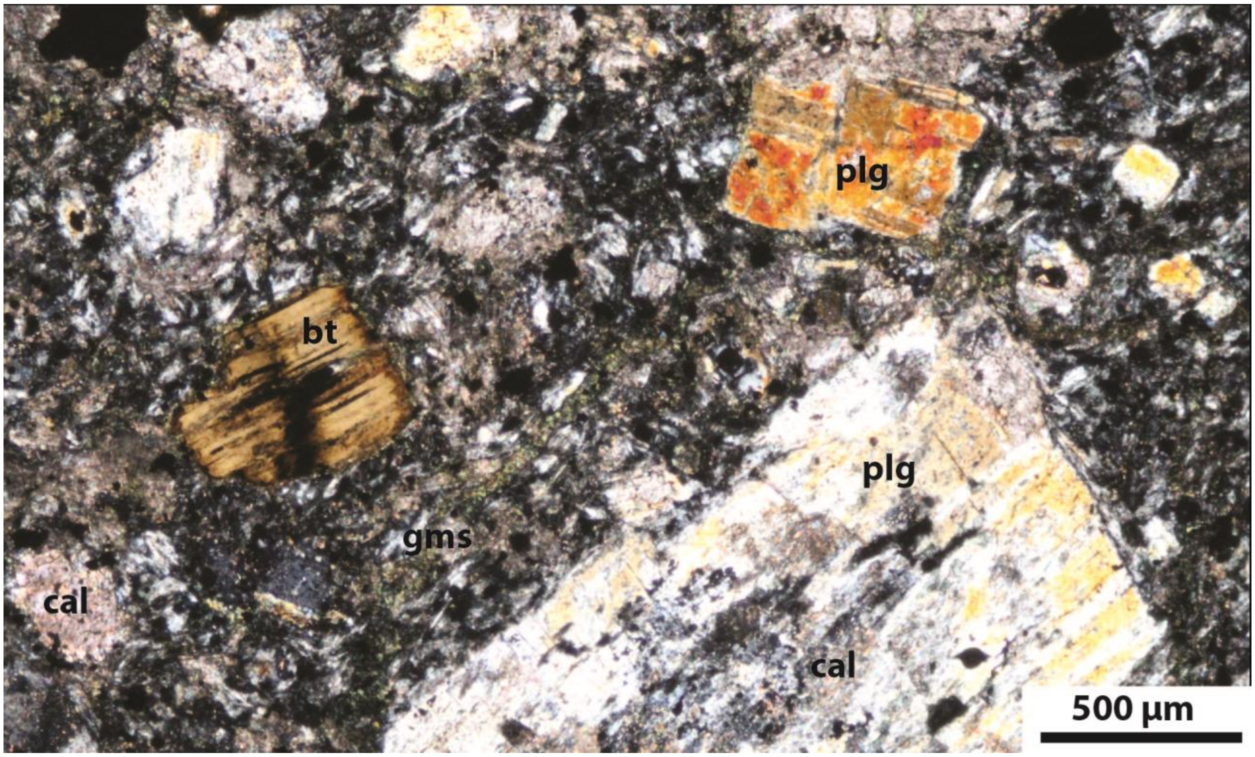


Figure 21. Photomicrograph of volcanic texture in sample 3005568. Phenocrysts of biotite (bt) and plagioclase (plg), clast of calcite (cal) in a groundmass of feldspar and calcite (gms); cross polarized light.

Sample 3005570: Volcanic conglomerate

Description: The sample is a volcanic conglomerate that is altered to an intense calc-potassic assemblage that includes K-feldspar, calcite, sericite, pyrite, magnetite, chalcopyrite and tetrahedrite-tennantite. This is overprinted by a vein-controlled quartz-calcite assemblage.

Estimated componentry:

> 37% Andesite clasts: 1 mm – 1 cm diameter clasts range from angular to subrounded. Most clasts are comparable in texture with 30-40%, medium-grained phenocrysts in a fine groundmass (<20 µm). Phenocryst geometry indicates many are plagioclase (e.g., rectangular geometry, calcite replacement; 30%), a few are K-feldspar (e.g. relict K-feldspar cores; 5%) and some are mafic compositions (e.g., domains with mafic secondary minerals; 5%). The smooth texture and fine grain size of groundmass is interpreted to indicate a coherent volcanic rock. Based on the interpreted mineralogy, the composition of the clasts is andesite.
>
> 30% Feldspar grains: 1-4 mm wide rectangular to equant shaped cross sections are completely replaced to secondary calcite-sericite-K-feldspar. The domains are interpreted to be feldspar due to their elongate, 6-sided lath geometry, subtle orthogonal cleavage and the composition of replacement minerals.
>
> 10% Mafic grains: 1-4 mm diameter mafic domains are inferred from the composition of replacement minerals that include pyrite and magnetite.
>
> 10% Matrix: material in the matrix is completely replaced to hydrothermal secondary K-feldspar, calcite and sericite. The alteration is texturally destructive and makes the determination of both composition and primary texture impossible.
>
> 5% K-feldspar grains: 1-3 mm diameter equant grains are rimmed by calcite, have sericite dustings on surface and are only partially replaced to calcite (Fig. 23)
>
> 5% Biotite grains: 1-3 mm diameter domains are inferred from the composition of replacement minerals to cleavage-parallel sericite and calcite (Fig. 23).
>
> 3% Quartz grains: 2 mm wide subrounded grains are best viewed in the billet as unstained, smooth textured grey-white grains with very marked boundaries. Unlike other clasts and phenocrysts, quartz grains lack any K-feldspar alteration at rims or along cleavage planes. The rounded nature of the quartz grains and the absence of quartz phenocrysts in the volcanic clasts is interpreted to indicate transportation of quartz grains prior to deposition. The presence of these grains favours a sedimentary interpretation for the intensely altered rock.

Secondary minerals

> 20% K-feldspar: 10-100 µm diameter anhedral grains are identified as yellow stain in offcut, in thin section they are colourless, have low relief and are cloudy (Fig. 23). K-feldspar defines fine

rims to most phenocrysts, clasts and cleavage parallel replacements of mafic and plagioclase phenocrysts. The intensity of K-feldspar alteration is related to proximity to Vein 1.

15% Calcite: 10-50 µm diameter anhedral masses are colourless to pleochroic pastel coloured, have extreme birefringence and twins are common. Calcite defines widespread replacement domains in both phenocrysts (Fig. 23) and groundmass/matrix material of clasts. Fibrous calcite is perpendicular to late (post-mineral) tension gashes.

10% Sericite: 10-30 µm diameter colourless, fibrous subhedral masses have subtle parallel extinction and 2nd order interference colours. Sericite defines cleavage parallel replacements of K-feldspar and partial to complete replacement domains as well that are shared with calcite. Sericite is identified in smaller branches connected to Vein 1 and Vein 2 where a subtle rotated fabric is defined by sericite in vein.

2% Quartz: 20 µm long fibrous elongate grains are colourless, have undulose extinction, moderate relief and low 1st order interference. Fibrous extensional vein at margin of pyrite vein contains fibrous quartz and calcite intergrown.

Secondary opaque minerals

5% Pyrite: 100-500 µm diameter anhedral to subhedral cubic-shaped grains are brassy yellow reflective (Fig. 22). Pyrite is concentrated in veins as blocky cubic cross sections and disseminated throughout the groundmass as anhedral, finer aggregate grains. Pyrite contains inclusions of chalcopyrite and is replaced by magnetite. Many domains are characterized by pyrite replacement of the matrix material.

4% Oxide/clay minerals: 100-200 µm diameter irregular domains are opaque and non-reflective. The domains are spatially associated with magnetite/leucoxene minerals and in many areas relict ti-oxide minerals can be observed throughout oxide domains.

2% Magnetite: 100-200 µm wide anhedral and irregular shaped grains are dull grey reflective and are at margins of pyrite grains. Magnetite occurs as inclusions in pyrite, at margins to pyrite, as embayments to pyrite and as embayments to chalcopyrite.

1% Leucoxene: 10-50 µm diameter elongate and in some areas fibrous disseminations are slightly paler grey reflective than magnetite. Leucoxene is disseminated throughout the rock, defines cleavage-parallel replacements of phenocrysts and fills veins with pyrite.

Tr Chalcopyrite: 5-20 µm diameter subrounded yellow reflective inclusions in larger pyrite grains. One tetrahedrite-tennantite grain contains two inclusions of chalcopyrite.

Tr Tetrahedrite-tennantite: 20 µm wide anhedral, subrounded grains are slightly more reflective than magnetite, are surrounded by pyrite disseminations and contains embayed relict pyrite and chalcopyrite at the core of the grain.

Vein 1: 3 mm wide vein is defined by an anastomosing dissemination band that varies width along strike. Vein contains blocky anhedral pyrite, chalcopyrite inclusions to pyrite and magnetite that rims and embays the pyrite grains (Fig. 22). Abundant opaque and non-reflective material accompanies vein and may reflect titanium oxides and/or clay related to the weathering of magnetite.

Vein 2: 2 mm wide vein has sharp vein boundaries and is infilled by subhedral pyrite with chalcopyrite inclusions and elongate fibrous masses of leucoxene.

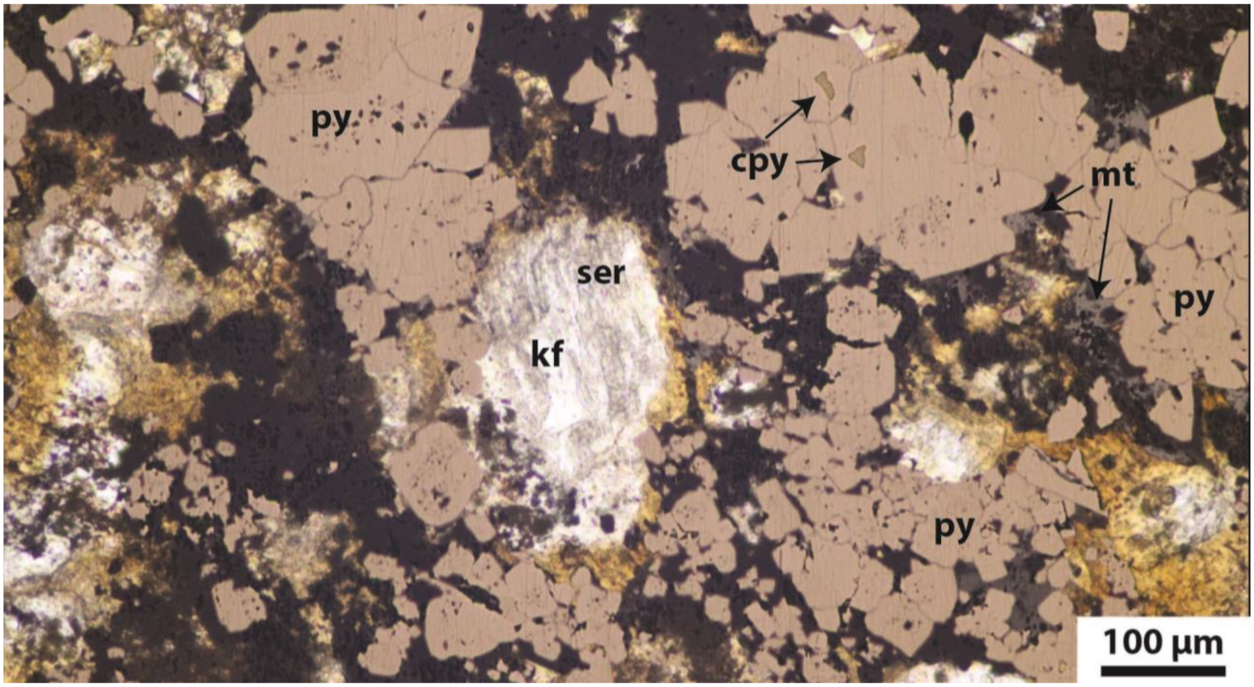


Figure 22. Photomicrograph of Vein 1 mineralization in sample 3005570. Blocky pyrite (py) in Vein 1 contains inclusions of chalcopyrite (cpy) with magnetite (mt) at margins to vein; relict K-feldspar (kf) is replaced to sericite; reflected and cross polarized light.

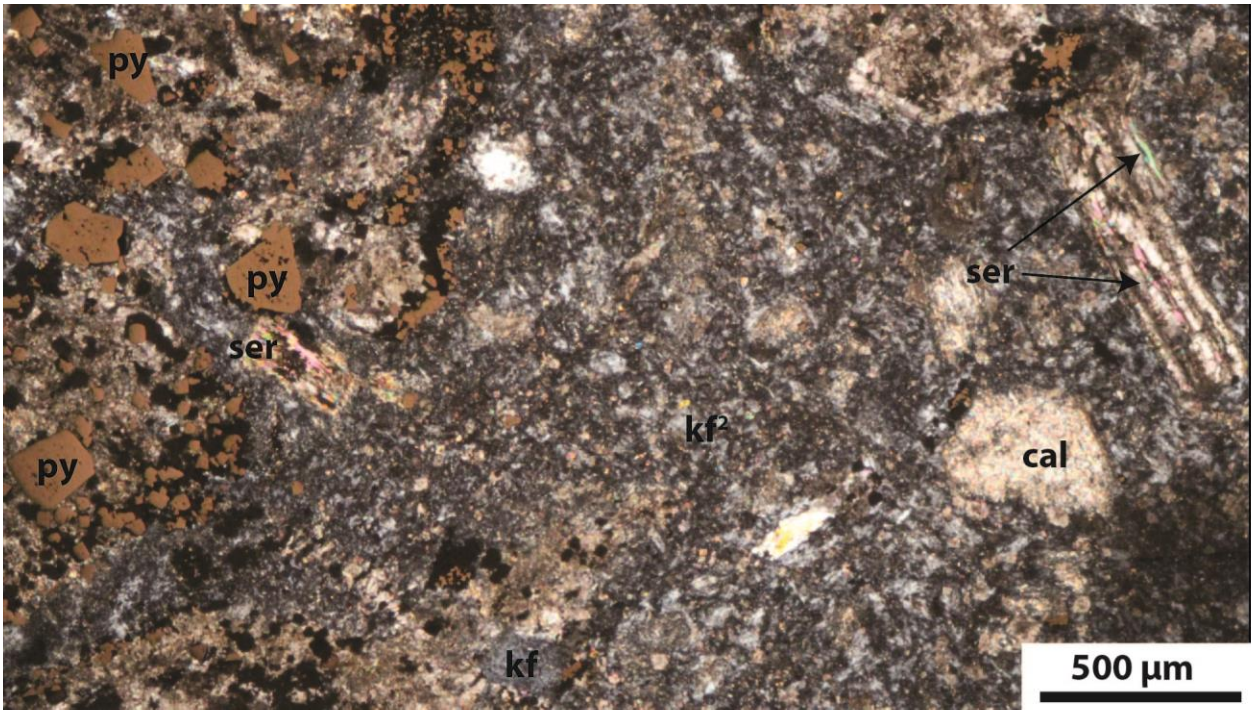


Figure 23. Photomicrograph of calc-potassic alteration in sample 3005570.K-feldspar (kf) phenocryst is dusted with sericite, feldspar phenocryst is totally replaced to calcite (cal), elongate feldspar or mafic phenocrysts are replaced to calcite-sericite (ser) and groundmass is replaced to secondary K-feldspar (kf^2) and disseminated pyrite (py); cross polarized and reflected light.

Sample GC63-0065: Diorite porphyry

Description: The sample is of a medium-grained hornblende diorite porphyry. An intense and pervasive calc-potassic assemblage of K-feldspar, sericite, carbonate, ilmenite and pyrite overprints this. This is followed by a late, intense oxidation of carbonate and pyrite to goethite/lepidocrocite and hematite respectively.

Estimated mineralogy:

> 60% Albite phenocrysts: 0.5-2 mm wide subhedral to euhedral colourless laths have polysnthetic twins, tartan twins, low 1st order grey interference colours and moderate relief. Cross sections perpendicular to the c-axis are 6-sided and parallel to the c-axis are… In the stained billet, the majority of K-feldspar defines rims to phenocrysts and patchy groundmass replacements. As some grains are intensely sericite replaced, the primary K-feldspar may be overprinted and estimation is suppressed on stained billet. The composition of the feldspar is ~An 13 (example readings: An_{15}, An_{20}, An_{17}, An_{13}, An_{14}).
>
> 3% Magnetite: 300-500 µm diameter domains are equant in shape and are completely replaced to opaque, non-reflective oxide/clay minerals, hematite, pyrite and leucoxene. The shape and mineralogy of secondary minerals indicates the domain was magnetite.
>
> 10% Hormblende phenocrysts: 1-2 mm long subhedral rectangular domains are characterized by complete replacement to sericite and cleavage parallel ilmenite. Secondary minerals pseudomorph a strong c-axis parallel geometry that is interpreted to reflect mineral cleavage. The elongate geometry and strong c-axis parallel cleavage may indicate these phenocrysts are hornblende.
>
> Tr Apatite: 300 µm diameter grains are colourless, have high relief, low 1st order grey interference colours and a subtle orthogonal cleavage. These grains are resistive to secondary alteration to sericite-carbonate and have parallel extinction.
>
> 25% Groundmass: 50 µm diameter equigranular feldspar is equant-shaped, anhedral and have interlocking grain boundaries. The lack of K-feldspar stain in groundmass is interpreted to indicate that K-feldspar values are very low in the groundmass and/or the K-feldspar has been replaced by secondary alteration.

Secondary minerals

> 18% Sericite: 50 µm colourless fibrous laths have moderate relief, parallel extinction and 1st order yellow interference colours. Sericite defines cleavage parallel replacements of plagioclase and K-feldspar; many minerals have orthogonal trends to sericite grain alignment (Fig. 24). Sericite is concentrated at margin to Vein 1 and occurs as dustings on secondary K-feldspar in vein. Sericite defines a subtle foliation fabric throughout the rock.
>
> 13% K-feldspar: 50-200 µm diameter anhedral, equant grains are colourless, have low relief and low 1st order interference. K-feldspar is disseminated throughout groundmass and is observed to

rim feldspar phenocrysts; the abundance of K-feldspar is related to proximity to veins. K-feldspar contains inclusions of carbonate and sericite and is intergrown with ilmenite in vein.

8% Carbonate: 50-100 µm diameter subhedral-euhedral rhombs are pleochroic, have high relief, are colourless in PPL and have high birefringence. Carbonate is disseminated throughout the groundmass as amorphous masses and fine rhombic forms that are almost completely replaced to Fe-oxide. The best preserved grains of carbonate are in Vein 1 where rhombic grains are enclosed by K-feldspar that contains a few very fine subrounded carbonate inclusions.

10% Goethite/lepidocrocite: 5-10 µm pleochroic brown-yellow grains are anhedral aggregates with rhombic forms that are high relief and 3rd order interference colours. The distribution of limonite in the matrix as rhombic forms is interpreted to indicate replacement of carbonate in the groundmass. The abundance of secondary iron oxide may suggest it is an iron carbonate.

1% Hematite: 5 µm anhedral masses are blood red pleochroic, have very high relief and are dull grey reflective. Hematite rims pyrite disseminations.

Secondary opaque minerals

5% Ilmenite: 100-200 µm long tabular shaped disseminations are dull grey reflective. Ilmenite defines fine disseminations throughout, preferentially replaces mafic domains, defines cleavage parallel elongate replacements and also nearly euhedral growths in Vein 1 (Fig. 25).

Tr Pyrite: 300 µm brassy yellow reflective grains define isolated disseminations that are enclosed by K-feldspar.

Vein 1: 500 µm wide vein contains semi-diffuse boundaries and blocky crystal texture. The vein contains K-feldspar, calcite and sericite. Calcite is enclosed by K-feldspar and also as inclusions to K-feldspar. The margins to the vein are enriched in K-feldspar in the groundmass relative the rest of the sample. Late stage oxidation alters carbonate in and around margins of vein to goethite/lepidocrocite.

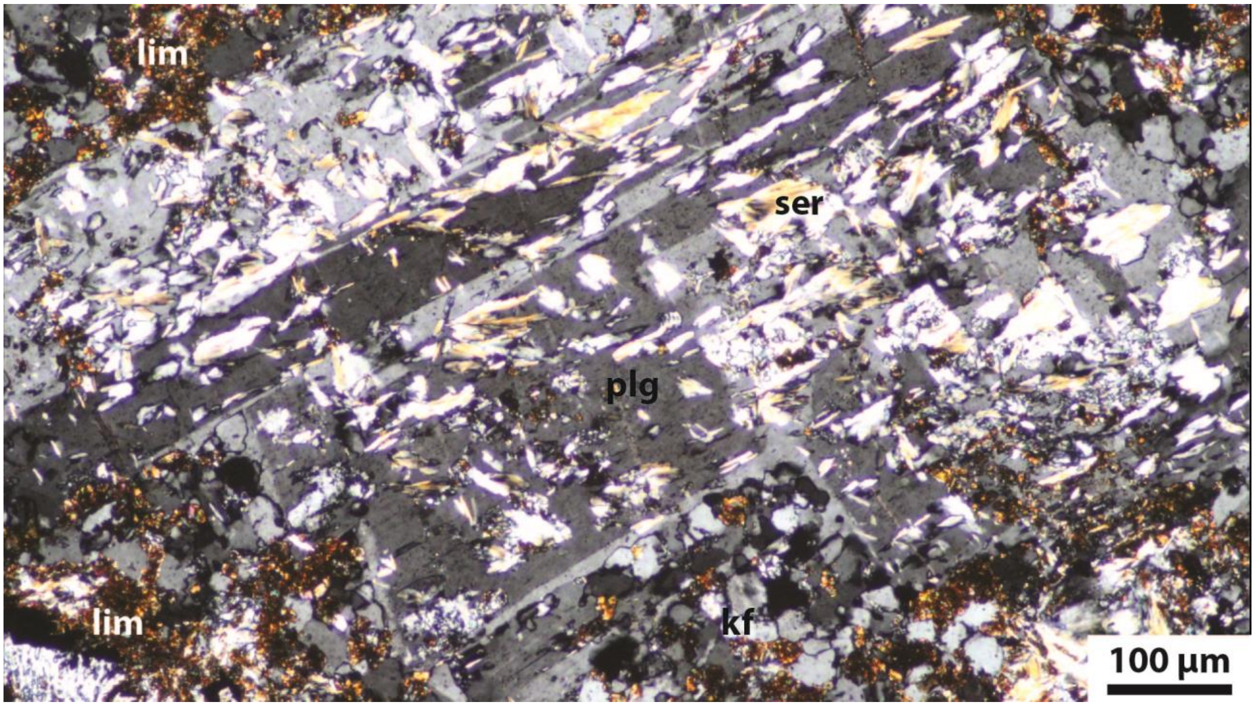


Figure 24. Photomicrograph of calc-potassic alteration in sample GC63-0065. Plagioclase phenocryst (plg) is overprinted by cleavage parallel sericite (ser), embayed at margin by K-feldspar (kf) and carbonate alteration at margin to phenocryst is oxidized to limonite (lim); cross polarized light.

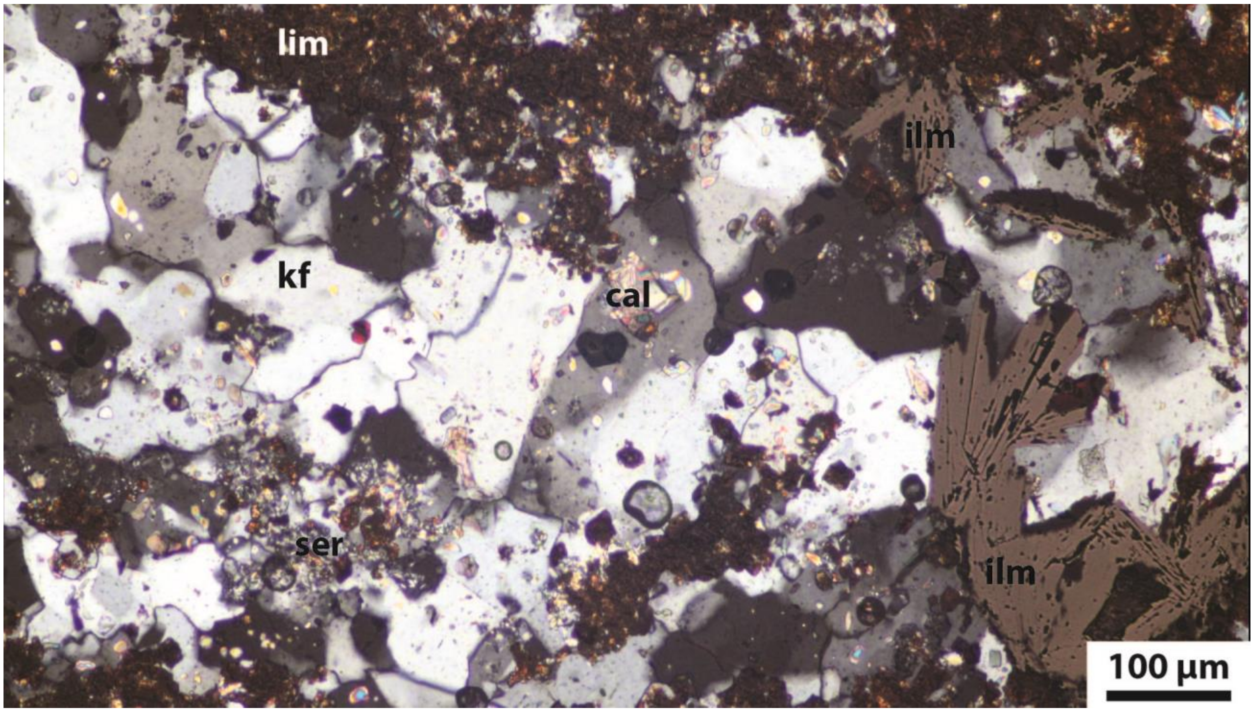


Figure 25. Photomicrograph of Vein 1 in sample GC63-0065. Vein 1 is infilled by K-feldspar (kf), calcite (cal), sericite (ser) and ilmenite (ilm); carbonate at margin to vein is altered to limonite (lim); cross polarized and reflected light.

Sample 3005577: Altered porphyry

Description: A medium-grained porphyry (?) is intensely altered to a calc-potassic alteration assemblage. The secondary mineralogy in decreasing abundance is: K-feldspar, sericite, pyrite, carbonate, anhydrite, quartz, rutile, chalcopyrite, biotite and tetrahedrite-tennantite with late-stage calcite veins.

Mineralogy

> The rock is so intensely altered that the original lithology is unclear. Sparse, relict, ~ 1 mm diameter skeletal plagioclase crystals are not consistently distributed. These may reflect phenocryst sites in porphyry or could also be interpreted as components of a clastic rock.

Secondary minerals

> 45% K-feldspar: 5-50 µm diameter anhedral replacement domains range from fine, crystalline, elongate grains that can define pressure shadows, anhedral-interlocking fine replacement domains, replacements of plagioclase and intergrowths with sulphide minerals. K-feldspar commonly is riddled with inclusions, mostly sericite.
>
> 25% Sericite: 10-30 µm diameter fibrous, randomly oriented to vein/sulphide paralleling fabrics have faint yellow-green pleochroism, high 1st order to low 2nd order interference colours and define one-sided pressure shadows to pyrite. The pressure shadow is interpreted to reflect hydrothermal flow as opposed to deformation. Many domains of sericite are microcrystalline masses in the groundmass.
>
> 6% Carbonate: 100-400 µm anhedral grains are brown coloured, have well developed twins and are spatially correlated with pyrite stringers. The carbonate cuts early quartz-sulphide vein event but also is intergrown with sulphides. Amorphous aggregates are in replacement domains with rutile; some are dark brown coloured (ankerite).
>
> 2% Anhydrite: 10-50 µm diameter anhedral grains are distributed as stringers with rutile. Cleavage geometries are not observable, but the mineral is interpreted as distinct from calcite due to both earlier timing and a distinctly patchy colouration to interference colours.
>
> 2% Calcite: 10-100 µm anhedral-blocky to fibrous-elongate geometries are mainly focused in areas of tectonic extension veins. Calcite is interpreted to be post-mineral in timing.
>
> 2% Quartz: 10-50 µm diameter grains are with pyrite minerals in bands within vein and are distinguished by K-feldspar by the absence of inclusions and the presence of undulose extinction.
>
> 1% Rutile: 10-100 µm diameter anhedral aggregates of extreme high relief, purple to yellow-brown coloured, most domains are isotropic and other domains have extreme birefringence masked by grain colour. The mineral rims hydrothermal quartz grains and is in stringers with anhydrite.
>
> Tr Biotite: 100 µm diameter lath is pleochroic brown, has birds eye extinction and is enclosed by secondary K-feldspar that is riddled with anhydrite inclusions.

Secondary opaque minerals

8% Pyrite: 20-500 µm diameter subhedral cubic to anhedral subrounded, contain widespread brittle fractures and riddled with linear inclusion trails. Pyrite contains inclusions of Mineral Y, is rimmed by chalcopyrite, inclusions of chalcopyrite and is enclosed by rutile. Pyrite is distributed as several meandering lenses reflecting loosely defined vein domains.

1% Chalcopyrite: 10-100 µm diameter anhedral aggregates, rims to pyrite, fracture fillings to pyrite, enclosed by Mineral X with highly embayed grain boundaries (chalcopyrite replaces rutile) and interstitial disseminations.

Tr Tetrahedrite-tennantite: 5-50 µm diameter anhedral minerals are white-silver coloured, have numerous pits and imperfections and comparable relief as chalcopyrite. The mineral has mutual boundaries textures with chalcopyrite, replaces pyrite in many cases and is enclosed and replaced by pyrite also. The mineral is deep blue-grey in the billet with a somewhat dull metallic lustre.

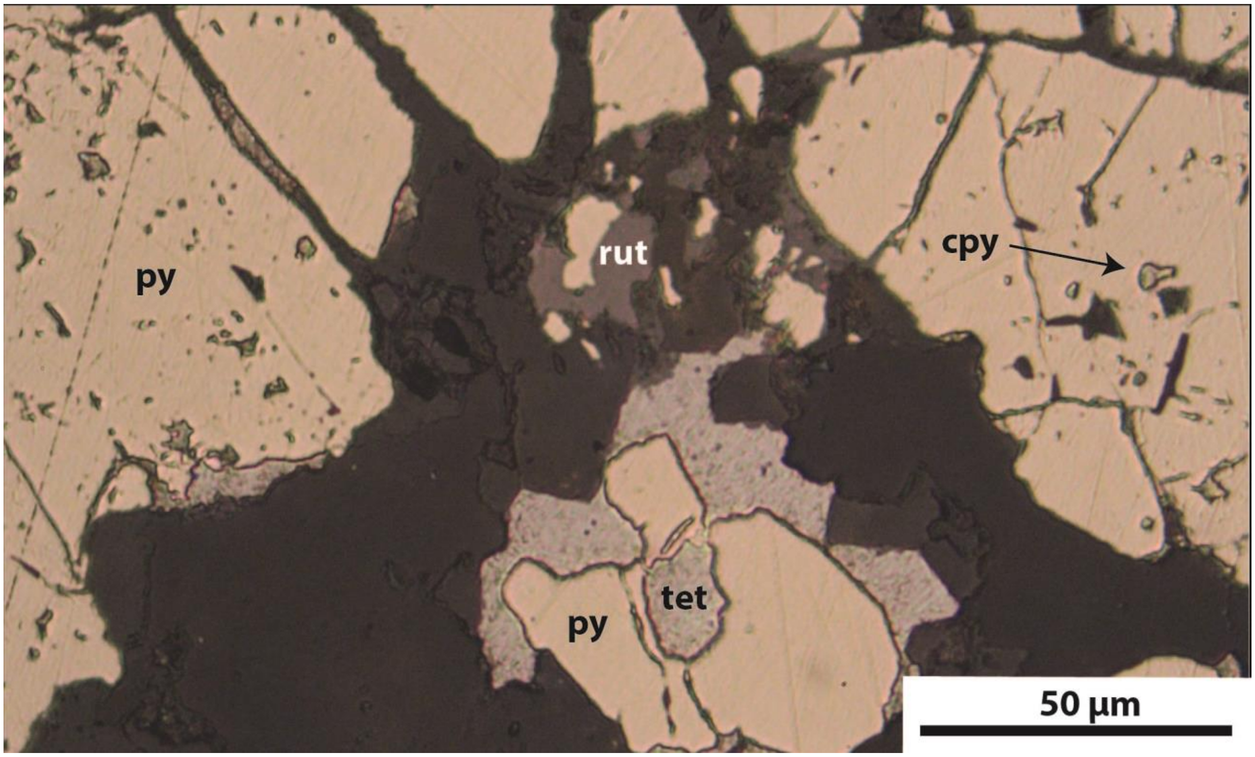


Figure 26. Microphotograph of mineralization in sample 3005577. Stringer contains pyrite (py) with chalcopyrite inclusions (cpy) and tetrahedrite-tennantite (tet) replacement at the margins; rutile (rut) is dull grey reflective; reflected light.

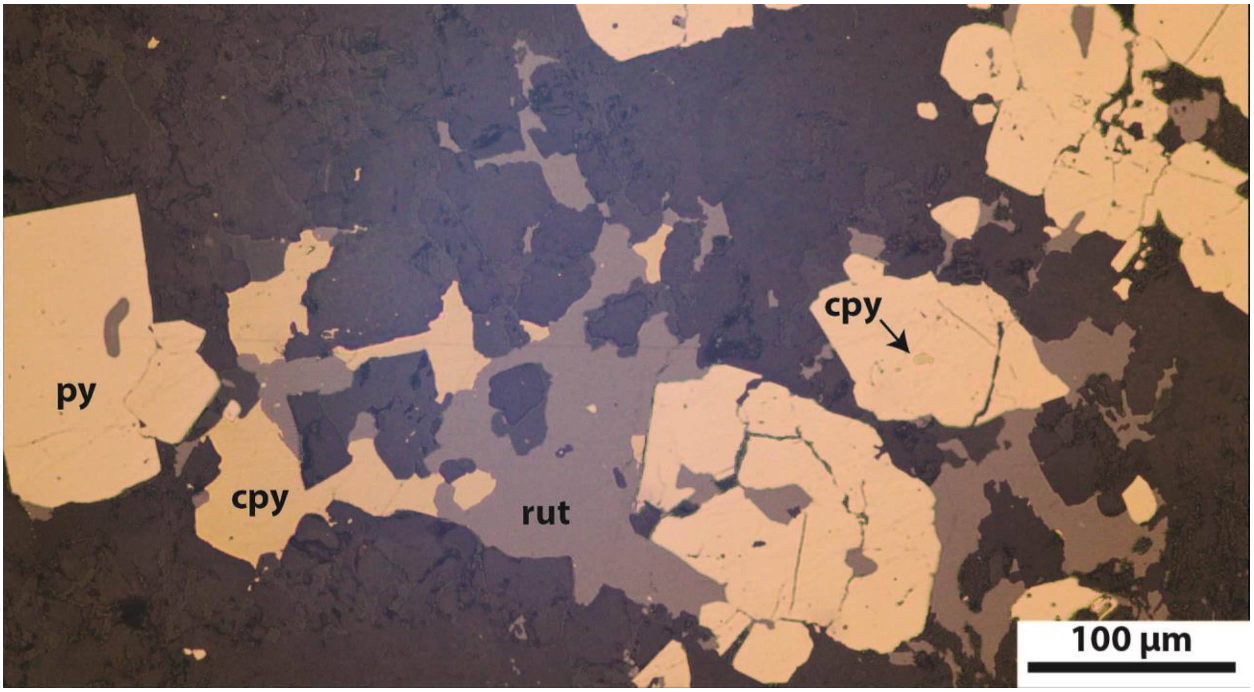


Figure 27. Microphotograph of mineralization in sample 3005577. Disseminated pyrite (py) contains chalcopyrite (cpy) inclusions and is rimmed and replaced by dull grey reflective rutile (rut) that shares interstitial grain space with chalcopyrite (cpy); reflected light.

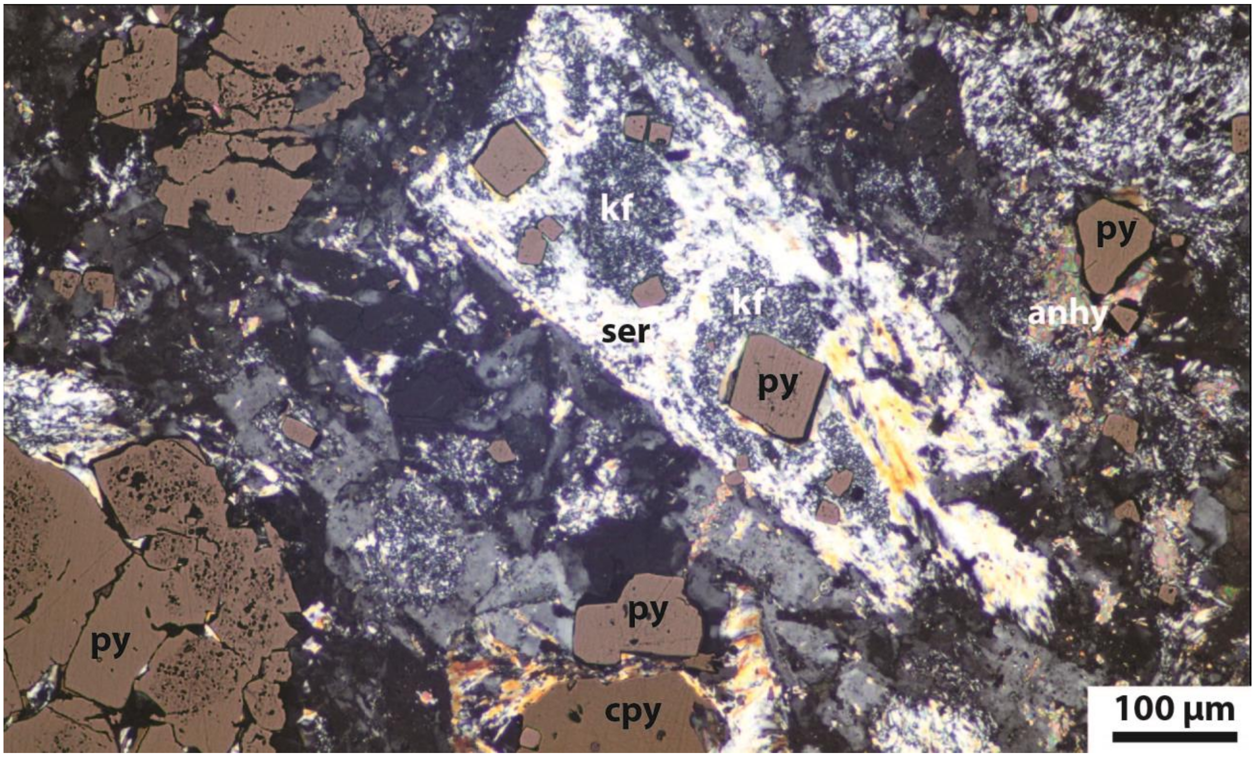


Figure 28. Microphotograph of alteration in sample 3005577. Relict phenocryst is replaced to secondary K-feldspar (kf), sericite (ser) and pyrite (py); disseminated pyrite, chalcopyrite (cpy) and anhydrite (anhy) throughout; cross polarized and reflected light.

Saddle zone lithology

Most of the samples in this study are part of the Copper Mountain plutonic suite (Late Triassic- Early Jurassic). The intrusions described here are all crowded porphyritic and medium-grained in texture with a fine-grained groundmass. Their composition ranges from dioritic in northern samples (Fig. 29), monzonite in central samples to syenite in southern samples. The composition of relict plagioclase phenocrysts is albitic. The K-feldspar phenocrysts in these samples are interpreted to be mostly orthoclase, however positive identification of the phenocrysts is inhibited by intense alteration. Mafic phenocrysts identified in these samples include hornblende, biotite and rare pyroxene in addition to primary magnetite. At the diorite-monzonite boundary, a monzonite intrusion breccia contains clasts of the monzonite in an altered groundmass (sample 3005549). The relative timing of the monzonite is unclear, however it is considered to cross-cut the diorite. One anomalous mafic intrusion (e.g., websterite from sample 3005518) could reflect a xenolith of a mafic igneous rock that the diorite intruded. The monzonite-syenite intrusions are interpreted to be the progenitor to the system due to: 1) the identification of synmineral timing of porphyry in sample 2016SA0908, 2) intense and widespread potassic alteration assemblages and 3) the correlation of porphyry mineralization and alkaline intrusions in the Central zone (J. Micko, 2010). The cross-cutting relationship between the monzonite and syenite is undetermined, however the syenite contains clasts of a K-feldspar bearing porphyry (sample 2016SA0907; Febbo, 2016) and is interpreted here as a younger phase that cuts the monzonite (Fig. 29).

The most southerly samples (e.g., 3005568 and 3005570) are of Stuhini Group (Upper Triassic) volcanic and sedimentary rocks that are intruded by the diorite-syenite plutons. The sampled rocks reflect a composition of latite for volcanic rocks as well as an andesite clast-bearing volcanic conglomerate.

Main stage potassic alteration

All of the samples in this study are overprinted by intensely developed main stage potassic assemblages of either sodic-potassic (northern study area) or calc-potassic (southern study area), both of which are associated with copper mineralization (Fig. 29). The potassic alteration appears to have a continuous strike length of more than 500 m and a width extent of at least 300 m.

The sodic-potassic alteration overprints the diorite porphyry and websterite and is expressed over an almost 300 m north-south strike length. The assemblage is defined by the following key minerals: K-feldspar, magnetite, albite, epidote, clinozoisite, apatite and chalcopyrite. Other alteration minerals that are associated with the assemblage include tremolite and titanite (sphene). Coarse magnetite-albite matrix breccia is associated with the alteration assemblage. Low grade copper mineralization is associated with sodic-potassic alteration and very high chalcopyrite:pyrite ratios. The sodic-potassic alteration is overprinted by a copper-bearing propylitic assemblage and is interpreted to be transitional with calc-potassic alteration to the south.

The calc-potassic alteration assemblage overprints the diorite, monzonite and syenite and is developed over an almost 500 m long northerly strike length (Fig. 29). The assemblage is defined by the following key minerals: K-feldspar, carbonate and chalcopyrite. Other alteration minerals that are associated with the assemblage are anhydrite, apatite, magnetite, muscovite, tetrahedrite-tennantite and pyrite. The calc-potassic assemblage is overprinted by late stage quartz-carbonate, sericite-chlorite and quartz-anhydrite-sericite alteration assemblages.

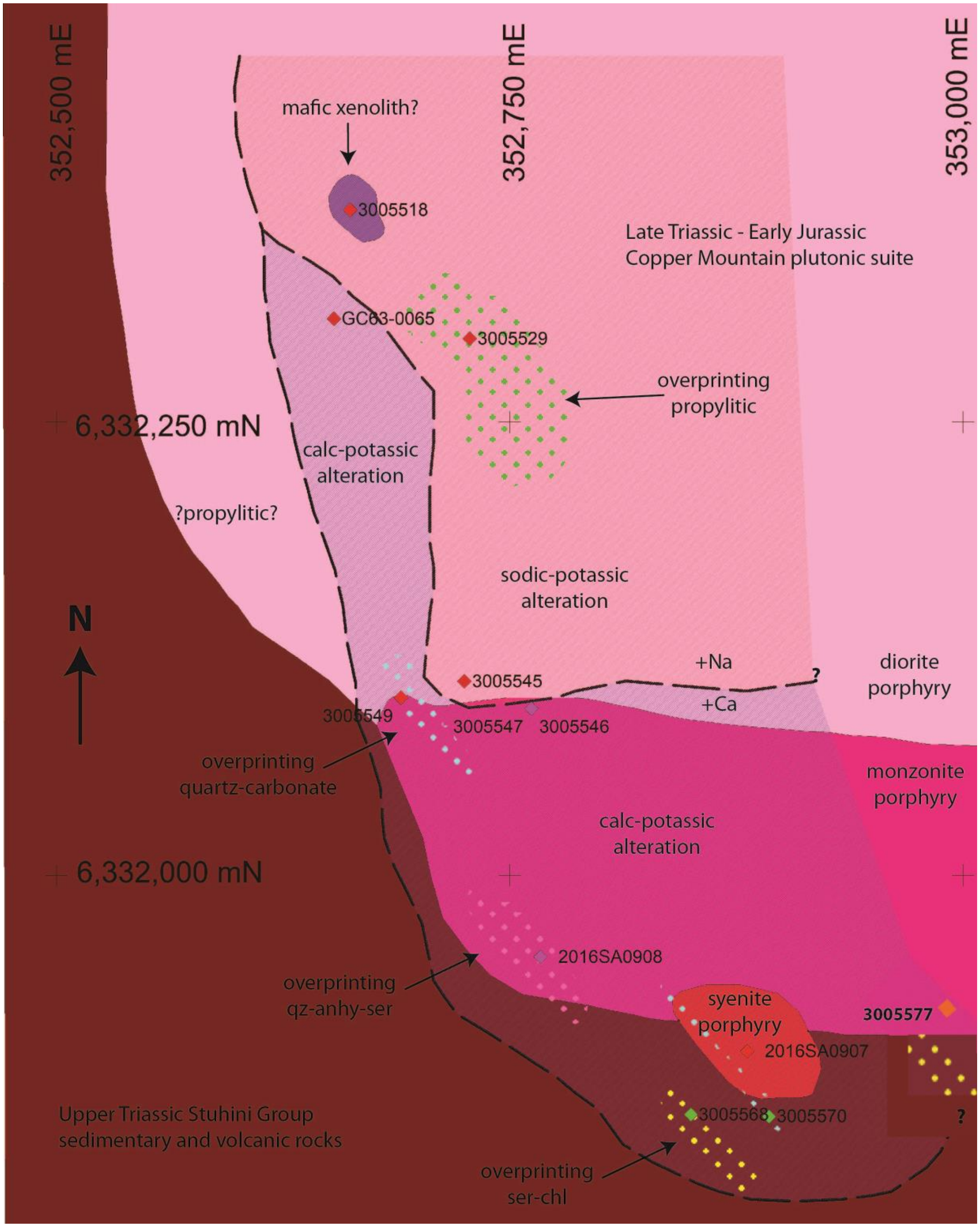


Figure 29. Spatial distribution of samples from this study (report 1712A) and study from report 1610A (Febbo, 2016) and one possible interpretation of lithology and alteration. The composition of intrusions ranges from north to south: diorite, monzonite and syenite that intrude Stuhini Group volcanosedimentary strata (Upper Triassic). The largest and most intense alteration assemblages are sodic-potassic alteration to the north and calc-potassic alteration to the south, both of which are associated with copper mineralization. Several less intense alteration events overprint the main that include quartz-carbonate, quartz-anhydrite-sericite and chlorite-sericite.

Main stage to late stage propylitic alteration

Propylitic (sodic-calcic) alteration is interpreted to be continuous with sodic-potassic alteration (e.g., sample 3005546) and also overprinting it (e.g., sample 3005529). The propylitic alteration assemblage includes epidote, chlorite, actinolite, apatite, calcite, tremolite, garnet and chalcopyrite. The propylitic alteration likely formed in multiple events associated with each plutonic emplacement event.

Late stage quartz-carbonate alteration

Quartz-carbonate alteration overprints the calc-potassic alteration assemblage (e.g., samples 3005549 and 3005570) as discrete veins that can contain quartz, calcite, apatite, clay and chalcopyrite. Unmineralized anhydrite-quartz-sericite veins (sample 2016SA0908) and sericite-chlorite veins (sample 3005568) are of similar age and correlate with this alteration assemblage.

Discussion: geology model

Based on the sample descriptions in this study and descriptions from Febbo (2016) of the Saddle zone, one possible geology model is presented here as follows (from oldest to youngest):

1. Emplacement of diorite porphyry that is largely pre-mineral in timing (Fig. 30).
2. Subsequent emplacement of monzonite porphyry that cuts the diorite.
3. Development of copper-bearing potassic alteration that grades from sodic-potassic at depth to calc-potassic at higher levels. Inferred propylitic halo flanks this potassic alteration assemblage (not sampled in this study).
4. Emplacement of syenite porphyry, continued sodic-potassic and calc-potassic alteration and small-scale propylitic overprint domains flanking the syenite.
5. Late stage quartz-carbonate and sericite-chlorite veins cut all and are heterogeneously mineralized.

The model presented for this alteration system suggests that the northern alteration (i.e., sodic-potassic) may be deeper-level exposures of the system (Fig. 30). If this can be verified from field mapping, it could indicate a north-plunging porphyry system with shallow, upper-level alteration assemblages expressed to the south and deeper-level alteration assemblages expressed to the north.

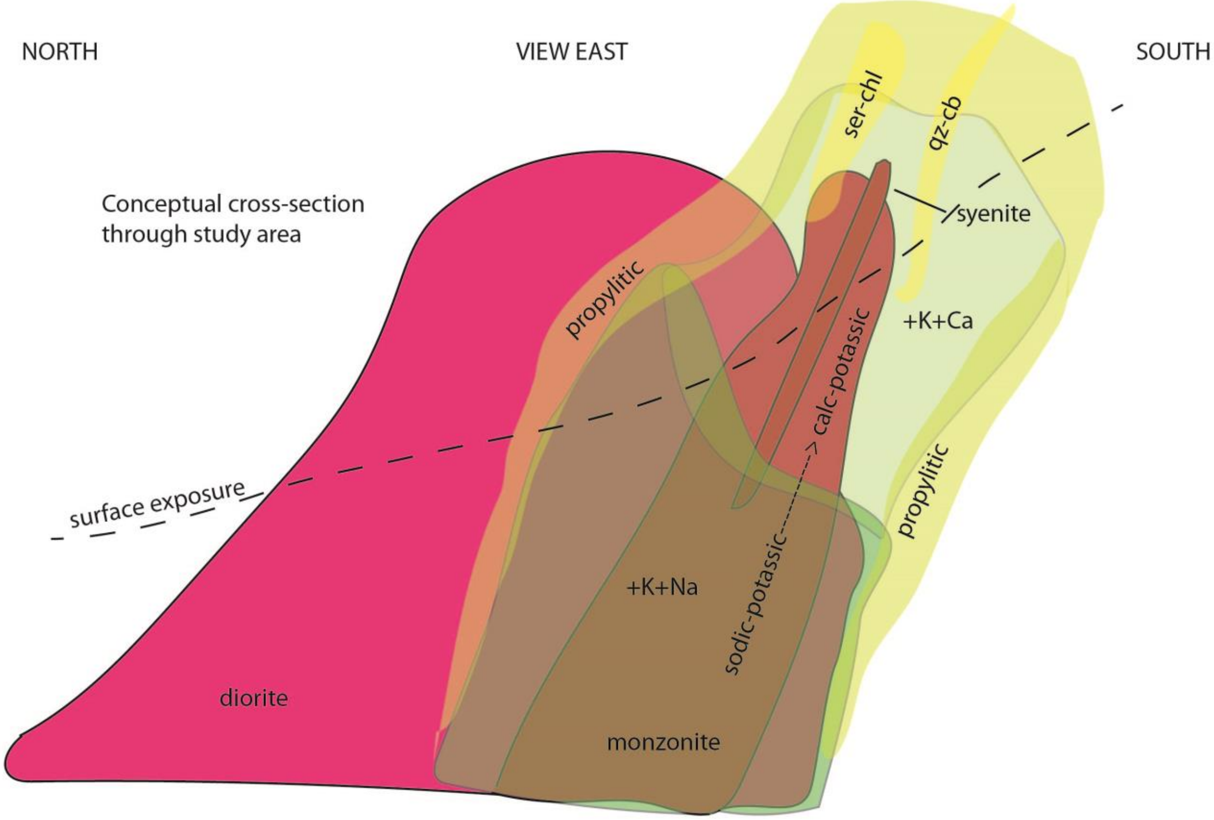


Figure 30. Cartoon model of conceptual north-south section through samples. Early diorite is cut by monzonite that is in turn cut by syenite. Deeper-level sodic-potsasic alteration grades into shallower-level calc-potassic, both of which are flanked by a propylitic alteration assemblage. Late stage assemblages of sericite-chlorite (ser-chl), quartz-carbonate (qz-cb) and anhydrite-sericite-quartz overprint potassic alteration and are heterogeneously mineralized.

References

Micko, J., 2010. The geology and genesis of the Central zone alkali copper –gold porphyry deposit, Galore Creek district, northwestern British Columbia, Canada. Unpublished PhD thesis, the University of British Columbia, 359 p.

Febbo, G.E, 2016. Petrography report 1610A. Company report prepared for Galore Creek Mining Corporation, 13 p.

APPENDIX VII

SCANNED CORE LOGS

Galore Creek Mining Corporation

Galore Creek Project

Orientation: -90
Depth: 137.67 m
Logger: J. Cournoyea
DDH No: GC04-0485
UTM N: 6332481.511
UTM E: 352782.378
Date: Sept 22/17
Sheet No: 1 of 2

GRAPHIC LOG						DESCRIPTION		ALTERATION											MINERALIZATION										SAMPLING AND ASSAY			
M Scale	Lith	Depth	Width	Struct	>'s	Rock Type		Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc	Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
	o o o					OUB	(0-4.28m) OVERBURDEN/CASING																									
10 20	‖ ‖ ‖ ‖ ‖					I8	(4.28-24.60m) Greyish green equigranular intrusive composed of 0.1-0.3 interlocking Orthoclase, Biotite, and Chlorite phenos. Trace cpy & mal observed with mafics, Limonite 1%	2		3	3		2			2			.1			~~1~~ 1.0		1		.1						
30 40 50	‖ △▽ ‖ ‖ ‖ △▽ ‖					I8/B?	(24.60-55.56m) Dark grey to grey green interval w sections throughout displaying breccia textures. Appears polylithic in places with subrounded to subangular I8, Kspar altered, & mafic clasts. Sections of obvious coherent-non breccia I8 ≈20%. Large patchy mag 2-3cm blob @ 42.2m within I8. Fault at 54.86m, Hem 1% on fractures Epidote moderate as vein/stringers & patches Bio 2 in some clasts/veins Kspar weak, trace blebs of Cpy observed in stringers	2	2	2	2		2			2			.1			1	1	1								
	‖				FLT ●	I8	(55.56-63.87) - as previously described (4.28-24.6m)	2		3	3		2			2			0			.5	.5									
60							MISSING CORE																									
70	‖ ‖ ‖ ‖					I8	(63.87-74m) Greenish red, Hem/chl/Kspar/epi/(diop?) alt'd I8, as previously described with strongly fractured interval @ 70.6-74, mag 1-3%, Cpy 0.2%. Mal 0.3% as blebs assoc w/ mag	3		3	2					1			.2			3	7	.5		.3						
80	△ ▽ △ ▽ △					B2	(74-88) Monolithic hydrothermal breccia composed of 80-95%, .2-10cm, Subangular to angular jigsaw clasts of I8 in a dominantly Magnetite cement composing 5-20%. Strongest Mag cement b/w 77-80m (20%) w/ strong K-spar altered I8 clasts. Fractured section @ 82-91m	3		2	2		2			1			.1			15	1	.5		.1						
90 100	‖ ‖ ‖ ‖					I8	(88-97) Red-green to greenish grey (as previous) rubble & reamed core to 91.7m	3		3	3		2			2			0			2	1	1		0						

Galore Creek Mining Corporation

Galore Creek Project

Orientation:

Depth:

Logger: J. Cournoyea

DDH No: GC04-0485

UTM N:

UTM E:

Date:

Sheet No: 2 of 2

GRAPHIC LOG						DESCRIPTION		ALTERATION												MINERALIZATION										SAMPLING AND ASSAY			
Scale	Lith	Depth	Width	Struct	>'s	Rock Type		Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc		Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
						I8	(97-107.5m) Green-grey to greyish green typical I8 (same as 4.28 & 24.6m) Fairly coherent	2		2	3		2			2				0			.5	1	.5		0						
110						B2/ I8	107.5-108m strong Mag veining cutting strong epi alt'd I8	2		2	4		1			2				0			15	.5	.5		0						
120						I8	(108-123m) Typical (as previous) carb stockwork strong at 113.5-116m	2		2	2		3			2				0			.5	.5	.5		0						
						I8	(123-125m)	2		2	2		2			1				0			.5	1	25		0						
130						I8	(125-137.6m) Reduced NQ-BQ as previous, fractured c̄ trace Mal on some fractures, Hem 2%	2		2	2		2			2				0			.5	2	1		.1						
140																																	

NovaGold Canada Inc.

Galore Creek Project

Orientation:
Depth:
Logger: J. Courneyea
DDH No: GC04-0493
UTM N:
UTM E:
Date: Sept 23/17
Sheet No: 1 of 1

GRAPHIC LOG						DESCRIPTION		ALTERATION												MINERALIZATION										SAMPLING AND ASSAY			
Scale	Lith	Depth	Width	Struct	>'s	Rock Type		Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc		Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
	o o o						OVER BURDEN																										
10	|| ||					I8	(6.70-53.34m) greenish grey to reddish green equigranular intrusive with 0.1-0.3mm Orthoclase, biotite + hornblende phenos. Little to no sulphide observed throughout	2		2	3		2			2									1.5								
20	|| ||						19.96-23.9m small sections with similar textures to GC04-0485 (24-55m) where there are mafic	2		2	2		2			2							3		1.5								
							xenoliths (clasts?)	2		1	1		2			0							0.5		60								
							23.9-25.4m	2		2	2		2			2							3		1.5								
30	|| ||						rusty orange w̄ pervasive Lim alteration	2		2	3		2			2							.5		1								
							25.4-28m (same as (19.96-23.9m)																										
	||						28-34m Typical I8 as (6.7-19.96)	3		2	2		1			2							7	5	1								
40	||						34-40 increased mag as blebby patches + veinlets I8/B2(?), stronger K-spar, increased hem	2		2	3		2			2							3		1.0								
50	||						40-53.34m I8 typical w̄ poor recovery @ 40-45 + 50-53																										
							5 EOH																										
60																																	

NovaGold Canada Inc.

Galore Creek Project

Orientation:
Depth: 85.34m (280ft)
Logger: J. Courneyea
DDH No: GC63-0065
UTM N:
UTM E:
Date: Sept 17/17
Sheet No: 1 of 3

GRAPHIC LOG — Scale | Lith | Depth | Width | Struct | >'s

3ft, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

.25, .27, .39, .20, .22, .21, .34

Drops

Rock Type	DESCRIPTION	Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc	Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
	OVB/CASING																									
I8	3-20.7ft (0.91-6.31m) Orange to reddish orange rust coloured, FeOx stained interval. Composed of equigranular .1-.2mm subhedral intergrowths of orthoclase, biotite, + hornblende. This interval is strongly fractured to almost rubble. Mag is moderate to strong as patchy blebs, stringers, + disseminations. Malachite was observed on some fractures	2		2	-											3		30		.1						
I8	20.7-79.4 (6.31-24.2m) Rusty orange to orangish red I8 (as above) with rare .2-.5cm orthoclase phenos) less limonite alteration relative to previous interval. Core is more coherent + FeOx is more patchy intense. Magnetite intensity increases to 5-7% as stringers + patchy blebs. Trace Cpy observed throughout as rare blebs (33ft + 62ft) associated w̄ mag. Spec hem on fracture @ ~62.8 ft weak hem on fractures (dusting ortho?)	2		2									.1			5	.2	20		.1						
I8	79.4-100.5ft (24.2-30.63m) Reddish brown to greyish red interval, distinctly less rusty than surrounding intervals, mod to weak epidote observed for first time, chl still weak but more obvious, ortho class weak overall but locally moderate	2		2						2						7		10								
	@ 94-98ft, chlorite alt increases, K-spar increases 1-2%. Malachite on fractures, Cpy .2% assoc. w̄ Mag	3		3									.2			5		3		1.5						
	98-100.5ft (same as 79.4-100.5ft) but Mag drops (altered out?)															1		3								

Galore Creek Mining Corporation

Galore Creek Project

Orientation:

Depth:

Logger: J. Courney

DDH No: GC63-0065

UTM N:

UTM E:

Date: Sept 17/17

Sheet No: 2 of 3

GRAPHIC LOG

	ft Scale	Lith	Depth	Width	Struct	>'s
	.03	11 11 ? 11				
110	.01	11 ? 11 11 ?				
120	.01	11 11 ? 11				
130	.3	11 11 11 △▽			CT?	
140	.29	/	/	/	/	/
150	.49	11 11 △▽ 11 11				
160	.36	/	/	/	/	
170	.27	11 11				
180	.27	11 11 △▽				
190	.21	11 11 △▽ 11 11				
200						

DESCRIPTION / ALTERATION / MINERALIZATION / SAMPLING AND ASSAY

Rock Type	DESCRIPTION	Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc		Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
I8?	100.5 - 131ft (30.63 - 39.93m) Strong alteration contact from previous weakly FeOx stained interval to intensely pervasive rusty orange limonite stained to 131ft (Possible a different Intrusive/Lithology?) This section is same as previous but c̄ more euhedral and apparent 'lathe' like hornblende (.1-.3mm) + subhedral (.1-.3mm) ortho phenos surrounded by intense pervasive FeOx. Some almost lithic looking fragments, but likely a result of alteration 0.3cm Qtz/Carb vein @ 124ft (in broken core) Magnetite weak to absent likely altered to lim? moderate gradational contact @ 131ft	2		2	1														60								
I8/B2?	131 - 137 (39.93 - 41.76m) Same as I8 previous to 100ft. Reddish grey to patchy rusty orange sections. Small sections have an almost breccia texture	3		2	3		2			2				.1			5		10		.1						
	137 - 147.6 ft MISSING CORE	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
I8/B2?	147.6 - 159.3 (44.99 - 48.56m) Same as previous	3		2	2		2			2							7		10		.1						
	151 - 159.3 - increased rusty FeOx in strongly fractured sections, spec hem + malachite on fractures all associated c̄ limonite + Mag	2		2	0		2			2				.1			5		30	.3	.2						
	159.3 - 172.9 ft MISSING CORE	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
I8/B2?	172.9 - 196 (52.7 - 59.74m) Reddish grey to rusty orange same as previous. Less fractured. Weak Qtz?/Carb veinlets c̄ minor mag (inclusions/selvages) appears late. Mag is strong as patches + stringers, possible breccia c̄ textures masked by rusty FeOx	3		2	2		2			2							10		30	.1	.1						

Galore Creek Mining Corporation

Galore Creek Project

Orientation: ______ Depth: ______ Logger: J. Courneya DDH No: GC63-0065

UTM N: ______ UTM E: ______ Date: ______ Sheet No: 3 of 3

GRAPHIC LOG

	Scale	Lith	Depth	Width	Struct	>'s
	.25	|| || ΔV				
210	.30	|| || ΔV			Flt	
220	.49	|| || ΔV			Flt	
230	.27	|| ||			Flt	
240	.35	|| ΔV ||				
250	.29	|| ||			Flt	
260	.21	ΔV || ||				
270	.21	|| ΔV || ||				
280	EOH					

DESCRIPTION / ALTERATION / MINERALIZATION / SAMPLING AND ASSAY

Rock Type	Description	Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc		Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
I8/ B2?	196-230 ft (59.74-70.10 m) Alteration contact? Pervasive FeOx staining rusty orange throughout, late quartz carb veinlets .2-.5cm w no preferred orientation. Flaky mica (bio?) on fracture @ 211.5ft. Cpy 0.3% associated w Magnetite blebs & stringers Malachite 0.1% on some fractures Strongly Fractured after 217ft, possible fault @ 216ft in 10cm crushed section	3		2	0		1			1				.3			5		60		.1						
I8/ B2?	230-255.6ft (70.10-77.91m) INTERMITANT RUSTY ORANGE w REDDISH GREY INTERVALS, strongly fractured w crushed sections (faults?) @ 230.5ft, 241.5, 253.5ft, all between 10-20cm width. Malachite .3% on fractures associated w mag + lim Cpy trace.	3		2	2		1			1							8										
I8/ B2?	255.6-263ft (77.91-80.16m) (Same as 196-230ft) Bracketing structure? Mag large patches w thin stringers, trace Cpy + Mal	3		2	0		1			1				.1			5		60		.1						
I8/ B2?	263-270 ft (80.16-82.30m) more coherent core. Strong Mag assoc w mal .3%. Cpy .1% locally .3-.4% assoc w Mal + mag @ 268.1 ft. Sharp gradational CT w FeOx staining @270 ft	3		2	2		1			2				.1			8				.3						
I8/ B2?	270-280ft (EOH) (82.30-85.34m) Rusty orange strongly fractured, no observed sulphides	2		2	0		1			1				0			5		50		0						

Galore Creek Mining Corporation

Galore Creek Project

Orientation:
Depth:
Logger: J. Courneyea
DDH No: GC03-0070

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GRAPHIC LOG

Scale (f*)	Lith	Depth	Width	Struct	>'s
.05	○ ○ ○ ○				
10					
.04	||				
20					
.05	||				
30					
.06	||				
40					
.09	||				
50					
.05	||				
60					
.09	||				
70					
.66	||				
80					
.05	||				
90					
.10	||				

DESCRIPTION / ALTERATION / MINERALIZATION

Rock Type	Description	Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc	Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%
	OVB/CASING																					
I8?	6-12ft Pervasively FeOx stained interval of I8 50% limonite, texturally destructive leaving only ortho phenos rubble/crushed @ 11.9-12	2					2											50				
I8	12-115ft Grey to grey green equigranular intrusive composed of 0.1-0.3cm interlocking Orthoclase, biotite, & hornblende phenocrysts. Epidote typically altering orthoclase and present as veins + stringers. Chlorite altering biotite & hornblende. Hematite occurs on some fractures but is weak overall. Kspar alteration is weak as halos on some epi veins and as patchs. Cpy occurs as blebs assoc w̄ mafics and is weak over all ≈ 0.1%.	2		2	3		2			2			.1				0.5	2				
	Epidote strong to intense @42-62ft pervasively altering orthoclase in sections or as veins & stringers.	2		2	4		2			2			.1			.5	.5	1				
	62.5-63ft strong hem w̄ mod strong chl 63-85ft increase in disseminated patchy mag ≈ 1-2%	2		3	3		2			2			.1			2	1.0	.5				
	85-98.5 mag continues to increase as patchy blebs & stringers as we approach the breccia contact ≈ 2-4% associated w̄ rare blebs of cpy +/- mal	2		2	3		2			2			.2			4	1.0	.2		.1		
	98.5-115ft Mag continues to increase to 4-6% as large blebs + patchs assoc w̄ cpy +/- mal. Mineralized carb vein w̄ mag + cpy + mal & epi selvage roughly 15° TCA @ 114ft																					

SAMPLING AND ASSAY

Sample No.	From	To	Control

Galore Creek Mining Corporation

Galore Creek Project

Orientation:

Depth:

Logger:

DDH No: GC63-0070

UTM N:

UTM E:

Date:

Sheet No: 2 of 4

GRAPHIC LOG

Depth	Scale
	.65
110	
	.04
120	
	.15
130	
	.44
140	
	.48
150	
	.44
160	
	.65
170	
	.86
180	
	.55
190	
	.90

DESCRIPTION

B2 (115 – 153ft)

Green to grey green monomictic clast supported hydrothermal breccia, composed of 75–85% 0.2–5cm, angular to subangular (jigsaw) epidote altered I8 clasts supported in a dominantly magnetite cement (15-25%) +/- Cpy, +/- mal

From 115 – 153ft unit is strongly fractured (possibly preferentially sampled?) as it seems more than 50% of the core is missing. Most of the texture/description/& composition is described from the occasional pieces of half core remaining in the tray, this may bias mineral % to a degree.

Cpy .2% associated w cement, mal .5% on fractures proximal mag cement

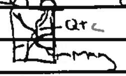
B2 (153 – 183.1ft)

as previous

More competant core than previous, epidote is reduced to moderate in clasts and Kspar alteration is moderate

Malachite is stronger w mag locally up to 30%. Strongest Malachite & Azurite @ 159–167ft

@ approx 175ft core axis parallel wavy Qtz vein appears to cut mag + clasts (.1–.3cm thick)



Cpy as blebs in mag, mal/az on fractures + proximal mag

B2 (183.1 – 300ft) fractured to crushed, even more so than 115–153ft, refer to picture

Mod - strong Limonite (10-30%) in this interval

ALTERATION / MINERALIZATION

Interval	Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc	Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%
115 – 153ft	2		2	4					2			.2			20		1		.5		
153 – 183.1ft	3		2	3					2			.2					3		1.5		

SAMPLING AND ASSAY

Sample No.	From	To	Control

Galore Creek Mining Corporation

Galore Creek Project

Orientation:

Depth:

Logger: J. Cowxyza

DDH No: GC63-0070

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UTM E:

Date:

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GRAPHIC LOG

	Scale	Lith	Depth	Width	Struct	>'s
	.96	△ ▽				
210	1.10	△ ▽				
220	1.32	△ ▽ △				
230	2.99	▽ △ ▽				
240	2.26	△ ▽				
250	2.16	△ ▽ △				
260	1.96	▽ △				
270	4.66	▽ △ ▽				
280		△ ▽				
290		D				

DESCRIPTION

Rock Type	
	(183 - 300ft) cont'd
	Malachite on fractures throughout this fractured/crushed interval 2% with .2% cpy blebs associated ~~w~~ mag
	Strong-mod magnetite cement (20%) similar to previous visible in the larger pieces (1-3cm)
	Epidote alteration moderate throughout associated with I8 clasts
	Kspar alteration moderate throughout w local <10cm sections of strong kspar
	Chl alteration weak to trace
	This section could possibly represent a fault zone? with crushed sections being faults?

ALTERATION

Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc	
3		2	3					2			

MINERALIZATION

Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%
.2			20		25	.1	2		

SAMPLING AND ASSAY

Sample No.	From	To	Control

NovaGold Canada Inc.

Galore Creek Project

Orientation:
Depth:
Logger: J. Courneyea
DDH No: G
UTM N:
UTM E:
Date: Sept 18/17
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GRAPHIC LOG

Scale
310
320
330
340
350
360
370

Rock Type	DESCRIPTION	Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc	Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
I8/B2?	(300-315ft) Limonite drops out, magnetite more patchy, breccia textures not observed, still strongly fractured to crushed Section is reddish brown. Could be on the edge of the breccia where mag does not strongly fracture I8?	3		2	2		2						.					.5	.3	.						
I8/ B2?	(315-329ft) Rusty orange interval w̄ pervassive FeOx patchy & veined mag w̄ spec hem on some fractures assoc. w̄ mag. Cpy .1% blebs assoc w̄ Mag, Mal .1% on fractures Rare .2-.4cm quartz/carb veins												.1			6		60		.1						
I8/ B2?	(329-344ft) Greenish to reddish grey I8 w̄ 5-7% patchy mag & mag veinlets	3		2	3		2						.1							.1						
I8?	(344-372.1 EOH) Strong FeOx alteration pervasive throughout Could be seperate lithology as this section has more euhedral & apparent lath like hornblende (.1-.3mm) & subhedral (.1-.3mm) ortho phenos surrounded by intense pervasive FeOx (same as 100.5-131ft in GC63-0065? Patchy stock work Qtz veining cutting another phase of Qtz/carb veinlets @ 362.5ft Small sections look more typically I8 ∴ likely alteration?	2		2	0		2						.1			3		65	.1							

EOH

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Galore Creek Project

Orientation:
Depth:
Logger: J. Courneyea
DDH No: GC64-0129
UTM N:
UTM E:
Date: Sept 19/17
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GRAPHIC LOG

Ft	Scale	Lith	Depth	Width	Struct	>'s
		O O O O				
	.03	||				
10	.06	||				
20	.05	||				
30		||				
40	.05	||				
50	.05	||				
60	.05	||				
70	.05	||				
80	.05	||				
90	.03	||				
		||				

Rock Type	DESCRIPTION	Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc	Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
	OVERBURDEN/CASING																									
I8	I8 5-29.5 ft Rusty orange strongly oxidized, equigranular intrusive composed of 0.1-0.3cm interlocking orthoclase, biotite, & hornblende phenos Limonite ghosts textures in places, hematite on some fractures, strongly fractured to crushed at 18-19.5ft. No observed sulphides	2		2	2		2			1							2	50								
I8	I8 29.5-96ft) Grey green to green grey equigranular intrusive, as previous, ~~but~~ Not as oxidized. Patchy & intermittent epi, mostly as .5-5cm vein & veinlets, rare trace Mal/Az assoc w̄ epi veinlets. Hem 0.2% on some fractures Lim .5%. Carb associated w̄ epi as stringers Strongly fractured @ 39-40 ft Weak kspar alt, weak chl alteration, trace ser alteration on feldspars	2		2	3		2			1							.	.5		.1						
I8?	96-101.2ft, Rusty orange interval with patchy carb & mag/spec stringers/veinlets. Vein or healed fault breccia texture in places, I8 textures observed where alteration does not overprint. No observed sulphides	2		2			3										2	65	1							

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Galore Creek Project

Orientation:
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GRAPHIC LOG						DESCRIPTION		ALTERATION												MINERALIZATION										SAMPLING AND ASSAY			
Scale	Lith	Depth	Width	Struct	>'s	Rock Type		Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc		Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
						B2	295 - 348.6 ft																										
							As described @ 234-276.5 ft																										
310							95% I8 clasts, 5% Mag cement																										
							FeOx patchy to absent													.2		.1	5	2	3		.1						
							Lim 3-5%																										
							Epidote as strong patches & veins	3		2	3		2			2																	
320							Stronger fracturing b/w 300-348																										
							Cpy 0.2% as blebs in Mag cement																										
							Py 0.1% as blebs in FeOx patches																										
330																																	
340																																	
48.6																																	
EOH							EOH																										

GC64-0129

NovaGold Canada Inc.

Galore Creek Project

Orientation:
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Logger: J Cournyea
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UTM E:
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GRAPHIC LOG						DESCRIPTION		ALTERATION												MINERALIZATION										SAMPLING AND ASSAY			
Scale	Lith	Depth	Width	Struct	>'s	Rock Type		Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc		Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
210 220	‖					I8	188-234 Fe-carb veinlets in strong epi @ 193ft, some epi stringers have a chl/ser halo Patchy Lim ≈ 2% Thin 10° TCA 0.5cm Kspar/carb vein @228-230ft Trace Mal & Trace Cp	2		2	3		2			2				.1			1.5		2		.						
230 240 250 260 270	△ ▽					B2	234-276.5 ft Strongly clast supported magnetite cemented hydrothermal breccia. Interval is composed of 90-95% angular to subangular (jigsaw) I8 clasts in a dominantly magnetite +/- Cpy +/- Mal cement Magnetite cement varies throughout interval with small sections showing good breccia textures & others showing patchy/stringer magnetite. Kspar alteration is moderate patchy. Epidote alteration is moderate patchy & vein/stringers. Cpy is .3% overall, with strongest between 242-276 ≈ 0.4-0.5%, Malachite is 1.5% on fractures & in mag. Cpy strongly assoc w mag	3		2	3		2		1					.3			10		3		1.5						
280 290	△ ▽					B2	276.5-295ft Rusty orange altered breccia, I8 clast strongly FeOx stained. Cpy 0.5% as blebs within mag cement, Carb moderate as late stringers. Py + Cpy stringers at 282.4ft. Spec hem on some fractures Cpy 0.5%, as blebs within mag cement	3		2	0		2							.5		.2	15		65		.5						

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Galore Creek Project

Orientation:
Depth:
Logger: J. Courneyca
DDH No: GC64-0129
UTM N:
UTM E:
Date: Sept 19/17
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GRAPHIC LOG

Depth	Scale
	.05
110	.03
120	.05
130	.03
140	.05
Dyke? 146-147	
150	.03
160	.05
170	.05
180	.03
190	.05

Rock Type	DESCRIPTION	Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc	Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
I8	101.2 - 146.2ft As previously described, without Limonite .1-.2cm thin limonite/FeOx stringers cutting epi vein (alt'd mag?) FRACTURE ZONE @ 110-115.1ft 0.5% Hem on zone fractures	2		2	3		2			1							.5	2								
D2?	146.2-147 DARK GREEN FINE GRAINED DIKE ē sharp Irregular contact @ 146.2	1		1			2																			
I8	147 - 165ft I8 as previously described ē weak to moderate epi alteration, Magnetite as stringers & patchs ≈ 1-2%, Cpy Bleb @ 147.1ft associated with Mag in Kspar altered patch. Strongly fractured @ 159.9-164ft, Carb as late stringers/veinlets Hem weak on some fractures, trace Spec Hem associat ē mag @ 162ft	3		2	3		2			1			.1				.2	2	.1	.1						
I8	165 - 176.2ft -Rusty orange ē small non-FeOx altered patches - Numerous non magnetic mafic stringers - Non FeOx patches have higher K-spar & patchy mag	2		2	2		2			1			.1				1	50		.1						
I8	176.2 - 188ft Light grey green to reddish green I8 with increased Kspar & increased chl, weak patchy epi → less epi veins in this section, mostly stringers. Less than 20cm sections of strong FeOx patchs, appear to be assoc ē mag stringers. Blebs of py & cpy in mafic stringer @ 177.4-177.6ft	3		3	2		2			1			.1		.1	1.5		5								
I8	188 - 234ft (Core reduced) Greenish grey I8 as previous, sections of strong patchy epi + epi veins	2		2	3		2			2			.1			1.5		2		.1						

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Galore Creek Project

Orientation:

Depth:

Logger: J. Cowneyea

DDH No: GC90-0371

UTM N:

UTM E:

Date: Sept / 7

Sheet No: of 4

GRAPHIC LOG						DESCRIPTION	
ft Scale	Lith	Depth	Width	Struct	>'s	Rock Type	
	o o o o					OUB	OVB / CASING
10	||					I8	10 116ft
20	||						Light Grey green to greenish grey equigranular intrusive composed of interlocking Orthoclase, Biotite, and Hornblende phenos. Epidote alteration is moderate throughout this interval as veins & patches. Chlorite weakly alters the Mafics & K-spar weakly alters the feldspars. Hem is 0.5% on fractures. Weak thin .1-.2cm mag stringers throughout. Mag w carb +/- qtz and chloritized Mafics @ 22.3-22.5ft. Rare small <10cm FeOx rich sections
30	||						
40	||						
50	||						
60	||						
70	||						
80	||						
90	||						

ALTERATION											MINERALIZATION										SAMPLING AND ASSAY			
Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc	Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
2		2	3		2			2						.5	.5	1.0								

NovaGold Canada Inc.
Galore Creek Project

Orientation:
Depth:
Logger: J. Courneyea
DDH No: GC90-0371
UTM N:
UTM E:
Date: Sept 21/17
Sheet No: 2 of 4

GRAPHIC LOG						DESCRIPTION		ALTERATION												MINERALIZATION										SAMPLING AND ASSAY			
ft Scale	Lith	Depth	Width	Struct	>'s	Rock Type		Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc		Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
110																																	
20																																	
'30																																	
40																																	
50 160						I8	146-166ft As previously described Strong Hem (5%) and moderate chlorite alteration in this section; Magnetite increase to 2-3% as patchy blebs & stringers Kspar increases but is difficult to quantify due to some Hem dusting of feldspars Cpy & Mol are trace assoc ū magnetite	3		2	2		2			2				.1			2	5	3		.						
170						I8/ B2?	As previously described, but rusty orange FeOx stained ū increased mag stringers & patchs (weak B2?) as small rare sections <5cm show breccia like textures. Late stockwork carb/qtz stringers. 0.1% Py assoc ū Lim, trace Cpy assoc with mag	3		2	1		3			2				.1		.1	3	1	50		.1						
180 190						I8	179-196.5 as previously described, Greyish-green to reddish green section with increased Hem & Kspar alteration, chlorite alteration patchy assoc ū mafics & hem. Patchy mag & mag stringers ≈3% assoc ū ↑ Kspar alteration	3		2	2		2			2							3	5	1								

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Galore Creek Project

Orientation:
Depth:
Logger: J. Cou yea
DDH No: GC90-0371
UTM N:
UTM E:
Date: Sept 22/ 7
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GRAPHIC LOG						DESCRIPTION		ALTERATION												MINERALIZATION										SAMPLING AND ASSAY			
Scale	Lith	Depth	Width	Struct	>'s	Rock Type		Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc		Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
210						I8/ B2.	196.5-215 ft As previous with Increased magnetite 5-7% as 1-3cm veins + lesser stringers + patchy blebs K-spar moderate but locally strong, biotite w̄ epi in mag vein @ ≈205ft. Malachite 0.2%. assoc with mag, Cpy trace assoc w mag	3	1	3	3		2			2				.1			6	3	1		.2						
220				FLT		I8/ B2	215-235 Rusty orange FeOx stained interval w̄ semi healed fault w̄ strong shear textures @220-220.5ft Mal 0.5% assoc w̄ mag on fractures Cpy 0.1% assoc w̄ mag	3		1	1		2			2				.1			7		55		.5						
230																																	
240 250						I8/ B2	235-257ft as previous Green to reddish green I8 w̄ increased hem, Mag 5% mostly as stringers & patches, .2% Cpy blebs w̄ mag .1% Mal on fractures	3		2	3		2			2				.2			5		1		.1						
260				FLT		I8/B2	257-263 Rusty orange FeOx stained interval, possible healed flt @ 259.5ft, late Carb/Qtz veinlets	3		2	0		3			0				.			2		50		.						
270							263-277 (same as 235-257)	3		2	3		2			2				.			5		1		.1						
280 290							277-302.3ft Rusty orange FeOx with small sections of greenish red alteration, 40% Lim, with 5-7% Mag mostly as patches & stringers with .3-.4% blebs of Cpy in with mag +/- .2% Malachite	3		2	2		2			2				.4			6		40		.2						

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Galore Creek Project

Orientation:
Depth:
Logger: J Cournoyea
DDH No: GC90-0371
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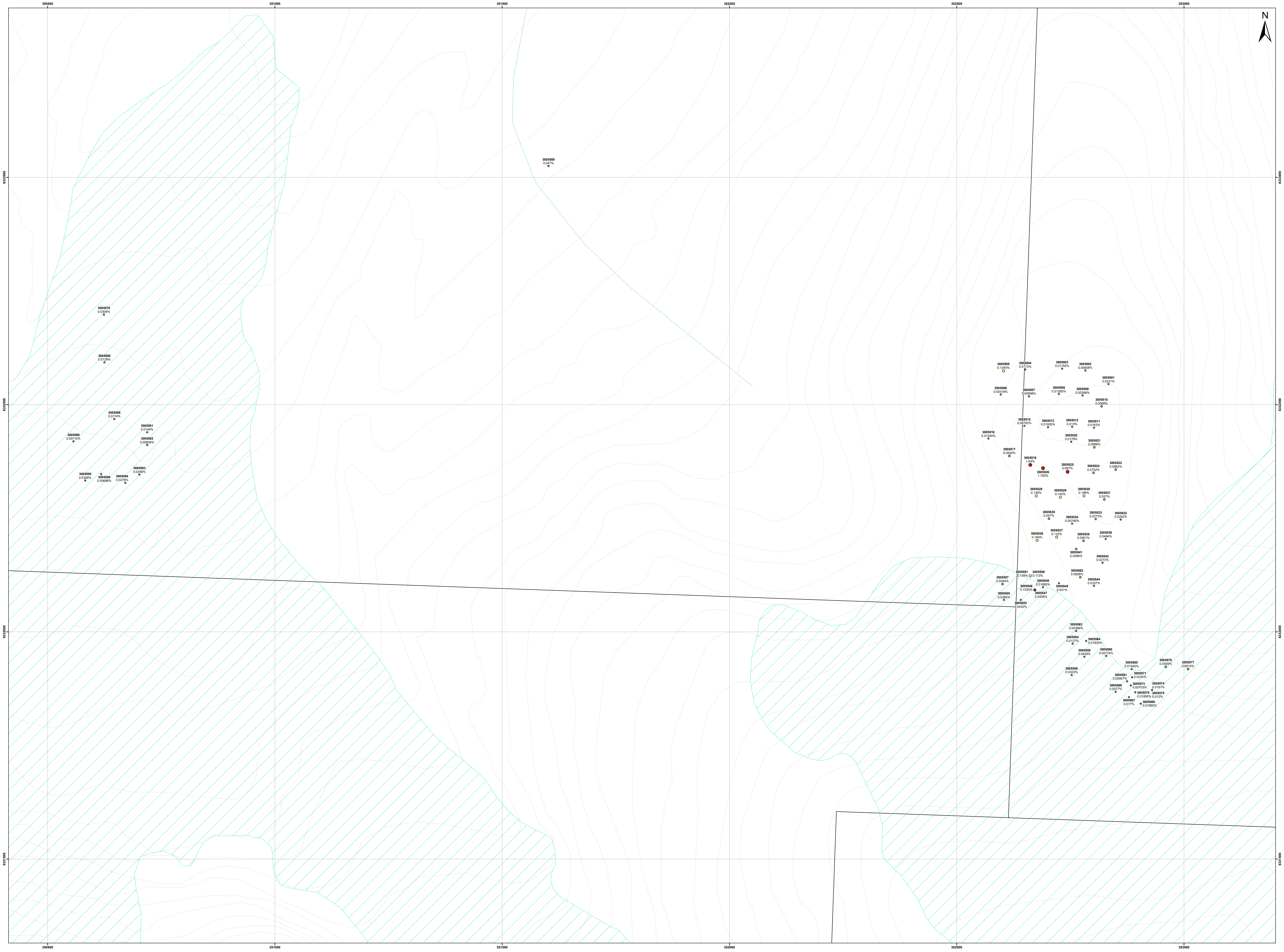
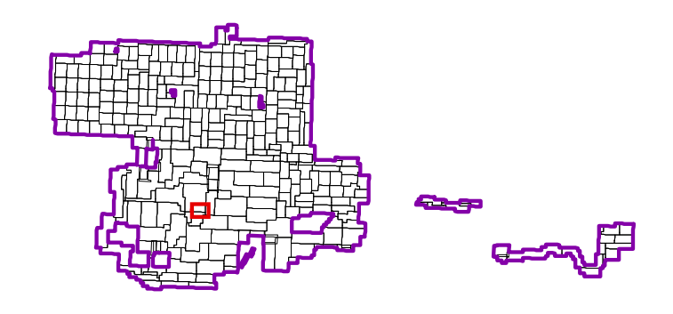
GRAPHIC LOG						DESCRIPTION		ALTERATION												MINERALIZATION										SAMPLING AND ASSAY			
Scale	Lith	Depth	Width	Struct	>'s	Rock Type		Or	Bio	Chl	Epi	Gar	Car	Anh	Gyp	Ser	Diop	Misc		Cp	Bn	Py	Mag	Hem	Lim	Spec	Azu Mal	Misc	%	Sample No.	From	To	Control
310							302-349 ft Greenish grey I8 w reddish green patches increased Kspar + hem+chl, these patches have blebs of cpy & Mal assoc w Mag locally up to .4%, Mag is 3-5% as patchy blebs & stringers	3		3	3		2			2				.3			4	5	1		.3						
320																																	
330																																	
340																																	
350							349-359 ft Rusty orange section at end of hole Late carb/qtz veins, cpy .3% assoc w mag, Mal .5% on fractures of mostly FeOx stained patches assoc w mag	3		2	2		2			2				.3			4	1	30		.5						
360	EOH						EOH																										

APPENDIX VIII

2017 Rock Sampling Galore Valley Area – Copper Geochemistry





2017 Rock Sample
Cu (%)

- ● <0.05%
- ● 0.05 - 0.1%
- ● 0.1 - 0.2%
- ● 0.2 - 0.5%
- ● > 0.5%
- ☐ Tenure Outline
- ☐ Mineral Tenure
- 🟦 Hydrology
- ▨ Glacier
- — Contours (100ft Interval)

0 100 metres

Galore Creek Mining
CORPORATION

2017 Rock Sampling
Galore Valley Area
Copper Geochemistry

Date: 4/16/2018	Drawn By: S. Beckman
Scale: 1:2,500	UTM Zone 9N (NAD 1983)

APPENDIX IX

2017 Rock Sampling Galore Valley Area – Gold Geochemistry

Galore Creek Mining
CORPORATION

2017 Rock Sampling
Galore Valley Area
Gold Geochemistry

Date: 4/16/2018	Drawn By: S. Beckman
Scale: 1:2,500	UTM Zone 9N (NAD 1983)