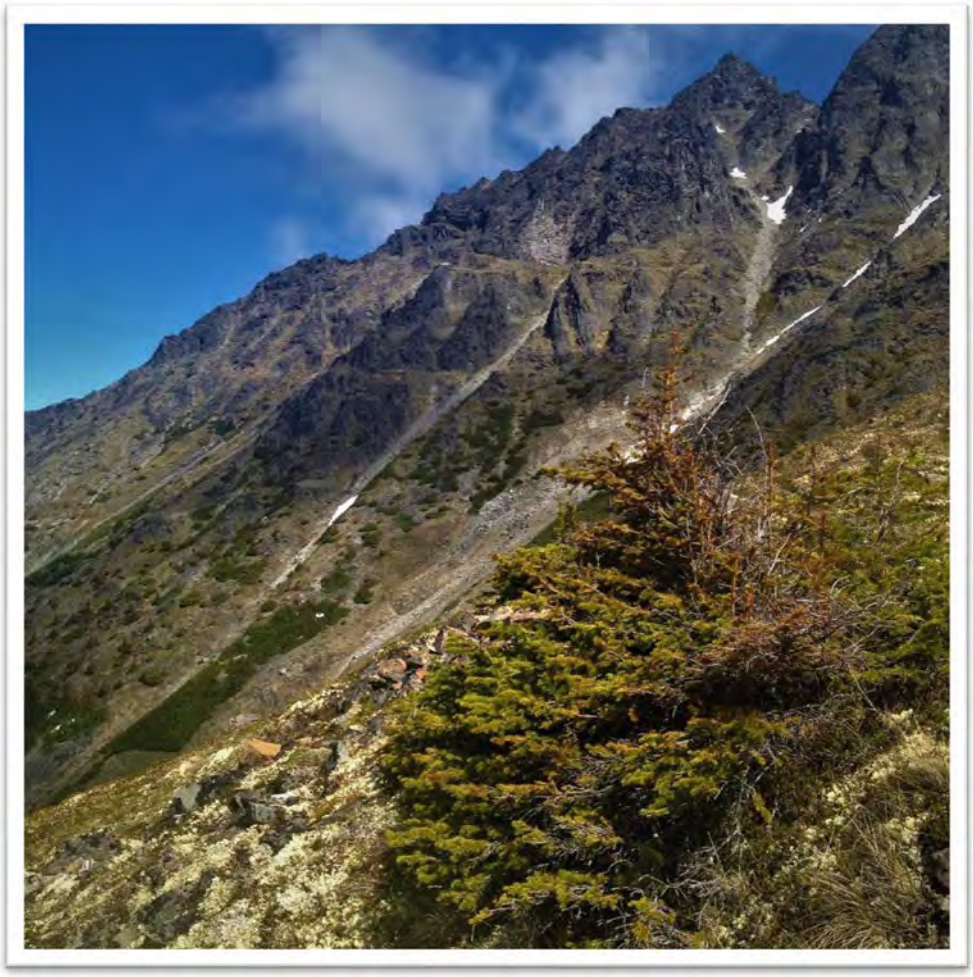


NI 43-101 Technical Summary Report on the Rocher Deboule Property

Prepared for:
American Manganese Inc.

For submission to:
SEDAR

Prepared by:
Ron Parent, P. Geo
Christo Marais, P. Geo

October 25, 2020

Table of Contents

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1. Summary

The Rocher Deboule gold-silver-copper-(zinc-lead-cobalt) Property ("the Property") in the Omnicea Mining Division, Rocher Deboule Range, is located 8 kilometres (km) south of Hazelton, British Columbia (B.C.). This is an old mining property and historical underground mine production is recorded from the periods of 1916-1918 and 1952 for the Rocher Deboule Mine and intermittently from 1918-1928 and 1940-1941 for the Victoria Mine.

Historically, operators report the Rocher Deboule Mine produced 47,825 tonnes and 139.72 kilograms (kg) gold, 2,627.5 kg of silver, 2,819,810 kg of copper and minor amounts of lead and zinc. The Victoria Mine produced 81.65 tonnes and 10.14 kg of gold, 20,254.5 kg of arsenic, 954.5 kg of molybdenum and 2,235.5 kg of cobalt.

The Property is comprised of three (3) contiguous mineral claims totaling 1,016.244 ha. American Manganese Inc. (AMI) owns 100% of the claims.

American Manganese Inc. ("AMI") commissioned Ron Parent, P. Geo and Christo Marais, P. Geo to provide an updated National Instrument 43-101 (NI 43-101) Technical Report on the Rocher Deboule Property ("the Property"). Christo Marais, P. Geol. visited the site on September 14, 2020 and was solely responsible for writing Section 7 Geological Setting and Mineralization. A memo detailing the site visit is presented in Appendix A. All other sections of the report were written by Ron Parent, P. Geol. Mr. Parent conducted a detailed review of all project data available from the issuer. With this data, he created a database as well as a 3D and gridded surface model of the Rocher Deboule Mine workings, local geology, geochemistry, and geophysics. This was done to facilitate a greater understanding of the spatial aspects of the project as it relates to potential for the discovery of economic quantities of ore.

The Property lies on the northwestern margin of a Late Cretaceous granodiorite pluton intruded into upper Jurassic sediments and upper Cretaceous volcanics where a series of precious-base metal quartz-sulphide veins occur. The vast majority of mineral showings comprise vein fillings of shear zones, normally in close proximity to the margin of the Rocher Deboule intrusive stock.

These mineralized shears closely parallel one set of orthogonal joint pattern caused by the cooling of the stock. The veins all strike in a northeasterly to easterly direction and dip approximately 55 degrees (°) to the north. They are found over significant lengths of shear zone, up to 1500 metres (m), and up to 200 m depth, and are locally of very high grade. Economic mineralization, as defined by historical mining on the Rocher Deboule mine, occurred over short strike lengths of 30-75 m and was concentrated in near vertical shoots.

Based on the host lithologies and mapped alteration assemblages, the Rocher Deboule Property is classified as a high sulfidation, intrusive (sediment) hosted, epithermal gold-silver-base metal vein-shear deposit (BC Geological Survey deposit no. I05. Polymetallic veins Ag-Pb-Zn+/-Au).

Exploration by the issuer and its predecessors (Ameridex and Rocher Deboule Minerals) has primarily involved soil and rock geochemistry as well as ground magnetometer and airborne geophysics using Dighem Survey equipment.

It is the authors' opinion that the favourable underground and surface sampling results for precious and base metals obtained to date by the issuer are of sufficient merit to warrant a two-phase

exploration program on the Property. This program would consist of core drilling, high accuracy GPS surveying, and onsite road improvements to provide access to drilling sites.

The recommended Phase One exploration program is budgeted at $ $601,176. Assuming favourable Phase One results, a Phase Two program of $ $396,672 is recommended to expand target definition.

2. Introduction

American Manganese Inc. ("AMI") commissioned Ron Parent, P. Geo and Christo Marais, P. Geo to provide an updated NI 43-101 Technical Report on the Rocher Deboule Property ("the Property"). The Property is located approximately 8 kilometres (km) south of Hazelton, British Columbia (B.C.). (**Figure 2-1**). AMI's name was changed to its current name from Rocher Deboule Minerals in January 2010. Ameridex Minerals was renamed RDB in September 2006.

The Property is host to several Minfile occurrences and had limited production from mining activities at the Rocher Deboule and Victoria Mines (1916-18, 1952). The Property lies on the northwestern margin of the Rocher Deboule granodiorite pluton in the Omineca Mining Division.

Christo Marais, P. Geol. visited the site on September 14, 2020. A memo detailing this site visit is presented in **Appendix A**. Mr. Parent conducted a detailed review of all project data available from the issuer. With this data, he created a database as well as a 3D and gridded surface model of the Rocher Deboule Mine workings, local geology, geochemistry, and geophysics. This was done to facilitate a greater understanding of the spatial aspects of the project as it relates to potential for the discovery of economic quantities of ore.

Recent exploration programs carried out on behalf of AMI and its predecessor companies, Ameridex Minerals Corp; and Rocher Deboule Minerals Corp., have occurred in 2002, 2004, 2007, 2011, 2016, 2017 and 2019. These programs have included mapping, soil and rock sampling, and airborne and ground geophysics in addition to drilling.

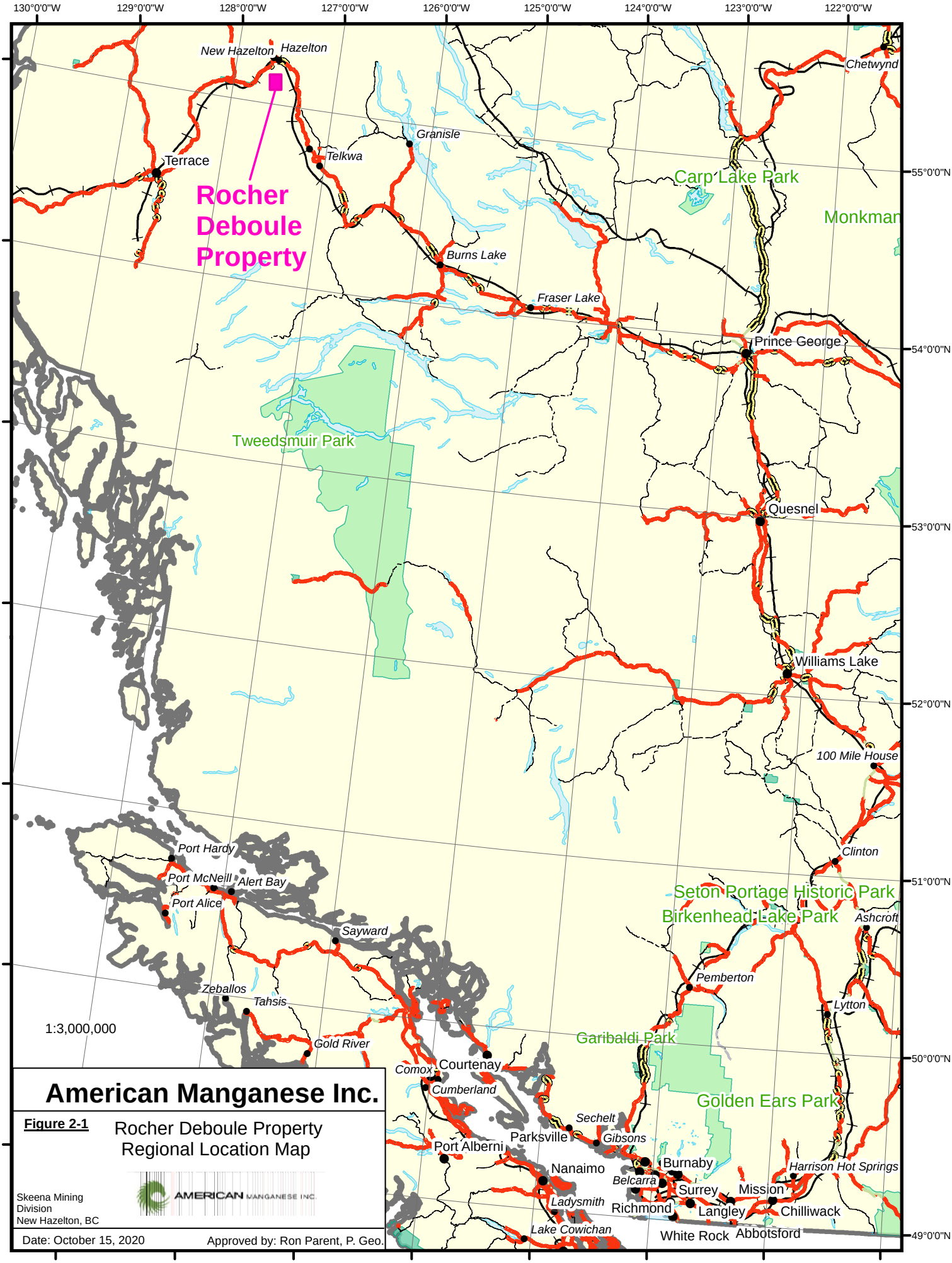
This NI 43-101 Technical Summary Report is an update of an earlier report completed in February 2007 by Burgoyne and Kikauka (2007).

This NI 43-101 Technical Summary Report is a summary of findings about this Property, and it is submitted to meet the technical reporting requirements for NI 43-101. It is understood that this document will be filed with the TSX Venture Exchange and possibly the BC Securities Commission and will become a public document.

A full list of the reports used in preparing this Technical Summary Report are detailed in Section 20.0. References are noted when quoted in this report. Some of the more important technical reports referenced by the authors include those of Burgoyne (2006), Sutherland Brown (1960), Quin (1987), Quin (1989), Kikauka (2002), Kikauka (2004), Jasper (1952) and Fugro Airborne Surveys Corp. (2007).

This report uses all metric distance measurements. The history section refers to oz/ton where 1 opt or oz/t (Troy Ounce/Short Ton) = 34.2857 Grams/Tonne (gpt). 1 gram per tonne is the same as 1 part per million; and 1 ppm equals 1000 ppb (parts per billion). Finally, 1% = 10,000 ppm or 10,000 gpt. Units of measure reported reflect the measurement of the written reports.

All currency values are expressed in Canadian dollars unless otherwise indicated. Generally, historical work prior to 1978 is in imperial measurements with metric in use after 1978.


130°0'0"W
129°0'0"W
128°0'0"W
127°0'0"W
126°0'0"W
125°0'0"W
124°0'0"W
123°0'0"W
122°0'0"W
55°0'0"N
54°0'0"N
53°0'0"N
52°0'0"N
51°0'0"N
50°0'0"N
49°0'0"N
New Hazelton
Hazelton
Chetwynd
Granisle
Telkwa
Terrace
Rocher Deboule Property
Carp Lake Park
Monkman
Burns Lake
Fraser Lake
Prince George
Tweedsmuir Park
Quesnel
Williams Lake
100 Mile House
Clinton
Seton Portage Historic Park
Birkenhead Lake Park
Ashcroft
Port Hardy
Port McNeill
Alert Bay
Port Alice
Sayward
Pemberton
Lytton
Zeballos
Tahsis
Gold River
Garibaldi Park
Comox
Courtenay
Cumberland
Golden Ears Park
Sechelt
Parksville
Gibsons
Port Alberni
Nanaimo
Burnaby
Harrison Hot Springs
Belcarra
Surrey
Mission
Ladysmith
Richmond
Langley
Chilliwack
Lake Cowichan
White Rock
Abbotsford
1:3,000,000
American Manganese Inc.
Figure 2-1
Rocher Deboule Property
Regional Location Map
Skeena Mining Division
New Hazelton, BC
AMERICAN MANGANESE INC.
Date: October 15, 2020
Approved by: Ron Parent, P. Geo.

3. Reliance on Other Experts

An informal review of mineral title and ownership of the claims of AMI that comprise the Rocher Deboule Property was completed through checking the records of the Mineral Title Branch, Ministry of Mines and Energy for B.C. However, there has been no formal legal mineral title and ownership review as this is outside the expertise of the writers and the scope of this report. The mineral tenure data was obtained by the author(s) from the Ministry website.

The authors have relied on certain information provided by the issuer regarding the agreements, permits, and potential environmental liabilities. Only a limited amount of time was spent verifying the assumptions made and passed on to the authors.

Most information about the Project was publicly available on the Ministry website and was downloaded from the site. Information on intermittent sampling programs that were not reported on to the Ministry as well as assessment reports that are currently confidential were provided by Andris Kikauka of AMI. Terri Piorun of AMI provided the information on environmental liability. The authors disclaim responsibility for the information in these aforementioned areas.

This report is based on an extensive technical review of information that was available for the Project. The authors have analyzed the available information and prepared this report with the care and due diligence that is standard per their professional designation. This report is believed to be correct at the time of preparation. All data used for and contained within this report are believed to be correct and complete at the time of writing. All conclusions drawn from the data are based on technical judgments of said material. There is nothing material, known to the writers, regarding the Rocher Deboule Property that is not included nor referred to in this report.

4. Property Description and Location

The Rocher Deboule Property lies at the north end of the Rocher Deboule Range in central B.C. at a latitude of 55°, 10 minutes north and a longitude of 127°, 38 minutes west on NTS Map Sheet 93M/4E. It is 8 km south of Hazelton, the Canadian National Railway and Provincial Highway 16 (Yellowhead). The eastern and southern portions of the Property are in the Juniper Creek drainage basin. See **Figure 4-1** which shows the mineral tenures and the drainage basin.

4.1. Tenure

The Property is comprised of three (3) contiguous mineral claims totaling 1,016.244 ha. All the mineral tenures are registered with Mineral Titles Online for the Province of B.C. These are electronic claims based on coordinates for the cells in UTM NAD 83 format. Two tenures, 510469 and 374216 are converted Legacy Claims. See **Table 4-1** below for tenure details.

Table 4-1: Mineral Tenures

Tenure Number	Area (Ha)	Issue Date (yyyy/mm/dd)	Expiry Date (yyyy/mm/dd)
856170	18.4736	2011/06/02	2025/04/01
1077458*	18.4844	2020/07/22	2021/07/22
510469	979.286	2005/04/09	2025/04/01

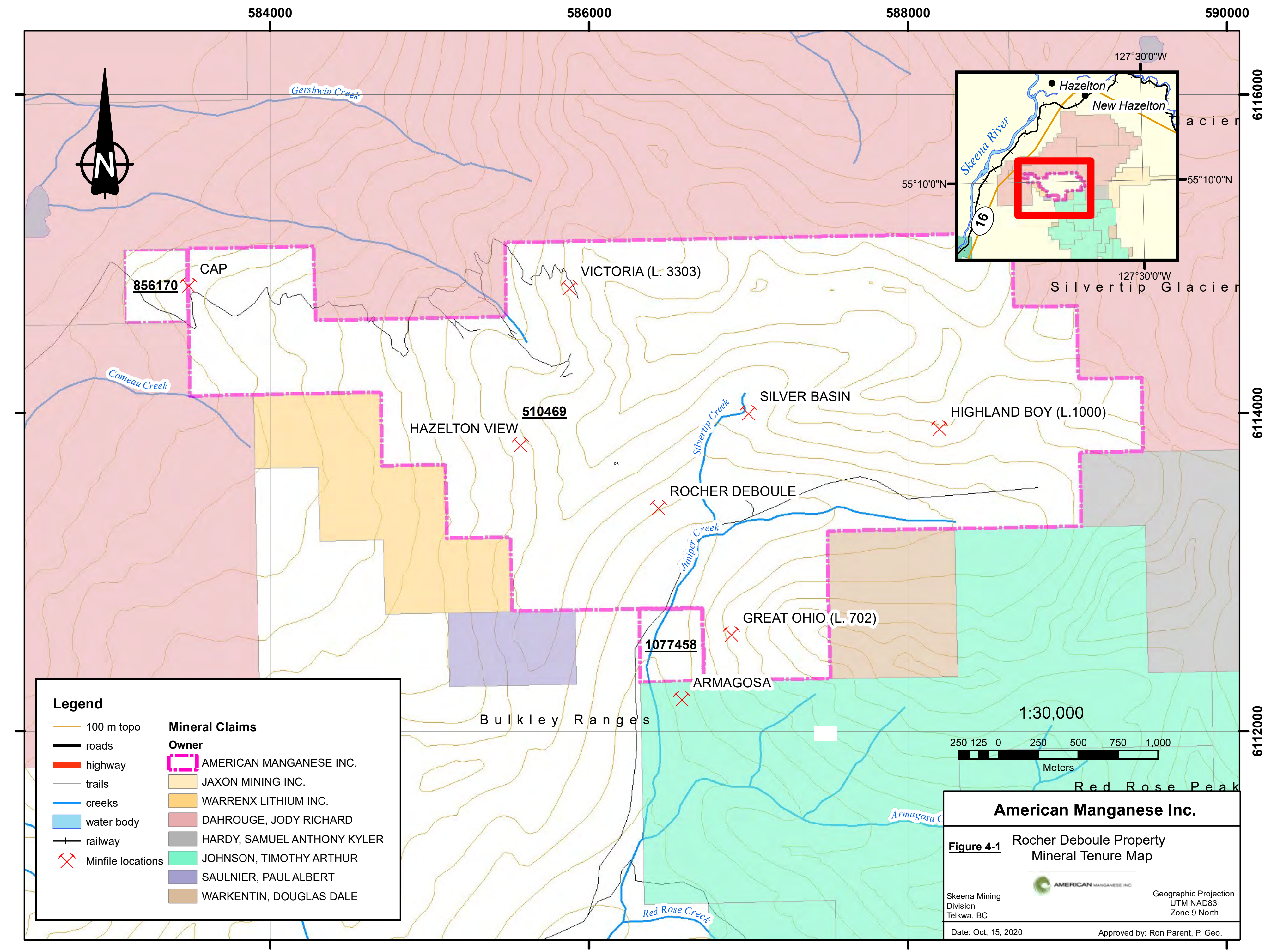
*This tenure's expiry date is protected until Dec. 31, 2021 as it falls under Covid-19 "Protected Status"

The mineral tenures are in the hereditary territory of the Wet'suwet'en First Nation.

4.2. Environmental Liabilities

The authors are aware that there may be potential environmental liabilities related to historical mining activities that have occurred on the property. It is unclear how much responsibility AMI would have regarding cleanup and/or monitoring water quality. It is assumed that the responsibility for any clean up would only become effective and enforceable should the company re-activate any mining operations at the site. These include:

- small amounts of tailings and waste rock that remain from historical mining at the Rocher Deboule, Highland Boy and Victoria Mines. These tailings and waste dumps, for the most part, have been overgrown by native vegetation and are not recognizable.
- Additional adits on site may have to be reclaimed or closed off, from time to time, especially if the Rocher Deboule Mine were ever to reopen. Any water seeping out of these adits may have to be monitored for water quality, again, only if the RDB mine reopens.
- during the site visit, a small amount of water was observed draining out of most of the adit portals on the property.


584000
586000
588000
590000
6116000
6114000
6112000
Gershwin Creek
Comeau Creek
Silvertip Creek
Juniper Creek
Armagosa C
Red Rose Creek
856170
CAP
VICTORIA (L. 3303)
510469
HAZELTON VIEW
SILVER BASIN
HIGHLAND BOY (L.1000)
ROCHER DEBOULE
GREAT OHIO (L. 702)
1077458
ARMAGOSA
Bulkley Ranges
Silvertip Glacier
Red Rose Peak
127°30'0"W
Hazelton
New Hazelton
Skeena River
55°10'0"N
16
1:30,000
250 125 0 250 500 750 1,000
Meters
Legend
100 m topo
roads
highway
trails
creeks
water body
railway
Minfile locations
Mineral Claims
Owner
AMERICAN MANGANESE INC.
JAXON MINING INC.
WARRENX LITHIUM INC.
DAHROUGE, JODY RICHARD
HARDY, SAMUEL ANTHONY KYLER
JOHNSON, TIMOTHY ARTHUR
SAULNIER, PAUL ALBERT
WARKENTIN, DOUGLAS DALE
American Manganese Inc.
Figure 4-1
Rocher Deboule Property
Mineral Tenure Map
Skeena Mining
Division
Telkwa, BC
Geographic Projection
UTM NAD83
Zone 9 North
Date: Oct, 15, 2020
Approved by: Ron Parent, P. Geo.

5. Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1. Access

The Rocher Deboule Property lies at the north end of the Rocher Deboule Range in central B.C. at a latitude of 55°, 10 minutes north and a longitude of 127°, 38 minutes west on NTS Map Sheet 93M/4E and is 8 km south of the community of Hazelton, the Canadian National Railway, and Trans-Canada Highway 16 in the Skeena River Valley. See **Figure 4-1** in Section 4. The eastern and southern portions of the Property are in the Juniper Creek drainage basin.

The property has two main access points:

1. The historic mine workings of the former Rocher Deboule Mine and the southern parts of the Property are reached via a 4-wheel drive road that leaves Trans-Canada Highway 16 at Skeena Crossing, 19 km southwest of Hazelton, B.C. This access road is comprised of a maintained logging road for 1 km and then branches off to follow Juniper Creek to the old Rocher Deboule Mine site, about 14.5 km. The Juniper Creek Road is heavily overgrown with alder and washed out in several places. It will require improvements using a bulldozer to be brought up to 4-wheel drive vehicle standards.

2. The Victoria Mine site area, located about 400 m north of the Rocher Deboule Mine site is only accessible from the west via a trail that leaves Highway 16 just southwest of Seeley Lake Provincial Park and climbs up the western slopes of the Rocher Deboule Range to approximately 400 m below the lowest adit on the old Victoria Mine site. This trail also provides access to the eastern part of the Rocher Deboule Property. Additionally, there are numerous foot trails that provide additional access on the Property.

5.2. Physiography

The Rocher Deboule Range of mountains is rugged with deeply incised valleys. Slopes are steep to precipitous with large areas covered in talus and bare rock; higher elevations have steep bluffs. The Property can be best described physiographically as one of mountainous topography at a stage of early maturity. The higher peaks and ridges are sharp crested, commonly serrated and have cirque glaciers and permanent snowfields. The terrain can impede access to some areas and the talus obliterates outcrop at lower elevations. Within the Property elevations range from 365 m at the western side, to 1,200 m at the center, over a horizontal distance of about 4 km.

5.3. Flora and Fauna

Vegetation on the Property is sparse. The areas with significant tree cover include the area immediately south and west of the Rocher Deboule Mine site, the lower slopes of Armagosa Creek and on the western parts of the Property. The tree cover is principally pine and juniper with some alder.

Fauna in the area include deer, moose, cougars, black bear, wolf, coyote, and wolverine, as well as birds and small mammals.

5.4. Climate

The Rocher Deboule Range is located on the eastern edge of the much larger Coast Mountain Range resulting in a mix of coastal and interior B.C. weather patterns. Climate in the Hazelton area is described as semi-arid and annual precipitation is less than 51 centimetres (cm) per year. Since there are heavy snow accumulations in winter, the recommended exploration work season for high elevations is between July and September. Lower elevation zones can be explored from May through October. It should be noted that accumulation of deep snow at higher elevations could result in a heavy spring runoff. With the onset of summer, snow melting is rapid and by July most of the Property is snow-free, apart from isolated areas of permanent snowfield. The summer months tend to be dry and hot, though Pacific coastal storms occasionally reach this far inland. Year-round access to the Rocher Deboule mine site would be possible with a program of snow clearing and avalanche control in some slide sensitive zones on the steep slopes adjacent to the roads, from December to April.

5.5. Infrastructure and Local Resources

The main towns in the area are Hazelton, in the Skeena River Valley, population 2,000; and Smithers, in the Bulkley River Valley, population 8,000. These communities are located 8 km south and 51 km southwest of the Property, respectively.

These communities offer a complete service, supply and infrastructure base. The procurement of skilled and unskilled mining, development and administrative personnel would be mostly fulfilled from these surrounding communities.

Commercial jet aircraft service is available in Smithers. The Canadian National Railway, and Trans-Canada Highway 16 (the Yellowhead) provide access to Hazelton, Smithers, and other smaller towns along the Skeena River. All communities are serviced by a major electrical grid.

Water supply would likely be fulfilled using the numerous annual streams present on the Property.

6. History

The Rocher Deboule Property has had a long history of mining and mineral exploration dating back over 100 years. The history of significant work done on the property could fill several books. Although the authors of this report discuss historical events (prior to 1976) to provide context regarding the site's rich exploration and mining history, the bulk of this report will concentrate on work done since the 1980s. The subsections below provide further details related to the progression of exploration and mining activity on the Property.

Figure 6-1 shows the progression of property ownership from 1981-2002 that is described where applicable in the subsections to follow. **Table 6-1** outlines the work known to have been completed onsite from 1968-1998, and references government documents (mainly ARIS and Property File documents from the BC Government) where such information is available.

6.1. Pre-1976

The initial claims were staked in the area during the period 1910-1912. After discovery, there was mining activity onsite from 1912 until 1918. The site reopened to mining briefly in 1929 and 1952. Since 1952, there has been no known mining on the Property.

Pre-1976 mining activity is reported to have resulted in production of commercially saleable products, including gold and silver. Historically, operators report the Rocher Deboule Mine produced 47,825 tonnes and 139.72 kilograms (kg) gold, 2,627.5 kg of silver, 2,819,810 kg of copper and minor amounts of lead and zinc. The Victoria Mine produced 81.65 tonnes and 10.14 kg of gold, 20,254.5 kg of arsenic, 954.5 kg of molybdenum and 2,235.5 kg of cobalt. 99.7 % of production was from the Rocher Deboule Mine (1915-1918; 1929 and 1952). Also, historical sampling indicates anomalous Tungsten values in the No. 2 and No. 4 veins. It is stressed for the purposes of NI 43-101 that the authors are unable to verify the legitimacy of such reports, and this information is to be considered anecdotal only.

A report on the Loudel Claims from April of 1968 by Douglas Parent, P. Eng. (no relation to the author) describes the property and ownership configuration at the time when the claims were owned by Louis, Delcourt, and Douglas Parent. They are reported to have conducted prospecting at this time and in 1971 Chapparal Mines conducted and reported upon an induced polarization survey that they completed in the project area.

The existence of these exploration and mining sites is verified and well documented by the Minfile system operated by the B.C. Geological Survey. It documents that the Rocher Deboule Property covers the former Rocher Deboule Mine, the Victoria Mine, Highland Boy, Great Ohio, and Cap workings in addition to numerous mineral occurrences. The locations of these occurrences and a production summary table is presented in **Figure 6-2**. A Minfile Detail Summary report for each of the catalogued showings and a detailed history for each of these occurrences is contained in **Appendix B**. **Figure 6-3** shows the historical Rocher Deboule Mine aerial tram station. **Figure 6-4** shows the Rocher Deboule Mine and camp. **Figure 6-5** shows the Victoria Mine buildings adjacent to No. 0 Adit.

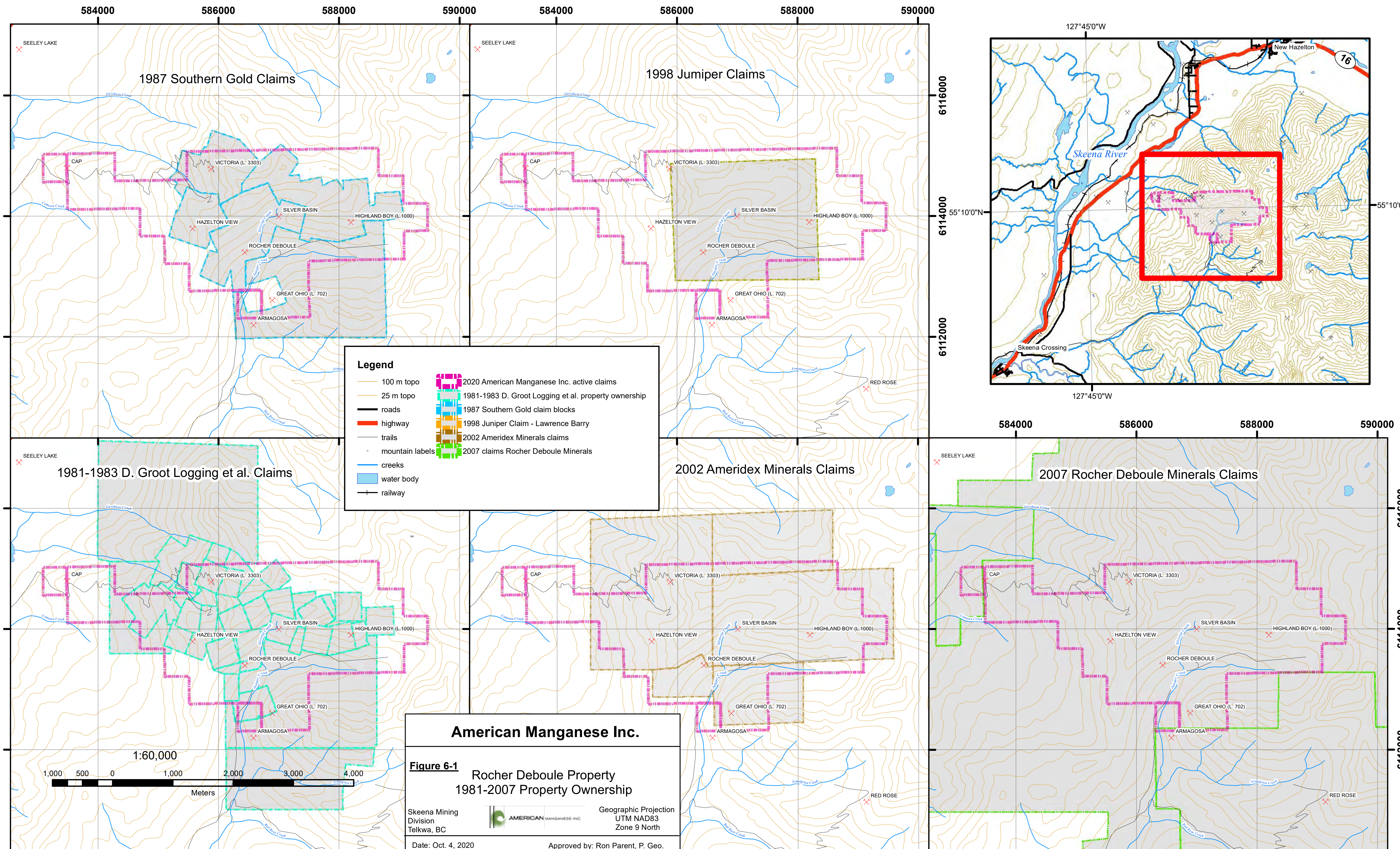
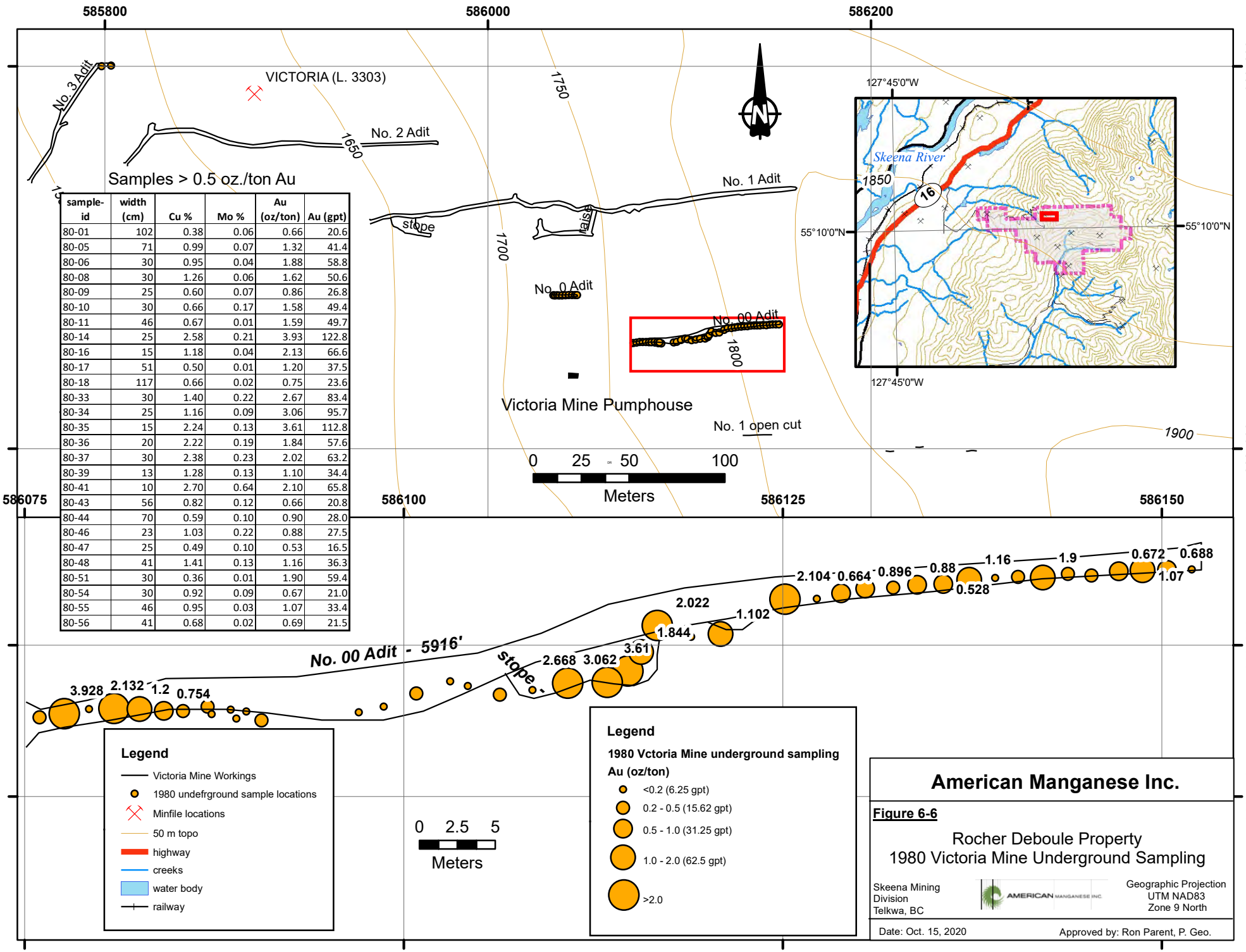

1987 Southern Gold Claims
1998 Jumiper Claims
1981-1983 D. Groot Logging et al. Claims
2002 Ameridex Minerals Claims
2007 Rocher Deboule Minerals Claims
584000
586000
588000
590000
6116000
6114000
6112000
SEELEY LAKE
CAP
VICTORIA (L. 3303)
SILVER BASIN
HIGHLAND BOY (L. 1000)
HAZELTON VIEW
ROCHER DEBOULE
GREAT OHIO (L. 702)
ARMAGOSA
RED ROSE
Legend
100 m topo
25 m topo
roads
highway
trails
mountain labels
creeks
water body
railway
2020 American Manganese Inc. active claims
1981-1983 D. Groot Logging et al. property ownership
1987 Southern Gold claim blocks
1998 Juniper Claim - Lawrence Barry
2002 Ameridex Minerals claims
2007 claims Rocher Deboule Minerals
127°45'0"W
55°10'0"N
New Hazelton
16
Skeena River
Skeena Crossing
1:60,000
1,000 500 0 1,000 2,000 3,000 4,000
Meters
American Manganese Inc.
Figure 6-1
Rocher Deboule Property
1981-2007 Property Ownership
Skeena Mining Division
Telkwa, BC
Geographic Projection
UTM NAD83
Zone 9 North
Date: Oct. 4, 2020
Approved by: Ron Parent, P. Geo.

Table 6-1: Work known to have been completed on the property from 1968-1998

Report ID	year	Owner	Report Title	Description / highlights	claim staking	mapping area Ha	no drillholes	td	core samples	road	ug	airborne geophysics	ground geophysics	grid km	Rock / core samples	soil and silt samples	stream sediment samples
PF800010	1968	Parent Family ownership	REPORT on LOUDEL CLAIMS Hazelton Area B. C.	Property summary, prospecting 1965, 1967													
AR03463	1971	Chapparal Mines	REPORT ON AN INDUCED POLARIZATION SURVEY HAZELTON AREA, BRITISH COLUMBIA ON BEHALF OF CHAPPARAL MINES LIMITED	Induced polarization survey identified four main areas of chargeability increase in a low-lying area adjacent to Highway 16 about 5 km south of Hazelton.									IP	22.75			
AR08336	1978-1980	Arbor Resources	Sampling Report on the Victoria Mineral Claim	Underground sampling at Victoria mine; over half of samples assay > 0.5 opt Au.											87		
AR10368	1981	D. Groot Logging Ltd.	Drilling Report on the Lead, Pick, Hazelton View, Tiger Claims	claim staking, drilling, mapping. Drilling encountered no significant mineralization.	Star 1-10; July 1-6	8	9	1281.4	143								
AR11019	1982	D. Groot Logging Ltd.	Rocher Deboule Property	Chip sampling; geophysics (Self Potential on 8 lines). Sampling encountered 2.8 opt Au and 4.16 opt Ag across 2.44 m and a total of 8 samples > 0.15 opt Au									SP	1.5	49		
AR11513	1983	D. Groot Logging Ltd.	Rocher Deboule Property Victoria Group	Drilling encountered no significant mineralization.			3	348.81	60								
AR16575	1987	Southern Gold Resources Ltd.	GEOPHYSICAL REPORT on a MAGNETIC AND VLF-ELECTROMAGNETIC SURVEY on the ROCHER DEBOULE PROPERTY	Geophysics - Mag, VLF-EM; Results generally confirm current geological understanding of the surveyed area.									Mag, VLF	117.25			

Report ID	year	Owner	Report Title	Description / highlights	claim staking	mapping area Ha	no drillholes	td	core samples	road	ug	airborne geophysics	ground geophysics	grid km	Rock / core samples	soil and silt samples	stream sediment samples
AR16714	1987	Southern Gold Resources Ltd.	SUMMARY REPORT 1987 EXPLORATION PROGRAM ROCHER DEBOULE PROPERTY	Gridding; mapping; geochem, surface and underground sampling. Arsenic and gold in soils served to outline existing vein structures. Several high grade gold and copper samples from underground and surface chip sampling		97									153	322	
n/a	1988	Southern Gold Resources Ltd. and Canamin Resources Ltd.	Summary Report 1988 Exploration Program	14 holes drilled in a fan pattern from a newly established drill station 75 m into the No. 2 Vein footwall encountered significant ore grade material.			14	891.7			75 m				51		
PF860290	1989	underground sampling	Summary Report 1989 Exploration Program	rehab on 300 level cross cut, sampling on the No. 4 Vein. Gold up to 0.445 oz/ton; Cu up to 12.60 %; vein widths 0.4-1.2 m											24		
N/A	1990	International Kengate	George Cross Newsletter	signs option to acquire 100% of RDB and Victoria													
N/A	1991	International Kengate	George Cross Newsletter	takes 200 pound sample; announces agreement to sell ore to equity silver; says that mining will start immediately													
25674	1998	Lawrence Barry	Prospecting Report on the Rocher DeBoule Property Juniper Mineral Claim	prospecting 1 day											4		



sample-id	width (cm)	Cu %	Mo %	Au (oz/ton)	Au (gpt)
80-01	102	0.38	0.06	0.66	20.6
80-05	71	0.99	0.07	1.32	41.4
80-06	30	0.95	0.04	1.88	58.8
80-08	30	1.26	0.06	1.62	50.6
80-09	25	0.60	0.07	0.86	26.8
80-10	30	0.66	0.17	1.58	49.4
80-11	46	0.67	0.01	1.59	49.7
80-14	25	2.58	0.21	3.93	122.8
80-16	15	1.18	0.04	2.13	66.6
80-17	51	0.50	0.01	1.20	37.5
80-18	117	0.66	0.02	0.75	23.6
80-33	30	1.40	0.22	2.67	83.4
80-34	25	1.16	0.09	3.06	95.7
80-35	15	2.24	0.13	3.61	112.8
80-36	20	2.22	0.19	1.84	57.6
80-37	30	2.38	0.23	2.02	63.2
80-39	13	1.28	0.13	1.10	34.4
80-41	10	2.70	0.64	2.10	65.8
80-43	56	0.82	0.12	0.66	20.8
80-44	70	0.59	0.10	0.90	28.0
80-46	23	1.03	0.22	0.88	27.5
80-47	25	0.49	0.10	0.53	16.5
80-48	41	1.41	0.13	1.16	36.3
80-51	30	0.36	0.01	1.90	59.4
80-54	30	0.92	0.09	0.67	21.0
80-55	46	0.95	0.03	1.07	33.4
80-56	41	0.68	0.02	0.69	21.5

Legend

- Victoria Mine Workings
- 1980 undefrground sample locations
- Minfile locations
- 50 m topo
- highway
- creeks
- water body
- railway

Legend

1980 Vctoria Mine underground sampling Au (oz/ton)

- <0.2 (6.25 gpt)
- 0.2 - 0.5 (15.62 gpt)
- 0.5 - 1.0 (31.25 gpt)
- 1.0 - 2.0 (62.5 gpt)
- >2.0

American Manganese Inc.

Figure 6-6

Rocher Deboule Property
1980 Victoria Mine Underground Sampling

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: Oct. 15, 2020

Approved by: Ron Parent, P. Geo.

Figure 6-3: Rocher Deboule Mine Aerial Tram Station

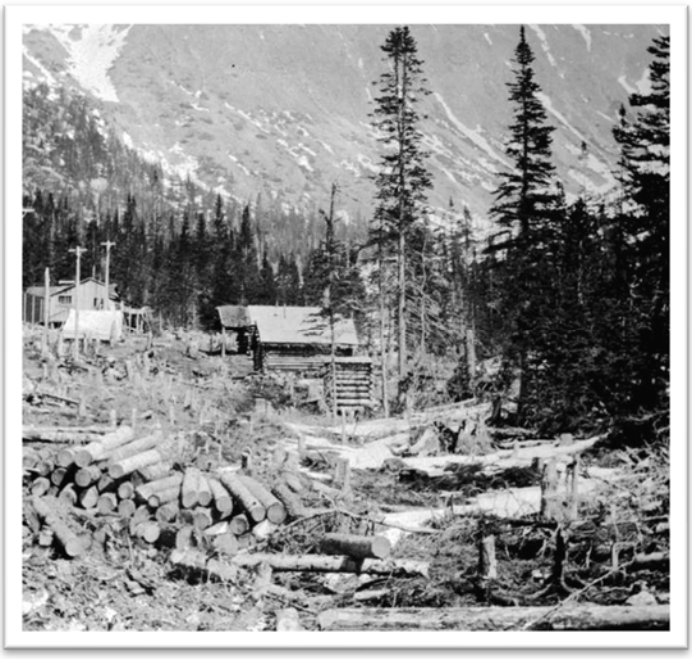


Figure 6-4: Rocher Deboule Mine and Camp

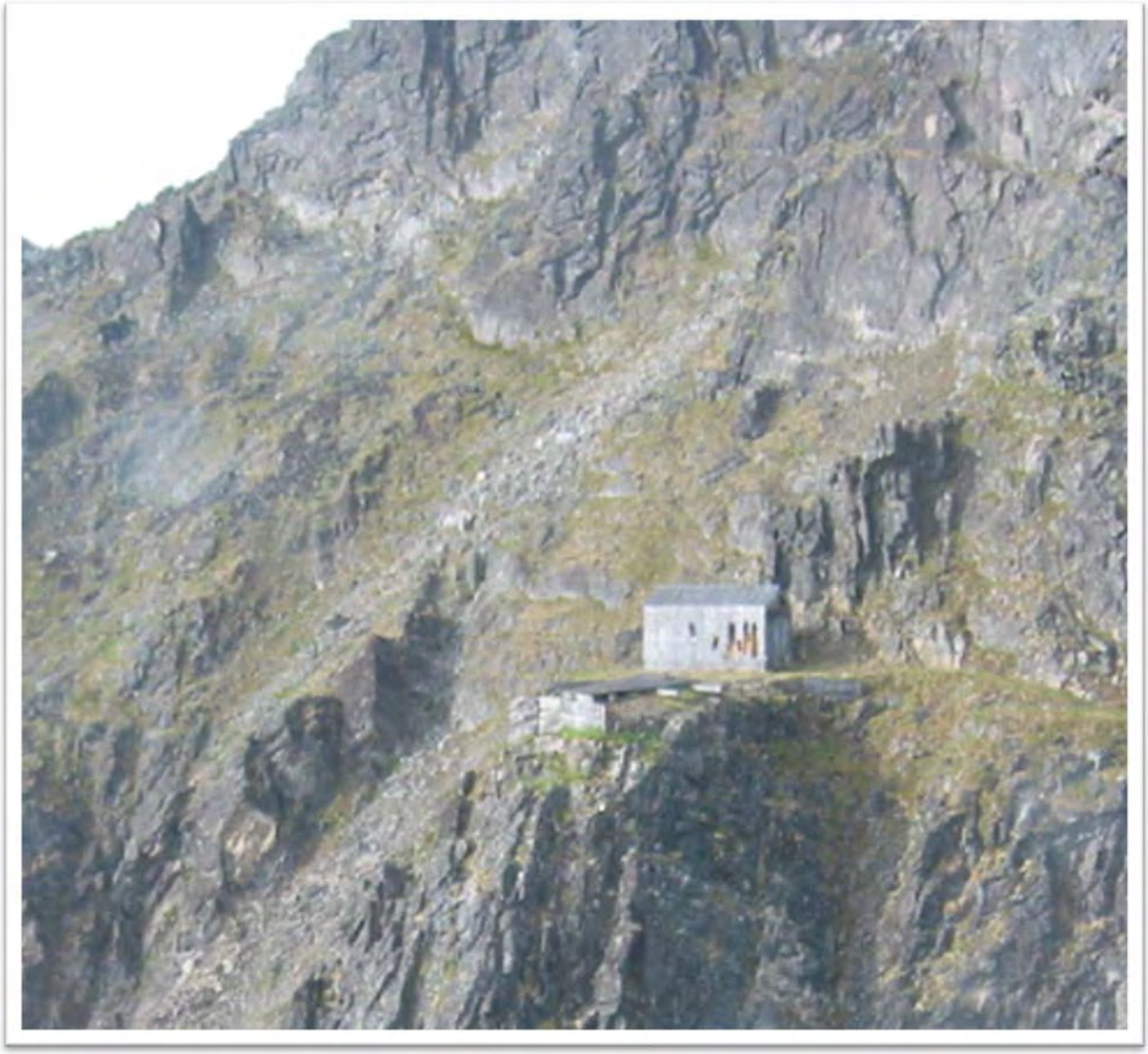


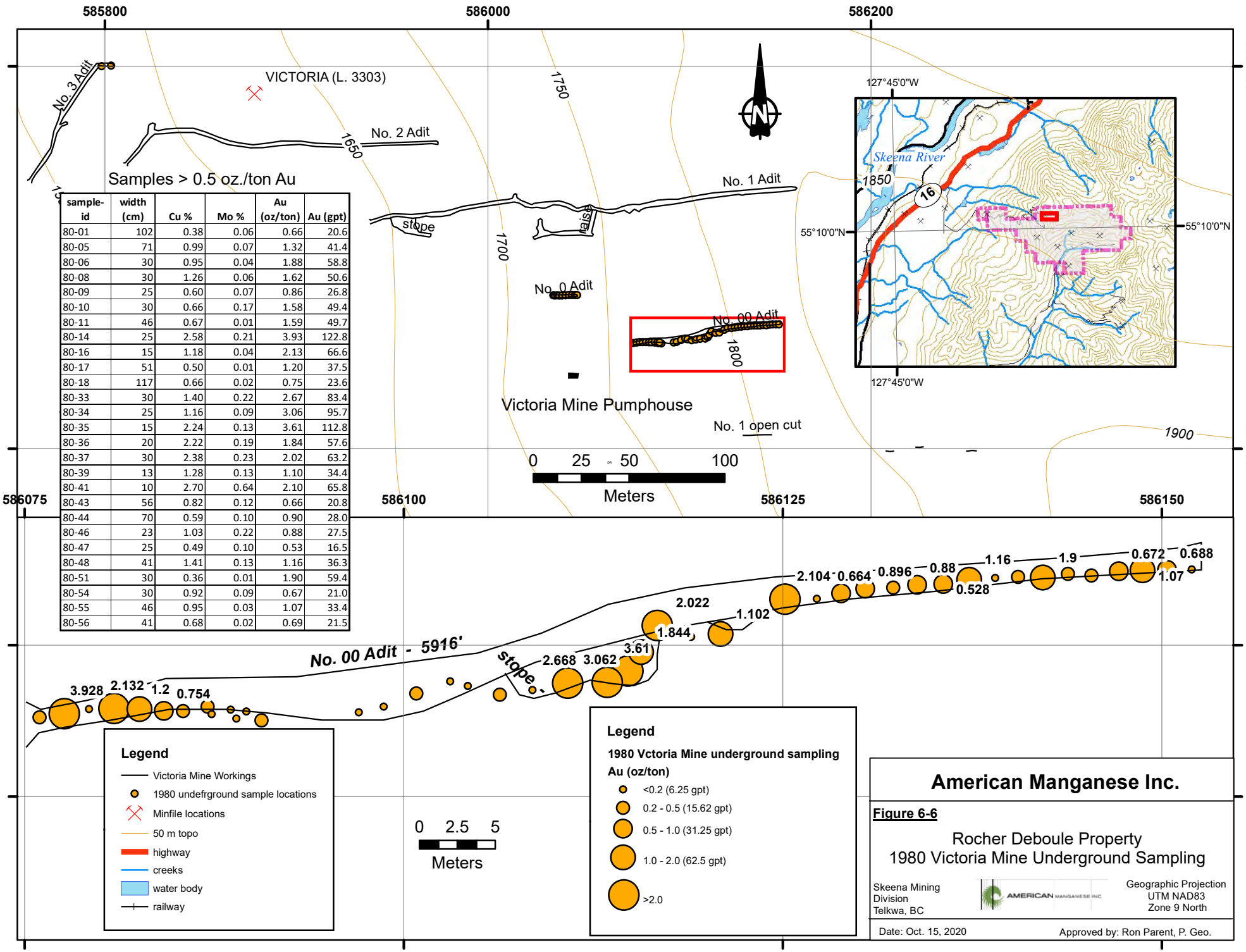
Figure 6-5: Victoria Mine Buildings Adjacent to No. 1 Adit

6.2. 1976-1983

The mineral claims covering the current tenure were initially staked in 1976-77 by W.F. McGowan who then transferred ownership to W.F. Craig in 1981. The terms of the transfer are not known. W.F. Craig then entered into a work agreement with D. Groot Logging that resulted in 3 years of exploration programs. D. Groot Logging staked additional ground in 1981 and 1982. Arbor Resources and J.M. Hutton also owned tenures in the area during this period.

In 1978-80, Arbor Resources Inc. constructed an access road to the 1,265-m elevation of the Victoria Mine and rehabilitated two adits at the 1,605 m and 1,768 m elevations. Here they collected a total of 87 rock samples from underground in 1980. See **Figure 6-6.**

In 1981 and 1983, D. Groot Logging was working on adjacent ground, not under lease to Arbor Resources, and they conducted a diamond drilling program of 12 holes over 1,670 m on the No. 2 vein at Rocher Deboule Mine. They had little success in terms of finding ore-grade material. The location of the drillholes is shown on **Figure 6-7**.



sample-id	width (cm)	Cu %	Mo %	Au (oz/ton)	Au (gpt)
80-01	102	0.38	0.06	0.66	20.6
80-05	71	0.99	0.07	1.32	41.4
80-06	30	0.95	0.04	1.88	58.8
80-08	30	1.26	0.06	1.62	50.6
80-09	25	0.60	0.07	0.86	26.8
80-10	30	0.66	0.17	1.58	49.4
80-11	46	0.67	0.01	1.59	49.7
80-14	25	2.58	0.21	3.93	122.8
80-16	15	1.18	0.04	2.13	66.6
80-17	51	0.50	0.01	1.20	37.5
80-18	117	0.66	0.02	0.75	23.6
80-33	30	1.40	0.22	2.67	83.4
80-34	25	1.16	0.09	3.06	95.7
80-35	15	2.24	0.13	3.61	112.8
80-36	20	2.22	0.19	1.84	57.6
80-37	30	2.38	0.23	2.02	63.2
80-39	13	1.28	0.13	1.10	34.4
80-41	10	2.70	0.64	2.10	65.8
80-43	56	0.82	0.12	0.66	20.8
80-44	70	0.59	0.10	0.90	28.0
80-46	23	1.03	0.22	0.88	27.5
80-47	25	0.49	0.10	0.53	16.5
80-48	41	1.41	0.13	1.16	36.3
80-51	30	0.36	0.01	1.90	59.4
80-54	30	0.92	0.09	0.67	21.0
80-55	46	0.95	0.03	1.07	33.4
80-56	41	0.68	0.02	0.69	21.5

Legend

- Victoria Mine Workings
- 1980 undefrground sample locations
- Minfile locations
- 50 m topo
- highway
- creeks
- water body
- railway

Legend

1980 Vctoria Mine underground sampling Au (oz/ton)

- <0.2 (6.25 gpt)
- 0.2 - 0.5 (15.62 gpt)
- 0.5 - 1.0 (31.25 gpt)
- 1.0 - 2.0 (62.5 gpt)
- >2.0

American Manganese Inc.

Figure 6-6

Rocher Deboule Property
1980 Victoria Mine Underground Sampling

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: Oct. 15, 2020

Approved by: Ron Parent, P. Geo.

585500
586000
586500
587000
6114500
6114000

Victoria No. 1 Vein

VICTORIA (L. 3303)

V81-9
V81-8
V81-6
V81-6
V81-2
V81-4
V81-3
V81-5
V83-2
V83-1A
V83-1
V81-1

SILVER BASIN

127°45'0"W
55°10'0"N
Skeena River
16

586080
586100
6114540
6114530

1.926
0.328
0.008
0.01
0.058
2.806
0.686
0.156
1.92

Sample-id	width (m)	Co %	Ag (oz./ton	Au (oz./ton)	Au (gpt)
37	2.44	0.20	4.160	2.806	87.69
28	1.93	0.05	0.900	1.926	60.19
46	1.65	0.42	0.340	1.920	60.00
27	0.7	0.38	0.100	0.900	28.13
38	2.62	0.10	0.100	0.686	21.44
56	0.46	0.15	0.040	0.570	17.81
29	0.22	0.20	0.160	0.328	10.25

Legend

veins

name

- contact - certain
- contact - inferred
- porphyry
- quartzite
- granodiorite
- 1982 rock sample location
- 1982 SP survey grid
- 1981 - 83 drillhole locations
- drillhole lines
- 25 m topo
- roads
- highway
- trails
- creeks
- water body
- railway

American Manganese Inc.

Figure 6-7

Rocher Deboule Property
D. Groot Logging 1981-83 Exploration

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: Oct 15, 2020

Approved by: Ron Parent, P. Geo.

6.3. Southern Gold Resources

Southern Gold Resources acquired interest in the property from W.B. Craig in an acquisition agreement dated February 5, 1987. They performed work on the property over 3 field seasons from 1987 through to 1989.

6.3.1. 1987 Program

In 1987 Southern Gold Resources performed surface and underground geological mapping and sampling on the No. 2, 3 and 4 Veins.

Surface sampling resulted in five surface chip samples assayed >0.1 oz/ton gold with copper values up to 3.96% and silver up to 2.213 oz/ton.

See **Figure 6-8** which shows the location of sampling relative to the No. 4 Vein at surface and the outcrops mapped that year, as well as the assay results in an inset table. Also shown is the contact between the Rocher Deboule stock and the sediments. Note the No. 4 Vein continues into the country rock (sediments). The roadways where the old mill was, and the location of the tram are also shown.

Quin (1987) on the surface sampling program:

"The #4 vein could be traced over 1300m… They indicate a locally significant precious metal content to the #4 vein."

All but one of the underground samples with >0.2 oz/ton gold came from the west end of the 1200 level from the No. 2 Vein. One sample assayed 3.83 oz/ton gold and 12.91% copper across 0.65 m. Additional assay highlights are shown on Figure 6-9.

Quin (1987) regarding the underground sampling:

"A very limited program of underground sampling and reconnaissance mapping was undertaken by the author and his assistants, principally on the #2 vein. This was partly due to the greater degree of access… and partly because old sample data indicated some significant precious metal potential in unmined sections of the 12 vein. All samples taken were chipped channel samples."

Samples of the No. 2 Vein were taken at the 1000 and 1200 level drifts of the underground workings. **Figure 6-9** shows a small concentration of high-grade samples at the east end of the 1000 level which assayed up to 2.70 oz/ton, and on the 1200 level at the opposite end of the mine at the west end of the 1200 level which assayed up to 3.8 oz/ton.

Additional surface exploration consisted of geochemical soil surveys and ground geophysics (magnetic and VLF electromagnetic) surveys and associated grid emplacement in addition to reconnaissance talus fines sampling on the eastern side of the property and off claims in the Armagosa Vein area. The location of the surface work program details is on **Figure 6-10.** This figure shows the locations of the grid and the samples. No information was compiled by this report's authors on the geochemical results of these survey.

Quin (1987) regarding the soil and fine talus sampling:

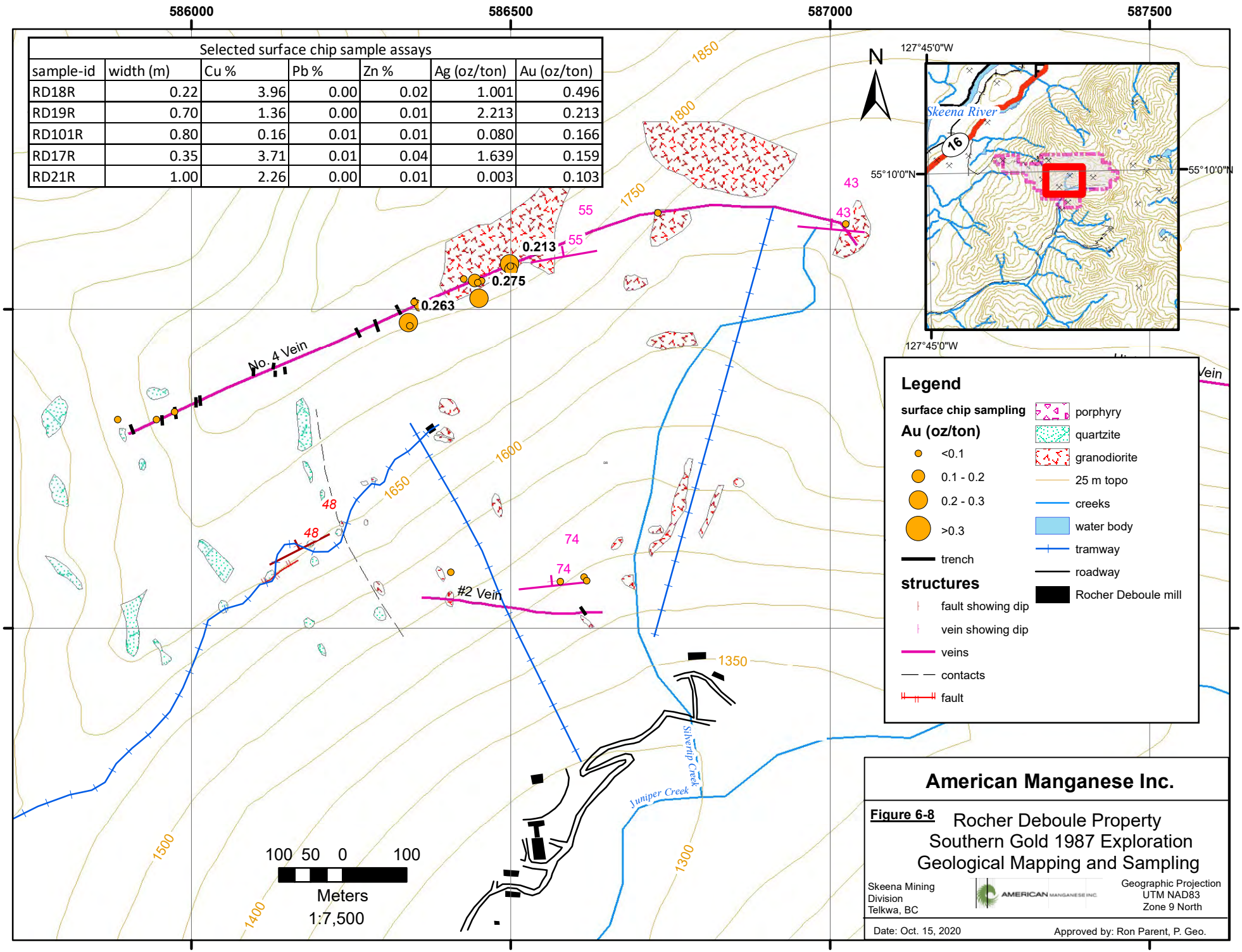
"The geochemical sampling was surprisingly effective at defining the known veins, suspected extension as well as outlining several new anomalies. Arsenic and gold proved to be the most effective elements for clearly defining vein structures, clearly outlining the #2 and #4 veins as well as indicating possible new veins."

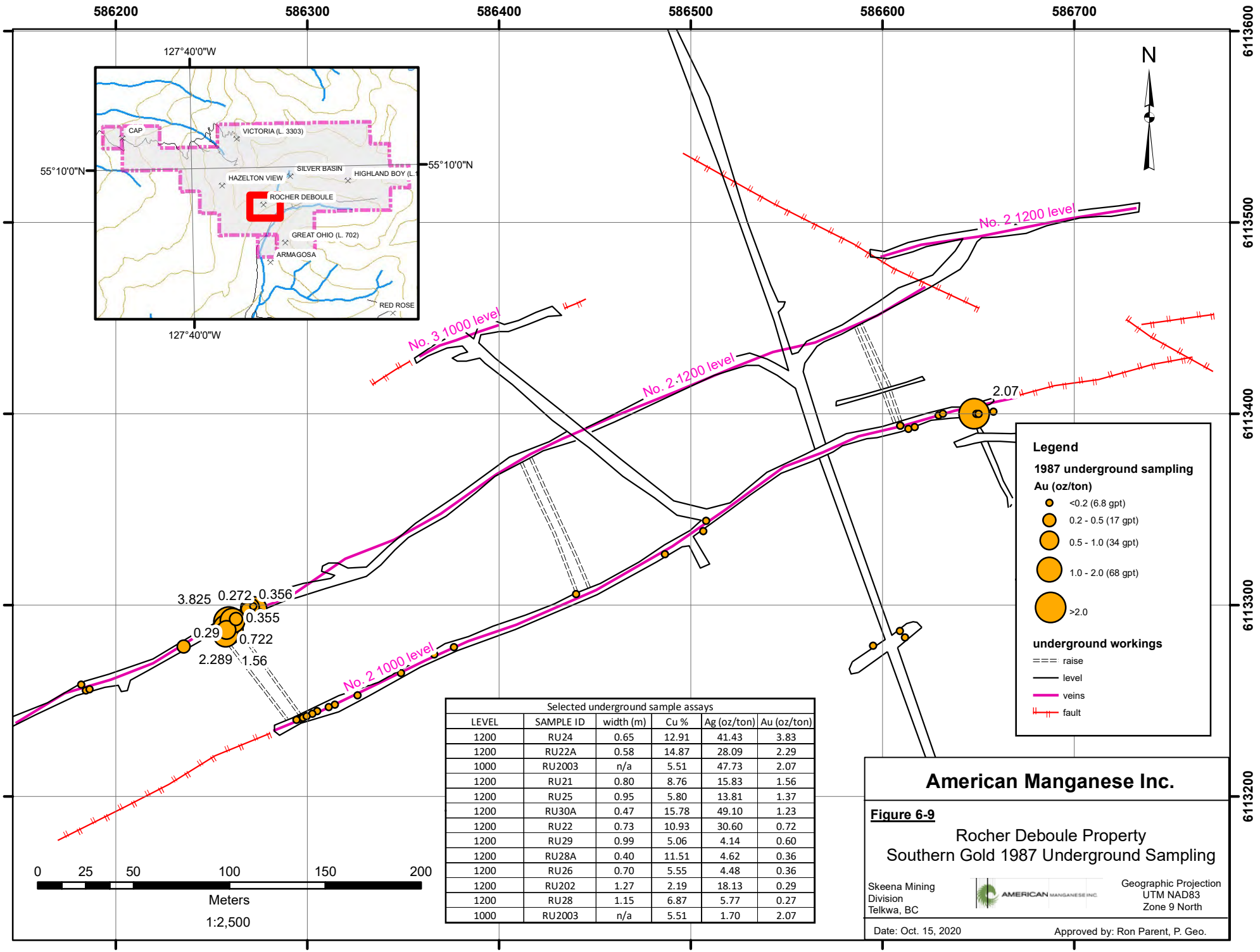
Regarding the 1987 Magnetic survey, Pezzot (1987) writes:

"In addition to the general geological structure, the magnetic data delineates a number of smaller and more interesting anomalous trends. These features are generated from surface or very near surface, narrow sources which generally strike east-west to 075^{o}. Both magnetic highs and magnetic lows are present respectively indicating the accumulation and absence of ferromagnetic materials (magnetite, pyrrhotite, ilmenite etc.). These anomalies are most prominent within and along the edge of the intrusive mass. Considering the geological environment, the most likely source of these features are the mineralized fracture sets observed at the contact between the stock and the country rock. The magnetic data suggests that these structures extend into the stock."

And of the VLF-EM survey Pezzot (1987) writes:

"an increase in the background surface conductivity across the sedimentary country rocks in the western portion of the survey grid can be observed. The outline of the intrusive stock is not as clearly delineated as in the magnetic data but is weakly evidenced. The most interesting feature observed is a 100 metre wide band of increased field strength measurements of the Seattle and Annapolis signals which correlate with the trend of magnetic lows described above. This response supports a fault or contact interpretation."


586000
586500
587000
587500
6114000
6113500
Selected surface chip sample assays
sample-id | width (m) | Cu % | Pb % | Zn % | Ag (oz/ton) | Au (oz/ton)
RD18R | 0.22 | 3.96 | 0.00 | 0.02 | 1.001 | 0.496
RD19R | 0.70 | 1.36 | 0.00 | 0.01 | 2.213 | 0.213
RD101R | 0.80 | 0.16 | 0.01 | 0.01 | 0.080 | 0.166
RD17R | 0.35 | 3.71 | 0.01 | 0.04 | 1.639 | 0.159
RD21R | 1.00 | 2.26 | 0.00 | 0.01 | 0.003 | 0.103
0.213
0.275
0.263
No. 4 Vein
#2 Vein
43
55
48
74
1850
1800
1750
1650
1600
1500
1400
1350
1300
Skeena River
Silvertip Creek
Juniper Creek
N
127°45'0"W
55°10'0"N
16
100 50 0 100
Meters
1:7,500
Legend
surface chip sampling
Au (oz/ton)
<0.1
0.1 - 0.2
0.2 - 0.3
>0.3
trench
structures
fault showing dip
vein showing dip
veins
contacts
fault
porphyry
quartzite
granodiorite
25 m topo
creeks
water body
tramway
roadway
Rocher Deboule mill
American Manganese Inc.
Figure 6-8
Rocher Deboule Property
Southern Gold 1987 Exploration
Geological Mapping and Sampling
Skeena Mining Division
Telkwa, BC
AMERICAN MANGANESE INC.
Geographic Projection
UTM NAD83
Zone 9 North
Date: Oct. 15, 2020
Approved by: Ron Parent, P. Geo.



Selected underground sample assays

LEVEL	SAMPLE ID	width (m)	Cu %	Ag (oz/ton)	Au (oz/ton)
1200	RU24	0.65	12.91	41.43	3.83
1200	RU22A	0.58	14.87	28.09	2.29
1000	RU2003	n/a	5.51	47.73	2.07
1200	RU21	0.80	8.76	15.83	1.56
1200	RU25	0.95	5.80	13.81	1.37
1200	RU30A	0.47	15.78	49.10	1.23
1200	RU22	0.73	10.93	30.60	0.72
1200	RU29	0.99	5.06	4.14	0.60
1200	RU28A	0.40	11.51	4.62	0.36
1200	RU26	0.70	5.55	4.48	0.36
1200	RU202	1.27	2.19	18.13	0.29
1200	RU28	1.15	6.87	5.77	0.27
1000	RU2003	n/a	5.51	1.70	2.07

American Manganese Inc.

Figure 6-9

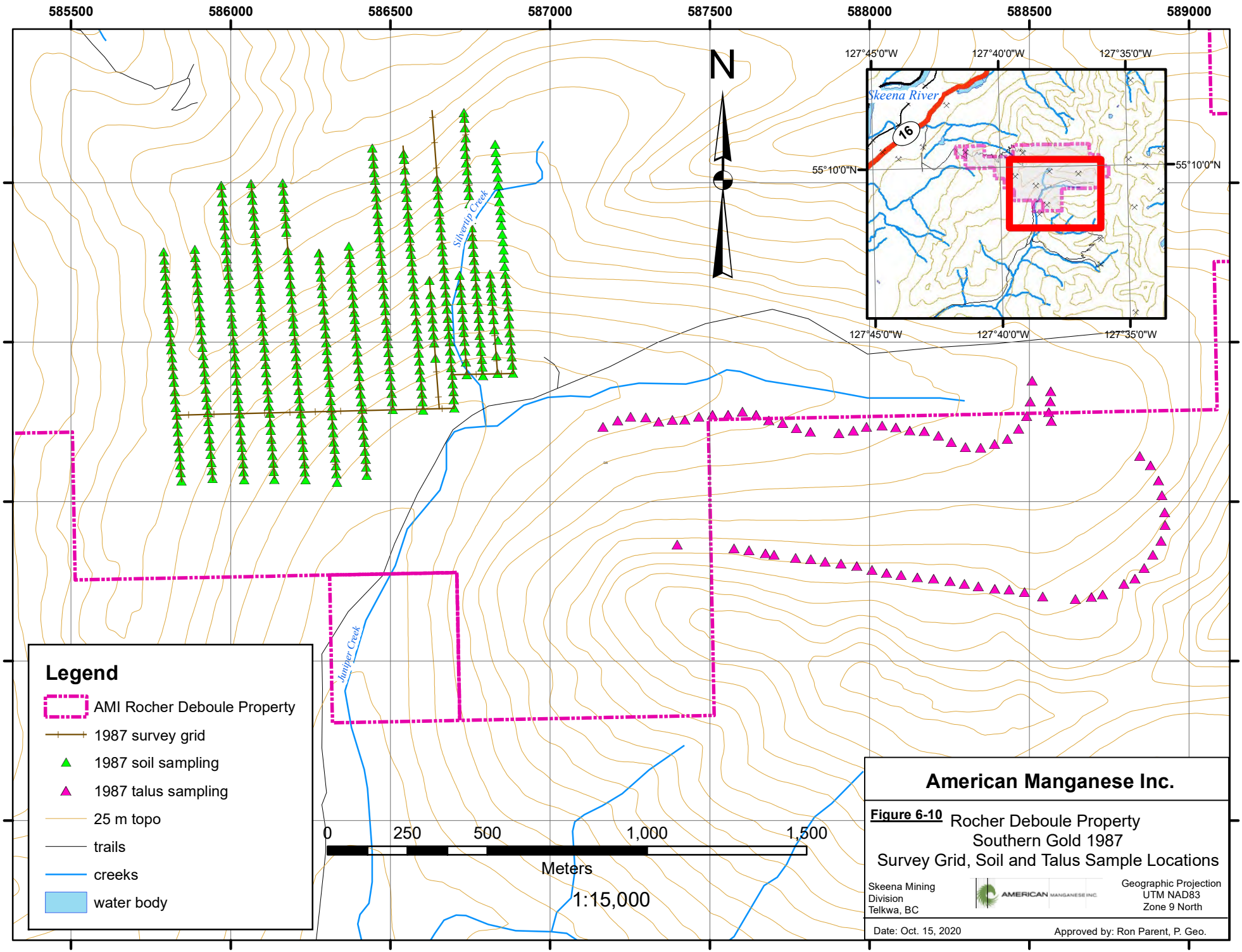
Rocher Deboule Property
Southern Gold 1987 Underground Sampling

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: Oct. 15, 2020

Approved by: Ron Parent, P. Geo.


585500
586000
586500
587000
587500
588000
588500
589000
6114000
6113500
6113000
6112500
6112000
N
127°45'0"W
127°40'0"W
127°35'0"W
55°10'0"N
Skeena River
16
Silvertip Creek
Juniper Creek
Legend
AMI Rocher Deboule Property
1987 survey grid
1987 soil sampling
1987 talus sampling
25 m topo
trails
creeks
water body
0
250
500
1,000
1,500
Meters
1:15,000
American Manganese Inc.
Figure 6-10
Rocher Deboule Property
Southern Gold 1987
Survey Grid, Soil and Talus Sample Locations
Skeena Mining Division
Telkwa, BC
AMERICAN MANGANESE INC.
Geographic Projection
UTM NAD83
Zone 9 North
Date: Oct. 15, 2020
Approved by: Ron Parent, P. Geo.

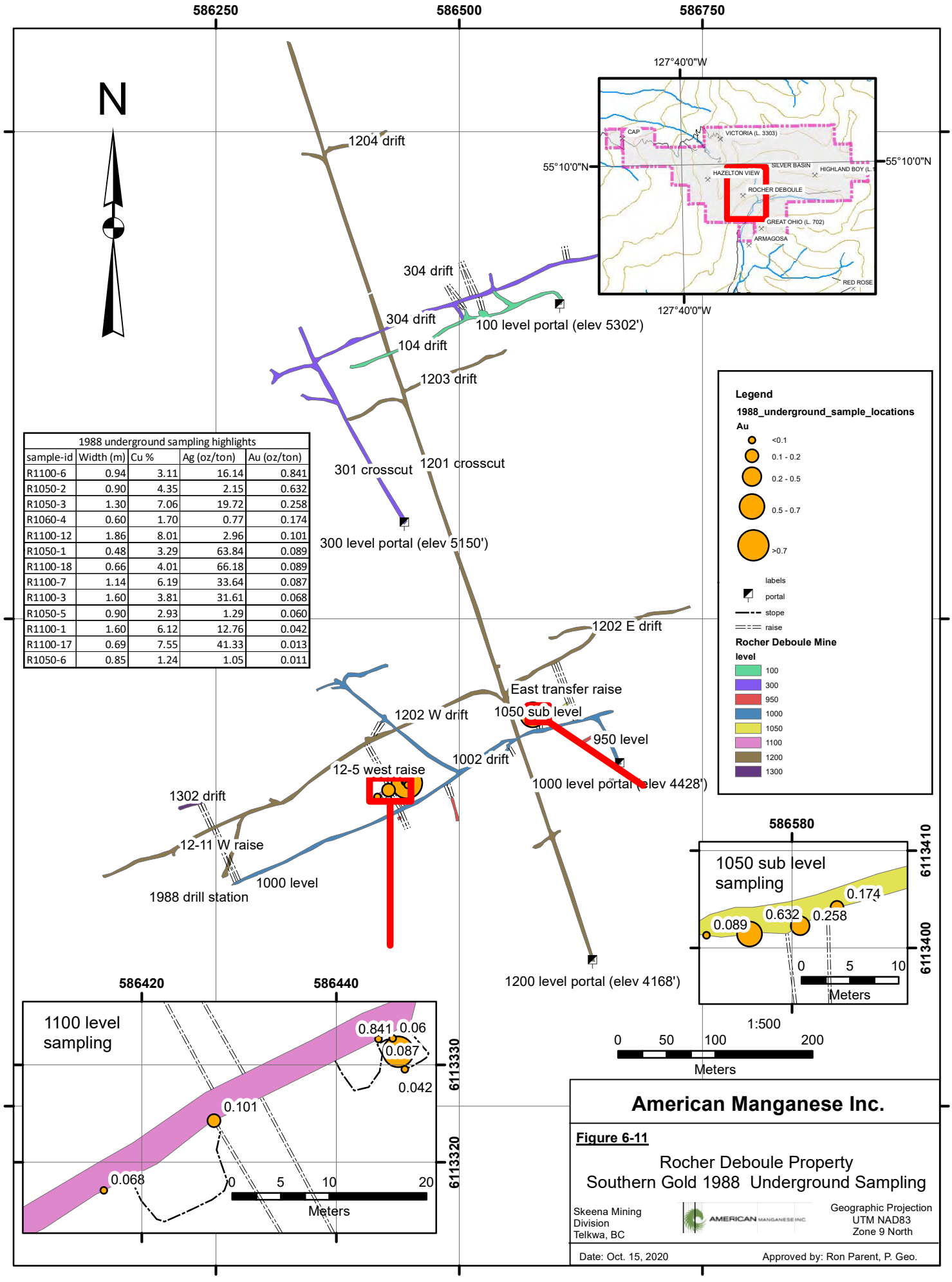
6.3.2. 1988 Program

A 1988 underground sampling program encountered vein widths of up to 1.86 m with several samples assaying > 0.1 oz/ton gold, up to 66.18 oz/ton silver and 8.01 % copper. See Figure 6-11 which shows undergrounds for the Rocher Deboule Mine, where sampling was carried out on the 1100 and 1050 sublevels. These samples assayed up to 0.84 oz/ton gold and 8.01% copper across widths of up to 1.86 m. See **Figure 6-11**.

Part of this program included the excavation of a 75 m long tunnel in the footwall of the No. 2 Vein on the 1200 level and the drilling of 14 holes from this location in addition to underground sampling on the No. 2 Vein on the 1100 level and 1050 sublevel. Samples from these locations assayed up to 0.381 oz/ton gold, and 6.66% copper across intersected widths of up to 0.55 m (true thickness is not known). While the appendices to the 1988 report are unavailable, the maps and assay highlights from the drilling and sampling serve to illustrate the impressive grade of portions of the No. 2 Vein.

See **Figure 6-12** which shows the plan projection of the drilling carried out in 1988 with assay highlights in an inset table.

Figure 6-13 shows a 3D rendering of the drillhole intercepts as they relate to the underground workings and the No. 2 Vein with oz/ton gold highlighted.



1988 underground sampling highlights				
sample-id	Width (m)	Cu %	Ag (oz/ton)	Au (oz/ton)
R1100-6	0.94	3.11	16.14	0.841
R1050-2	0.90	4.35	2.15	0.632
R1050-3	1.30	7.06	19.72	0.258
R1060-4	0.60	1.70	0.77	0.174
R1100-12	1.86	8.01	2.96	0.101
R1050-1	0.48	3.29	63.84	0.089
R1100-18	0.66	4.01	66.18	0.089
R1100-7	1.14	6.19	33.64	0.087
R1100-3	1.60	3.81	31.61	0.068
R1050-5	0.90	2.93	1.29	0.060
R1100-1	1.60	6.12	12.76	0.042
R1100-17	0.69	7.55	41.33	0.013
R1050-6	0.85	1.24	1.05	0.011

American Manganese Inc.

Figure 6-11

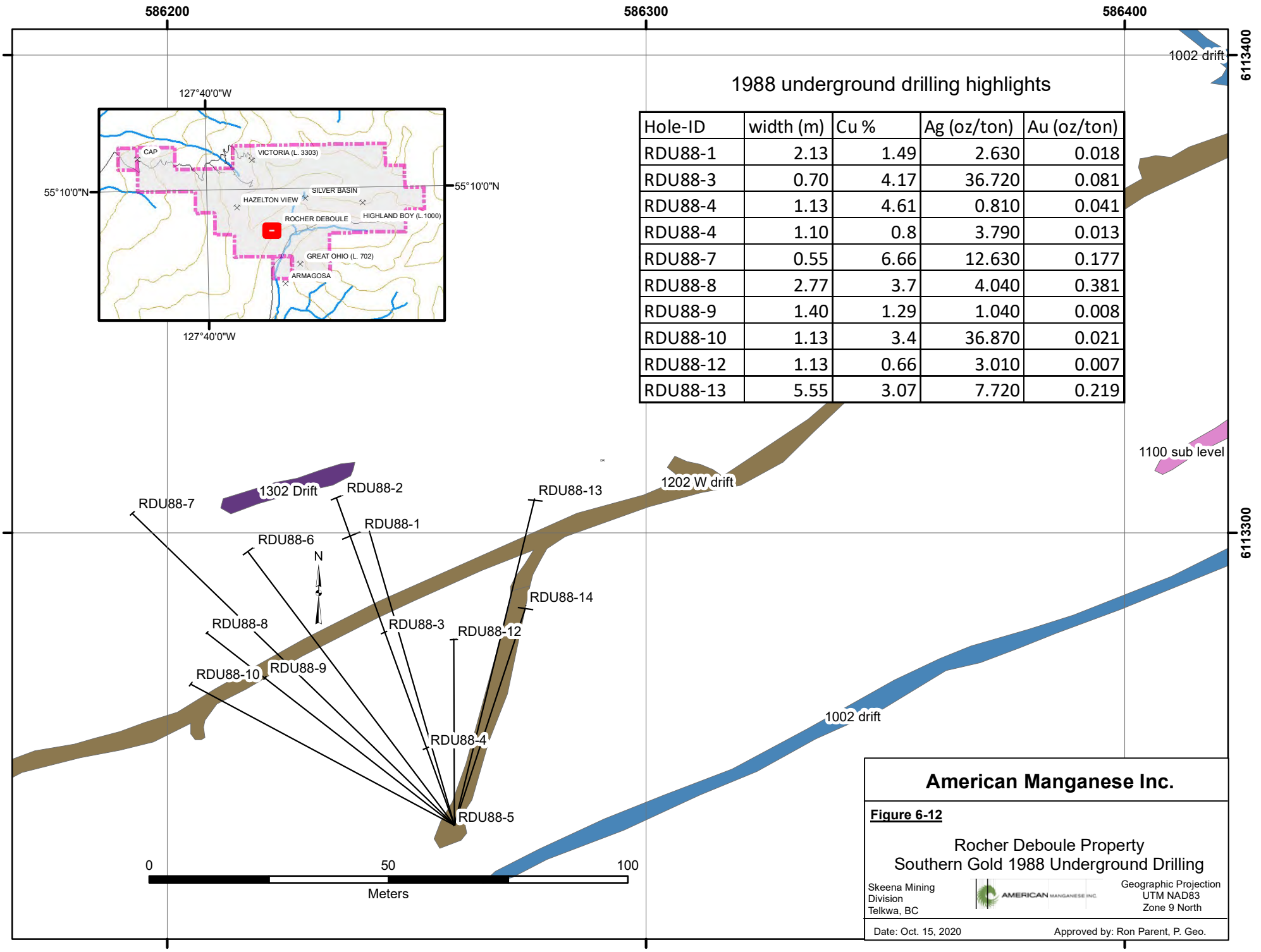
Rocher Deboule Property
Southern Gold 1988 Underground Sampling

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: Oct. 15, 2020

Approved by: Ron Parent, P. Geo.



1988 underground drilling highlights

Hole-ID	width (m)	Cu %	Ag (oz/ton)	Au (oz/ton)
RDU88-1	2.13	1.49	2.630	0.018
RDU88-3	0.70	4.17	36.720	0.081
RDU88-4	1.13	4.61	0.810	0.041
RDU88-4	1.10	0.8	3.790	0.013
RDU88-7	0.55	6.66	12.630	0.177
RDU88-8	2.77	3.7	4.040	0.381
RDU88-9	1.40	1.29	1.040	0.008
RDU88-10	1.13	3.4	36.870	0.021
RDU88-12	1.13	0.66	3.010	0.007
RDU88-13	5.55	3.07	7.720	0.219

American Manganese Inc.

Figure 6-12

Rocher Deboule Property
Southern Gold 1988 Underground Drilling

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: Oct. 15, 2020

Approved by: Ron Parent, P. Geo.

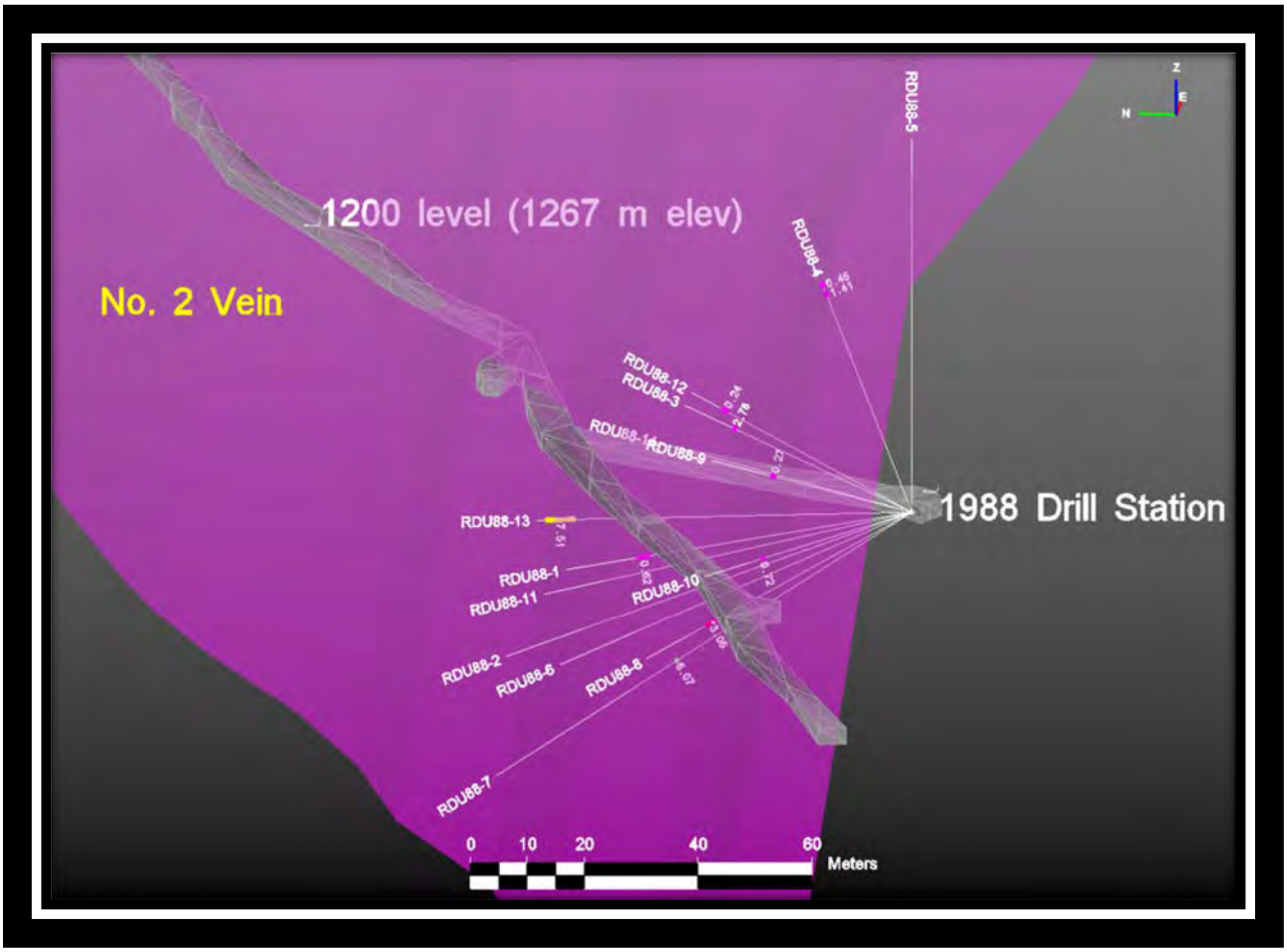


Figure 6-13: 3D Rendering of 1988 Drilling Results Assays in ppm Gold.

6.3.3. 1989 Program

A small program was conducted by Southern Gold in 1989. Quin (1989) writes:

"The 1989 exploration program comprised principally of rehabilitating the 300 level cross-cut. This work provided access to the #4 vein, which was the principal source of ore for the Rocher Deboule Mine during its operating period. It was hoped that examination of the vein would provide information on the size and nature of the #4 vein ore chutes and give some indication of the potential for additional reserves both along strike and down dip."

And:

"The average of all samples collected was 0.063 oz/ton Au, 2.56 oz/ton Ag and 4.12% Cu, over an average width of 78 cm."

6.3.4. Ancillary Activities Related to the Property Status from Late 1988 - 2001

A series of articles from the "*George Cross News*" from the fall of 1988 through the summer of 1991 indicates some attempted "wheeling and dealing" of the property, but, aside from the extraction of a 200 pound sample taken from the No. 2 Vein at Rocher Deboule, no other work or production transpired. Extracted quotes from the above-noted publication are presented below:

- September 1988: "Southern Gold has granted its affiliate CanaMin Resources Ltd. the right to earn a 50% interest in the property by spending $200,000, which has (already) been spent on rehabilitation of the 1200-foot mine level. Expenditures are now being shared 50-50 between CanaMin and Southern."
- November 1990: "International Kengate Ventures has signed an option to acquire 100% in the Rocher Deboule and Victoria mines…"
- April 1991: "International Kengate Ventures Inc. has taken a 200-pound sample from underground on the east portion of the No.2 vein of the Rocher de Boule mine."
- May 1991: "Dan Clark, president, reports International Kengate Ventures Inc. has received assays from a 200-pound sample taken…"
- July 1991: "International Kengate Ventures Inc. has agreed in principle for Equity Silver Mines Ltd. to buy the first 1,000 tons of ore from the company's Rocher de Boule mine… Mobilization of crews, equipment and one underground drill rig will start immediately"

No information is available to indicate that mining ever re-started.

It would appear that all of the claims were allowed to lapse in 1993. In 1998 a claim was staked which consisted of the Juniper Mineral claim owned by Lawrence Barry of the Hunter Exploration Group. Mr. Barry did some prospecting and took 4 samples in the summer of 1998. The Juniper Claim was allowed to lapse when it expired on July 14, 1999.

In May 2001, the Company (then Ameridex Minerals Corp.) reported it had acquired four (4) staked mineral claims consisting of 53 units (1,325 ha) centered around the main underground working at the headwaters of Juniper Creek, 9 km south of Hazelton, B.C. This transaction was completed for $3,500.

Since then, the property has remained with the company, although the tenure coverage has been modified due to the change in the claim staking system to an online format.

6.4. Historical Mineral Resources

None of the previous mineral resource estimates were prepared in accordance with NI 43-101, and as such, will not be reported on here in this report.

It is noted that none of the reported historical estimates contained more than about 50,000 tonnes of material, which is not considered an economic quantity of ore.

7. Geological Setting and Mineralization

7.1. Regional Geology

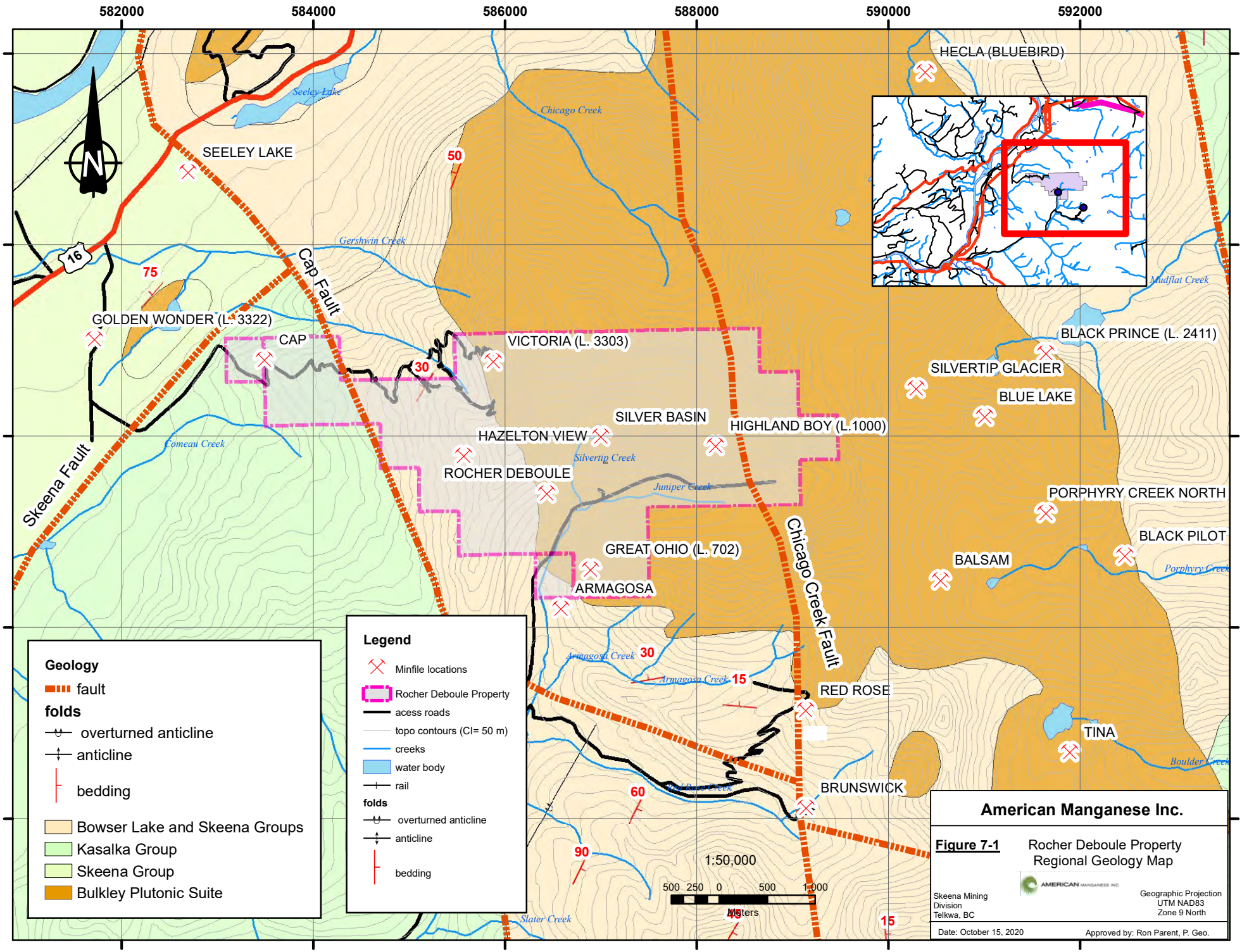
The Rocher Deboule Property forms part of the Rocher Deboule Range and is part of the Skeena Arch. The Rochester Deboule Range was originally mapped by Sutherland Brown (1960) in the late 1950's. This mapping was followed up by Richards (1978) in 1977 and 1978 at a scale of 1:250 000. The Skeena Arch is a northeast tending belt of uplifted Jurassic rocks that transects B.C. and separates the Bowser and the Nechako basins. The Skeena Arch is well mineralized and has been mapped in considerable detail. See **Figure 7-1**. The Skeena Arch straddles Skeena Terrane; which is a volcanic arc complex that formed off-shore and accreted to the west coast of North America in Middle Jurassic time. The terrane comprises two cycles of volcanic and related intrusions and overlying sedimentary rock (Kasalka Group and Hazelton Group) built on a pre-existing basement of metamorphosed volcanic rock and limestone (Asitka Group). Volcanism ceased shortly after the terrane docked and the arch developed as a topographic high that separated a large overlying sedimentary basin (Bowser Basin) in the northwest from a continental volcanic basin (Nechako Basin) in the southeast. The Rocher Deboule area is on the Bowser Basin side of the arch. Marine sediments gave way to non-marine (Skeena Group), in the early Cretaceous.

This was followed by a severe period of contraction with up to 44% of shortening along the basin. Folding and less pervasive faulting continued into the Tertiary but peaked in the Late Cretaceous, between 110 and 90 megaannum (Ma) (million years ago) .

Continental volcanism, accompanied by emplacement of small plutons in the thickened crust, started in the Skeena Arch and in the Nechako Basin shortly after peak deformation and continued intermittently through to the Tertiary. The main period occurred between approximately 88 Ma and 74 Ma, when the Bulkley intrusions were emplaced and the Kasalka volcanic rocks were extruded. The Rocher Deboule intrusion and the surrounding volcanic rocks are from one of these volcanic complexes. There was a similar, later episode of volcanism - the Babine intrusion in the Early Tertiary, between 54 Ma and 51.5 Ma.

According to MacIntyre and Diakow (1998) the two magmatic events occurred during periods of extension which lead to local horst (uplift) and graben (collapse) development between parallel north-south oriented faults, and also deposition of substantial thicknesses of lava within caldera basins and on their flanks. They also note that there is commonly a close association between the volcanic rocks and their associated intrusions.

MacIntyre and Diakow (1998) indicate there are three stages in the development of the Central Skeena Terrane which is best developed at Rocher Deboule. At Rocher Deboule, the Hazelton Group volcanic rocks are overlain by Bowser Lake Group sediments and Skeena Group sediments. The rocks are deformed, eroded and faulted by a cauldron subsidence complex. Kasalka Group volcanic rocks are shown surrounding the down-drop basin and the underlying Bulkley Intrusions are shown to have off-shoots that (potentially at least) are associated with porphyry style copper mineralization. At Rocher Deboule, there are 16 MINFILE occurrences clearly associated with the main body of the stock. Most, including the Rocher Deboule and Victoria are found around the outer rim.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HECLA (BLUEBIRD)
SEELEY LAKE
Seeley Lake
Chicago Creek
Gershwin Creek
Cap Fault
Skeena Fault
Comeau Creek
Mudflat Creek
GOLDEN WONDER (L. 3322)
CAP
VICTORIA (L. 3303)
BLACK PRINCE (L. 2411)
SILVERTIP GLACIER
BLUE LAKE
SILVER BASIN
HIGHLAND BOY (L.1000)
HAZELTON VIEW
ROCHER DEBOULE
Silvertip Creek
Juniper Creek
PORPHYRY CREEK NORTH
BLACK PILOT
Porphyry Creek
BALSAM
GREAT OHIO (L. 702)
ARMAGOSA
Armagosa Creek
Chicago Creek Fault
RED ROSE
TINA
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BRUNSWICK
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Geology
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Bowser Lake and Skeena Groups
Kasalka Group
Skeena Group
Bulkley Plutonic Suite
Legend
Minfile locations
Rocher Deboule Property
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topo contours (CI= 50 m)
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overturned anticline
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Meters
American Manganese Inc.
Figure 7-1
Rocher Deboule Property
Regional Geology Map
Skeena Mining Division
Telkwa, BC
Geographic Projection
UTM NAD83
Zone 9 North
Date: October 15, 2020
Approved by: Ron Parent, P. Geo.

7.2. Property Geology

7.2.1. Stratigraphy

The Rocher Deboule Range is underlain by late Jurassic to early Tertiary successor basin assemblages of the Bowser Lake, Skeena, and Kasalka Groups, containing locally significant thickness of volcanic rocks. Granodiorite intrusions, from large stocks to abundant dykes, are assigned to the late Cretaceous Bulkley Intrusions. These intrusions are closely related to most of the mineral occurrences in the area. See ***Figure 7-2*** for a table of formations.

Group	Formation	Period	Age	Description
Bulkely Intrusion		Upper Cretaceous	70 Ma	Early Granodiorite and felpar porphyry; Late Quartz Monzonite Intrusion; Dioritic Dykes
Intrusives, Cut into Red Rose formation and Kasalka in the south.				
Unconformity				
Kasalka Group	Brian Boru Formation	Upper Cretaceous	88 Ma	Varicoloured porphyritic andesitic flows and breccias, tuffs, minor volcanic sandstone and conglomerate
Unconformity				
Skeena Group	Red Rose Formation	Upper Cretaceous	100 Ma	Hornfels folded fine-grained clastic sediments
Lower Bowser Lake Group		Upper Jurassic-Lower Cretaceous	145 Ma	Sandstones and Siltstones
Hazelton Group		Middle Jurassic	160 Ma	Volcanic
Asitka Group		Triassic and older	>200 Ma	Metamorphosed volcanic rock and limestone

Figure 7-2: Table of Formations for the Rocher Deboule Property.

7.2.1.1. Kasalka Group

The Kasalka Group of volcanics are exposed at the Cap. The Kasalka Group consists of volcanic breccia exposed at 670 m elevation on the lower slope of the Rocher Deboule Range, west of the stock contact. The main zone is reported to consists of east-west fractured andesite flow and breccia cut by numerous veins containing quartz, carbonate, pyrite, chalcopyrite, arsenopyrite and, locally at least, sphalerite. The rocks of the Kasalka Group are in faulted contact with rocks from the Skeena group. The eastern extent of the Kasalka Group is terminated against the lower Basin and Skeena Groups by the Cap Fault.

7.2.1.2. Bowser Lake and Skeena Groups

The Upper Jurassic-Lower Cretaceous Bowser and Skeena Lake Groups outcrop between the Kasalka Group and the Buckley Plutonic Suite and underly the Buckley Plutonic Suite. The zone is roughly

700 m wide and strikes north-northeast and is parallel to the fault controlling the emplacement of the Kasalka Group. To the south of the Property the contact between the Buckley Pluton and the Bowser Lake Skeena Groups trends east-west.

Lower Bowser Lake Group consists of sandstones and siltstones representing a northerly prograding deltaic assemblage, the debris comprising principally of volcanic clasts. Much of the sediments have undergone thermal metamorphism forming a biotite hornfels rim to the Rocher Deboule stock. Deformation of the Bowser sediments is related to major block faulting and intrusion of the pluton. Block faulting is thought to have uplifted the Rocher Deboule Range, exposing the pluton to erosion, while preserving sediments in the valleys to the north and west. As a result of the intrusion of the Rocher Deboule stock, the sediments consistently dip to the west.

7.2.1.3. Bulkley Plutonic Suite

The rocks of the Bulkley Plutonic Suite are best described as a stock and they comprise the eastern half of the Property. The Property is located on the western side of the stock. The following description is taken from Quin (1987). The Rocher Deboule stock underlies about 70 square kilometers (km^2) of the northern part of the Rocher Deboule Range. The stock is an elongate pluton oriented north 25° west. It is a composite of two domes with a connecting saddle. The details of the walls of this stock are readily apparent in the vertical exposures that the rugged relief offers, and the roof is exposed along parts of the central spine of peaks. The stock is asymmetrical; the eastern side has a gentler slope than the western side.

The main part of the stock is composed of porphyritic granodiorite; a light grey mottled rock in which tabular phenocrysts of plagioclase and dark hornblende and biotite are set in a faintly pink matrix that is fairly homogeneous but contains some inclusions. Inclusions in the porphyritic granodiorite are omnipresent with 1% in the main rock mass and between 2-4% near the roof. Inclusions are up to 12 inches in length.

The northern part of the stock consists of a fine-grained, buff colored, biotite quartz.

7.2.1.4. Younger Dykes

Several types of dykes, younger than the plutonic intrusions are found on the Property. From youngest to oldest these include:

- Aplites and pegmatites;
- Granitoid dykes of a quartz monzonite composition, including the Rocher Dyke in the Rocher Deboule Mine, which is up to 30 m wide;
- Porphyritic andesite dykes;
- Felsite dykes of aphanitic texture; and
- Late fine-grained dark, often aphanitic biotite-lamprophyres and basalts.

7.2.2. Structure

On a Property scale, the area is dominated by two north-south extensional faults (**Figure 7-1**). The Cap Fault forms the eastern contact of the Kasalka Group and to the west of this the rocks of the Bowen and Skeena Groups were uplifted to expose the stock.

A second north-south striking fault; Chicago Creek Fault, cuts through the center of the Property. This structure displaces the mineralized vein at Highland Boy and mineralized veins do not continue east of the structure.

The granodiorite cuts clearly across the folded Bowser Lake Groups with no deformation of these rocks. The granodiorite is massive with no foliation or lineation.

Jointing throughout the granodiorite is pronounced, regular and contact controlled. Three sets of joints are present:

1. The first set of joints are parallel to the contact and is contact controlled.
2. The second set of cross joints are perpendicular to the contact. This joint set makes horizontal traces on the contact.
3. The third set of radial joints are less prevalent, normal to the other two and dips vertically.

Sutherland Brown suggests that the lack of foliation, the lack of evidence of intense forceful intrusion, and the fit of the pattern to the shape of the stock, indicate that cooling contraction caused the joints. The stock is dated at 72 Ma.

Mineralization is associated with a series of shear structures. The majority of the structures trend between 70- 85° and dip between 70- 85° north. At Great Ohio, the structure trends 55° and dips 60° to the north.

The structures are accompanied by porphyritic dykes and veins, with shear cross cutting the dykes and veins. At Rocher Deboule, the mineralization is described as brecciated. The shears are controlling structures, for both vein type mineralization and intrusive dykes.

Where mineralization is present, especially in underground workings, the structures have been described in detail, but in the absence of good structural mapping between the different mineral showings, the relationship between the shear structures that are not on strike with each other is not fully understood, and the relationship between barren dykes and shear structures is also unknown.

7.3. Mineralization

The description of the mineralization for the different areas is highly varied but has been summarized in ***Table 7-1***. The mineralization for the different areas is highly variable, and proper descriptions of it is lacking in some areas. The majority of the mineralization is vein-style shear-hosted mineralization such as for Rocher Deboule, Victoria, Great Ohio and Cap. Mineralization is found in cross veins at Victoria. Fissure veins are found at Great Ohio.

Table 7-1: Summary of Mineralization in the Different Areas at the Rocher Deboule Property.

No	Area	Host Lithology	Association	Mineralisation	Alteration
1	Rocher Deboule	Hazelton Rocher Deboule porphyritic granodiorite Hornfels siltstones	Shear related	Chalcopyrite Arsenopyrite Pyrite Malachite	Deuteric Alteration
2	Victoria	Rocher Deboule Diorite lamprophyre dykes Rocher Deboule Felspar porphyritic dyke	Shear Veins Cross veins Fault	Pyrite Chalcopyrite Arsenopyrite Safflorite Lollingite	Quartz veins Carbonate alteration Limonite staining
3	Highland Boy	Buckley intrusive	Sulphide fissures	Chalcopyrite Pyrite Magnetite	Quartz Carbonate Magnetite
4	Greater Ohio	Buckley Intrusive	Quartz fissure veins, Shear hosted	Chalcopyrite Pyrite Galena-Sphalerite	
5	Cap Zone	Kasalka andesitic flows/tufts	Shear zone vein hosted	Pyrite Tetrahedrite Chalcopyrite Arsenopyrite	Quartz Carbonate Phyllic

The Rocher Deboule shows a large diversity in styles of mineralization and mineralogy for the various areas and geochemical zonation of the area. Two main types of mineralization are present:

1. "Porphyry-type" stock works carrying one or more occurrences of Cu, Mo, Au, Ag, W and Sn;
2. Polymetallic veins carrying:
   - Cu, Au and Ag in the centre of the stock (Highland Boy);
   - Co, Ni, As, Au and Ag in the northwest part (Victoria); and
   - Cu, Pb, Zn, Au and Ag on the western margin (Cap).

The oldest and most widespread, a pegmatitic phase, formed veins composed principally of dark massive hornblende and glossy quartz with minor feldspar, apatite, magnetite, scheelite, tourmaline, ferberite, and molybdenite. This style of mineralization predominates on the Highland Boy and Great Ohio and is locally well developed in the No. 2 Vein and No. 4 Veins of the old Rocher Deboule Mine.

The second stage forms the main phase of sulphide mineralization including principally chalcopyrite (old Rocher Deboule Mine No. 4 Vein) and pyrrhotite (Great Ohio), but also locally significant amounts of arsenopyrite and cobalt-nickel sulpharsenides (Victoria Vein) and pyrite. It appears that these minerals replace the hornblende and possibly the quartz and cavities. The sulphide content is variable, averaging 5-10% and ranging up to 89-90% over 0.5 to 1.0 m. Quin (1987) suggests there may be some evidence for regional zoning of the sulphides from the interior of the pluton where pyrrhotite chalcopyrite predominate (Great Ohio, Highland Boy) to chalcopyrite and pyrite at the pluton margins (old Rocher

Deboule Mine No. 4 Vein) to sulpharsenides in the sediments outside the pluton (Victoria Vein). Precious metals are associated with the sulphides of this phase and are considered the main target of economic mineralization.

The third stage of mineralization crosscuts the earlier stages. Mineralization consists of milky quartz with main sulphides of tetrahedrite, galena, and pyrite and possibly chalcocite. Gangue mineral fillings consist of combs of quartz containing siderite and calcite. The eastern end of the No. 2. Vein, at the old Rocher Deboule Mine is the best example of this phase. This phase has limited tonnage but is important and a secondary target of economic mineralization. All three phases can overlap, especially at the western and eastern ends of No. 2 Vein at the old Rocher Deboule Mine on the 1,200 and 950 levels, respectively. The precious metals appear to be distributed among several minerals, but principally the iron-cobalt sulpharsenides and arsenides, tetrahedrite and chalcopyrite. Phases 2 and 3 are the main precious metal carriers with the phase three minerals carrying most of the silver.

The three phases of mineralization reflect three pulses of mineralization along deep, reactivated structures. The degree and extent of overlap presumably reflects the extent to which various shear-hosted veins were reopened and their proximity to the source of later, incoming fluids. The composition of the fluid will be governed by its source, subsequent reaction with country-rock and temperature gradient.

The known veins on the Rocher Deboule Property are widely distributed throughout the northern part of the Rocher Deboule stock. For the most part they are oriented with a easterly strike and a moderate north dip, parallel to one of four prominent joint sets. The mineralization for individual areas will be discussed by area in the following sections.

7.3.1. Victoria

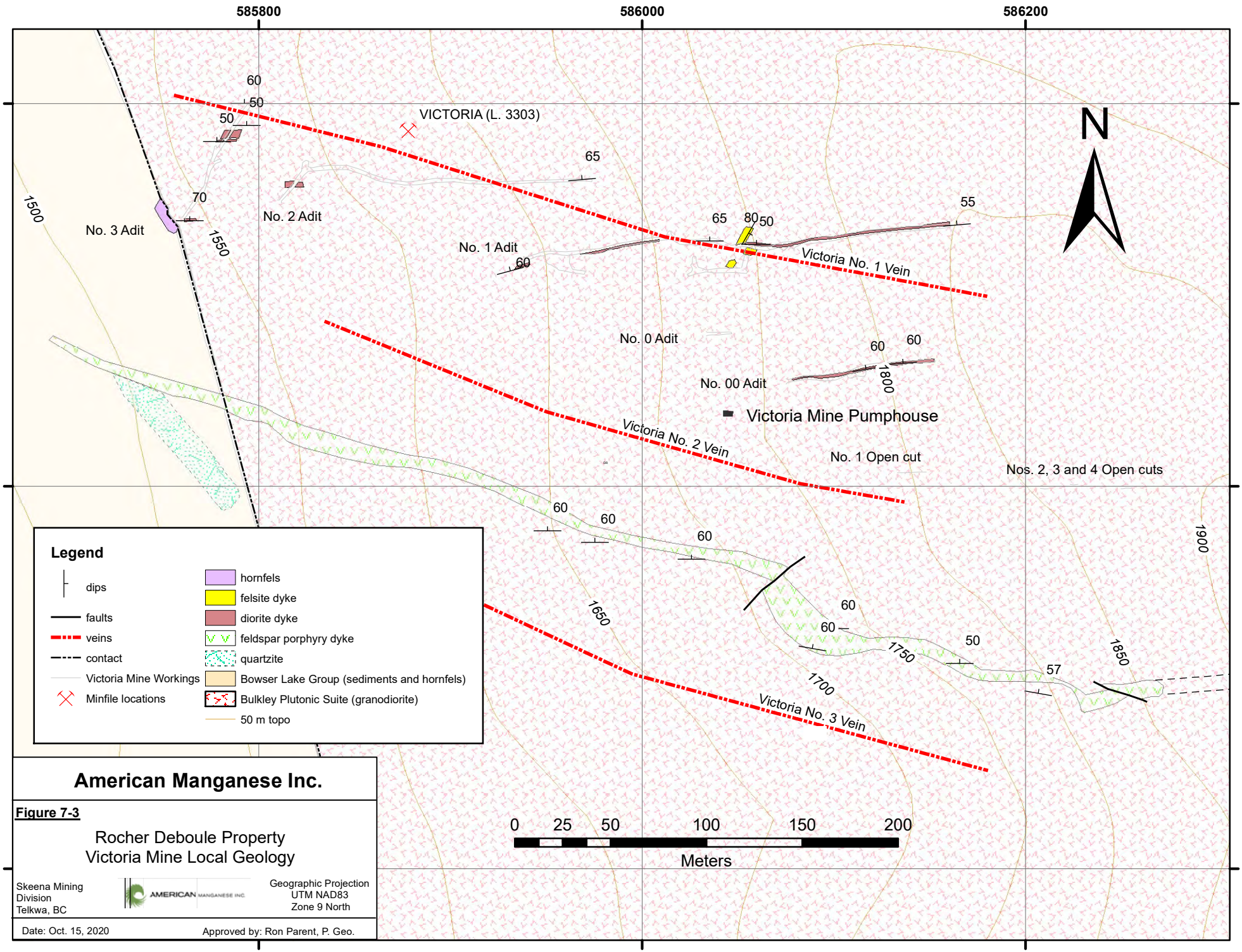
The Victoria Mine is found in close proximity to the western contact of the northern dome of the Buckley stock (***Figure 7-3***). Mineralization occurs in a series of roughly east-west trending veins that is strongly associated with shears developed in this direction and a series of porphyritic dykes following the general shear direction. The mineralization occurs in a series of mostly east-west veins that is developed within the rocks of the Buckley Intrusion to the west of the contact with the sedimentary rocks of the east-west. The relative distribution of the Victoria Veins shown in the significant mineralization in the Victoria Mine area is restricted to the granodiorites though the structures continue into the hornfels siltstones of the Bowser Lake Group.

Several shear sets are developed, along which younger dykes have intruded and veins had developed. The dykes are not well developed at surface, but underground workings showed the prominence of the dykes to the shear structures. Veins are also developed along the shears and follow the shears.

The main vein shears strike about north 85° east, and dip about 60° north. The No. 1 Vein is well exposed. The No. 2 Vein is about 300 m south of No.1 Vein and is intermittently exposed. No. 3 Vein is about 200 m south of No. 2 Vein and 300 m north of the No. 4 Vein of the old Rocher Deboule Mine. The veins are developed over distances ranging between 300 and 400 m.

Several different sets of dykes had intruded in the hanging wall parallel to the shear structures, or in the shears themselves. These are:

- A fine-grained diorite dyke accompanying the No. 1 Vein. The dyke is roughly between 0.6 to 0.9 m thick but is up to 9 m wide in some of the underground workings.
- An aphanitic, light grey felsite dyke in the hanging wall of, and parallel to the No. 1 Vein. The thickness of the dyke ranges between 3.7-4 m.
- A feldspar porphyry dyke along the shear at the No. 3 Vein. The dyke is 9 m wide and dips at 60°.



American Manganese Inc.

Figure 7-3

Rocher Deboule Property
Victoria Mine Local Geology

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: Oct. 15, 2020

Approved by: Ron Parent, P. Geo.

7.3.2. Vent Zone

A geochemically identified zone of mineralization that is not associated with structure was also identified at the Victoria Mine and is known as the Vent Zone. The Vent Zone is located approximately 1 km south-west of the Victoria Mine No. 1 Vein.

The Vent Zone is characterized by disseminated, widespread mineralization and alteration hosted in andesitic flows/tuffs (porphyritic) of Upper Cretaceous Kasalka Group (Brian Boru Formation) mixed with Lower Cretaceous Red Rose Formation coarse clastic sediments, and although it has not yet been mapped, it is considered prospective in nature.

7.3.3. Rocher Deboule

The old Rocher Deboule Mine is 400 m south of the Victoria Mine and is also in the western periphery of the Rocher Deboule stock. The contact between the Bulkley Intrusion and the upper Bowser Lake Group dips approximately 65° southeast in the area. The local geology is shown on ***Figure 7-4*** and is described below.

The host rock is unaltered granodiorite of the Rochester Deboule stock with local deuteric alteration along joint sets. Mineralization in the Rocher Deboule is associated with veins that are in proximity of shear zones and dykes that are roughly parallel to subparallel to that of the Victoria Mine veins. Here, however veins have been observed to extend into the hornfels siltstones and quartzites of the upper Jurassic Bowser Lake Group.

There are four types of dykes in the immediate area, as indicated by surface and underground mapping.

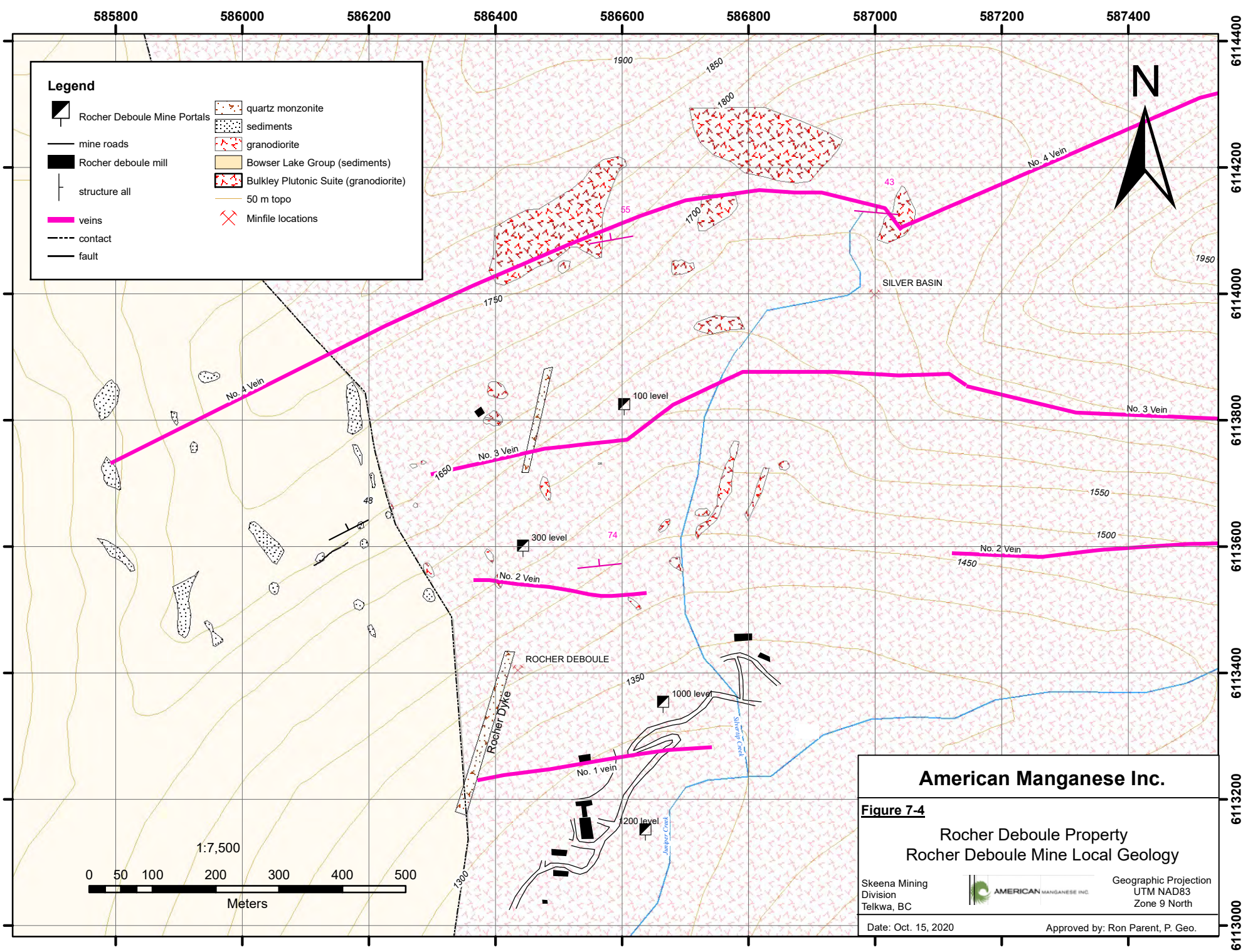
1. The Rocher Dyke is:
   - A fine-grained quartz monzonite dyke, 12 to 24 m wide, that strikes 10° and dips 52° west but can dip between 47-60°.
   - Chilled margins and the petrology is similar to that of the quartz-monzonite phase of the Rocher Deboule stock.
   - Offset by the veins in the 1002 level west and 1204 level east drifts 1.2-2.4 m, but on 1202 west drift the dyke is apparently offset by dilation No. 4 Vein and fracture.
2. On the 1200 level a small diorite dyke is parallel to the Juniper Fault and about 120 m south of the 1203 drift a similar 4.5-m-wide dyke strikes north 30° east and dips 70° north-west.
3. A porphyritic andesite dyke 3.7 m wide occurs in the hanging wall of No. 3 Vein shear on the 1200 level. The rock resembles dykes related to the Brian Boru Formation, although it is younger.
4. The last type of dyke consists of two occurrences of narrow, 0.6-m-wide, pale greenish-grey aphanitic dikes found on the 1200 level.

Four sets of joints have been mapped and they are presented in ***Table 7.2***.

Table 7-2: Joint orientation at Rocher Deboule

Joint Set	Strike	Dip
A	55°	55° south
B	345°	65° west
C	85°	5° north
D	60°	65° north

The last three joint sets conform closely with the normal orthogonal joint system of the stock. The last set contains much of the deuteric alteration and quartz-hornblende pegmatite veinlets. Both alteration and pegmatite veinlets are particularly prominent on the footwall sides of the major veins.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Rocher Deboule Mine Portals
mine roads
Rocher deboule mill
structure all
veins
contact
fault
quartz monzonite
sediments
granodiorite
Bowser Lake Group (sediments)
Bulkley Plutonic Suite (granodiorite)
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Minfile locations
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1450
1350
1300
1950
No. 4 Vein
No. 3 Vein
No. 2 Vein
No. 1 vein
SILVER BASIN
ROCHER DEBOULE
100 level
300 level
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200 level
Rocher Dyke
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55
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0 50 100 200 300 400 500
Meters
American Manganese Inc.
Figure 7-4
Rocher Deboule Property
Rocher Deboule Mine Local Geology
Skeena Mining Division
Telkwa, BC
AMERICAN MANGANESE INC.
Geographic Projection
UTM NAD83
Zone 9 North
Date: Oct. 15, 2020
Approved by: Ron Parent, P. Geo.

Mineralization is hosted in veins that occupy shears. The shears are described as largely uniform in the area and follow similar directions of the dykes.

There are four main veins developed in the old Rocher Deboule Mine. ***Figure 7-5*** shows an isometric view of underground workings and veins and faults and the veins are described below.

1. The No.1 Vein is exposed on the 1200 level and is exposed in the rockslide on the surface. On the 1200 level it is a 0.6-m-wide breccia zone cemented by calcite with traces of chalcopyrite. On surface it is better mineralized with chalcopyrite in hornblende and quartz.
2. The No. 2 Vein is found on several working levels but is mainly present on the 1200 and 1000 levels, and on the 1200 level east of the Juniper Fault. West of the fault to about 45 m beyond the Rocher Deboule Dyke the shear is tight and contains some lenses 0.3-0.9 m wide, but normally not more than 0.3 m of vein material consisting of third stage mineralization. The No. 2a Vein is exposed only on the 1000 level.
3. The No. 3 Vein is exposed on the 1200 level. The vein is developed on a fault plane, with a 3.7-m-wide porphyritic andesite dyke on the hanging wall. It contains minor amounts of quartz and calcite minerals.
4. The No. 4 Vein is developed by the 100, 300, 500, and 1200 levels. On the 1200 level the vein consists either of barren shear or pegmatite hornblende-quartz-feldspar with almost no metallic minerals. There are four distinct ore shoots, which contained large quantities of chalcopyrite in hornblende, but the shoots terminated abruptly with little disseminated mineralization between them.

The mine workings are transected by a younger fault; the Juniper Fault. This fault displaces the ore. The vein consists of lenses of crushed rock about 0.6-m-wide, cemented with quartz and with some arsenopyrite, pyrite, chalcopyrite, and malachite). It strikes 33° and dips 70° south. The Juniper Fault is the only significant fault at the old Rocher Deboule Mine and is younger than the veins. A small young granitic dyke follows it on 1200 level. It offsets No. 2 Vein 30 m to the left, although drag indicates a right-hand movement.

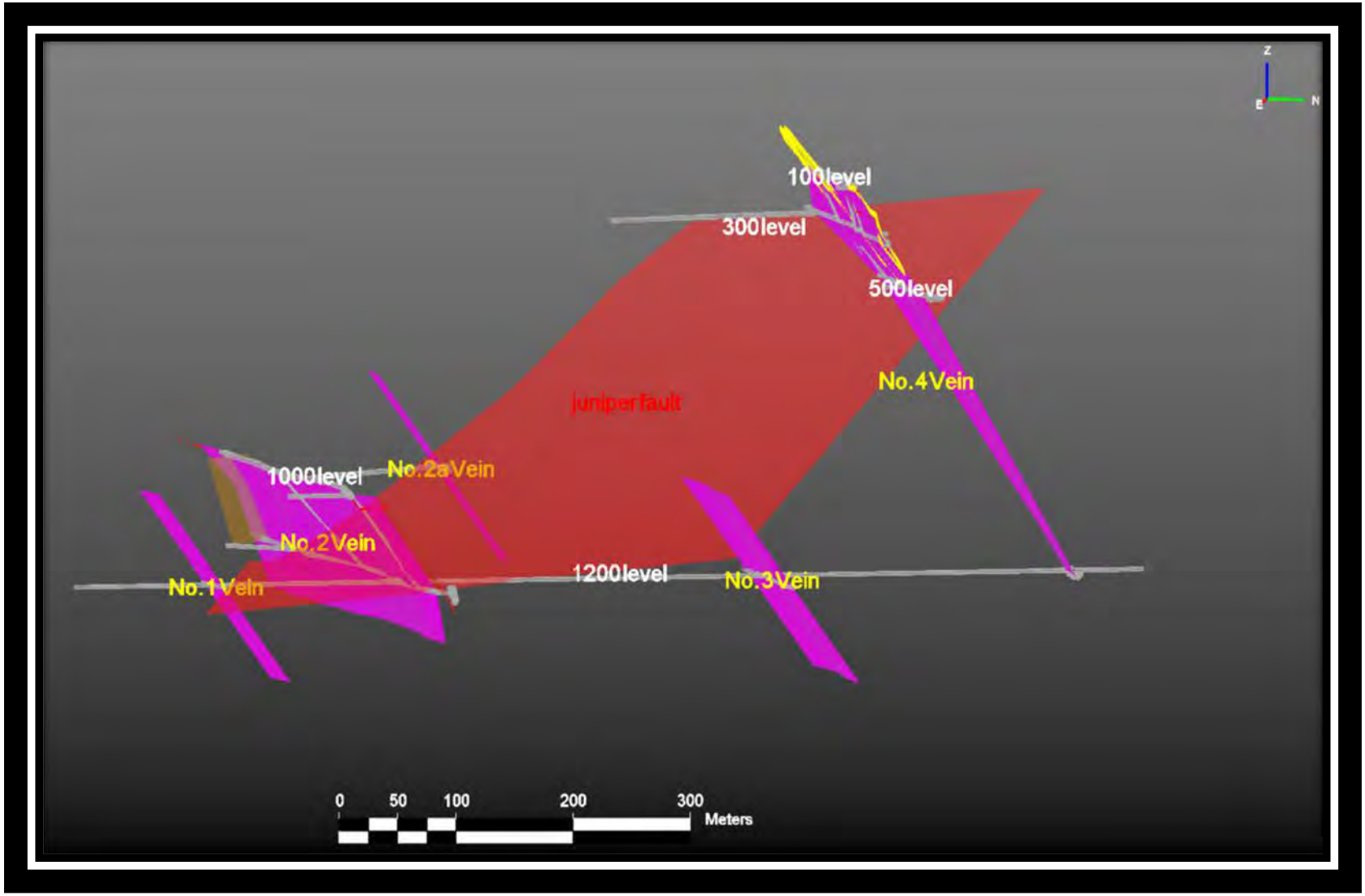


Figure 7-5: Isometric view of underground workings and veins.
Veins – magenta, faults-red, yellow are stopes in the No. 4 Vein and grey are mine workings.

7.3.4. Highland Boy

Highland Boy is located at the center of the stock, 2 km east of the Rocher Deboule Mine. (**Figure 7-6**). Mineralization is developed in the form of two fissure veins with the southern-most developed in a shear zone that is along the strike of the Rocher Deboule No. 4 Vein.

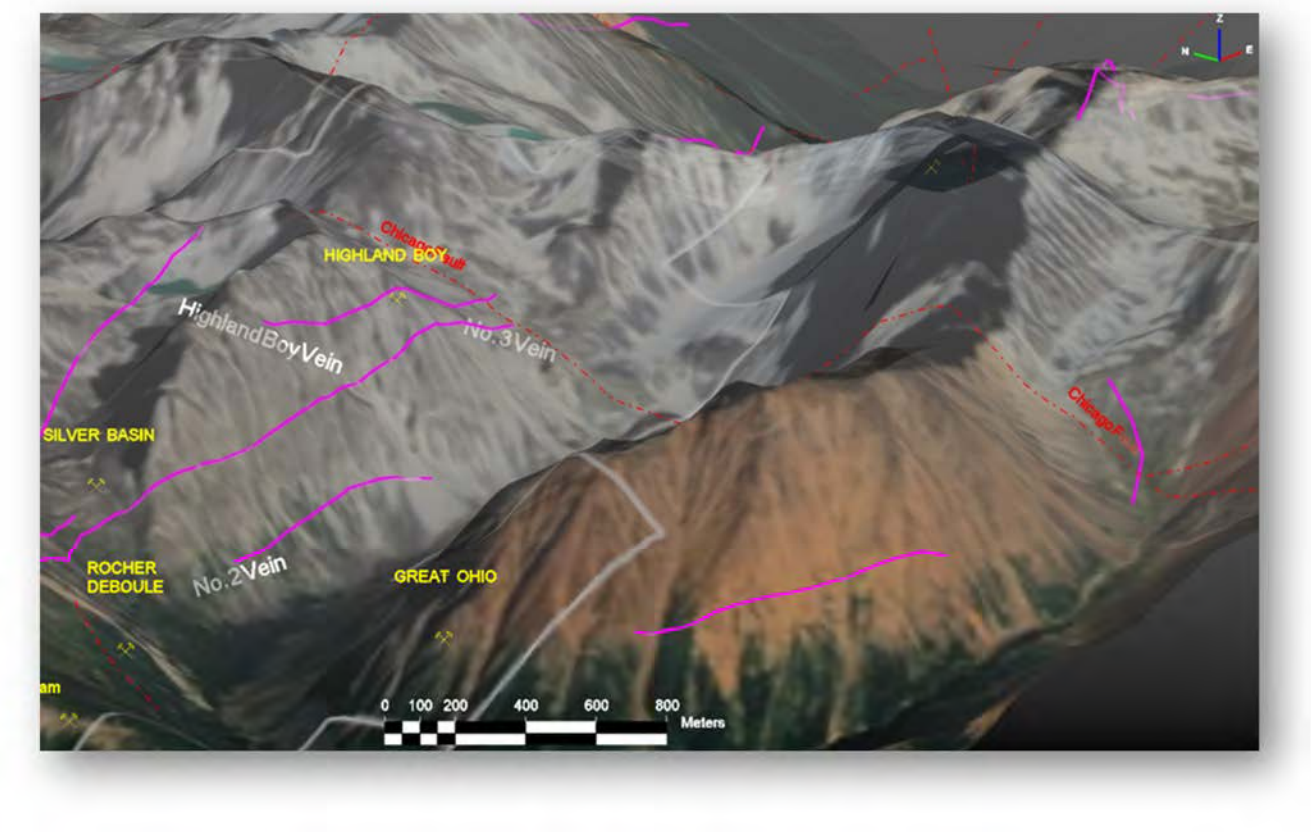


Figure 7-6: Highland Boy Area Showing Veins (magenta) Faults (red) and Property Boundary (grey)

Highland Boy is in the center of the Rocher Deboule stock and is not contact related as in the case of the Victoria Mine and the Rocher Deboule Mine.

Several adits have been driven into the No. 2 Vein and exposed it underground with the furthermost adits 394 m apart. ***Table7-3*** presents a general description of the No. 2 Vein at the uppermost tunnel where the vein is partially described.

Table 7-3: Summary of Vein Description of No. 2 Vein at Highland Boy.

Depth into adit (m)	Thickness (m)	Vein description	Mineralization
0	0.5	Quartz-sulphide fissure	30% chalcopyrite-pyrite-magnetite
9	0	Vein pinched out	No mineralization
21.2	0.12	Quartz-sulphide fissure	Heavy sulphides
26.5-32	0.3 - 0.8	Quartz-sulphide fissure	chalcopyrite-pyrite-magnetite
>32		No information available	No information available

The fissure in the highest adit can be described as a quartz carbonate fissure that pinches and swells cutting out in places but ranging in thickness between 0.1 and 0.8 m. Mineralization is mostly chalcopyrite, pyrite and magnetite and is massive (30 % chalcopyrite) in places.

On surface several open cuts exposed the vein up to an elevation of 1950 m. At 1932 m elevation, 150 m west of the portal, the vein is 0.6 m wide with massive and banded chalcopyrite, coarsely crystalline magnetite and pyritohedral pyrite crystals 2.5 cm in diameter.

West of this cut, a branch splay of the fissure joins the main vein. The branch splay carries 0.6 m of solid sulphide, chiefly chalcopyrite, for 9 m from the main vein.

7.3.5. Great Ohio

The Great Ohio occurrence is found 1 km to the south of Rocher Deboule. See ***Figure 7-7***. It is potentially related to the same system of shears, developed close to the western contact between the sedimentary rocks of the Hazelton Group and the Rocher Deboule stock. The main vein strikes 50°, dipping 70° northwest, parallel to the granodiorite-sediment contact. The quartz vein is up to 120 cm in width and is mineralized with scattered minor chalcopyrite, galena, sphalerite, pyrrhotite, arsenopyrite and pyrite. Two parallel subsidiary structures contain quartz, hornblende and chalcopyrite. (Geological Survey of Canada Memoir 223)

Three subparallel shears are developed in the porphyritic granodiorite at the entrance of an adit at an elevation of 1,372 m. The shears trend at 55° and dip 65-70° north. The quartz sulphide fissures is mineralized with chalcopyrite-pyrite-galena-sphalerite.

Figure 7-7: Great Ohio Minfile Occurrence

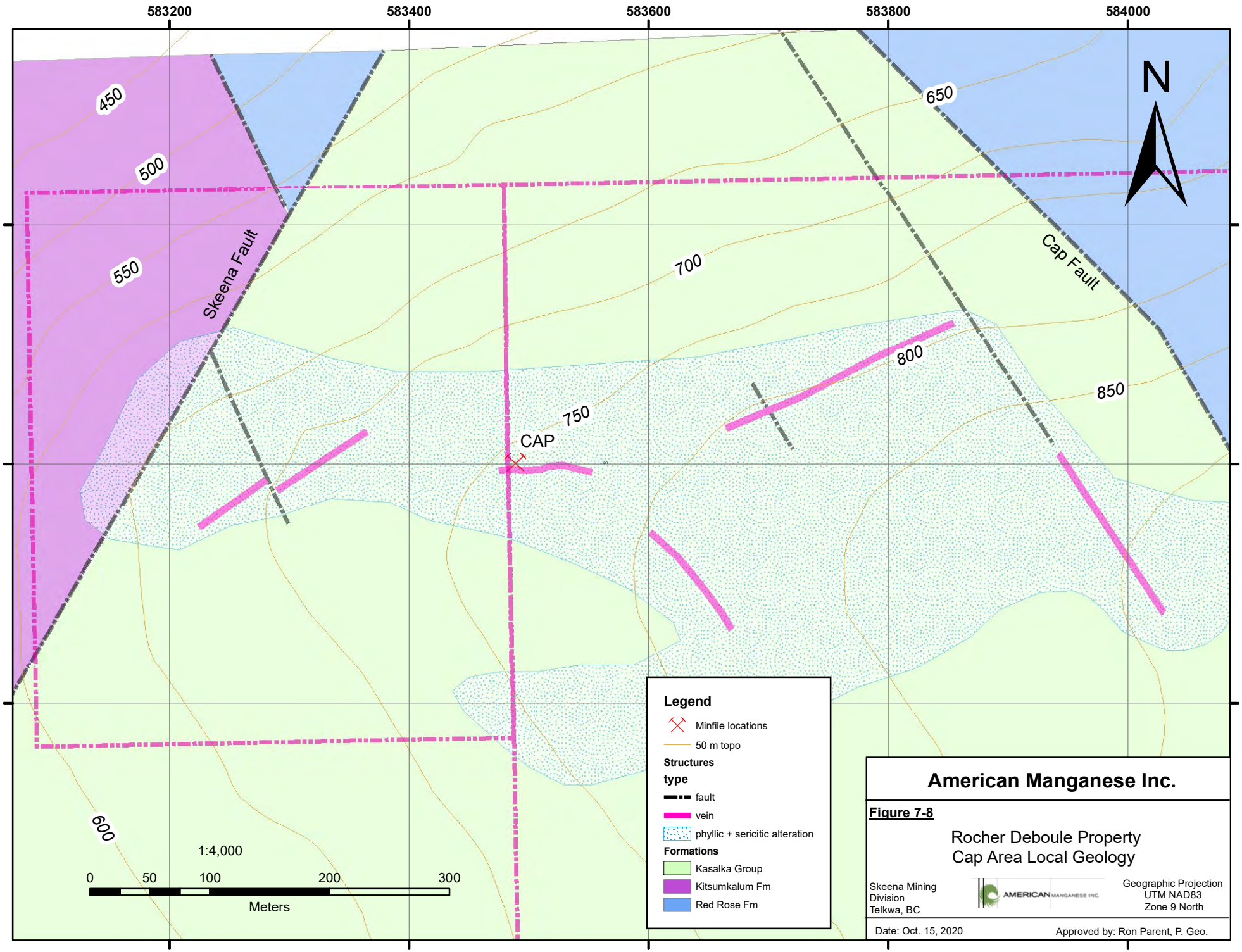
7.3.6. Cap

The Cap is found at a lower location in the Kasalka rocks of the Rocher Deboule Range. The host rock for the Cap is volcanic breccia from the Kasalka Group. The main zone consists of an of east-west fractured andesite flow and breccia cut by numerous veins containing quartz, carbonate, pyrite, chalcopyrite, arsenopyrite and, locally at least, sphalerite. The Kasalka Group rocks shows moderate phyllic and alteration and contains pyrite up to 1.5%.

Mineralization in the Cap is hosted in a shear trending 290° dipping 70° north. Several shafts and tunnels were developed on the main shear zone, and a subsidiary vein is present 200 m east of the main shear.

The principal vein is exposed in four locations over an 80 m strike length. The shear is between 0.8-9 m wide in places. The geological map presented in ***Figure 7-8*** shows the vein which appears to be better developed closer to the Skeena Fault and the Cap Zone Fault. The phyllic serecitic alteration

expressed as quartz-pyrite-chlorite-clay-limonite-sericite is also shown on this map. The clay-limonite-pyrite-quartz alteration is prominent in cuttings in the area, and veins contain high amounts of pyrite. The Skeena and Cap Zone Faults also appear to influence the alteration. The contacts of the alteration also appear to be parallel to the mineralized structures.


583200
583400
583600
583800
584000
6115000
6114800
6114600
N
450
500
550
600
650
700
750
800
850
Skeena Fault
Cap Fault
CAP
1:4,000
0 50 100 200 300
Meters
Legend
Minfile locations
50 m topo
Structures
type
fault
vein
phyllic + sericitic alteration
Formations
Kasalka Group
Kitsumkalum Fm
Red Rose Fm
American Manganese Inc.
Figure 7-8
Rocher Deboule Property
Cap Area Local Geology
Skeena Mining Division
Telkwa, BC
AMERICAN MANGANESE INC.
Geographic Projection
UTM NAD83
Zone 9 North
Date: Oct. 15, 2020
Approved by: Ron Parent, P. Geo.

7.3.7. Silver Basin

The Silvertip Basin stockwork zone occurs in the small cirque at the head of Silvertip Creek, in an area locally known as Silvertip Basin. It is above 1,700 m elevation, surrounded by rugged mountains on three sides and to a large extent floored in coarse, blocky talus. The stockwork has limited exposure as small, isolated areas of altered and mineralized outcrop along the creek, amongst the talus and on the immediate walls of the cirque. The full extent of the stockwork zone was yet to be delineated (Minfile capsule geology).

7.3.8. Hazelton View

The Hazelton View area is underlain by hornfelsic greywackes and siltstones of the Middle Jurassic to Lower Cretaceous Bowser Lake Group which are intruded by the Rocher Deboule porphyritic granodiorite stock of the Late Cretaceous Bulkley Plutonic Suite. The stock is cut by vein/dyke systems which follow east trending fractures.

Old reports speak of the Hazelton View and the Victoria Mine area as being the same occurrence; however, in 2011 while prospecting the area, AMI discovered a set of railroad tracks protruding from a collapsed tunnel. Presumably, this is the Hazelton View occurrence, which appears to be on strike to the west of the northern Rocher Deboule veins and south of the Victoria Mine area (Kikauka, 2011).

The showing accessed by the tunnel is covered but the mineralization is reflected in local debris. Samples were taken of this material by AMI personnel in 2011. Sample 11 DE 814, is a high-grade sample, collected near the mouth of the tunnel. It is the most significant indication of mineralization in the Hazelton View area and was found to contain 6 grams per tonne (ppm) gold, 65 ppm silver, 10.14% copper, 0.27% cobalt and 1.0% arsenic (Ethier and Pinsent, 2012). Elsewhere in the Hazelton View area, there is a 1 m wide shear zone that contains frothy quartz, and there are several areas of rock stained by malachite. Sample DE 820 consists of hornfelsed sediment that contains disseminations of chalcopyrite and assays 9 ppm silver and 0.27% copper.

Sample KM 747 is a biotite, magnetite and chalcopyrite rich rock that contains 2.3% copper and 17 ppm silver (Ethier and Pinsent, 2012).

8. Deposit Types

8.1. Minfile Deposit Types

For each of the Minfile occurrences on the property, BC's Minfile Database has deposit type data compiled describing the principle characteristics of each deposit. See **Table 8.1** below

Table 8-1: Minfile Occurrences

Minfile	Commodities	Deposit type	Character	Deposit class
GREAT OHIO (L. 702) PILOT (L.704)	Copper, Gold, Lead, Zinc	I05 - Polymetallic veins Ag-Pb-Zn+/-Au	Vein	Epigenetic, Hydrothermal
HIGHLAND BOY (L. 1000) DELTA COPPER	Copper, Silver, Gold, Uranium, Tungsten, Tin	I13 - Sn veins and greisens	Vein	Epigenetic
ROCHER DEBOULE JUNIPER (L. 2400)	Copper, Silver, Gold, Tungsten, Zinc, Lead, Uranium, Molybdenum,	I05 - Polymetallic veins Ag-Pb-Zn+/-Au I12 - W veins	Vein, Shear	Epigenetic, Hydrothermal
VICTORIA (L. 3303) HAZELTON VIEW (L. 3299)	Gold, Cobalt, Silver, Molybdenum, Nickel, Uranium, Arsenic, Copper,	I05 - Polymetallic veins Ag-Pb-Zn+/-Au	Vein, Shear	Epigenetic, Hydrothermal
CAP COMEAU	Copper, Silver, Gold, Zinc	I05 - Polymetallic veins Ag-Pb-Zn+/-Au	Vein, Shear	Epigenetic, Hydrothermal
SILVER BASIN SILVER CREEK	Copper, Gold, Silver	L04 - Porphyry Cu +/- Mo +/-Au I05 - Polymetallic veins Ag-Pb-Zn+/-Au	Stockwork, Vein	Hydrothermal, Porphyry
HAZELTON VIEW ROCHER DEBOULE	Gold, Silver, Copper, Cobalt	I05 - Polymetallic veins Ag-Pb-Zn+/-Au	Shear, Vein	Epigenetic, Hydrothermal

The primary mineral deposit type that has been the focus of exploration on the property is BC Profile #I05 - POLYMETALLIC VEINS Ag-Pb-Zn+/-Au written by Lefebvre and Church (1996), British Columbia Geological Survey. Section 8.2 further describes the geological characteristics of the deposit, and is taken from Lefebvre and Church (1996).

Although there has been some postulating about the potential that exploration be focussed on an IOCG model, the vast majority of work done on the property revolves around the exploration for mineralization in veins, shears, and dykes. Notwithstanding this, the possibility of a deep seated IOCG type deposit being discovered exists given what is known about the geochemistry of the rocks and soils on the Property.

8.2. Geological characteristics

From Lefebvre and Church (1996):

Capsule description: *Sulphide-rich veins containing sphalerite, galena, silver and sulphosalt minerals in a carbonate and quartz gangue. These veins can be subdivided into those hosted by*

metasediments and another group hosted by volcanic or intrusive rocks. The latter type of mineralization is typically contemporaneous with emplacement of a nearby intrusion.

Tectonic settings: *These veins occur in virtually all tectonic settings except oceanic, including continental margins, island arcs, continental volcanics and cratonic sequences.*

Depositional environment/geological setting:

- *Metasediment host: Veins are emplaced along faults and fractures in sedimentary basins dominated by clastic rocks that have been deformed, metamorphosed and intruded by igneous rocks. Veins postdate deformation and metamorphism.*
- *Igneous host: Veins typically occur in country rock marginal to an intrusive stock. Typically veins crosscut volcanic sequences and follow volcano-tectonic structures, such as caldera ring-faults or radial faults. In some cases the veins cut older intrusions.*

Age of mineralization: *Proterozic or younger; mainly Cretaceous to Tertiary in B.C.*

Host/Associated rock types*: These veins can occur in virtually any host. Most commonly the veins are hosted by thick sequences of clastic metasediments or by intermediate to felsic volcanic rocks. In many districts there are felsic to intermediate intrusive bodies and mafic igneous rocks are less common. Many veins are associated with dikes following the same structures.*

Deposit form: *Typically steeply dipping, narrow, tabular or splayed veins. Commonly occur as sets of parallel and offset veins. Individual veins vary from centimetres up to more than 3 m wide and can be followed from a few hundred to more than 1,000 m in length and depth. Veins may widen to tens of metres in stockwork zones.*

Texture/Structure: *Compound veins with a complex paragenetic sequence are common. A wide variety of textures, including cockade texture, colloform banding and crustifications and locally druzy. Veins may grade into broad zones of stockwork or breccia. Coarse-grained sulphides as patches and pods, and fine-grained disseminations are confined to veins.*

Ore mineralogy (principal and subordinate): *Galena, sphalerite, tetrahedrite- tennantite, other sulphosalts including pyrargyrite, stephanite, bournonite and acanthite, native silver, chalcopyrite, pyrite, arsenopyrite, stibnite. Silver minerals often occur as inclusions in galena. Native gold and electrum in some deposits. Rhythmic compositional banding sometimes present in sphalerite. Some veins contain more chalcopyrite and gold at depth and Au grades are normally low for the amount of sulphides present.*

Gangue mineralogy (principal and subordinate):

- *Metasediment host: Carbonates (most commonly siderite with minor dolomite, ankerite and calcite), quartz, barite, fluorite, magnetite, bitumen.*
- *Igneous host: Quartz, carbonate (rhodochrosite, siderite, calcite, dolomite), sometimes specular hematite, hematite, barite, fluorite. Carbonate species may correlate with distance from source of hydrothermal fluids with proximal calcium and magnesium-rich carbonates and distal iron and manganese-rich species.*

Alteration mineralogy: *Macroscopic wall rock alteration is typically limited in extent (measured in metres or less). The metasediments typically display sericitization, silicification and pyritization. Thin veining of siderite or ankerite may be locally developed adjacent to veins. In volcanic and intrusive host rocks the alteration is argillic, sericitic or chloritic and may be quite extensive.*

Weathering: *Black manganese oxide stains, sometimes with whitish melanterite, are common weathering products of some veins. The supergene weathering zone associated with these veins has produced major quantities of manganese. Galena and sphalerite weather to secondary Pb and Zn carbonates and Pb sulphate. In some deposits supergene enrichment has produced native and horn silver.*

Ore controls: *Regional faults, fault sets and fractures are an important ore control; however, veins are typically associated with second order structures. In igneous rocks the faults may relate to volcanic centers. Significant deposits restricted to competent lithologies. Dykes are often emplaced along the same faults and in some camps are believed to be roughly contemporaneous with mineralization. Some polymetallic veins are found surrounding intrusions with porphyry deposits or prospects.*

Genetic models: *Historically, these veins have been considered to result from differentiation of magma with the development of a volatile fluid phase that escaped along faults to form the veins. More recently researchers have preferred to invoke mixing of cooler, upper crustal hydrothermal or meteoric waters with rising fluids that could be metamorphic, groundwater heated by an intrusion or expelled directly from a differentiating magma. Any development of genetic models is complicated by the presence of other types of veins in many districts.*

Comments: *Ag-tetrahedrite veins, contain very little sphalerite or galena. These may belong to this class of deposits or possibly the five-element veins. The styles of alteration, mineralogy, grades and different geometries can usually be used to distinguish the polymetallic veins from stringer zones found below syngenetic massive sulphide deposits.*

Associated deposit types:

- *Metasediment host: Polymetallic mantos (M01).*
- *Igneous host: May occur peripheral to virtually all types of porphyry mineralization (L01, L03, L04, L05, L06, L07, L08) and some skarns (K02, K03).*

Geochemical signature: *Elevated values of Zn, Pb, Ag, Mn, Cu, Ba and As. Veins may be within arsenic, copper, silver, mercury aureoles caused by the primary dispersion of elements into wall rocks or broader alteration zones associated with porphyry deposit or prospects.*

Geophysical signature: *May have elongate zones of low magnetic response and/or electromagnetic, self-potential or induced polarization anomalies related to ore zones.*

Other exploration guides: *Strong structural control on veins and common occurrence of deposits in clusters can be used to locate new veins.*

Economic factors:

- ***Typical grade and tonnage:*** *Individual vein systems range from several hundred to several million tonnes grading from 5 to 1500 g/ton Ag, 0.5 to 20% Pb and 0.5 to 8% Zn.*

Average grades are strongly influenced by the minimum size of deposit included in the population. For BC deposits larger than 20,000 tons the average size is 161,000 tons with grades of 304 g/ton Ag, 3.47 % Pb and 2.66 % Zn. Copper and gold are reported in less than half the occurrences, with average grades of 0.09 % Cu and 4 g/ton Au.

- ***Economic limitations:*** *These veins usually support small to medium-size underground mines. The mineralization may contain arsenic which typically reduces smelting credits.*

Importance: *The most common deposit type in B.C. with over 2,000 occurrences; these veins were a significant source of Ag, Pb and Zn until the 1960s. They have declined in importance as industry focused more on syngenetic massive sulphide deposits. Larger polymetallic vein deposits are still attractive because of their high grades and relatively easy beneficiation. They are potential sources of cadmium and germanium.*

Based on the host lithologies and mapped alteration assemblages, the Rocher Deboule Property is classified as a high sulfidation, intrusive (sediment) hosted, epithermal gold- silver-base metal vein-shear deposit. The Property lies on the northwestern margin of a granodiorite pluton intruded into sediments and volcanics where a series of precious-base metal quartz- sulphide veins have had historical mine production. The economic potential and Property merit is to be found not only in the historical quartz-sulphide veins but also in mineralization and alteration that has copper-gold porphyry and/or iron oxide-copper-gold (IOCG) affinities and potential.

All of the mineral showings described in detail, with certain exceptions, on the Rocher Deboule Property comprise vein fillings of shear zones, normally in close proximity to the margin of the Rocher Deboule stock. These mineralized shears closely parallel one set of orthogonal joint pattern caused by the cooling of the stock. The veins all strike in a northeasterly to easterly direction and dip approximately 55 degrees to the north. The veins are found over significant lengths of shear zone, e.g., on the Highland Boy-Rocher Deboule system a strike length of perhaps 1,500 m is indicated. However, economic mineralization, as defined by mining on the Rocher Deboule Mine, occurred over short strike lengths of 30-75 m and was concentrated in near vertical shoots, e.g., the No. 4 Vein at the Rocher Deboule Mine.

Three distinct phases of mineralization defined in the different veins have been described by Sutherland Brown (1960). All three phases can overlap, especially at the western and eastern ends of No. 2 Vein at the Rocher Deboule Mine. The precious metals appear to be distributed among several minerals, but principally the iron-cobalt sulpharsenides and arsenides, tetrahedrite, and chalcopyrite.

In 2002 (Kikauka, 2002) Ministry of Energy and Mines, Geological Survey Branch published *"Fe-Oxide Cu-Au (IOCG) deposit potential*" which lists the new major mineral deposits recently discovered, e.g., Olympic Dam (Southeast Australia), 2 billion tonnes grading 1.6 % Cu, 0.04 % U_3O_8, 3.5 g/t Ag, 0.6 g/t Au, and Candelaria (Northern Chile), 366 million tonnes 1.08 % Cu, 0.26 g/t Au, 4.5 g/t Ag. The IOCG deposit characteristics are high iron content (hematite and/or magnetite), albite, K-feldspar, sericite, carbonate, chlorite, quartz, amphibole, pyroxene, biotite, tourmaline and apatite gangue, with geochemically anomalous Fe, Cu, Au, Ag, Co, P, U, and Rare Earth Elements (REE) (Eckstrand et al. 1995), (Webster 2002). The Geological Survey Branch of British Columbia (2001) lists the Rocher Deboule area as having Regional Geochemical Stream sediments >95th percentile for Au, La, Fe, & Cu. The Rocher Deboule also contains geochemically anomalous values in Co, U and REE as well as most of the gangue

minerals common to IOCG deposits. The deep-seated structural setting of the Rocher Deboule occurrence combined with a geochemical signature possibly similar to other IOCG deposits increases the potential for an IOCG-type high grade and tonnage resource at depth. The Rocher Deboule can be classified as a vein/replacement type of occurrence, but the geochemical signature similar to known IOCG deposits suggests that the consideration be given to deeper exploration for porphyry mineralization. The anomalous lanthanum defined by the BC Geological Survey regional stream sediment surveys for the area and the anomalous air magnetic pattern defined by the Geological Survey of Canada are good indicators of iron-oxide-copper-gold style mineralization. The historical air magnetic coverage for the Property and surrounding area is given in the Geological Survey of Canada Geophysics paper 5245. It should be noted that there is a large magnetic anomaly with a +6500 gamma high. The air magnetic anomalies for IOCG deposits can be regional and are related to magnetite and/or coeval igneous rocks.

In 1990 (George Cross Newsletter 1990) International Kengate Ventures Inc. reported the No. 2 Porphyry Zone about 366 m to the north of the Rocher Deboule Mine. It is thought that this zone may be the area of the No. 2 Vein at the Victoria Mine. This porphyry zone is reported as a hydrothermal zone that has “estimated” dimensions of 762 m length, 610 m in depth and 12.2 m in width. Mineralization is reported from a surface trench that yielded values as high as 30.5 ppm gold and 0.35% cobalt. The 1990 report must be treated as anecdotal in nature. However, it is significant that the area where this reported mineralization occurs could be coincident to a 9 m wide feldspar porphyry dyke, which follows No.2 Vein at Victoria Mine and is, in part, altered to quartz-sericite-carbonate rock.

The vein systems known on the Rocher Deboule Property could be part of a much larger hydrothermal system that are indicative of a porphyry copper (gold) system laterally or possibly at depth. Hydrothermal vein systems, like Rocher Deboule, can be outboard of a typical hydrothermally altered defined porphyry copper (gold) system. From an exploration perspective, further evaluation should be focussed to the west of the Rocher Deboule and Victoria Mines towards and into the sediments (uJB) and volcanics (uKB) to define porphyry style mineralization and alteration.

9. Exploration

Since acquiring the Property through the staking of the RDB mineral claims in 2001, the company, AMI and its predecessors have carried out numerous exploration programs using a range of exploration techniques including, but not limited to geochemistry, geophysics, drilling and mapping. **Table 9-1** outlines the work done by the issuer since acquiring the property through staking in 2002.

Table 9-1: Work Done by the Issuer (American Manganese Inc.) Since Acquiring Property

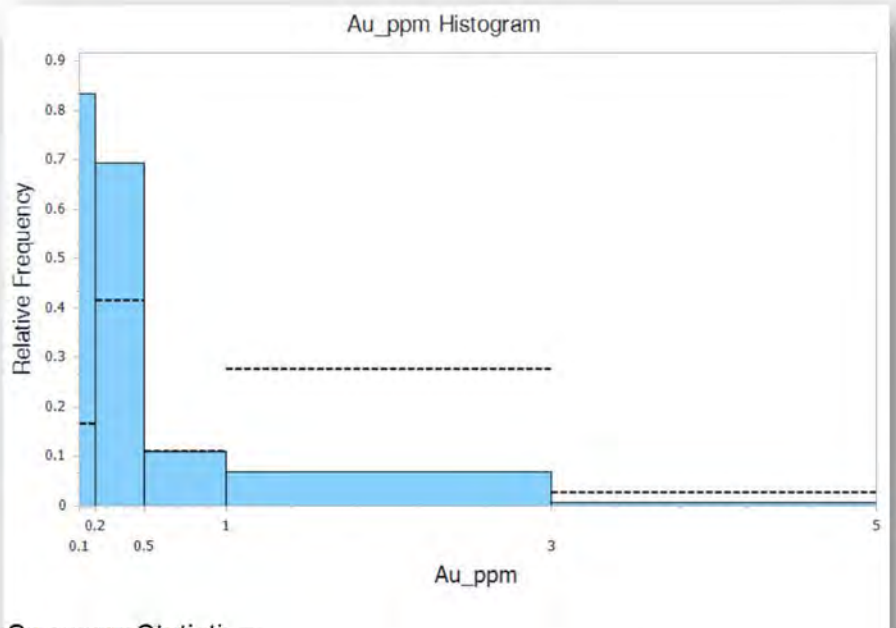
Report ID	Year	Owner	Report Title	Description / Highlights	mapping area Ha	no. drillholes	Total depth (m)	core samples	airborne geophysics	ground geophysics	grid km	Rock / core samples	soil and silt samples	stream sediment samples
26984	2002	Ameridex Minerals Corp	GEOLOGICAL & GEOCHEMICAL REPORT ON THE RD 1-6 CLAIM GROUP, ROCHER DEBOULE RANGE, HAZELTON, B.C.	mapping and sampling	70							18	6	
27558	2004	Ameridex Minerals Corp	GEOLOGICAL & GEOCHEMICAL REPORT ON THE RD 1-8 CLAIM GROUP, ROCHER DEBOULE RANGE, HAZELTON, BC.	mapping, sampling, magnetics						mag	3.3	6	17	2
29677, 29338	2007	Rocher DeBoule Minerals Corp.	Technical Report on the ROCHER DEBOULE PROPERTY	airborne survey, ground mag; DRILLING		6	1106.1	97	1089	mag	1.55	41	6	
n/a	2008	Rocher DeBoule Minerals Corp.	No report prepared. The work program covered a much larger area than the current tenure does.	The number of samples represents those collected from the current property bounds. There were no significant results to report.								9	4	
n/a	2009	Rocher DeBoule Minerals Corp.	No report prepared. The work program covered a much larger area than the current tenure does.	As above. 3 grab samples at 9.69, 85.18, and 161.65 ppm Au. Also a 1 m chip sample at 85.18 ppm Au. Negligible copper.								11		
33297	2011	American Manganese Inc.	PROSPECTING and GEOCHEMICAL REPORT On the ROCHER DEBOULE PROPERTY	As above. mapping, prospecting 8 km2; mag 22km; 10 rock samples up to 82.1 ppm Au and 10% Cu	800					mag	22	299	95	1

Report ID	Year	Owner	Report Title	Description / Highlights	mapping area Ha	no. drillholes	Total depth (m)	core samples	airborne geophysics	ground geophysics	grid km	Rock / core samples	soil and silt samples	stream sediment samples
n/a	2012	American Manganese Inc.	No report prepared.	4 soil samples > 1 ppm (2.21, 2.51,3.41,8.65, and 9.52) Au and one chip sample at 3.41 ppm Au.								2	56	
36089	2016	American Manganese Inc.	REPORT ON ROCHER DEBOULE MINERAL PROPERTY CAP MINERAL OCCURRENCES HAZEL TON, B.C.	Mainly chip sampling; 4 samples had Cu > 1%; one sample had 9.28 ppm Au and 5.7% Cu								19		
36827	2017	American Manganese Inc.	GEOPHYSICAL & GEOCHEMICAL REPORT ON ROCHER DEBOULE VICTORIA No 1 & VENT ZONE MINERAL OCCURRENCES HAZELTON, B.C.	mag 7.2 km; sampling. 8 rock samples ranging from 8.77 – 1654 ppm Au. Soil samples for SGH study.						mag	7.2	14	144	
38601	2019	American Manganese Inc.	GEOPHYSICAL & GEOCHEMICAL REPORT ON ROCHER DEBOULE CAP, VICTORIA No 1, 2, 3, VENT, TRAM, & JUNIPER CREEK ZONES MINERAL OCCURRENCES HAZELTON, B.C.	2.95 km mag; one copper sample >1% and 2 gold samples >25 ppm Au						mag	2.95	85	111	

9.1. Soil Sampling

9.1.1. Gold and Copper

A total of 549 soils samples assayed for multiple elements comprise the dataset covering the current property tenure. With an average of 0.13 ppm, a maximum 9.52 ppm and standard deviation of 0.71 and a variance of 0.5 there are several coincident anomalies with copper. Summary statistics and a histogram for gold samples are presented in ***Figure 9-1***. The locations, gold values and contoured anomalies are presented on ***Figure 9-2***. There are several coincident anomalies where both gold and copper are in abundance. These will be discussed further in the context of the 3D gridded model that was prepared during the course of this report preparation.



Summary Statistics

Statistics	Au_ppm
Valid Data	419
Total Data	419
Missing Data	0
Invalid Data	0
Minimum	0.00
Maximum	9.52
Mean	0.13
Variance	0.50
Standard Deviation	0.71
Coefficient Of Variation	5.62

Figure 9-1: Gold in Soils Statistics and Histogram

584000 585000 586000 587000 588000 589000

6115000 6114000 6113000 6112000

N

veins
veins
veins
veins
veins
veins

Victoria No. 1 Vein
Victoria No. 2 Vein
Victoria No. 3 Vein
No. 4 Vein
No. 4 Vein
No. 3 Vein
No. 3 Vein
No. 2 Vein
No. 2 Vein
Highland Boy Vein

VICTORIA (L 3303)
HAZELTON VIEW
SILVER BASIN
HIGHLAND BOY (L 7000)
ROCHER DEBOULE
GREAT OHIO (L 702)
ARMAGOSA

Gamsilm Creek
Gamsilm Creek
Juniper Creek
Juniper Creek

Bulkley Ranges

Legend

veins

soil samples
Au ppm
- 5.000001 - 99999.000000
- 3.000001 - 5.000000
- 1.000001 - 3.000000
- 0.500001 - 1.000000
- 0.100001 - 0.500000
- 0.000300 - 0.100000

gold in soil contour
<all other values>

gold
- 1
- 2
- 3
- 4
- 5

25 m topo
trails
creeks
portal
Mintie locations

American Manganese Inc.

Figure 9-2

Rocher Deboule Property
Gold in soil

Skeena Mining Division
Telkwa, BC

AMERICAN MANGANESE INC.

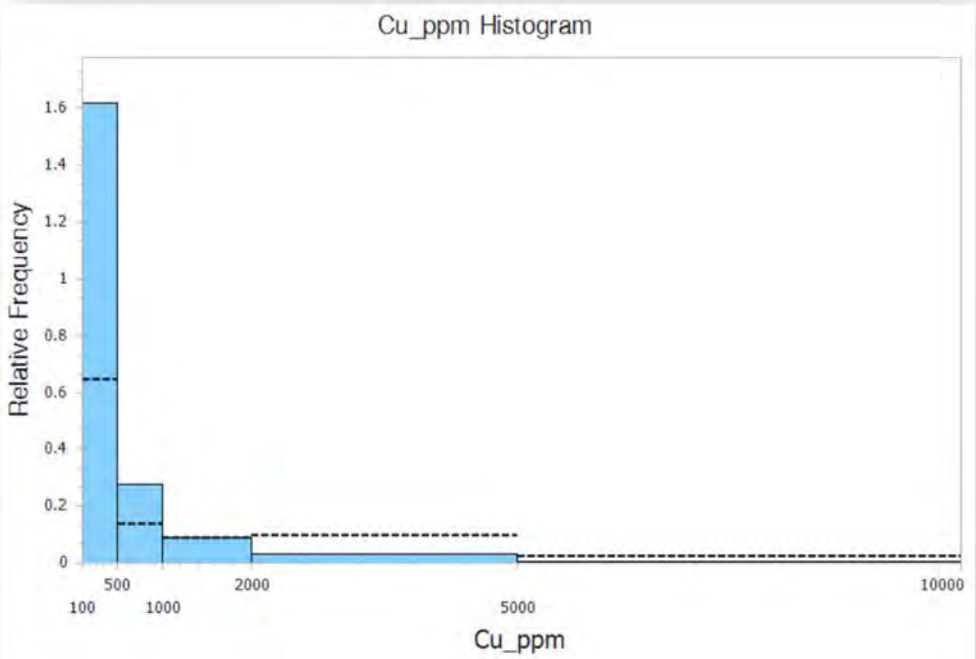
Geographic Projection
UTM NAD83
Zone 9 North

Date: October 22, 2020

Approved by: Ron Parent, P. Geo.

Copper in soils returned a maximum value of 30,280 ppm (3%) and average of 280 ppm with a standard deviation of 1,588 ppm. Statistics and a histogram are presented in ***Figure 9-3***. ***Figure 9-4*** shows an overview of the sample locations and copper anomalies. The distribution is what is expected for such a sample population.

A large part of the property has been covered by soil samples collected by the issuer. The location of the samples relative to veins and faults on the property is illustrated in ***Figure 9-5*****.**



Summary Statistics

Statistics	Cu_ppm
Valid Data	584
Total Data	584
Missing Data	0
Invalid Data	0
Minimum	2.80
Maximum	30280.00
Mean	280.76
Variance	2524510.63
Standard Deviation	1588.87
Coefficient Of Variation	5.66

Figure 9-3: Copper in Soils Histogram and Summary Statistics


N
veins
Victoria No. 1 Vein
Victoria No. 2 Vein
Victoria No. 3 Vein
No. 4 Vein
No. 3 Vein
No. 2 Vein
Highland Boy Vein
HAZELTON VIEW
ROCHER DEBOULE
SILVER BASIN
GREAT OHIO (L. 752)
ARMAGOSA
Bulkley Ranges
Legend
veins
soil samples
Cu ppm
>10000
5000 - 10000
3000 - 5000
2000 - 3000
1000- 2000
<1000
copper in soil contour
Cu ppm
20000-25000
10000
5000
4000
2000
1000
25 m topo
trails
creeks
portal
Minfile locations
American Manganese Inc.
Figure 9-4
Rocher Deboule Property
Copper in soil
Skeena Mining
Division
Telkwa, BC
Geographic Projection
UTM NAD83
Zone 9 North
Date: October 22, 2020
Approved by: Ron Parent, P. Geo.

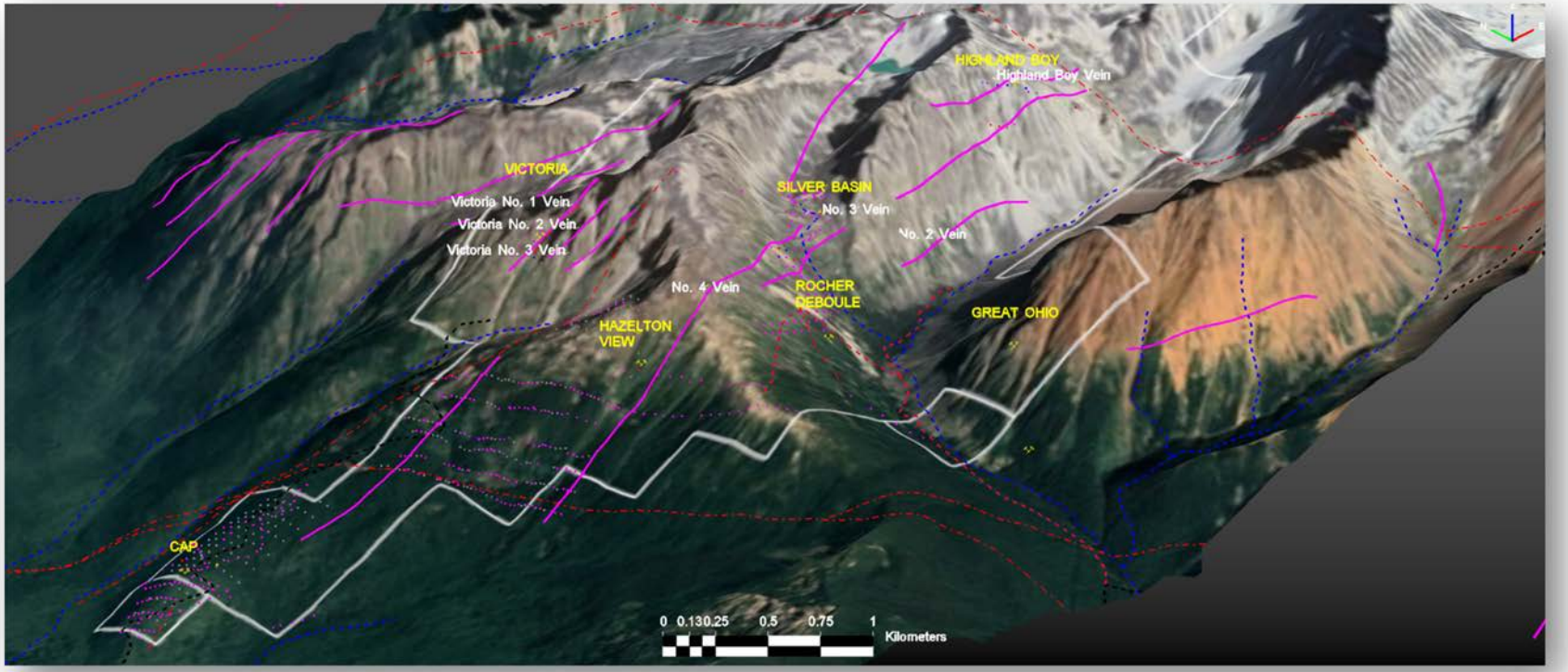


Figure 9-5: Isometric View of the Property Showing the Location of Soil Sampling (Small Dots), Faults (Red Dash) and Veins (Magenta)

Copper has a similar distribution trend to gold, with several conicident anomalies, a summary of which is presented in ***Table 9-2*** below.

Table 9-2: Copper and Gold Anomalies

Location	Maximum Au ppm	Size (m^2 > 0.5 ppm)	Maximum Cu ppm	size (m^2 > 1000 ppm)	Relative location
Cap	2.31	3985	2390	2991	Copper anomaly is downslope approximately 50 metres
Hazelton View No. 4 Vein	1.9	11742	17080	60012	Conicident and both immediately north of No.4 vein
Rocher Deboule	9.5	8446	5984	14396	coincident
Silver Basin	8.7	14727	30280	39634	Coincident
Highland Boy	1.8/3.1*	27559/18414	4936	84074	Coincident

*there are two separate gold anomalies at Highland Boy

During the course of preparing this report, all assays for samples collected by the issuer that covered the current tenure were compiled into an MS ACCESS database for analysis and plotting. This data was then modelled using a 2D gridded surface file (GSF) using MinePlan (Minesight).

A 2D GSF allows any number of variables (assays, mag values, dip, elevation, etc.) to be displayed on any particular surface, through color contouring and displaying blocks colored by a value. In our case we are looking at various values (gold, copper and total magnetic field) to be translated to a gridded model, in this case the model was 25m by 25m blocks. When we add the gridded topo surface to the model, this allows us to display 2D contoured/gridded data on the topographic surface. This provides a 3D perspective on the gridded results.

When plotted as coloured contours on the gridded topographic surface, one can clearly see the relationship between the various anomalies and the vein structures that control the mineralization. See ***Figures 9-6*** and ***9-7*** below, which show the results of assays for copper and gold in soil.

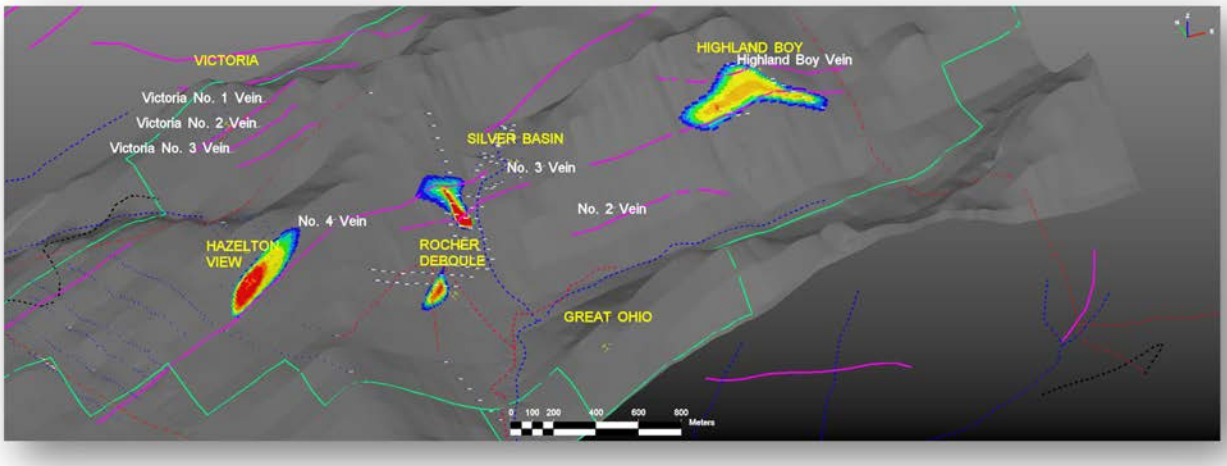


Figure 9-6: Copper in Soil Geochemistry Model
(magenta – veins; dashed blue – creeks; green – property; colored dots – soil sample locations)

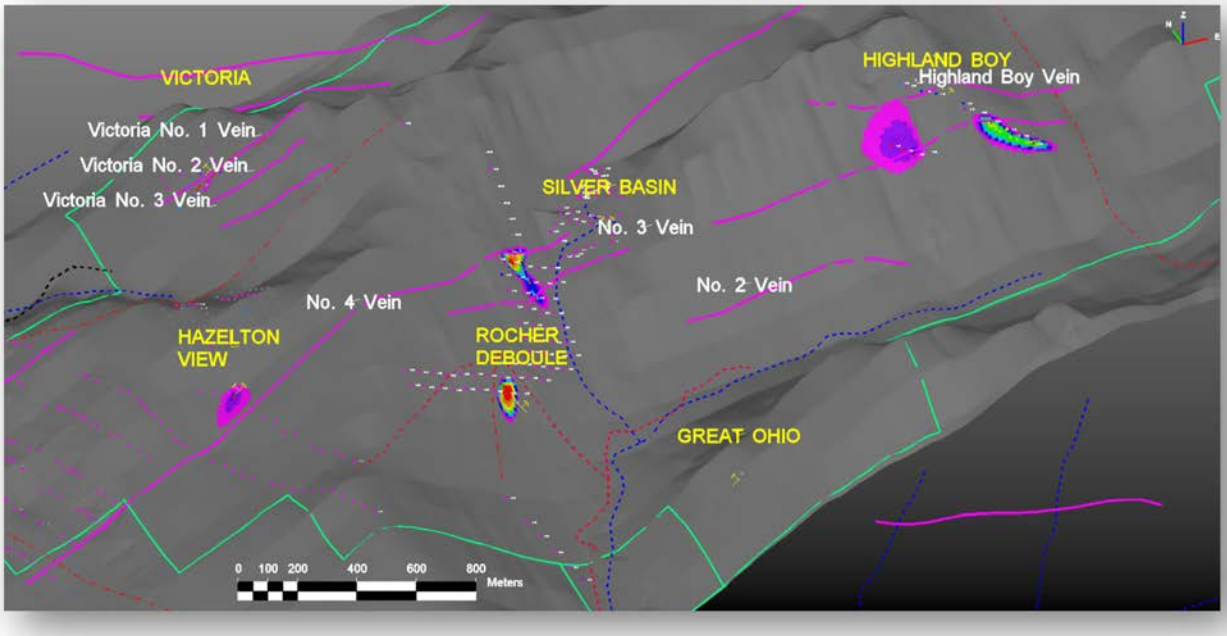


Figure 9-7: Gold in Soil Geochemistry Model
(magenta – veins; dashed blue – creeks; green – property; colored dots – soil sample locations)

While the authors have concentrated on gold and copper values for the purpose of evaluating the overall potential of the Property, other potentially economic elements of interest show anomalous values. Elements such as cobalt, silver, and tungsten have been identified as having anomalous values.

Data on elements other than gold and copper have been compiled in the database but have not been reviewed in any great detail by the authors at this time.

It is interesting to note that a direct line from the highest gold samples from Hazelton View to Rocher Deboule to Highland Boy plunges westward between 7 and 8° (***Figure 9-8***). This may be indicative of some kind of ore shoot or some other structure, infill sampling between these areas would help clarify this interesting observation.

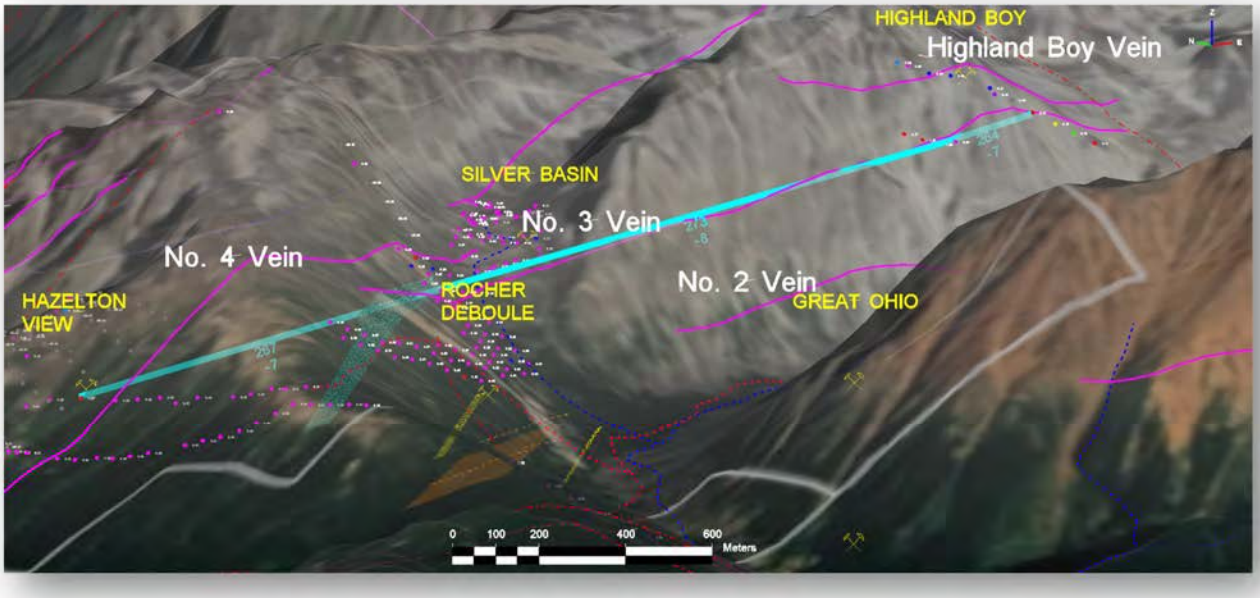


Figure 9-8: 3D Projection of Alignment of Gold and Copper Anomalies (blue line) from Hazelton View to Highland Boy. Legend is same as Figure 9-7.

9.1.2. Spatiotemporal Geochemical Hydrocarbon (SGH) Geochemistry

In 2017, a total of 164 soil samples were collected in the Victoria Mine area and analyzed for hydrocarbons utilizing the SGH methodology. This resulting interpretation of anomalies is a semi-quantitative method of establishing the location of potential mineral targets.

From ACTLabs, 2017:

> *"SGH is a deep penetrating geochemistry that involves the analysis of surficial samples from over potential mineral or petroleum targets. The analysis involves the testing for 162 hydrocarbon compounds in the C5-C17 carbon series range applicable to a wide variety of sample types. These hydrocarbons have been shown to be residues from the decomposition of bacteria and microbes that feed on the target commodity as they require inorganic elements to catalyze the reactions necessary to develop hydrocarbons and grow cells in their life cycle. Specific classes of*

hydrocarbons (SGH) have been successful for delineating mineral targets found at over 950 metres in depth. Samples of various media have been successfully analyzed i.e., soil (any horizon), sand, till, drill core, rock, peat, humus, lake-bottom sediments and even snow. After preparation in the laboratory, the SGH analysis incorporates a very weak leach, essentially aqueous, that only extracts the surficial bound hydrocarbon compounds and those compounds in interstitial spaces around the sample particles."

The results were presented using the IOCG template of SGH Pathfinder Classes for redox, gold and copper. A redox cell is defined as an area of oxidation-reduction reactions or exchange of electrons that is produced over geological bodies and mineralization.

This data was used to generate similar results using a gridded surface model and provides a unique 3D view of the anomalies. The redox values from the survey actually served to discover the Vent Zone, due to the presence of a redox cell anomaly along with coincidental gold and copper anomalies. ***Figures 9-9*** through ***9-11*** further illustrate the results of this work.

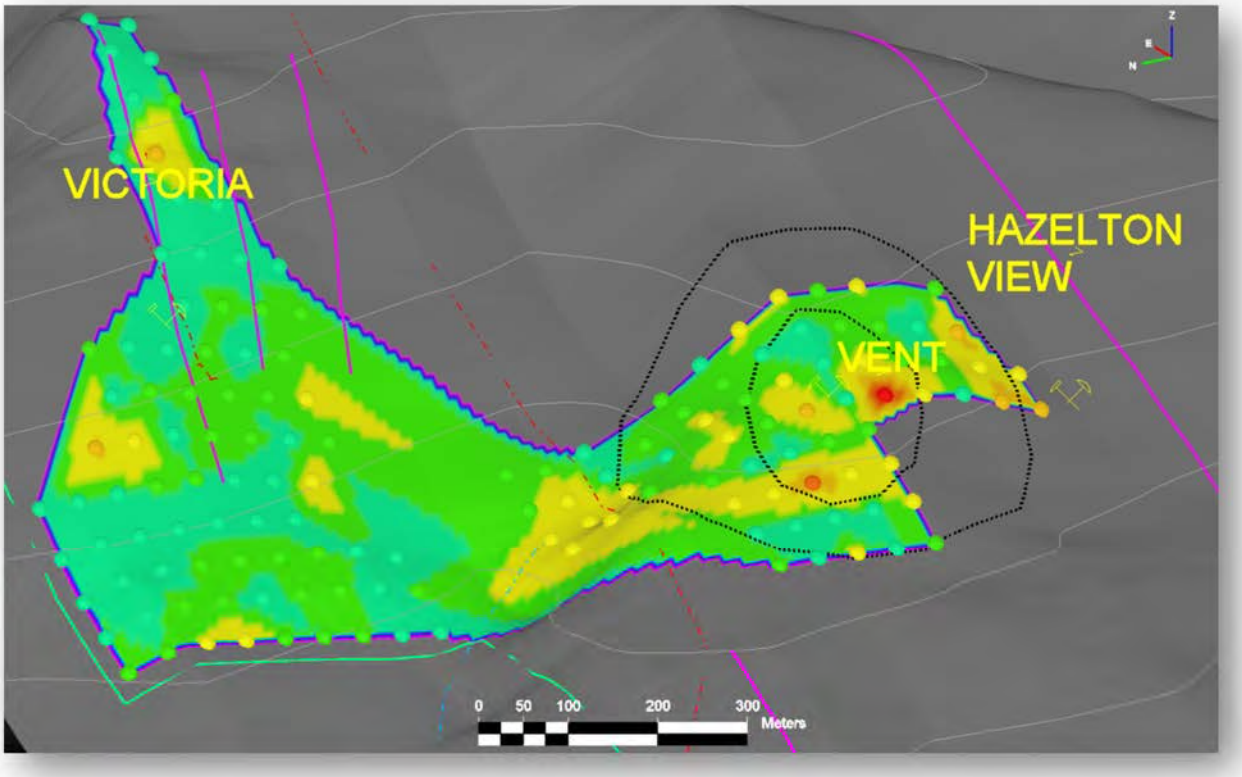


Figure 9-9: Gridded Surface Model of SGH Redox Data. Dashed Black Lines Indicate the Interpreted Redox Cell. Victoria No. 1, 2 and 3 Vein Shown with Pink Lines

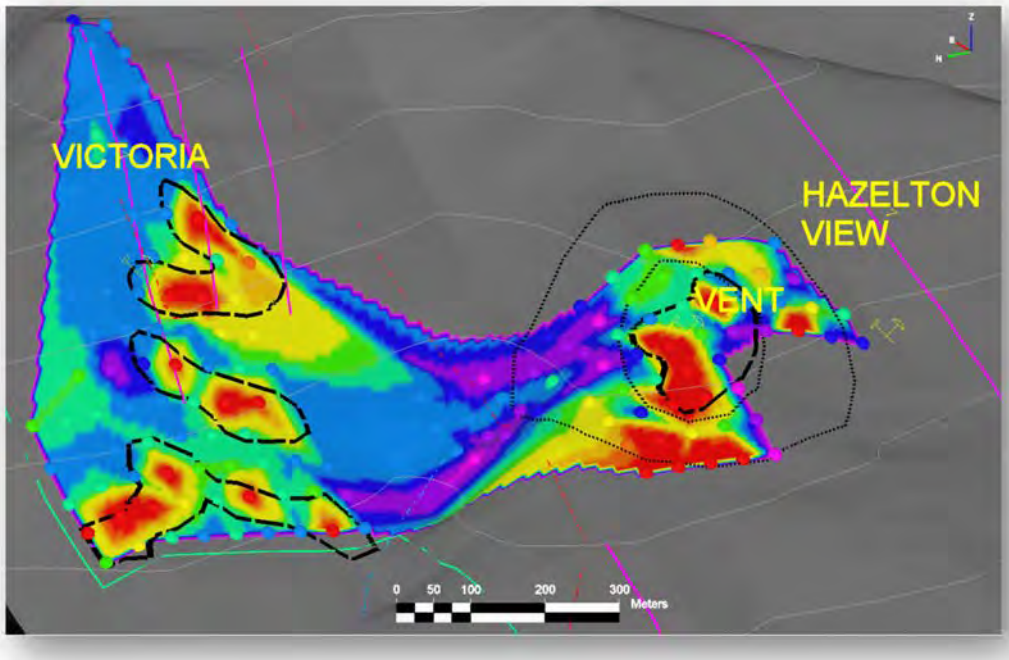


Figure 9-10: SGH Copper in Soil. Legend: Pink = Veins, Red Dashed = Faults, Property Line = Green, Copper and Gold Coincidental Anomalies = Long Dashed Lines

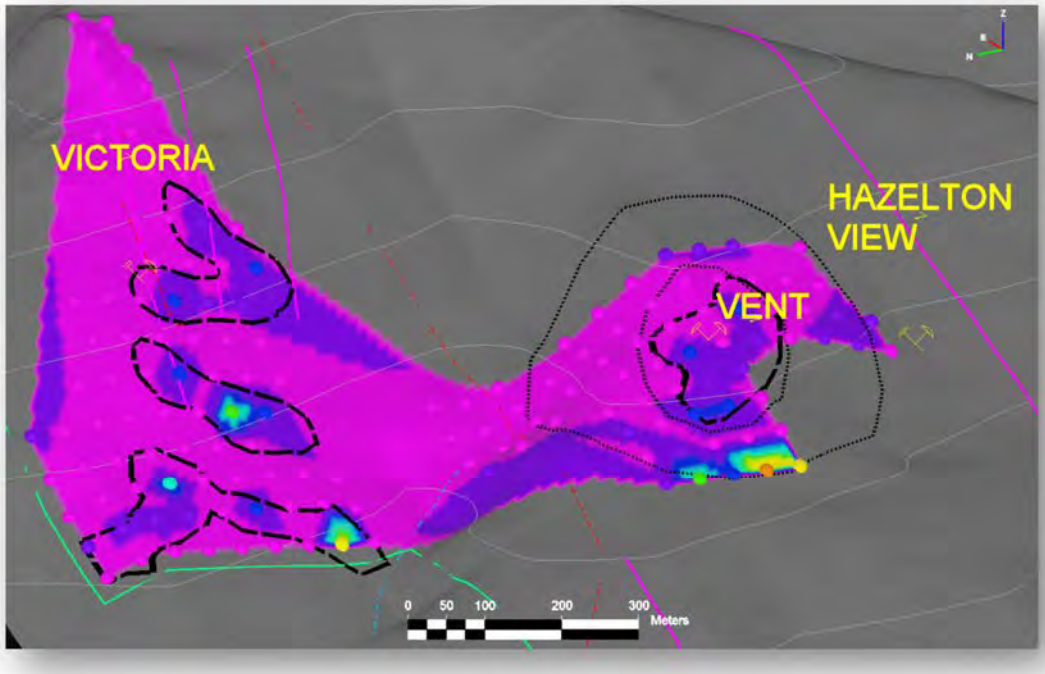


Figure 9-11: SGH Gold Showing Anomalies in Soil

It is curious, however, why there was not a redox anomaly over the 3 gold-copper anomalies that roughly correspond with the Victoria No. 1, 2 and 3 Veins. Perhaps the mineralization is a different in the Vent Zone, but this remains to be determined.

9.2. Rock Sampling

A total of 458 rock samples have been collected and analysed during the period 2002–2019. 2011 was the most productive year with over 300 samples collected. A summary of sampling by year is presented in ***Table 9-3*** below.

Table 9-3: Rock Sampling by Year

Year	Chip	Float	Grab	Total
2002	18			18
2004	6		1	7
2007	11		20	31
2008	1	10	22	33
2009	1	2	8	11
2011	40	42	220	302
2012	2			2
2016	13	6		19
2017	6	8		14
2019	3	6	12	21
Total	101	74	283	458

9.2.1. Float Sampling

The sampling of float material serves to indicate the grade of the material that is possible to be located in an area. If the samples are from dump material, it can indicate additional potential and gives an indication of previous production grade. Because of the long history of mining and prospecting in the area abundant float material is available for collecting and analyses.

A total of 11 of 74 samples in the database have gold values >1.5 ppm Au. The mineralogical and assay details for these samples are presented in ***Table 9-4***. These samples were obtained from in and around the Victoria Mine and Hazelton View (***Figure 9-12***). Of note is the relative abundance of cobalt in the high-grade gold samples as well as the comparatively low copper numbers.

Table 9-4: Gold in float sample highlights and mineralogy

sample_id	rock type	Au ppm	Ag ppm	Cu ppm	Co ppm	Mineralogy (%)								
						actinolite	hornblende	calcite	sericite	arsenopyrite	barite	chalcopyrite	pyrite	safflorite
08EE1012	n/a	206	27.9	20.1	22400									
17VIC-14	andesitic tuff	164	22.4	18.3	11350	30	20	0.2	0.3	5	-	0.1	-	1
17VIC-7	granodiorite	119	7.95	37.8	24600	30	20	0.2	0.3	5	0.1	-	0.1	1
17VIC-2	granodiorite	110.50	3.67	2.3	15350	30	20	0.2	0.3	5	-	-	0.1	1
17VIC-5	granodiorite	96.8	2.84	1.1	27500	30	20	0.2	0.3	5	-	-	0.1	1
17VIC-6	granodiorite	56.8	1.95	1.5	20500	30	20	0.2	0.3	5	-	-	0.1	1
08EE1000	n/a	23.4	48.8	**16700**	7180									
17VIC-9	andesitic tuff	13.65	20.4	12	2360	30	20	0.2	0.3		0.1	-	0.1	1
11DE822	n/a	8.68	n/a	14.62	1192.5									
11DE814	n/a	5.91	n/a	**101350**	2000									
08EE1001	n/a	4.34	11.9	6470	1780									

Note: Bolded samples also occur in the copper highlights

Figure 9-12: Gold in Float Sample Highlights

Nineteen (19) of the 74 float samples in the database assayed greater than 2,000 ppm copper. A variety of rock types comprise this group, from andesitic tuff to granodiorite and sediments. Of this group, the highest copper grade is over 10 % with a corresponding gold value of 5.9 ppm. A summary of these results is presented in ***Table 9-5***. Of additional note is the relatively low grade of cobalt in the copper rich samples compared to gold. The location of these samples is shown in ***Figure 9-13***. Of note is the lack of any high grade copper assays in the vicinity of the Victoria Mine.

Table 9-5: Copper in float sample highlights and mineralogy

sample_id	rock type	Au_ppm	Ag_ppm	Cu_ppm	Co_ppm	Mineralogy
11DE814	n/a	**5.9**	n/a	101350	>999	
08EE1000	n/a	**23.4**	48.8	16700	7180	
1420117	andesitic tuff	0.25	65.8	14750	55	
11DE877	granodiorite	1.43	25.4	11710	2.2	
19RD8	andesitic tuff	0.02	2.07	11350	10	actinolite (10%), hornblende (10%), calcite (0.2%), sericite (0.3%), chalcopyrite (1%), pyrite (1%)
11DE896	granodiorite	0.04	2.97	10610	23.9	malachite, carbonate, chalcopyrite
11DE879	granodiorite	0.32	9.31	8303	23.4	
08EE1002	sediment	1.49	6.26	7660	608	vein quartz, chalcopyrite, pyrite
11DE818	n/a	0.03	n/a	6903	204.9	pyrite, chalcopyrite, biotite, quartz, chlorite, hornblende stockwork
08EE1001	n/a	**4.34**	11.9	6470	1780	Heavy black mineral
11DE850	sediment	1.49	n/a	5571	54.1	hornblende, magnetite, hematite, chalcopyrite, pyrite
11KM752	sediment	0.36	5.73	4617	367	disseminated arsenopyrite, pyrite
11KM782	granite	0.12	5.57	3142	9.3	hornblende, hematite, chalcopyrite
11DE884	granodiorite	0.05	4.71	3095	6.5	malachite, chalcopyrite, magnetite
11KM792	n/a	0.14	n/a	3019	10.4	hornblende, quartz, chalcopyrite, magnetite
1051404	n/a	0.01	5.8	2680	9.7	hornblende veins 2mm, chalcopyrite fracture fills
11KM758	n/a	0.03	4.2	2357	2.7	pyrite, malachite, biotite, vein quartz
11DE883	n/a	0.80	11.9	2354	22.3	
1051260	n/a	0.0621	n/a	2059.84	4.6	malachite, magnetite, calcite, pyrite

Note: Bold samples are also in top gold grades

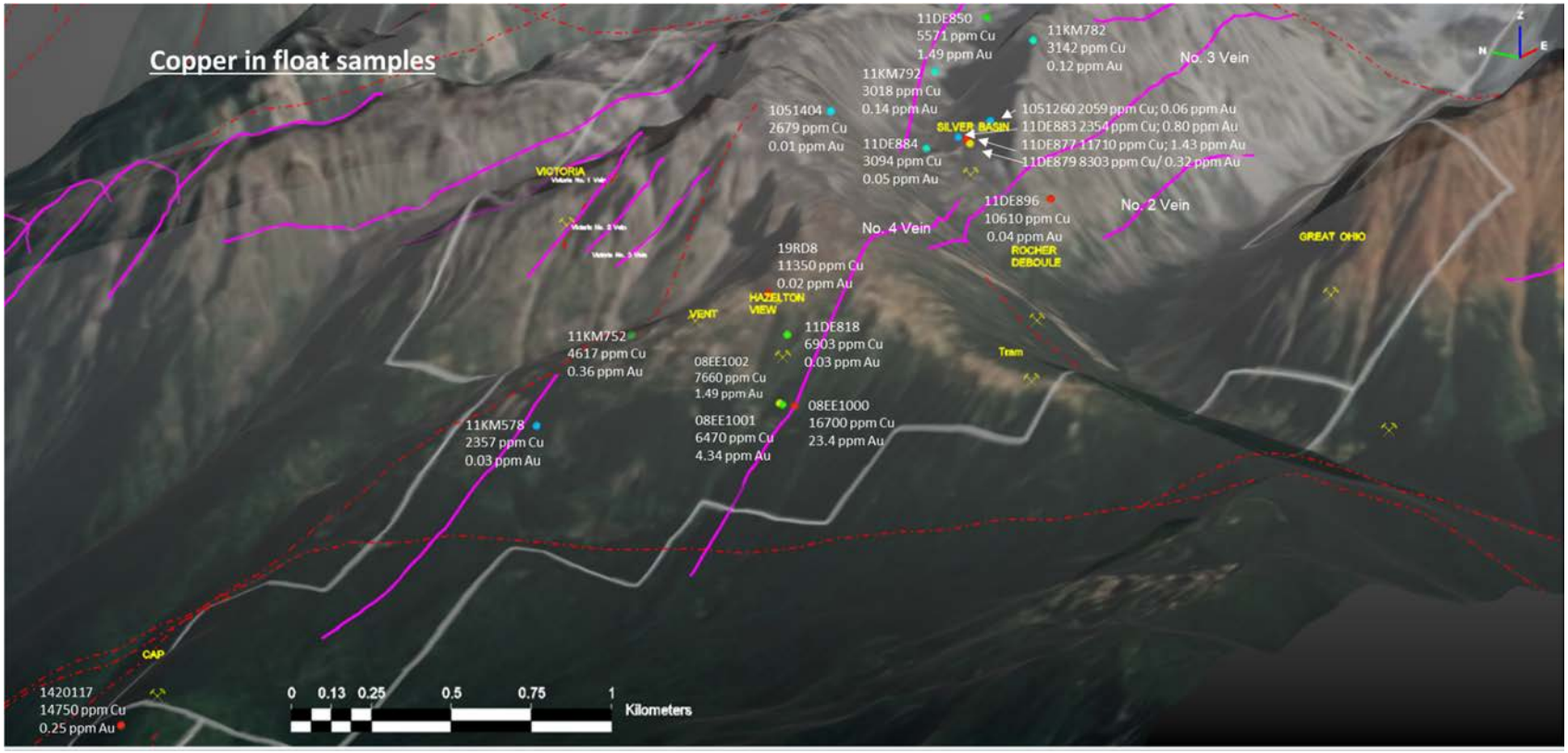


Figure 9-13: Copper in Float Samples Highlights

9.2.2. Grab Sampling

A total of 283 grab samples were assayed by the issuer. Seventeen (17) samples assayed >3.0 ppm gold (***Table 9-6***). While these samples are quite evenly spread out amongst the occurrences (Figure 9-14), similar trends to the float sample distribution can be observed in this data set. It would appear that each high-grade gold sample has either elevated copper or cobalt, but generally not both. This could indicate that the vein structures they were in were precipitated at different depths, temperatures and/or conditions into the host rock chemistry.

The top gold and copper assays are presented in ***Table 9-6*** and ***Table 9-7*** respectively and are illustrated on ***Figure 9-14*** and ***Figure 9-15*** respectively.

Table 9-6: Top gold assays from grab sampling (bold are also in top copper assays

sample_id	Au_ppm	Ag_ppm	Cu_ppm	Co_ppm	description
09DE317	161.7	12.7	11.48	>9999	cobalt above detection limit
09DE322	75.4	6.8	243	>9999	cobalt above detection limit
RD07-007	42	n/a	n/a	11000	
11KM789	41.8	7.3	494	98.2	hornblende, nickel–arsenides
1051226	**32.73**	**n/a**	**96830**	**438.8**	**magnetite**
RD07-003	**31.14**	**39.5**	**178000**	**2000**	
RD07-006	26.64	n/a	n/a	10000	
1420417	17.6	5.6	24	2460	
1420424	16.75	1.8	368	321	arsenopyrite
RD07-016	**12.06**	**n/a**	**25500**	**186**	
11KM749	10.3	2.4	154	>9999	1% arsenopyrite, hornblende, quartz, calcite; cobalt above detection limit
09DE315	9.69	1.75	17	52.7	arsenopyrite in hornblende.
11KM784	7.7	20	9365	13.8	
11DE853	7.1	n/a	3426	536.2	leached granodiorite, micro fractures contain chalcopyrite
1051295	6.2	0.499	11.9	1322.8	granodiorite with qtz, hornblende and an unidentified mineral
11DE824	3.3	n/a	2	831.9	hornblende, arsenosulfides, malachite, qtz vein with pyrite
11KM773	**3.1**	**16.147**	**72150**	**133.9**	**disseminated chalcopyrite in weathered granite**

Table 9-7: Top copper assays from grab samples (bold are also in top gold assays)

sample_id	Au_ppm	Ag_ppm	Cu_ppm	Co_ppm	comments
RD07-017	2.27	163.00	237000	50	
RD07-005	2.47	135.00	205000	93	
RD07-003	**31.14**	**39.50**	**178000**	**2000**	
RD07-001	0.37	50.40	120500	2900	
1051226	**32.73**	**n/a**	**96830**	**438.8**	**magnetite**
RD07-012	1.65	n/a	84700	876	
RD07-015	2.35	248.00	82300	196	
1051274	0.05	n/a	76380	30.8	vein going cross ways through stockwork
11KM773	**3.06**	**16.15**	**72150**	**133.9**	**disseminated chalcopyrite in rotted granite**
RD07-011	1.89	n/a	60500	383	
08KM2002	2.17	26.00	41600	119	Rocher #2 vein
11DE887	1.42	86.60	31850	10.4	1% chalcopyrite disseminated in granodiorite
11DE838	1.37	n/a	27520	74.9	8 veinlets
11KM793	0.72	30.50	26190	30.5	20 x 15 m bleached granodiorite boulder; quartz and disseminated chalcopyrite
11DE826	2.56	n/a	25820	34.6	cubed, disseminated pyrite, chalcopyrite, limonite
RD07-016	**12.06**	**n/a**	**25500**	**186**	
11KM764	0.07	2.96	25270	18.6	
11KM747	0.28	17.21	22990	22.5	biotite, chalcopyrite, magnetite
1051231	0.21	n/a	22470	85.7	altered granite
11KM771	0.08	0.30	22190	68.8	malachite, quartz black hornblende
11KM766	0.29	1.68	20430	13.1	pyrite, malachite, azurite, quartz crystals in black hornblende, magnetite
1420436	0.95	33.20	19650	66.9	malachite, pyrite
09DE320	1.76	144.00	18720	184.7	
09DE321	1.43	79.79	18260	165.6	
08Cap212	1.82	407.00	16000	26.2	
09DE314	0.25	11.27	15860	20.1	
1051267	0.19	n/a	15660	57.6	chalcopyrite, magnetite
11KM748	0.15	8.85	14230	9.7	quartz, hornblende
1051250	0.39	n/a	13670	17.4	horseshoe vein chalcopyrite
08Cap204	0.23	245.00	13300	19.7	
1051215	0.25	n/a	13270	9.4	feldspar porphyry
1051421	0.57	9.96	12880	95.7	blue volcanic, magnetite, chalcopyrite
1420416	0.94	1845.00	11450	4.9	pyrite 10%, 4 shears in 10m
08EE1007	0.07	25.00	11000	71	

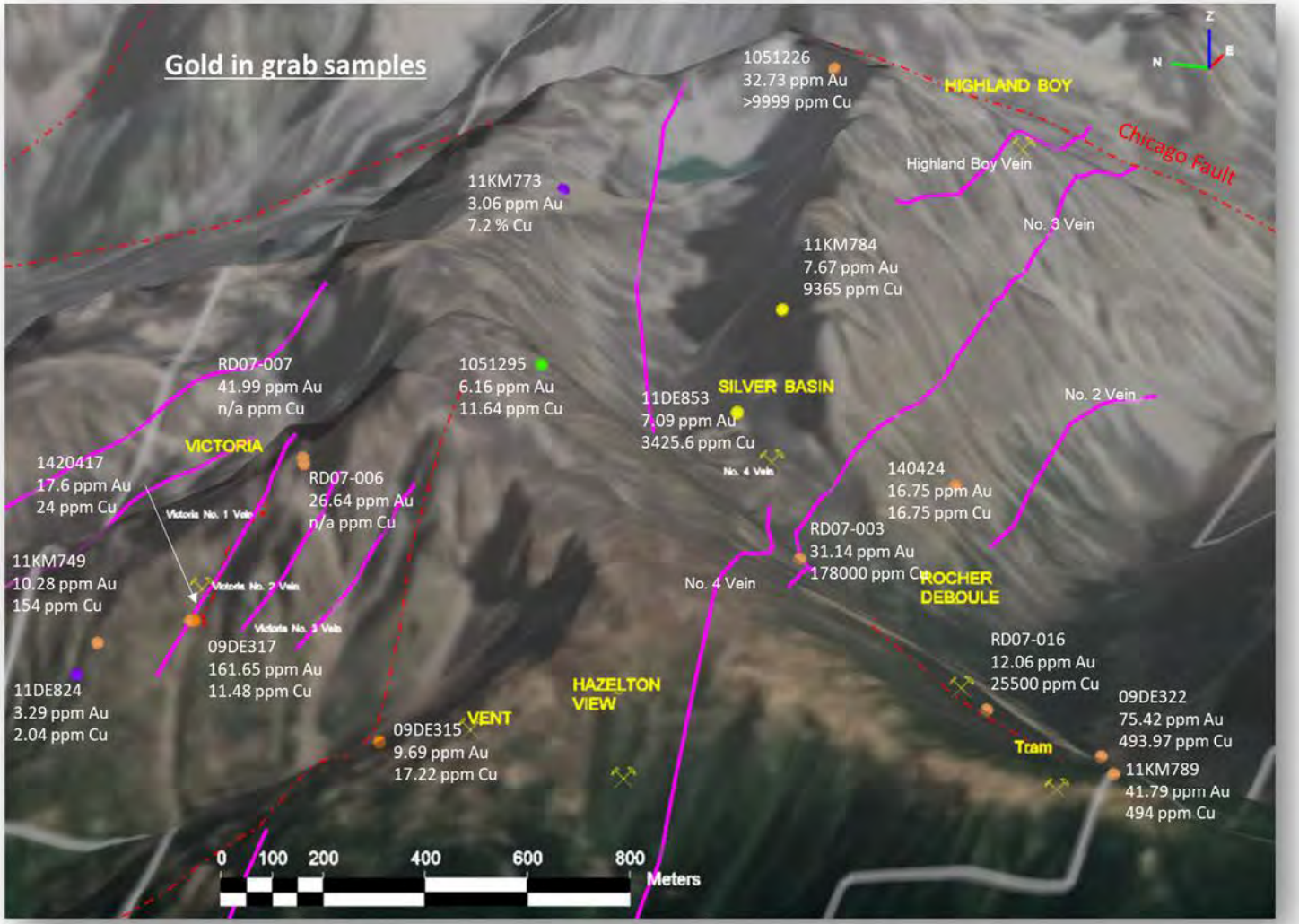


Figure 9-14: Gold in Grab Samples Highlights

Figure 9-15: Copper in Grab Samples Highlights

9.2.3. Chip Sampling

A total of 101 chip samples have been collected across widths ranging from 0.1 to 2.0 m. Twenty-three (23) samples contain >1 ppm gold (***Table 9-8***). The association of either copper or cobalt with the high-grade gold samples seems to be quite well established in this sample set. Only four of the 23 samples with high gold values are not in the Victoria or Rocher Deboule Mine areas. These results are presented in ***Figure 9-16***.

Table 9-8: Top gold assays from chip sampling

sample_id	width_m	Au_ppm	Ag_ppm	Cu_ppm	Co_ppm	comments
AR-8	0.6	1640	160.9	8208	320	5-10% secondary tourmaline/hornblende developed in porphyritic granodiorite, chalcopyrite-pyrrhotite are main sulphides present, with minor malachite, arsenopyrite & chalcopyrite
AR-10	0.5	980	16.8	4749	34	5-10% secondary tourmaline/hornblende developed in porphyritic granodiorite, chalcopyrite-pyrrhotite are main sulphides, minor malachite, arsenopyrite & chalcocite in quartz
AR-12	0.5	810	11.9	2577	15	5-10% secondary tourmaline/hornblende developed in porphyritic granodiorite, chalcopyrite-pyrrhotite are main sulphides, minor malachite, arsenopyrite & chalcocite in quartz
AR-17	0.2	160	1.2	1092	22	porphyritic granodiorite host, chalcopyrite-pyrrhotite-arsenopyrite-cobaltite are main sulphides present, with minor malachite, & chalcocite in quartz-hornblende-tourmaline
AR-6	0.8	154.14	19.5	17	1468	2-5% secondary tourmaline developed in porphyritic granodiorite, chalcopyrite-pyrrhotite--arsenopyrite-cobaltite are main sulphides present, with minor malachite, & chalcopyrite
17VIC-4	**0.3**	**126**	**7.75**	**4.5**	**17050**	**andesitic tuffs-flows, 30% actinolite, 20% hornblende, 0.2% calcite, 0.3% sericite 5% diss arsenopyrite, 0.1% py, 1% saffloritе**
09DE316	1	85.18	5.434	58.8	>9999	quartz, chlorite, biotite hornblende; cobalt greater than detection limit
11DE870	0.45	82.1	10.71	303.94	61.5	black calcite, visible gold
AR-9	0.6	15	1.1	1537	19	5-10% secondary tourmaline/hornblende developed in porphyritic granodiorite; chalcopyrite-pyrrhotite-molybdenite are main sulphides present, with minor malachite, arsenopyrite
AR-11	**0.4**	**14.8**	**107**	**97239**	**1388**	**5-10% secondary tourmaline/hornblende developed in porphyritic granodiorite, chalcopyrite-pyrrhotite-molybdenite are main sulphides, minor malachite, & chalcocite in smoky quartz**

sample_id	width_m	Au_ppm	Ag_ppm	Cu_ppm	Co_ppm	comments
AR-7	0.3	10	0.9	478	16	5-10% secondary tourmaline/hornblende developed in porphyritic granodiorite, chalcopyrite-pyrrhotite are main sulphides present, with minor malachite, arsenopyrite & chalcopyrite
AR-15	0.2	9.78	1.2	475	859	porphyritic granodiorite; chalcopyrite-pyrrhotite-arsenopyrite-cobaltite are main sulphides present
1420102	**0.28**	**9.28**	**39.984**	**57025.5**	**271.8**	**andesitic tuffs-flows 15% quartz, 0.2% calcite, 0.1% ser, 20% magnetite second-stage weak breccia, minor banding, vuggy**
17VIC-1	0.15	8.77	2.32	7.7	3400	andesitic tuffs-flows 30% actinolite, 20% hornblende, 0.2% calcite, 0.3% sericite 5% diss arsenopyrite, 0.1% pyrite, 1% safflorite
1051261	**1.5**	**7.9976**	**n/a**	**15100**	**16.9**	**chalcopyrite**
11DE840	**0.4**	**6.0136**	**n/a**	**13190**	**70**	
AR-13	**0.3**	**5.06**	**72**	**83609**	**807**	**5-10% secondary tourmaline/hornblende developed in porphyritic granodiorite, pyrrhotite-molybdenite-arsenopyrite are main sulphides, minor malachite, & chalcocite in quartz**
RD-12-AR-01	**0.2**	**3.41**	**71.6**	**76230**	**58.46**	**porphyritic granodiorite 30% quartz, 0.2% calcite, 0.3% sericite, 5% magnetite 8% chalcopyrite, 10% pyrite, 4% sphalerite, 0.7% arsenopyrite second stage weak breccia, minor banding, vuggy**
RD-04-AR-2	0.3	2.7401	16.1	5797.1		pyrite, chalcopyrite, pyrrhotite, magnetite in quartz carbonate vein
AR-14	0.2	1.78	145.7	3377	10	5-10% secondary tourmaline/hornblende developed in porphyritic granodiorite, chalcopyrite-pyrrhotite-molybdenite are main sulphides present, with minor cobaltite, malachite
08EE1018	**0.15**	**1.51**	**138**	**157500**	**249**	**Rocher #2 vein in creek**
AR-16	0.2	1.44	21.8	49163	88	porphyritic granodiorite host, chalcopyrite-pyrrhotite-arsenopyrite-cobaltite are main sulphides present
1051232	**1**	**1.21**	**n/a**	**17650**	**66.6**	**granite**

Note: Bold samples are also in top copper assays Table 9-6.

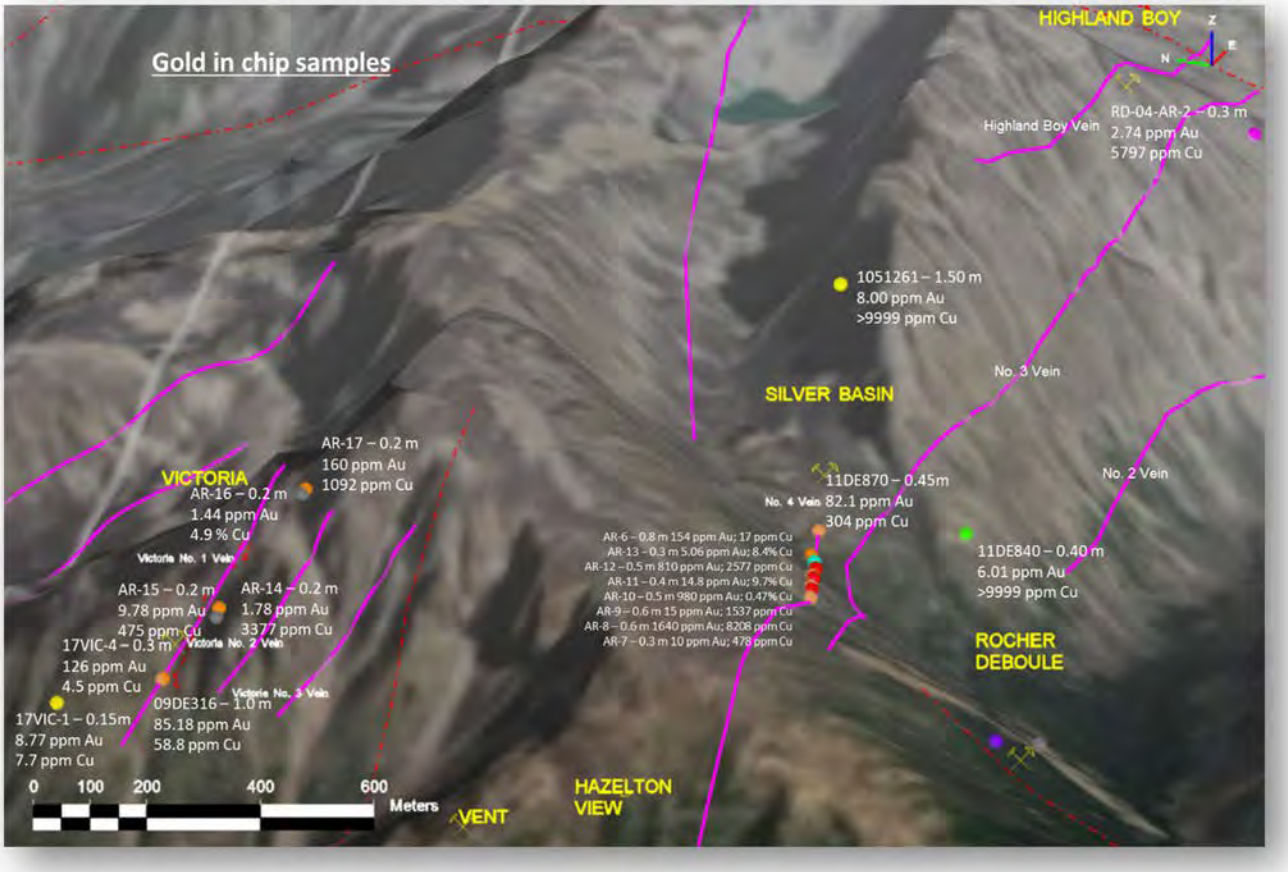


Figure 9-16: Gold in Chip Samples Highlights

Copper highlights include 17 of 101 samples which assayed >10,000 ppm (1%) across widths of up to 1.5 m. Detailed sample information is presented in ***Table 9-9*** and ***Figure 9-17***. Nine of these samples also occur in the top gold assays (***Table 9-8***)

Table 9-9: Top copper assays from chip sampling

sample_id	width_m	Au_ppm	Ag_ppm	Cu_ppm	Co_ppm	description
08EE1018	0.15	1.505	138	157500	249	Rocher No. 2 Vein in creek
AR-2	0.6	0.64	50	>99999	n/a	porphyritic granodiorite, pyrite-chalcopyrite-sphalerite-molybdenite are main sulphides present, with minor arsenopyrite, malachite, tetrahedrite; Copper above detection limit
AR-11	0.4	14.8	107	97239	1388	5-10% secondary tourmaline/hornblende developed in porphyritic granodiorite, chalcopyrite-pyrrhotite-molybdenite are main sulphides, minor malachite, & chalcocite in smoky quartz
RD-12-AR-02	0.28	0.012	40.4	86472	22.1	porphyritic granodiorite 15% quartz, 0.2% calcite, 0.1% ser, 20% magnetite trace sphalerite-galena, 0.5% pyrite, 10% chalcopyrite second stage weak breccia, minor banding, vuggy
AR-13	0.3	5.06	72	83609	807	5-10% secondary tourmaline/hornblende developed in porphyritic granodiorite, pyrrhotite-molybdenite-arsenopyrite are main sulphides, minor malachite, & chalcocite in quartz
RD-12-AR-01	0.2	3.41	71.6	76230	58.46	porphyritic granodiorite 30% quartz, 0.2% calcite, 0.3% sericite, 5% magnetite 8% chalcopyrite, 10% pyrite, 4% sphalerite, 0.7% arsenopyrite second stage weak breccia, minor banding, vuggy
AR-18	0.4	0.32	51.2	69429	197	porphyritic granodiorite; chalcopyrite-pyrrhotite-arsenopyrite-cobaltite are main sulphides present, with minor malachite, & chalcocite in quartz-hornblende-tourmaline
1420102	0.28	9.28	39.984	57025.5	271.8	andesitic tuffs-flows; 15% quartz, 0.2% calcite, 0.1% sericite, 20% magnetite second stage weak breccia, minor banding, vuggy
1420108	n/a	0.91	74.256	51586.5	768.9	andesitic tuffs-flows; **missing location**
AR-16	0.2	1.44	21.8	49163	88	porphyritic granodiorite; chalcopyrite-pyrrhotite-arsenopyrite-cobaltite are main sulphides present
11DE866	1	n/a	41.198	46760	493.3	hornblende, magnetite, chalcopyrite
11KM767	0.45	0.8176	n/a	23400	13	hornblende, magnetite, chalcopyrite, pyrite, quartz
1051232	1	1.2139	n/a	17650	66.6	granite
11DE869	1	n/a	17.981	16460	91.6	magnetite vein
1051261	1.5	7.9976	n/a	15100	16.9	chalcopyrite
1420103	0.22	0.245	65.456	13387.5	3360	andesitic tuffs-flows
11DE840	0.4	6.0136	n/a	13190	70	vein material

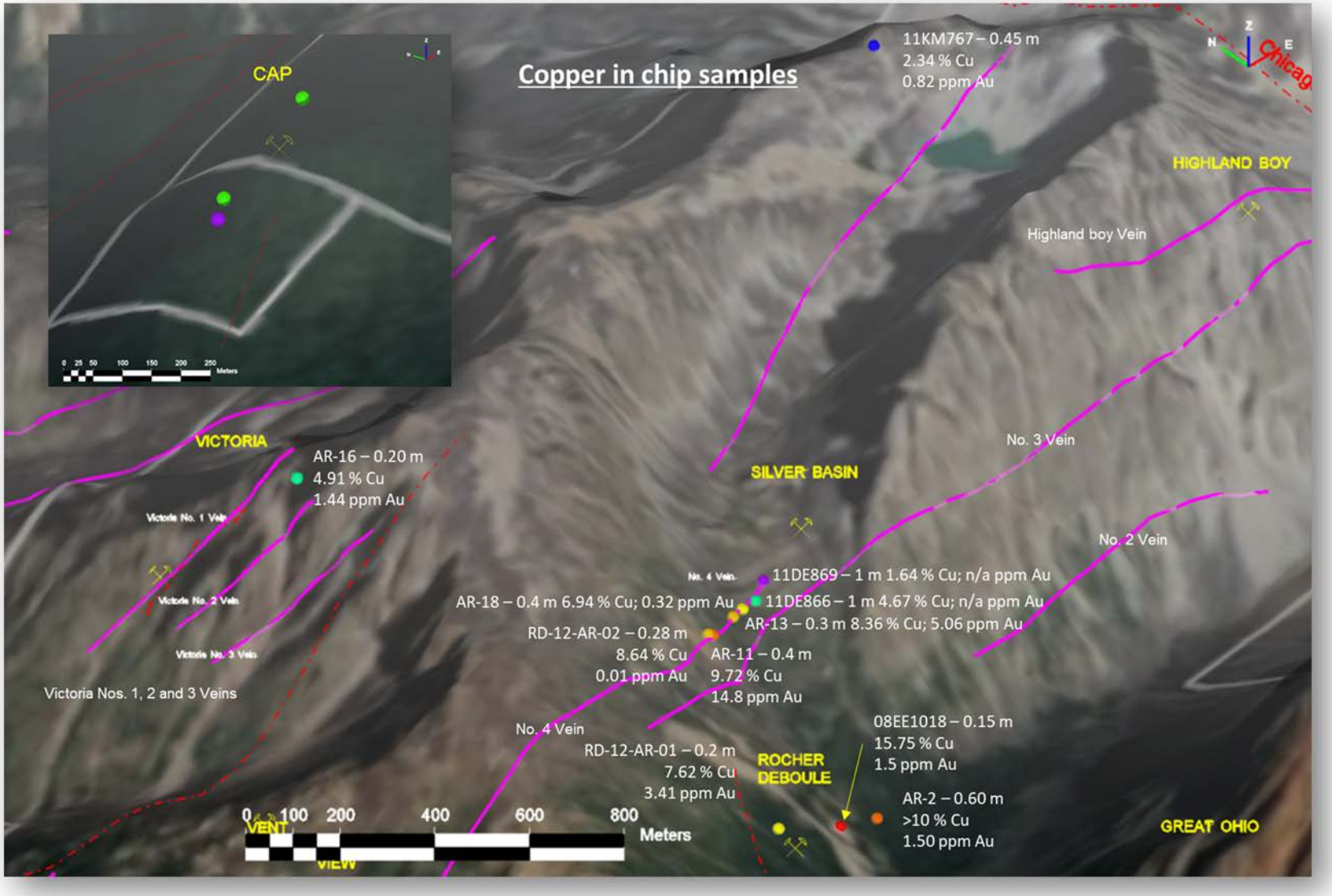


Figure 9-17: Gold in Chip Samples Highlights

9.3. Geophysics

AMI and its predecessors have completed 5 ground magnetometer surveys during the period 2004-2019. In 2007, Fugro was contracted to perform and aerial survey over what was a much larger land package at that time. A total of 2,277 readings comprise the ground magnetometer data set. The type and amount of work completed is summarized in ***Table 9-10***.

Table 9-10: Geophysical survey details

year	type	Line km	# readings
2007	airborne	1089	539659
2004	ground magnetometer	3.3	391
2007	ground magnetometer	1.55	143
2011	ground magnetometer*	22	895
2017	ground magnetometer	7.2	598
2019	ground magnetometer	2.95	250
Total ground magnetometer		37	2277

*readings collected during this program were not corrected for diurnal variation.

9.3.1. Ground Magnetometer Surveys

A compilation of the survey data from each of the programs is presented in ***Figure 9-18***. The data were compiled into a database and used to generate a gridded model of the total magnetic field so the information could be viewed in 3D. This is shown in ***Figures 9-19*** *through* ***22***. A number of anomalies are apparent in the data set and the overall intensity of the magnetic field mimics the results from the airborne survey, discussed in the next section. These surveyed areas have modified colour scales to help highlight the anomalies.

The Highland Boy area was the first area in which AMI's predecessor company, Rocher Deboule Minerals Corp., conducted a ground magnetometer survey. They initially laid out a grid with 2 x 1.2 km long lines at 33° azimuth straight up the mountainside. Most other cross lines were 300-350 m in length along a baseline that eventually ran 1,700 m northwest-southeast. The anomalies almost run in an X shape with two magnetic highs approximately coincident with the No. 3 Vein and the Highland Boy Vein. See ***Figure 9-19.***

In 2011 the magnetometer surveying didn't follow a grid but rather traversed an area of roughly 140 ha. It is important to note that this data was not corrected for diurnal variation as is the normal practice when performing magnetomter surveys. With that said, AMI did observe that there were no magnetic storms in the area during the time of the survey. Even uncorrected data can prove valuable. In this case it would appear that there are some magnetic highs following the general trend of the No. 3 Vein. See ***Figure 9-20.***

In both the Victoria and the Cap areas, the overall magnetic field is quite lower than the previously surveyed areas. There are two distinct anomalies that run parallel to the Victoria No. 1 and 2 Veins. At the Cap area it is quite magnetically flat, with one anomaly 300 m along trend from the Cap showing. See ***Figure 9-21*** *and* ***9-22*** *respectively.*

584000 585000 586000 587000 588000 589000

6116000 6115000 6114000 6113000

N

Gershwin Creek

Silverzip Creek

Juniper Creek

127°40'0"W 127°35'0"W 55°10'0"N

16

CAP

2019 Cap

2017 Victoria Mine

VICTORIA (L. 3303)

2011 uncorrected mag data

2007 Highland Boy West

2004 Highland Boy East

HIGHLAND BOY (L.1000)

SILVER BASIN

HAZELTON VIEW

ROCHER DEBOULE

GREAT OHIO (L. 702)

Victoria Survey Legend

2017 mag contours 2017 mag data points

nT	nT
< 56450	<56450
56451 - 56500	56450 - 56500
56501 - 56550	56501 - 56550
56551 - 56600	>56550
>56600	

Rocher Deboule Survey Legend

2011 mag contours 2011 uncorrected mag

nT	gammas
<57000	< 57000
57001 - 58000	57001 - 58000
58001 - 59000	58001 - 59000
59001 - 60000	59001 - 60000
>60000	>60000

Cap Survey Legend

2019 mag contours 2019 mag data points

nT	nT
55720 - 55750	55593 - 55700
55751 - 55800	55701 - 55800
55801 - 55900	55801 - 55900
55901 - 55900	55901 - 99999
55901 - 99999	

Highland Boy Survey Legend

2004, '07 mag contours 2004, '07 mag data points

nT	nt
<57000	< 57000
57001 - 58000	57001 - 58000
58001 - 59000	58001 - 59000
59001 - 60000	59001 - 60000
>60000	>60000

Legend

- AMI Rocher Deboule Property
- 25 m topo
- roads
- highway
- trails
- creeks
- railway
- portal
- Minfile locations

1:15,000

0 100 200 400 600 800 1,000 1,200

Meters

American Manganese Inc.

Figure 9-18 Rocher Deboule Property
RDB / AMI
Magnetic Survey Compilation

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: Oct. 15, 2020

Approved by: Ron Parent, P. Geo.

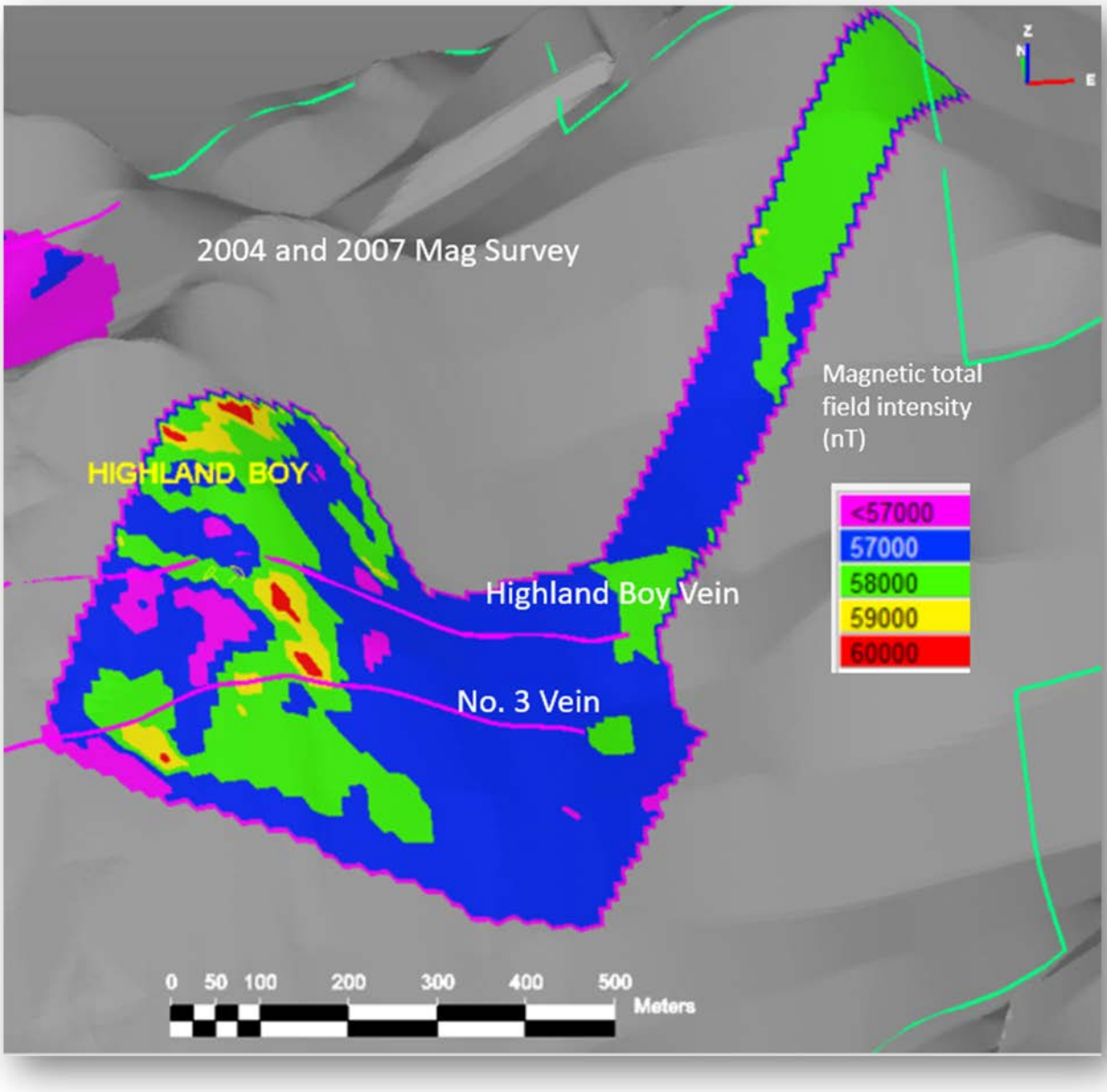


Figure 9-19: Highland Boy Ground Magnetometer Survey Readings

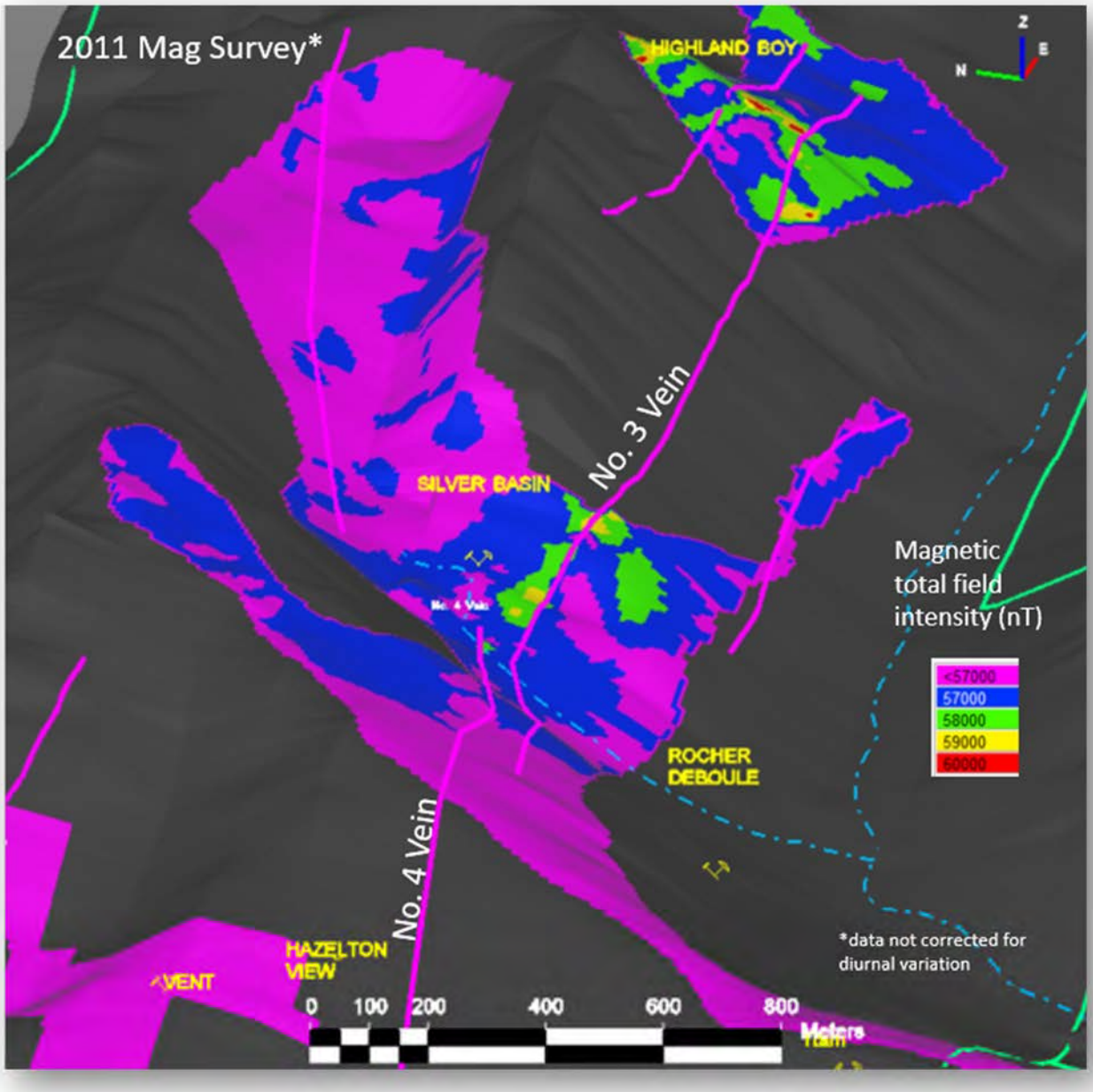


Figure 9-20: RDB and Silver Basin Ground Magnetometer Results

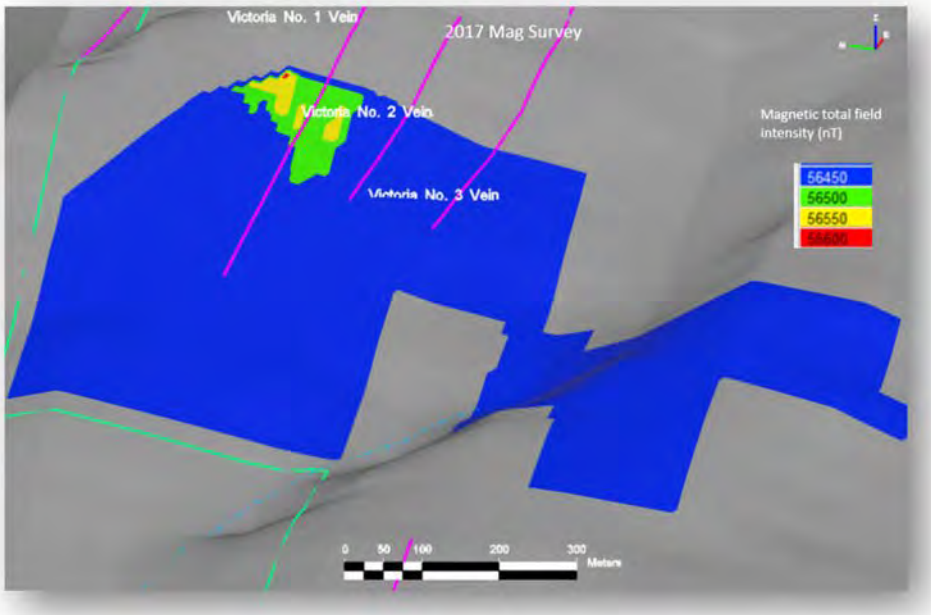


Figure 9-21: Victoria Ground Magnetometer Survey 2017

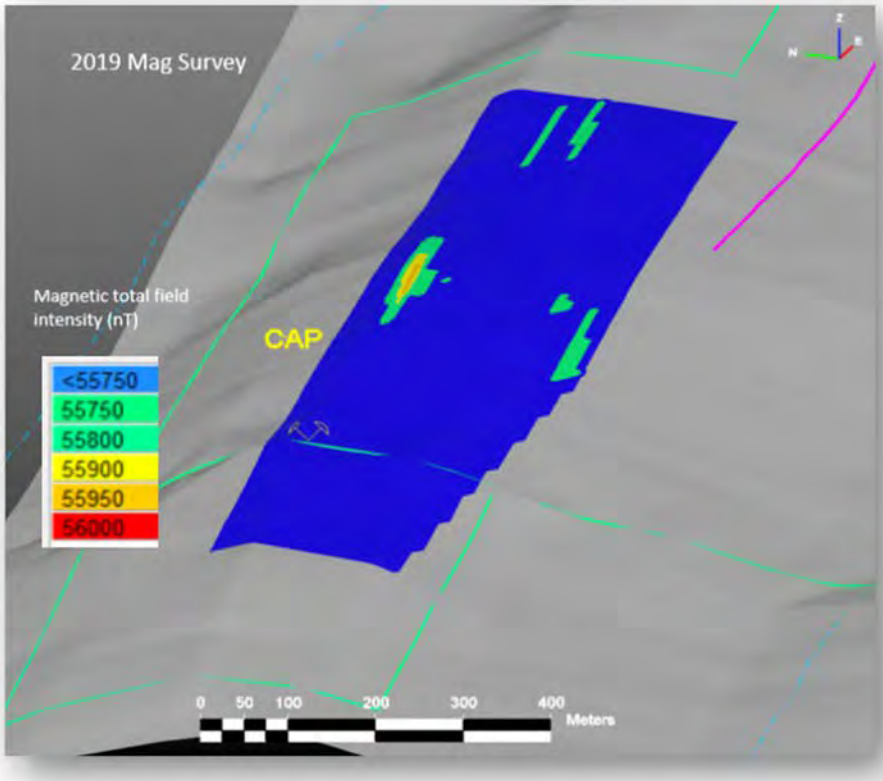


Figure 9-22: Cap Area Ground Magnetometer Survey Data (2019)

9.3.2. Airborne Survey

As mentioned previously, Fugro performed an airborne survey using a helicopter and equipment from Dighem from July 7-17th, 2007 (***Figure 9-23***).

From Fugro (2007):

"The purpose of the survey was to detect zones of conductive mineralization and to provide information that could be used to map the geology and structure of the survey area. This was accomplished by using a DIGHEM multi-coil, multi-frequency electromagnetic system, supplemented by a high sensitivity cesium magnetometer and a 256-channel spectrometer. The information from these sensors was processed to produce maps that display the magnetic, radiometric and conductive properties of the survey area. A GPS electronic navigation system ensured accurate positioning of the geophysical data with respect to the base maps."

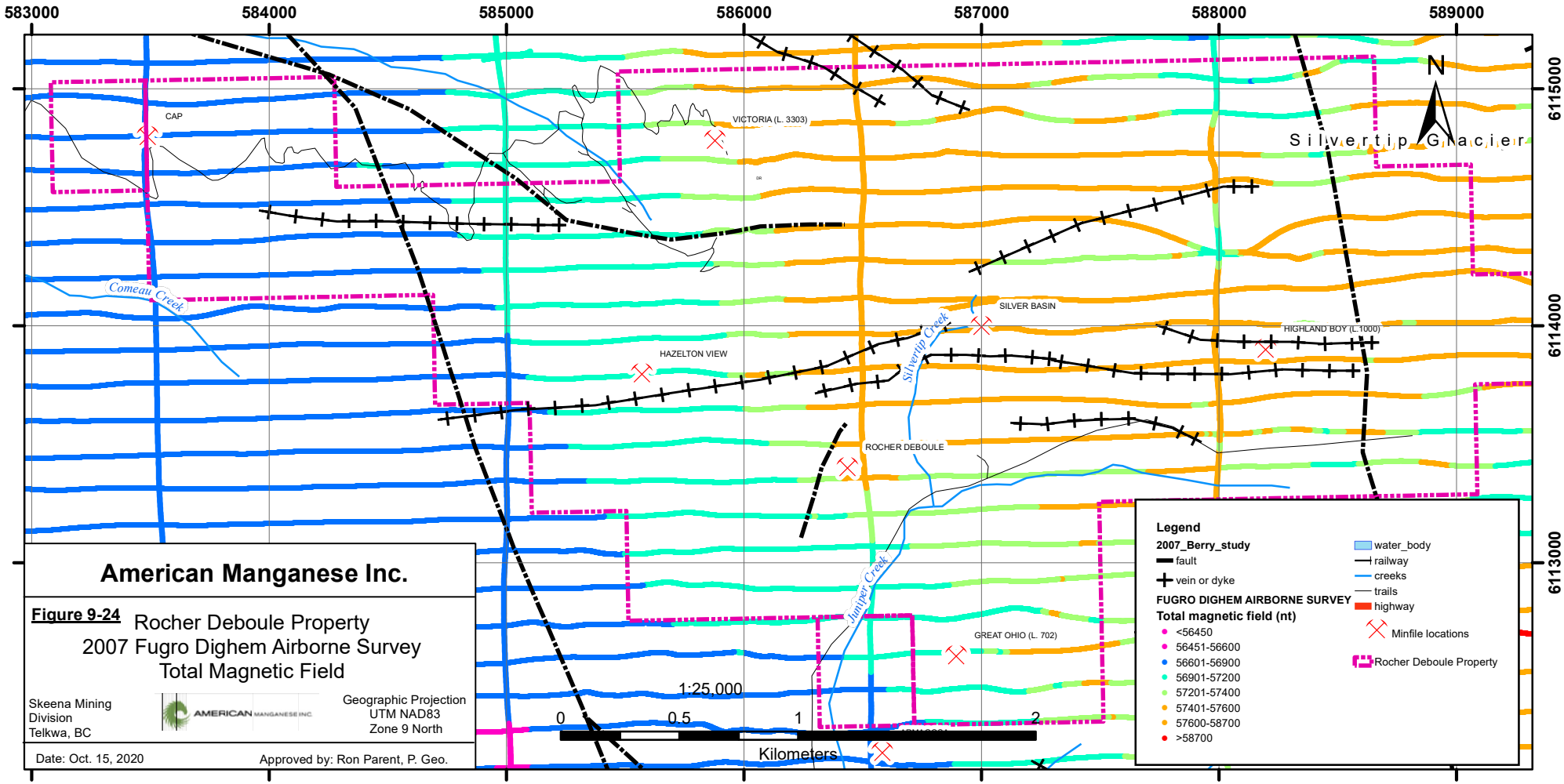
Figure 9-23: Helicopter and "Bird" Used for the Airborne Survey

In addition to total field magnetics, the survey collected electromagnetic data, apparent resistivity and others information. ***Figure 9-24*** shows the results of the survey covering the current tenure

and also a list of the other data layers collected during the field survey. The field data was validated and used to create a gridded model , which can be seen in ***Figure 9-25***.

Curiously enough, the magnetic highs almost parallel topography, especially on either side of the Silver Basin Valley. The contact between the Rocher Deboule Stock and the sediments/volcanics of the Bowser and Skeena Groups is approximately delineated.

SURVEY DATA FORMAT: 47 CHANNELS														
#	CHANNEL NAME	precision	UNITS	DESCRIPTION	#	CHANNEL NAME	precision	UNITS	DESCRIPTION	#	CHANNEL NAME	precision	UNITS	DESCRIPTION
1	x	0.1	m	UTME-NAD83(ZONE-20)	17	CPI7200	0.1	ppm	Inphase-Coplanar 7031 HZ	33	CPPL	0.1		Coplanar Powerline Monitor
2	y	0.1	m	UTMN-NAD83(ZONE-20)	18	CPQ7200	0.1	ppm	Quadrature-Coplanar 7031 HZ	34	CPSP	0.1		Coplanar Spheric Monitor
3	fid	0.1		fiducial increment	19	CXI5500	0.1	ppm	Inphase-Coplanar 5871 HZ	35	tc_down	1	counts/s	raw Total Count window
4	flight	0.1		flight number	20	CXQ5500	0.1	ppm	Quadrature-Coplanar 5871 HZ	36	k_down	1	counts/s	raw Potassium window
5	latitude	0.1	degrees	latitude WGS84	21	CPI56K	0.1	ppm	Inphase-Coplanar 55540 HZ	37	u_down	1	counts/s	raw Uranium window
6	longitude	0.1	degrees	longitude WGS84	22	CPQ56K	0.1	ppm	Quadrature-Coplanar 55540 HZ	38	th_down	1	counts/s	raw Thorium window
7	ALTBIRD	0.1	m	Bird Height	23	RES900	0.1	ohm-m	Resistivity 900 Hz	39	u_up	1	counts/s	Upward uranium window
8	gps_z	0.1	m	helicopter height above mean sea level	24	DEP900	0.1	m	Depth 900 Hz	40	cosmic	1	counts/s	cosmic counts
9	dem	0.1	m	digital terrain model	25	RES7200	0.1	ohm-m	Resistivity 7200 Hz	41	live_time	1	ms	spectrometer live time
10	diurnal_cor	0.1	nt	diurnal correction	26	DEP7200	0.1	m	Depth 7200 Hz	42	tc_cor	1	counts/s raw	Total Count window corrected
11	mag_raw	0.1	nt	total magnetic field	27	RES56K	0.1	ohm-m	Resistivity 56000 Hz	43	k_cor	1	counts/s raw	Potassium window corrected
12	mag_final	0.1	nt	total magnetic field	28	DEP56K	0.1	m	Depth 56000 Hz	44	u_cor	1	counts/s raw	Uranium window corrected
13	CPI900	0.1	ppm	Inphase-Coplanar 881 HZ	29	DIFI	0.1		Diff. Based On 5500/7200 Inphase	45	th_cor	1	counts/s raw	Thorium window corrected
14	CPQ900	0.1	ppm	Quadrature-Coplanar 881 HZ	30	DIFQ	0.1		Diff. Based On 5500/7200 Quadrature	46	kpa	0.1	kpa	air pressure
15	CXI1000	0.1	ppm	Inphase-Coaxial 1113 HZ	31	CXPL	0.1		Coaxial Powerline Monitor	47	temp_ext	0.1	C	air temperature
16	CXQ1000	0.1	ppm	Quadrature-Coaxial 1113 HZ	32	CXSP	0.1		Coaxial Spheric Monitor	48	ALT_R	0.1	m	Helicopter Height
										49	gr820_down	1		256 channel spectrum array channel



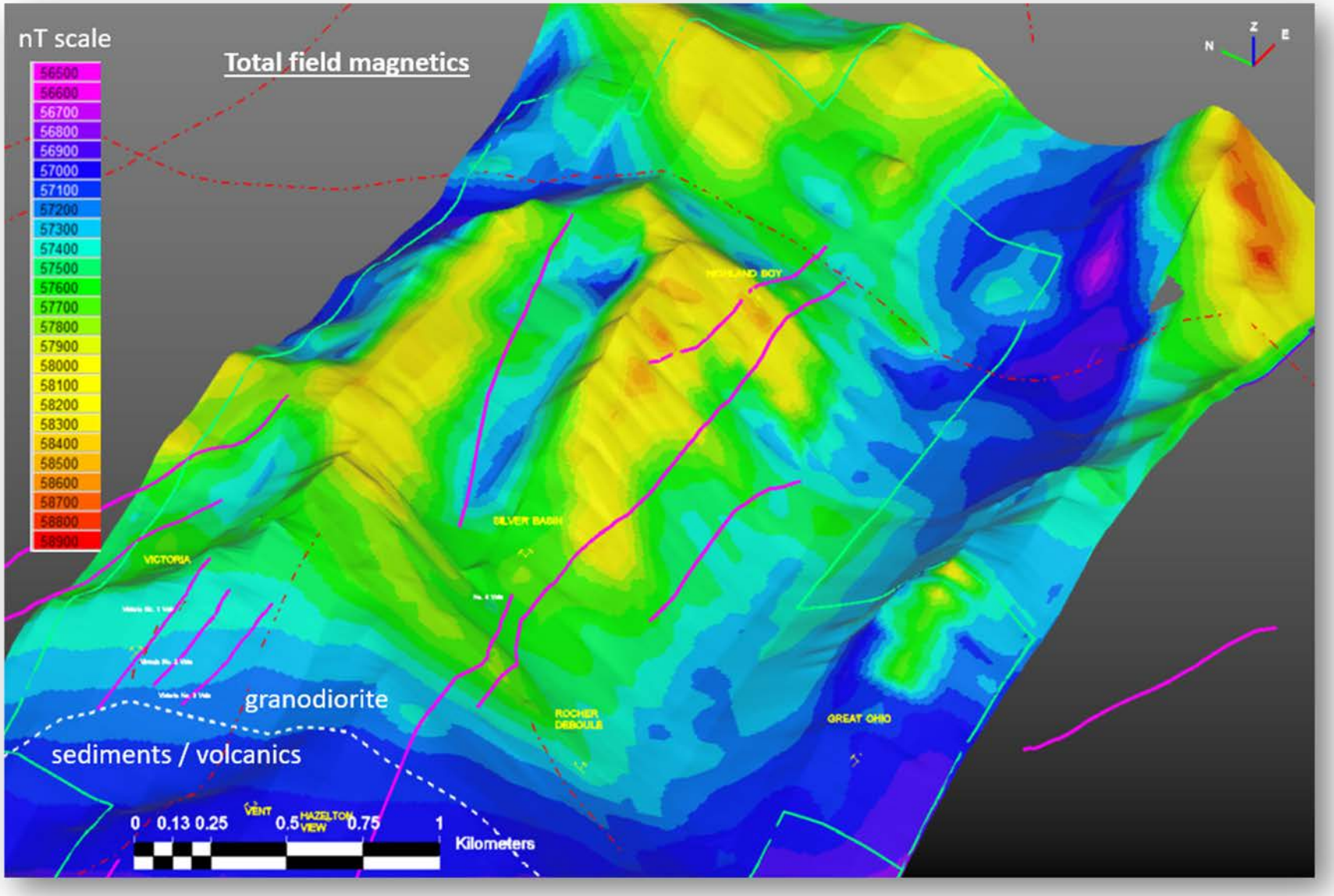


Figure 9-25: Gridded Magnetic Model Created from Airborne Survey Data

10. Drilling

Only one drill campaign has been carried out by the issuer to date.

During September 2007, Rocher Deboule Minerals Corp. completed 1,106.1 m over six drillholes on the Highland Boy showing and vein structure. This drilling was carried out under the supervision of Mr. Andris Kikauka, P.Geo., Qualified Person. All six holes were drilled from one set-up, approximately 100 m north of the surface trace of Cu-Ag-Au bearing quartz-sulphide Highland Boy Upper Vein, at 1,952 m elevation. The six drillholes were completed and they varied from 137.2 to 327.7 m in depth as tabulated in **Table 10-1**. The Highland Boy Cu-Ag-Au mineral occurrence features two 90° to 120° trending and steeply north-dipping quartz-sulphide-iron oxide fissure veins that outcrop in rugged terrain at 1,768 to 1,980 m elevation. The southernmost vein zone is traced west along surface to the Rocher Deboule No. 4 Vein. The Highland Boy Veins contain massive and banded chalcopyrite, coarsely crystalline magnetite, and pyrite in a gangue of quartz, calcite, dolomite, hornblende, tourmaline, actinolite, sericite, biotite and chlorite. The drilling was completed by Neill's Mining Ltd. and was of BQ TW diameter core size.

Diamond drillhole data including hole number, depth, easting, northing, elevation, azimuth, and dip are given in ***Table 10-1***.

Table 10-1: Highland Boy diamond drillhole details

hole-id	UTM_east	UTM_N	elevation	azimuth	dip	td (m)
07-HB-01	588259	6114062	1973.1	200	-70	327.7
07-HB-02				200	-50	163.1
07-HB-03				220	-50	144.5
07-HB-04				220	-70	182.9
07-HB-05				340	-50	150.9
07-HB-06				300	-48	137.2
Total						**1106.3**

The core from six drillholes was logged in detail by Andris Kikauka, P.Geo. Sample assay sheets were developed for the 97 drill core samples that were split and assayed. These sample intervals varied in length from 0.31 to 2.63 m. No down-hole surveys were completed and the drillhole location was captured with a hand held GPS unit

Holes 1 through 4 intersected what is assumed to be the Highland Boy Vein in widths from 0.31 to 1.61 m drilled thickness. The true thickness would be about 85% of the drilled thickness based on the angle of intersection in the drillhole. Gold values from 0.005-3.14 ppm and copper from 486-13,800 ppm (***Table 10-2***). The projected intersection of the Highland Boy Vein with topography is located approximately 45 m up-slope from the currently mapped position of the vein on surface. This most likely is a result of incorrect location of the Highland Boy Vein on surface, however, one cannot rule out the possibility of a fault displacing the vein before it reaches the surface as fault gouge was observed in the footwall of the vein in holes 1 and 2. Holes 5 and 6 did not intersect the Highland Boy Vein (***Figure 10-1***).

Table 10-2: Highland Boy Vein intersections

hole ID	sample-id	from	to	width	Au ppm	Ag ppm	Cu ppm
07-HB-01	D1-14	130.82	131.34	0.52	0.118	0.77	7050
07-HB-02	D2-7	105.37	105.68	0.31	3.14	47.5	138000
07-HB-03	D3-4	100.95	102.56	1.61	0.005	0.09	486
07-HB-04	D4-8	136.64	137.77	1.13	0.025	0.27	960

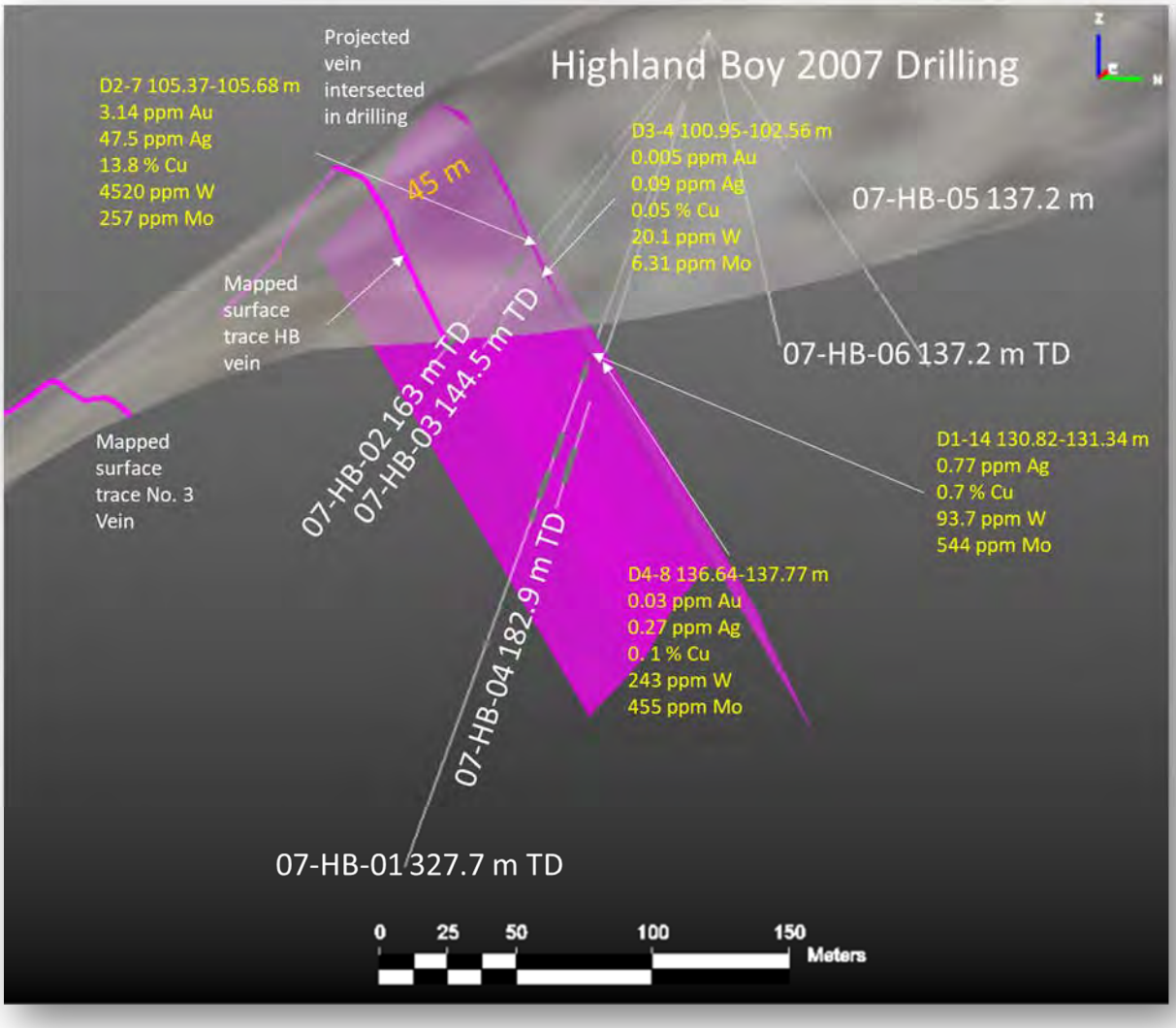


Figure 10-1: Highland Boy 2007 Drilling

11. Sample Preparation, Analyses and Security

During the 2007 Rocher Deboule diamond-drilling program, core boxes from the 6 drillholes were transported to Hazelton, B.C. and laid out in sequence for visual inspection and the capture of a photographic record. Visual observations of geological and mineralogical data was recorded in drill logs. The core was laid out in a manner whereby data for variance in mineral, alteration and structure could be recorded in drill logs and in photographs. Sample intervals varied in width from 0.31-2.63 m. The core was split in half using a manual, screw-tightened vice core-splitter. There were a total of 97 split core samples. Split core samples were placed in marked poly bags and shipped to ASL Chemex in North Vancouver, B.C. for 4 acid-near total digestion (ALS Code ME-MS61) 48 element ICP geochemical analyses. The remaining half of the split core was returned to the box as an oriented specimen and placed back in marked core boxes and the lids were fastened. The core boxes were cross-stacked <1 m high for storage.

Rock samples collected by AMI were of three general types:

1. Chip samples taken across widths ranging from 0.2-1.5 m. Rock chip samples consisted of acorn to walnut sized chips taken with rock hammer and maul averaging 2.5 kg in weight.
2. Grab samples taken from mineralized outcrops, in-situ or very close.
3. Float rock samples of talus or dump material, not in-situ.

Samples were placed in marked poly bags and shipped to Pioneer Labs in Richmond, B.C. for 30 element Induced Couple Plasma (ICP) and gold geochemical analysis.

Soil and sediment samples were also collected as described below:

1. Silt fraction stream sediment samples were taken with a shovel from active stream channels and were wet screened through -20 mesh screens. Stream sediment samples were placed in marked kraft envelopes for shipping.
2. Soil samples were taken with a grub hoe and consisted of talus fines. The soil horizon is poor to moderately well developed in the general area and the soil sample material is weathered ‘C’ horizon. Samples were placed in marked kraft sample bags for shipping.

Only three conventional assay labs were used for assaying by the issuer:

1. ACME Labs of Vancouver, B.C. is an ISO 9001:2000 accredited laboratory with certificate number FM63007.
2. ALS Chemex Labs of North Vancouver, B.C. is an ISO 9001:2000 and ISO 17025 accredited laboratory. They are also a member of the Standards Council of Canada Accredited Laboratories.
3. Pioneer Labs of Richmond, BC is a fully accredited analytical laboratory.

The laboratories have stated that the data generated for Rocher Deboule Minerals Corp. samples carried out from 2004-2019, was performed in each respective lab by university graduate and post-graduate personnel who have degrees in analytical chemistry. Regulatory authorities recognize all of the subject labs.

Activation laboratories analysed samples for the SGH Survey discussed in Section 9.1.2.

A summary of samples and assays is presented in ***Table 11-1.***

Table 11-1: Sample and assay details

Assay Lab	chip	float	grab	SGH_soil	soil	stream sediment	Grand Total
Acme	4				10	3	17
Activation Laboratories				146			146
ALS	41	45	240		143	1	470
Pioneer	48	23	31		381	9	492
Grand Total	93	68	271	146	534	13	1125

Qualified Person, Andris Kikauka, P.Geo supervised core sampling and logging. The samples were crushed and pulverized and analyzed by ICP for all elements, except gold, which was done independently as a geochemical analyses by a combined fire assay and atomic absorption method. All elements except gold were expressed in parts per million. Gold analyses was expressed in both parts per billion and parts per million. The ICP multi-element analyses used a 0.5-gram sample digested with 3 ml of aqua regia diluted to 10 ml of water. Gold analysis uses a 10-gram sample digested with aqua regia, methyl isobutyl ketone extracted (MIBK), graphite furnace and atomic absorption finished to 1 part per billion detection.

Split core samples from the 2007 drill program were placed in marked poly bags and shipped to ASL Chemex in North Vancouver, B.C. for 4 acid-near total digestion (ALS Code ME-MS61) 48 element ICP geochemical analyses.

12. Data Verification

During the course of preparing this report, Mr. Parent, P. Geo spent considerable time compiling and digitizing information from the many reports and data sets that were available for the Property. When compiling the data for the history section of the report, the compilation consisted mainly of the amounts and general location of surveys and sampling, with the exception of the Roche Deboule underground sampling done by Southern Gold. This information, along with historical mine plans were used to construct detailed maps and a 3D wireframe model of the workings, veins, and other structures in order to get a good understanding of the project.

Work done by AMI and its predecessors was collected digitally and compiled in spreadsheets, shape files and MS Access databases, resulting in the validation and verification of 100% of the data with 98.5% of the rock and soil samples being located. Only three samples were missing assay data and there were 17 samples for which the authors were unable to determine the precise location of a sample.

All of the assay reports were obtained in .csv format from ALS and and ACME assay labs where AMI was only able to provide a .pdf file. Pioneer Lab data was compiled from the .pdf files converted to spreadsheets, edited and imported to the database. A detailed, cross-referenced record of each assay lab report is tied to each sample and can be queried readily for additional analysis and interpretation.

During the site visit by Christo Marais, P. Geo on September 14, 2020, several locations in the field were verified and geology and mineralization consistent with the history and reporting of the property were observed. A copy of the site visit memo prepared by Mr. Marais is included as **Appendix A** of this report.

13. Mineral Processing and Metallurgical Testing

Not relevant.

14. Mineral Resource Estimates

Not relevant. The issuer has not completed any NI 43-101 compliant resource estimates.

15. Mineral Reserve Estimates

Not relevant

16. Mining Methods

Not relevant

17. Recovery Methods

Not relevant

18. Project Infrastructure

Not relevant

19. Market Studies and Contracts

Not relevant

20. Environmental Studies, Permitting and Social or Community Impact

2007 Permit (MX-1-728) is still active with a reclamation bond of $10,500 being held (certificate number 9763-324) at BMO financial institution, and is covered by Safekeeping Agreements dated April 16, 2007 and March 31, 2008. The issuer has not filed any annual information reports since 2007.

Reclamation of portions of the Rocher Deboule Mine may be required if the site is put back into production. It is noted that there are the remains of historical tailings dumps which have since revegetated naturally.

Water draining from any old workings (as observed during the site visit) should be monitored and reported on by a professional qualified in environmental assessments if and when the project is advanced to production.

21. Capital and Operating Costs

Not relevant

22. Economic Analysis

Not relevant

23. Adjacent Properties

The Rocher Deboule Property is located within the Hazelton Mountain Range of central B.C. This is a very prolific mineralized belt for a variety of metals and styles of mineralization.

The Red Rose Mine is located 11 km south of Hazelton and 1.5 km southeast of the Rocher Deboule Property. The Red Rose mineral occurrence consists of a quartz vein system, which contains variable amounts of tungsten, copper, gold, silver, molybdenum, and uranium. According to the government of BC MTO, the property containing this and the Armagosa is owned by Mr. Timothy Arthur Johnson (***Figure 4-1***). Between 1942 and 1954, 103,424 tonnes of ore produced 1,002,839 kg of tungsten. There are no NI 43-101 compliant resources. The Red Rose also contains quartz veins with reported assay values greater than 17 ppm gold and silver, which occur with chalcopyrite and/or tetrahedrite. Uranium, in the form of uraninite, was also present in the tungsten ore.

The Armagosa is located on the north side of Armagosa Creek and approximately 600 m south of the Great Ohio Veins. There are two adits and one small shaft. The lower adit is at 1,322 m and the upper adit is at 1,408 m.

Within approximately 150 km of the Rocher Deboule Property, there are several large porphyry or porphyry-style copper-molybdenum, copper-gold, molybdenum, and molybdenum-tungsten deposits. A summary of the status and NI 43-101 compliant resources for these properties is presented in ***Table 23-1.***

Table 23-1: Metals deposits within 150 km of Rocher Deboule

Property	Status	Reserves** / Resources* (NI43-101 Compliant)	Owner / Operator (BC Minfile)
Bell-Granisle (Cu-Au)	Past Producer	119 Mt @0.41% Copper and 0.15 gpt Au***	n/a
Berg (Cu-Mo)	Developed Prospect	557 Mt @ 3.12 Ag, 0.3% Cu, 0.037% Mo* combined	Terrane Metals
Big Onion (Cu-Mo)	Developed Prospect	94.4 Mt @ 0.42 % Cu, 0.012 % Mo* combined	Eagle Peak Resources
Endako (Mo)	Past Producer	33.4 Mt @ 0.049 % Mo* combine	Thompson Creek Metals
Huckleberry Main & East Zones (Cu-Mo-Au)	Past Producer	14 Mt @ 0.362 % Cu, 0.005 % Moly** proven and probable	Imperial Metals Corp
Kitsault (Mo)	Past Producer	228.2 Mt @ 5.0 ppm Ag; 0.083% Mo** proven and probable	Alloycorp
Louise Lake (Cu-Mo)	Developed Prospect	26 Mt @ 1.01 gpt Ag, 0.22 gpt Au, 0.231 % Cu, 0.008 % Mo* combined	North American Gem Inc.
Poplar (Cu-Mo)	Developed Prospect	171.3 Mt @ 2.3 gpt Ag, 0.08 gpt Au, 0.28% Cu, 0.008 % Mo* indicated	Lions Gate Metals
Davidson	Developed Prospect	90.1 Mt combined at 0.286 % Mo and 0.036% tungsten*	Darnley Bay Resources

*** resources are not NI 43-101 compliant

24. Other Relevant Data and Information

Not relevant

25. Interpretation and Conclusions

1. The authors have completed a detailed technical evaluation of the Rocher Deboule Property that includes the Rocher Deboule Mine, the Victoria Mine and the Great Ohio, Highland Boy and Cap Vein workings. The preparation of this technical report included certain due diligence procedures.
2. It is concluded that the technical field work done by the Issuer is adequate for the purposes of this report. It is recommended that the company implement a Quality Management System for the collection and storage of exploration information.
3. Based on the host lithologies and mapped alteration assemblages, the Rocher Deboule Property is classified as a high sulfidation, intrusive (sediment) hosted, epithermal gold- silver- base metal vein-shear deposit. The Property lies on the northwestern margin of a granodiorite pluton intruded into sediments and volcanics where a series of precious-base metal quartz-sulphide veins have had historical mine production.
4. The economic potential of the Property is clearly evident; however, only core drilling will prove whether there is enough ore grade material to sustain an economic and profitable operation, something that no other operators on the Property have been able to do.
5. Further compilation of data from the 1980's would serve to enhance the data set created during the course of writing this report, especially as it relates to geophysical surveys (aside from magnetometer) and soil samples covering ground not sampled by the Issuer.
6. All of the mineral showings described in detail, with certain exceptions, on the Rocher Deboule Property comprise vein fillings of shear zones, with some in close proximity to the margin of the Rocher Deboule stock. These mineralized shears closely parallel one set of orthogonal joint patterns caused by the cooling of the intrusive body. The veins all strike in a northeasterly to easterly direction and dip approximately 55° to the north. The veins are found over significant lengths of shear zone, e.g., on the Highland Boy-Rocher Deboule system a strike length of perhaps in excess of 1,500 m. However, economic mineralization encountered during mining at Rocher Deboule occurred over short strike lengths of 30-75 m and was concentrated in near vertical shoots, e.g., the No. 4 vein at the Rocher Deboule Mine.
7. It is possible that the vein systems known on the Rocher Deboule Property could be part of a much larger hydrothermal system that are indicative of a porphyry copper (gold) system laterally or possibly at depth. Hydrothermal vein systems, like Rocher Deboule, can be outboard of a typical hydrothermally altered porphyry copper (gold) system.
8. The primary exploration and development objective should be to drill test the numerous targets on the Property. This could be initially accomplished by using a heli-portable diamond drill to drill test several targets on the Property. Eventually the road access to the Property up Juniper Creek, from Highway 16 on the Skeena River, must be repaired and maintained.

26. Recommendations

The Rocher Deboule Property should be advanced by drilling from underground or surface. Additional surveying to try and get more precise locations of the various veins and structures at surface would serve to help tie-in surface sampling with underground results in the Rocher Deboule Mine. Some additional data compilation and modeling is recommended, especially conducting a detailed review of the data set from the 2007 airborne survey.

There are many targets on the Property, but by far the most advanced and highest concentration of good gold and copper grades is the No. 4 Vein at Rocher Deboule. The No. 4 Vein is encountered underground on the 1200 level; however, sampling did not indicate any mineralization. The current data compilation makes it a bit unclear as to whether the sampling on surface is the same vein mined at the Rocher Deboule Mine on the 100, 300 and 500 levels shown on ***Figure 26-1***. This 50 m difference noted here has been noted previously in the Highland Boy area when trying to tie-in underground drilling intercepts to surface mapping and sampling.

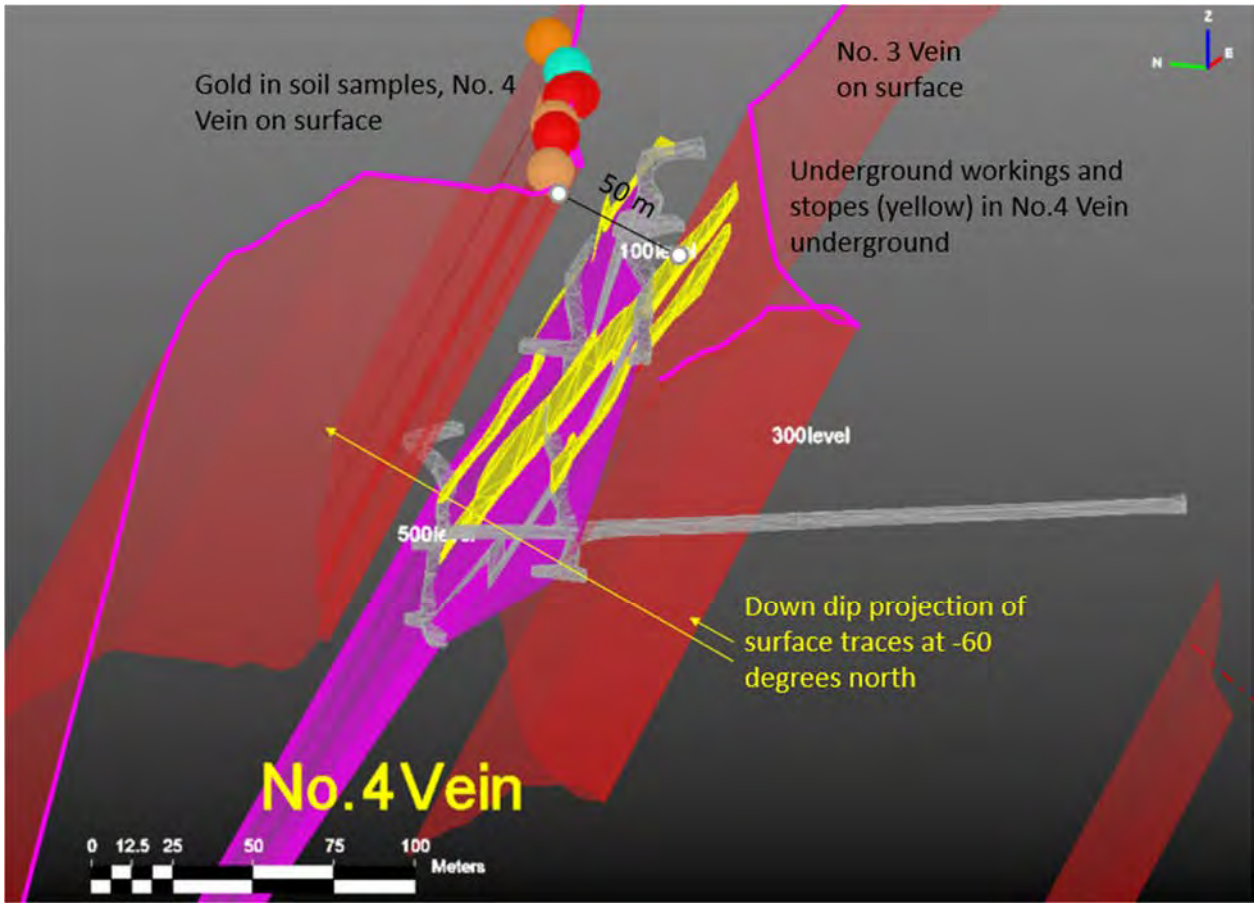


Figure 26-1: Underground Workings Versus Surface Mapping

It is the authors' opinion that the character and favourable underground and surface sampling results for precious and base metals (Cu-Ag-Au and W-Mo-Co-As) obtained to date by the Issuer and others are of sufficient merit to warrant an exploration drilling program to be conducted in two phases. The two proposed phases of the program are detailed below.

26.1. Phase 1 Program

The objectives of the Phase 1 program is to conduct drilling as follows:

1. Drill the three main veins (4, 3 and 2) at Rocher Deboule from surface with the intent to expand the known mineralization.
2. Investigate potential locations for underground access and drilling.
3. Surface mapping in the Vent Area.
4. Conduct a GPS survey with the intent of tying-in all known geological, morphological and constructed structures and excavation locations.

See **Table 26-1** for the locations and details of the proposed drilling program.

Table 26-1: Proposed Phase 1 drilling program

Vein Target	hole-id	UTM_9E	UTM_9N	elev (m)	azimuth (o)	dip (°)	td (m)
No. 2	V2-1	586292	6113303	1421	150	-50	100
	V2-2	586330	6113329	1417	150	-50	100
	V2-3	586366	6113353	1415	150	-50	100
	V2-4	586453	6113445	1443	150	-50	150
No. 3	V3-5	586218	6113570	1593	150	-70	150
No. 4	V4-6	586600	6113966	1692	150	-50	150
	V4-7	586668	6113996	1676	150	-50	150
						7 holes	**900 m**

Figures 26-2 and **26-3** show the relationship between the proposed drillhole locations and the underground workings and geology at Rocher Deboule.

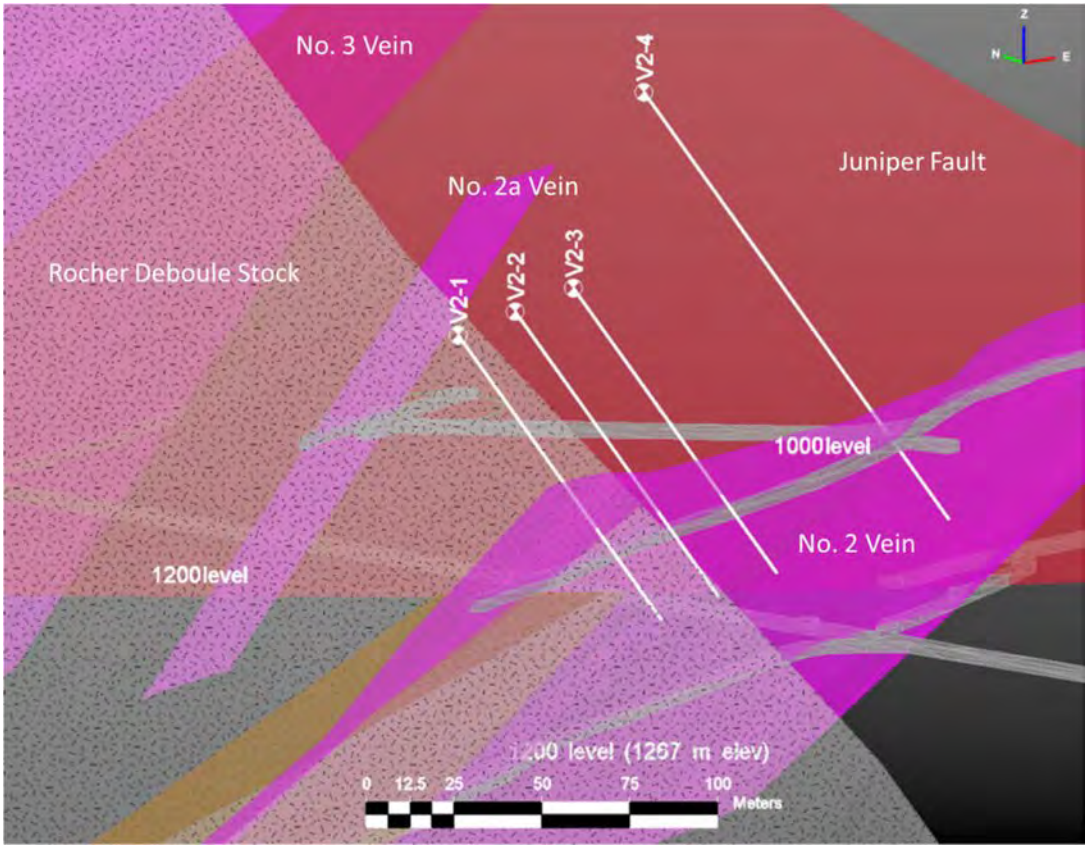


Figure 26-2: Phase 1 No. 2 Vein Proposed Drillholes.

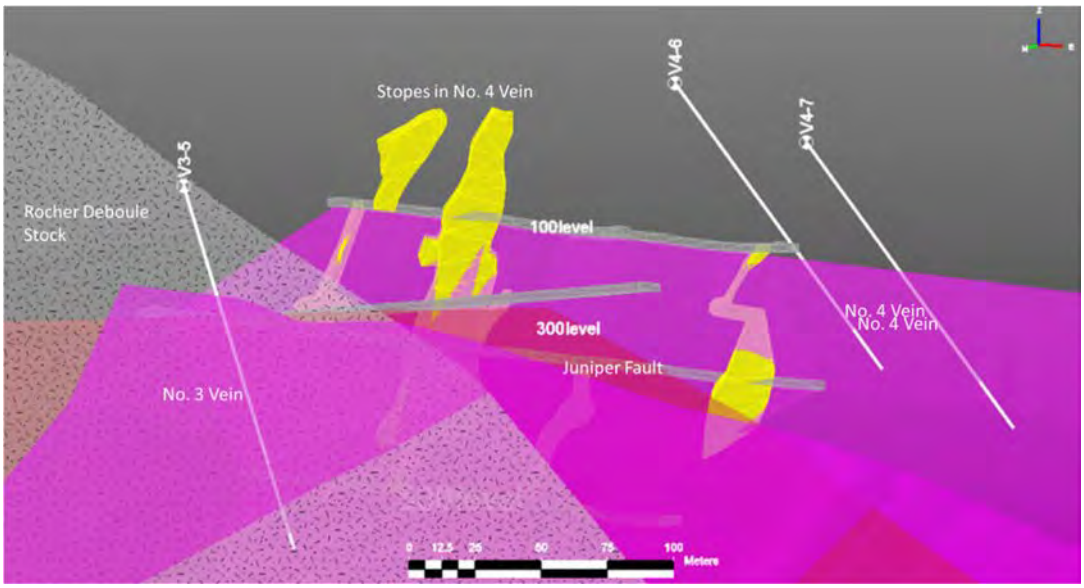


Figure 26-3: Phase 1 No. 3 and 4 Vein Proposed Drillholes

The proposed Phase 1 drilling program is budgeted at $601,176. See **Table 26-2** for details.

Table 26-2: Phase 1 program budget

Item	qty	amount	rate	amount
Geologist Manager	day	30	$ 750	$ 22,500
Core-logging Geologist	day	30	$ 500	$ 15,000
1 drill	m	900	$ 395	$ 355,500
33 sample assays per 100 m	each	297	$ 40	$ 11,880
Equipment and Supplies	all in			$ 6,000
Communication	all in			$ 1,500
Accommodation and Meals	day	60	$ 100	$ 6,000
Transportation & Helicopter	day	40	$ 2,000	$ 80,000
REPORT PREPARATION	hours	40	$ 65	$ 2,600
Sub Total				**$ 500,980**
Contingency		20%		$ 100,196
			Total Phase 1 Program	**$ 601,176**

26.2. Phase 2 Program

Providing the Phase 1 drilling program yields favourable results, a Phase 2 drilling program is recommended as described below.

Follow-up step-out drilling should be conducted at locations yielding any positive results from Phase 1 drilling. This requires a quick turn-around for sample assays from the lab unless the program is deferred to the following year.

Step-out drilling at 25-50 m increments along strike and down dip is proposed. 550 m should be allotted for additional drilling.

The total amount of drilling proposed for Phase 2 is 550 m. The budget amount would be $396,672 as described below in **Table 26-3**.

Table 26-3: Phase 2 program budget

Item	qty	amount	rate	amount
Geologist Manager	day	21	$ 750	$ 15,750
Core logging Geologist	day	21	$ 500	$ 10,500
1 drill	m	550	$ 405	$ 222,750
33 sample assays per 100 m	each	181.5	$ 40	$ 7,260
Equipment and Supplies	all in			$ 6,000
Communication	all in			$ 1,500
Accommodation and meals	day	42	$ 100	$ 4,200
Transportation & Helicopter	day	30	$ 2,000	$ 60,000
REPORT PREPARATION	hours	40	$ 65	$ 2,600
Sub Total				**$ 330,560**
Contingency		20%		$ 66,112
			Total Phase 2 Program	**$ 396,672**

It may not be possible to do both Phase 1 and 2 in the same calendar year due to, among other things, obtaining drill permits, inclement weather and avalanche risks, prompt availability of analyses from the Phase 1 program, etc.

The Phase 1 and 2 programs are budgeted at a combined value of $1M.

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APPENDIX A

Location/Identification

MINFILE Number: 093M 069
National Mineral Inventory Number: 093M4 Pb1
Name(s): **GREAT OHIO (L. 702)**
PILOT (L.704)
Status: Showing
Mining Division: Omineca
Electoral District: Bulkley Valley-Stikine
Regions: British Columbia
Resource District: Skeena Stikine Forest District
BCGS Map: 093M012
NTS Map: 093M04E
UTM Zone: 09 (NAD 83)
Latitude: 55 09 09 N
Northing: 6112610
Longitude: 127 38 11 W
Easting: 586894
Elevation: 1300 metres
Location Accuracy: Within 500M
Comments: Lot 702.

Mineral Occurrence

Commodities: Copper, Gold, Lead, Zinc

Minerals
Significant: Galena, Sphalerite, Chalcopyrite, Arsenopyrite, Pyrrhotite, Pyrite
Associated: Quartz, Hornblende
Mineralization Age: Unknown

Deposit
Character: Vein
Classification: Hydrothermal, Epigenetic
Type: I05: Polymetallic veins Ag-Pb-Zn+/-Au
Strike/Dip: 050/70N
Comments: Main vein.

Host Rock

Dominant Host Rock: Plutonic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Jurassic-Cretaceous	Bowser Lake	Undefined Formation	------
Upper Cretaceous	------	------	Bulkley Intrusions

Isotopic Age	Dating Method	Material Dated
------	------	------
72 Ma	Potassium/Argon	Biotite

Lithology: Porphyritic Granodiorite, Hornfels, Argillite, Sandstone
Comments: Isotopic age date is from Geological Survey of Canada Open File 2322.

Geological Setting

Tectonic Belt: Intermontane
Physiographic Area: Hazelton Ranges
Terrane: Plutonic Rocks, Bowser Lake

Inventory

Ore Zone: SAMPLE
Year: 1954
Category: Assay/analysis
Report On: N

NI 43-101: N

Sample Type: Channel

Commodity	Grade
Gold	0.2000 grams per tonne
Copper	0.6200 per cent

Comments: A 13-centimetre channel sample.

Reference: Geological Survey of Canada Memoir 223 (1954) page 45.

Capsule Geology

The Great Ohio property is located on the west side of the Rocher Deboule Range, 10 kilometres south of South Hazelton. It is located south of the Rocher Deboule mine (093M 071).

The property is underlain by porphyritic granodiorite of the Rocher Deboule stock which is one of the Late Cretaceous Bulkley Intrusions. The stock has been dated at 72 million years (Geological Survey of Canada Open File 2322). The stock intrudes hornfelsed sedimentary rocks of the Middle Jurassic to Lower Cretaceous Bowser Lake Group.

The main vein strikes 050 degrees, dipping 70 degrees northwest, parallel to the granodiorite-sediment contact. The quartz vein is up to 120 centimetres in width and is mineralized with scattered minor chalcopyrite, galena, sphalerite, pyrrhotite, arsenopyrite and pyrite. Two parallel subsidiary structures contain quartz, hornblende and chalcopyrite. A 13-centimetre wide sample of typical material from one of these assayed 0.2 gram per tonne gold and 0.62 per cent copper (Geological Survey of Canada Memoir 223).

Bibliography

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EMPR BULL 43-53
EMPR MAP 69-1 (#281)
EMR MP CORPFILE (Delta Copper Co. Ltd.)
GSC MAP 971A, 44-24, 1731
GSC MEM 223-55; *223 (1954)-45; 110-14
GSC OF 2322
EMPR PFD 883811

Date Coded:	1985/07/24	**Coded By:**	BC Geological Survey (BCGS)	**Field Check:**	N
Date Revised:	1991/10/04	**Revised By:**	Ron McMillan (RHM)	**Field Check:**	N

Location/Identification

MINFILE Number: 093M 070
National Mineral Inventory Number: 093M4 Cu2
Name(s): **HIGHLAND BOY (L.1000)**
DELTA COPPER, GOLDEN FLEECE (L.1001), BALMORAL (L.1002), HAPPY JACK (L.1003), SILVER TIP (L.1004), ZIG ZAG FR. (L.1005), ROCHER DEBOULE, RD

Status: Past Producer
Mining Method Underground
Regions: British Columbia
BCGS Map: 093M012
NTS Map: 093M04E
Latitude: 55 09 50 N
Longitude: 127 36 56 W
Elevation: 1900 metres
Location Accuracy: Within 500M
Comments: Adit.

Mining Division: Omineca
Electoral District: Bulkley Valley-Stikine
Resource District: Skeena Stikine Forest District

UTM Zone: 09 (NAD 83)
Northing: 6113904
Easting: 588197

Mineral Occurrence

Commodities: Copper, Silver, Gold, Uranium, Tungsten, Tin

Minerals
Significant: Chalcopyrite, Pyrite, Scheelite, Cassiterite, Uraninite
Associated: Quartz, Hornblende, Specularite, Magnetite
Mineralization Age: Unknown

Deposit
Character: Vein
Classification: Epigenetic
Type: M01: Flood Basalt-Associated Ni-Cu, I13: Sn veins and greisens
Shape: Regular
Modifier: Sheared
Strike/Dip: 090/70N
Comments: Veins strike east-west and dip steeply north.

Host Rock

Dominant Host Rock: Plutonic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Upper Cretaceous	------	------	Bulkley Intrusions

Isotopic Age	Dating Method	Material Dated
72 Ma	Potassium/Argon	Biotite

Lithology: Porphyritic Granodiorite
Comments: Mineralization is hosted in the Rocher Deboule stock, the age date is from Geological Survey of Canada Open File 720.

Geological Setting

Tectonic Belt: Intermontane
Physiographic Area: Hazelton Ranges
Terrane: Plutonic Rocks

Inventory

Ore Zone: VEIN
Year: 1954

Category: Assay/analysis

Report On: N

NI 43-101: N

Sample Type: Chip

Commodity	Grade
Silver	15.1000 grams per tonne
Gold	0.7000 grams per tonne
Copper	4.9700 per cent
Tin	0.9000 per cent
Uranium	0.0150 per cent
Tungsten	0.7200 per cent

Comments: A 15-centimetre sample.

Reference: Geological Survey of Canada Memoir 223 (Rev).

Summary Production

		Metric		Imperial	
Mined:		68	tonnes	74	tons
Milled:		0	tonnes	0	tons
Recovery	Silver	1,089	grams	35	ounces
	Gold	124	grams	4	ounces
	Copper	4,760	kilograms	10,494	pounds

Capsule Geology

The Highland Boy property is located on the west side of the Rocher Deboule Range, 9 kilometres south of South Hazelton.

Two continuous subparallel veins occur in porphyritic granodiorite of the Rocher Deboule stock of the Late Cretaceous Bulkley Plutonic Suite. These are likely continuations of the vein shears at the Rocher Deboule mine (093M 071) to the west. The Chicago Creek fault cuts the granodiorite and terminates the veins on the east.

The veins strike east-west and dip steeply north. The upper or Highland Boy vein shear is up to 2 metres wide and is mineralized with chalcopyrite, pyrite, specular hematite, magnetite, scheelite, cassiterite, and uraninite. A 15-centimetre sample assayed 0.7 gram per tonne gold, 15.1 grams per tonne silver, 4.97 per cent copper, 0.90 per cent tin, 0.72 per cent WO3 and 0.015 per cent equivalent uranium (Geological Survey of Canada Memoir 223 (Rev.)).

In 1917, 68 tonnes produced 1,089 grams of silver, 124 grams of gold and 4,760 kilograms of copper.

WORK HISTORY

The property, consisting of 9 Crown-granted claims, is located on upper Juniper Creek east of the Rocher Deboule mine. The property was located about 1910 and acquired in 1912 by the Rocher Deboule Copper Company Ltd., who also owned the Rocher Deboule mine. It was leased to the Delta Copper Co. of Edmonton in 1915 that did most of the exploration and in 1917 made a shipment of ore. The property has commonly been called the Delta Copper and was leased sporadically in the early 1920s. It was acquired in 1951 by Western Uranium Cobalt Mines Limited who did no work on the property.

Development work has been done in two adits; the main adit is 91.4 metres in length and has a stope and winze about 30 metres from the portal; the adit on the Delta Fraction claim is several hundred feet in length. The Chicago group of 5 claims, including Lots 513-515, was located at the head of Chicago Creek and north of and adjoining the Highland Boy group.

The Chicago Rocher Deboule Copper Company, Limited, and the Delta Copper Company, Limited, were both organized in 1916 and apparently both held an interest in the Chicago group. The claims were Crown-granted to the Delta Copper Company in 1920.

In 1987, 14 dump samples were collected by Southern Gold Resource Ltd (Assessment Report 16714).

During 2007, Rocher Deboule Minerals Corp conducted limited prospecting and rock and soil sampling, a large area Dighem airborne geophysical survey by Fugro airborne Surveys Corp., a remote sensing analysis by John L. Berry, a small area ground magnetometer survey, and diamond core drilling program of 1106.1 meters over 6 drill holes on the Highland Boy Showing was also conducted. These were drilled from one set up,

approximately 100 metres north of the surface trace of copper-silver-gold bearing quartz-sulphide Highland Boy Upper vein. One intercept with and estimated true thickness of 1.93 metres assayed 2.18 per cent copper, 7.71 grams per tonne silver, 0.511 gram per tonne gold, 0.004 per cent molybdenum and 0.070 per cent tungsten (Assessment Report 29338). In general the drill results were disappointing.

In 2011, American Manganese Inc carried out a program that entailed 22 kilometres of ground magnetometer survey, 841 soil samples, 455 rock samples and 68 silt samples. Prospecting and sampling was done in the Highland Boy area and a review of the 2007 core was made.

See Rocher Deboule (093M 071) for related details of work done on the Rocher Deboule property of American Manganese, of which the Cap was part of in the late 2000s.

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EMPR FIELDWORK 2006, pp. 1-17
EMPR MAP 22-53; 69-1 (#281)
EMPR OF 1990-32; 1992-1; 1992-3; 1998-10; 2008-6
EMR MP CORPFILE (Delta Copper Co. Ltd.)
GSC EC GEOL No. 16, p. 41; No. 16 (2nd Edit.), p. 231
GSC MAP 44-24; 971A; 1731; 1732
GSC MEM *110, pp. 14-18; *223, pp. 48-50; *223 (Rev.), pp. 47-49
GSC OF 551; 720; 2322; 5705
CIM TRANS Vol. LIII, 1950, p. 285

EMPR PFD 883812, 883811

Date Coded:	1985/07/24	**Coded By:**	BC Geological Survey (BCGS)	**Field Check:**	N
Date Revised:	2015/02/17	**Revised By:**	Garry J. Payie (GJP)	**Field Check:**	N

Location/Identification

MINFILE Number: 093M 071
National Mineral Inventory Number: 093M4 Cu1
Name(s): **ROCHER DEBOULE**
JUNIPER (L.2400), RD

Status: Past Producer
Mining Method Underground
Regions: British Columbia
BCGS Map: 093M012
NTS Map: 093M04E
Latitude: 55 09 35 N
Longitude: 127 38 36 W
Elevation: 1374 metres
Location Accuracy: Within 500M

Mining Division: Omineca
Electoral District: Stikine
Resource District: Skeena Stikine Natural Resource District

UTM Zone: 09 (NAD 83)
Northing: 6113405
Easting: 586436

Comments: The No. 2 vein, on the northeastern portion of Rocher Deboule Mountain, 11 kilometres south of Hazelton.

Mineral Occurrence

Commodities: Copper, Silver, Gold, Tungsten, Zinc, Lead, Uranium, Molybdenum, Cobalt

Minerals
Significant: Chalcopyrite, Tetrahedrite, Scheelite, Sphalerite, Galena, Cobaltite, Safflorite, Glaucodot, Molybdenite, Uraninite
Significant Comments: Possibly chalcocite.
Associated: Quartz, Hornblende, Feldspar, Apatite, Magnetite, Arsenopyrite, Pyrrhotite, Calcite
Associated Comments: Also pyrite.
Alteration: Limonite, Malachite, Erythrite, Siderite
Alteration Type: Oxidation
Mineralization Age: Unknown

Deposit
Character: Vein, Shear
Classification: Hydrothermal, Epigenetic
Type: I05: Polymetallic veins Ag-Pb-Zn+/-Au, I12: W veins, L01: Subvolcanic Cu-Ag-Au (As-Sb)
Shape: Tabular
Modifier: Sheared
Dimension: 700x2x0 metres
Strike/Dip: 075/50N
Comments: Veins.

Host Rock

Dominant Host Rock: Plutonic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Jurassic-Cretaceous	Bowser Lake	------	------
Upper Cretaceous	------	------	Bulkley Intrusions

Isotopic Age	Dating Method	Material Dated
------	------	------
72 Ma	Potassium/Argon	Biotite

Lithology: Porphyritic Granodiorite, Quartz Monzonite Dike, Diorite Dike, Porphyritic Andesite Dike, Siltstone, Greywacke

Comments: Mineralization is hosted in the Rocher Deboule stock; the age date is from Geological Survey of Canada Open File 720.

Geological Setting

Tectonic Belt: Intermontane
Physiographic Area: Hazelton Ranges

Terrane: Stikine

Metamorphic Type: Contact

Grade: Hornfels

Inventory

Ore Zone: ROCHER DEBOULE

Year: 1990

Category: Combined

Report On: Y

Quantity: 54,000 tonnes

NI 43-101: N

Commodity	Grade
Silver	207.4000 grams per tonne
Gold	3.5000 grams per tonne
Copper	2.7000 per cent

Comments: Probable/possible reserves.

Reference: George Cross Newsletter No.228, November 26, 1990.

Summary Production

		Metric		Imperial	
Mined:		36,457	tonnes	40,186	tons
Milled:		36,457	tonnes	40,186	tons
Recovery	Silver	2,167,780	grams	69,696	ounces
	Gold	133,676	grams	4,298	ounces
	Copper	2,557,433	kilograms	5,638,175	pounds

Capsule Geology

The Rocher Deboule mine is located on the northeastern portion of Rocher Deboule Mountain, 11 kilometres south of Hazelton. The Rocher Deboule and Victoria mines (093M 072) were discovered before World War I. From 1915 to 1954, 123,395 tonnes produced 2,653,086 grams of silver, 157,226 grams of gold, 2,840,966 kilograms of copper, 341 kilograms of lead, 34,692 kilograms of tungsten, and 3,274 kilograms of zinc.

Hornfelsic greywackes and siltstones of the Jurassic to Lower Cretaceous Bowser Lake Group are intruded by the Rocher Deboule porphyritic granodiorite stock of the Late Cretaceous Bulkley Plutonic Suite. Dikes are not abundant but consist of fine grained quartz monzonite, fine-grained diorite and porphyritic andesite. There are five main vein structures which are numbered from 1 to 5, the No. 2 vein being the most important. The veins occur over a 750 metre width, within parallel structures which generally strike 075 degrees and dip 35 to 65 degrees north. The veins are 0.5 to 2.4 metres wide and up to 700 metres long.

Three distinct stages of mineralization are apparent. The first stage is pegmatitic and includes hornblende, quartz, feldspar, apatite, magnetite, scheelite, molybdenite and uraninite. The second and main stages include chalcopyrite, glassy quartz, arsenopyrite, cobaltite, safflorite, glaucodot and pyrrhotite. The third stage includes milky quartz, siderite, calcite, tetrahedrite, sphalerite, galena, pyrite and possibly chalcocite. Secondary minerals include malachite, erythrite and limonite.

WORK HISTORY

The Rocher Deboule property was located in 1910 by Sargeant and Munroe of Hazelton, British Columbia which was acquired, in 1911, by Rocher Deboule Copper Company of Salt Lake City, Utah. Development on the property was done under lease by the Montana Continental Development Company, a company owned by the principals of Rocher Deboule Company. Ore was mined and shipped from the upper part of the No. 4 vein from April 1915, until February 1916, when the property reverted to its owners. Development work, previously neglected, was done on the No. 2 and 4 veins and by 1917 a 945 metre adit, known as the 1201, was driven from the bottom of the valley of Juniper Creek to intersect all known veins. Production in 1917-18 was largely from the No. 2 vein and was much less than in the previous two years, although the copper-gold grade was good. The mine was closed in October 1918, because of a lack of developed ore and a drop in copper price.

In 1929, Aurimont Mines Limited, who mined and shipped some ore, leased the property. In 1930, Hazelton Copper Mines Limited again leased the property but no production was done. The property remained inactive until 1950 when it was acquired by Western Uranium Cobalt Mines Ltd. whose initial interest was a means of access to the adjacent Victoria mine; the company immediately began to investigate Rocher Deboule as a source of copper and precious metal ore and as a prospect for uranium-cobalt. In 1950, a slide that blocked the portal of the 1200-level was cleared, the upper

levels were rehabilitated and construction of a camp was begun. A 100-ton-per-day mill was put in operation in May 1952, and shut down in November of the same year because the grade was lower than expected. Part of the mill equipment was moved to the nearby Red Rose tungsten mine (093M 067) which was owned by the same company. After the Red Rose mine was closed in 1954, equipment from both mines was sold.

During 1987-89, Southern Gold Resources Limited completed drill testing and sampling of the No. 2 Vein and estimated a potential reserve of 49,800 tonnes averaging 2.69 per cent copper, 208.1 grams per tonne silver and 3.51 grams per tonne gold (Property File Placer Dome - Quin, 1989). The Nos. 4 and 2a veins were examined during this time with encouraging results, but work was limited by accessibility of the old workings and an unstable slide in the vicinity of the outcrops. Sampling of the No. 4 vein, on the 91-metre level, returned an average of 2.17 grams per tonne gold, 88.1 grams per tonne silver and 4.12 per cent copper over an average of 0.78 metre from 24 samples (Property File Placer Dome - Quin, 1989).

In 1991, the indicated ore reserve of the No. 2 vein was estimated at 37,000 tonnes grading 11.66 grams per tonne gold equivalent; the No. 4 vein has indicated reserves of 17,000 tonnes of the same grade respectively (Open File 1992-1). A radioactive sample over 38 centimetres from the No. 2 vein assayed 0.019 per cent equivalent uranium (Geological Survey of Canada Memoir 223 (Rev.)). A sample taken in 1949, assayed 0.21 per cent equivalent uranium (Geological Survey of Canada Economic Geology 16, 1952).

The Number 2 Porphyry zone is a bulk tonnage target estimated to be 757 metres long, 605 metres deep and an average of 12 metres wide. Samples from a trench on the quartz stockwork in this zone assayed up to 30.5 grams per tonne gold and 0.35 per cent cobalt over 2.4 metres (George Cross Newsletter No. 228, November 26, 1990).

Total indicated (probable/possible) reserves at Rocher Deboule are 54,000 tonnes grading 2.70 per cent copper, 207.4 grams per tonne silver and 3.5 grams per tonne gold or 11.66 grams per tonne gold equivalent (George Cross Newsletter No. 228, November 26, 1990).

In 1998, Hunter Exploration Group conducted prospecting on the Rocher DeBoule (Assessment Report 25674).

The property was dormant until May 2001, when American Manganese Inc. (former known as Rocher Deboule Minerals Corporation) reported that it had acquired four mineral claims consisting of 53 units (1325 hectares) centred around the main underground working at the headwaters of Juniper Creek (www.americanmanganeseinc.com).

During the period of October 2001 and May 2002, geological surveying and geochemical rock and stream sediment sampling was carried out on the Rocher Deboule and Victoria mines. Aside from the expected copper-silver-gold values of economic interest, which returned values up to 14.8 grams per tonne gold, greater than 10 per cent copper and 399.6 grams per tonne silver, the Rocher Deboule Nos. 2, 3 and 4 veins contained variable molybdenite, sphalerite, arsenopyrite and safflorite (Assessment Reports 26984, 29338).

In 2004, three rock-chip samples were collected from the vicinity of the No. 4 vein of the Rocher Deboule mine. The samples were analyzed geochemically and all results were in excess of 10,000 parts per million copper, from 0.79 to 1.8 grams per tonne gold and 7.1 to 100 grams per tonne silver (Assessment Reports 27558, 29338).

In March 2007, Rocher DeBoule Minerals Corp. contracted Fugro Airborne Survey Corporation to complete a Dighem electromagnetic, magnetic, radiometric geophysical survey over the Rocher Deboule property in a survey block amounting to 1089 line kilometres. The survey identified a strong positive anomaly (60,000 to 62,000 nanoteslas, approximately 3000 to 5000 nanoteslas above average) over an area of approximately 0.5 by 1 kilometre (Vancouver Stockwatch - November 20, 2012; Assessment Report 29338). American Manganese conducted a limited diamond drill program near one of the Highland Boy adits in 2007.

In 2011, American Manganese Inc. carried out a program that entailed 22 kilometres of ground magnetometer survey, 841 soil samples, 455 rock samples and 68 silt samples. The most significant soil sample returned 8650 parts per billion gold, 72.4 parts per million silver, 0.58 per cent copper, 1.31 per cent arsenic and 20.09 per cent iron (Vancouver Stockwatch - November 20, 2012; Assessment Report 33297). At this time, the Rocher Deboule property covered three small, past-producing mines and five significant prospects including: Highland Boy (093M 070), Rocher Deboule (093M 071), Victoria (093M 072), Great Ohio (093M 069), Cap (093M 073), Golden Wonder (093M 074), Three Hills (093M 075) and Daley West (093M 053).

Prospecting programs carried out were designed to step away from the known mines and expand the working knowledge of the property. Prospecting resulted in the discovery of numerous new showings. The principal areas of interest extend in an east-west trending belt from Golden Wonder (considerably west of the contact of the stock) through the Rocher Deboule and Victoria mines and east to the Highland Boy. One of the most intensely studied areas is the upper Silvertip Creek, approximately mid-way between the Rocher and Highland Boy mines.

On the Rocher Deboule occurrence itself, the 2011 program explored for extensions and additional structures of known veins. It focused on the potential for broader zones of lower grade mineralization. New veins were found and pockets of alteration were noted and sampled. Fourteen samples were collected in the general vicinity of the old mine.

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Date Coded:	1985/07/24	**Coded By:**	BC Geological Survey (BCGS)	**Field Check:**	N
Date Revised:	2019/10/22	**Revised By:**	George Owsiacki (GO)	**Field Check:**	N

Location/Identification

MINFILE Number: 093M 072
National Mineral Inventory Number: 093M4 Co1
Name(s): **VICTORIA (L. 3303)**
HAZELTON VIEW (L.3299), NEW HAZELTON GOLD, AURIMONT, ROCHER DEBOULE, RD

Status: Past Producer
Mining Method Underground
Regions: British Columbia
BCGS Map: 093M012
NTS Map: 093M04E
Latitude: 55 10 20 N
Longitude: 127 39 06 W
Elevation: 1680 metres
Location Accuracy: Within 500M

Mining Division: Omineca
Electoral District: Bulkley Valley-Stikine
Resource District: Skeena Stikine Forest District

UTM Zone: 09 (NAD 83)
Northing: 6114786
Easting: 585878

Comments: The No. 1 adit, on the northwest side of Rocher Deboule Mountain, 10 kilometres south of Hazelton.

Mineral Occurrence

Commodities: Gold, Cobalt, Silver, Molybdenum, Nickel, Uranium, Arsenic, Copper, Zinc

Minerals
Significant: Cobaltite, Arsenopyrite, Molybdenite, Uraninite, Autunite, Pyrite, Sphalerite, Allanite, Galena, Tetrahedrite, Safflorite
Associated: Actinolite, Quartz, Feldspar, Apatite, Sphene, Erythrite, Scapolite
Alteration Type: Quartz-Carb., Sericitic
Mineralization Age: Unknown

Deposit
Character: Vein, Shear
Classification: Hydrothermal, Epigenetic
Type: I05: Polymetallic veins Ag-Pb-Zn+/-Au
Shape: Regular **Modifier:** Sheared
Dimension: 450x300x1 metres **Strike/Dip:** 085/60N
Comments: No. 1 vein; 0.5 metre wide.

Host Rock

Dominant Host Rock: Plutonic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Jurassic-Cretaceous	Bowser Lake	Undefined Formation	------
Upper Cretaceous	------	------	Bulkley Intrusions

Isotopic Age	Dating Method	Material Dated
------	------	------
72 Ma	Potassium/Argon	Biotite

Lithology: Porphyritic Granodiorite, Diorite Dike, Feldspar Porphyry Dike, Greywacke, Siltstone, Hornfels

Comments: Mineralization is hosted in the Rocher Deboule stock, age date is from Geological Survey of Canada Open File 2322.

Geological Setting

Tectonic Belt: Intermontane
Physiographic Area: Hazelton Ranges
Terrane: Plutonic Rocks, Bowser Lake

Metamorphic Type: Contact
Grade: Hornfels

Inventory

Ore Zone: VICTORIA
Year: 1983
Category: Unclassified
Report On: Y
Quantity: 1,000 tonnes
NI 43-101: N

Commodity	Grade
Silver	2.8400 grams per tonne
Gold	42.5500 grams per tonne
Cobalt	2.0000 per cent

Comments:

Reference: CIM Special Volume 37, page 186.

Summary Production

		Metric	Imperial
	Mined:	51 tonnes	56 tons
	Milled:	51 tonnes	56 tons
Recovery	Gold	7,341 grams	236 ounces
	Arsenic	7,710 kilograms	16,998 pounds
	Cobalt	785 kilograms	1,731 pounds

Capsule Geology

The Victoria property is located on the northwest side of Rocher Deboule Mountain, 8 kilometres south of South Hazelton. Between 1926 and 1940, 51 tonnes produced 7 710 kilograms of arsenic, 7 341 grams of gold and 785 kilograms of cobalt.

Hornfelsic greywackes and siltstones of the Middle Jurassic to Lower Cretaceous Bowser Lake Group are intruded by the Rocher Deboule porphyritic granodiorite stock of the Late Cretaceous Bulkley Plutionic Suite. The stock is cut by vein/dike systems which follow east trending fractures.

The Victoria deposit consists of three parallel vein structures (Victoria #1, #2 and #3), 200 to 300 metres apart, which strike 085 degrees and dip 60 degrees north, and a small cross-vein which strikes northward and dips 50 degrees east. However work it was reported in 2011 that prospecting suggests there may be a well-mineralized, parallel, unexplored vein, Victoria #0, a short distance to the north and a mineralized shear, Victoria #4, further south (Assessment Report 33297, page 33).

The No. 1 vein follows a dark grey, fine-grained diorite dike and averages 0.5 metre wide, is up to 450 metres along strike, and is 300 metres in vertical extent. It is open to the east and at depth. The No. 2 vein follows a feldspar porphyry dike and is 10 metres wide and up to 800 metres long. The No. 3 vein is up to 723 metres long and is intersected by a cross-vein containing galena, sphalerite, tetrahedrite, arsenopyrite, safflorite and pyrite.

The vein material consists of an assemblage of gold-bearing cobalt-nickel sulpharsenides with minor molybdenite in a gangue of actinolite with glassy quartz and feldspar. Additional minerals include uraninite, apatite, sphene, allanite, erythrite, cobaltite, d rare scapolite and possibly autunite.

A 10-centimetre sample taken in 1940 assayed 270 grams per tonne gold, 37.7 grams per tonne silver, 5.9 per cent cobalt, 0.81 per cent molybdenum, 2.8 per cent nickel and 0.64 per cent equivalent uranium (Bulletin 43). Samples taken in 1950 on the No. 1 and No. 2 veins assayed 47.3 grams per tonne gold, 0.90 per cent cobalt, and 0.16 per cent equivalent uranium across 0.85 metre, and 143.3 grams per tonne gold, 2.05 per cent cobalt and 0.59 per cent equivalent uranium from a veinlet sample, respectively (Geological Survey of Canada Economic Geology 16). A 1983 sample on the No. 2 vein assayed 23.32 grams per tonne gold and 0.0063 per cent arsenic over 0.5 metre (Assessment Report 11019).

In 1987, Southern Gold Resources Limited identified, an untested, coincidental geophysical and geochemical anomaly associated with a possible easterly extension of the No. 1 vein. Further work was performed on the Roche Deboule property (see 093M 071).

Unclassified reserves at Victoria are 1000 tonnes grading 2.84 grams per tonne silver, 42.55 grams per tonne gold and 2 per cent cobalt (CIM Special Volume 37, page 186).

Ameridex reported in 2002 that the Victoria vein exhibits continuity over a distance of 305 metres horizontally and vertically.

WORK HISTORY

The name (Victoria) applied to the property has varied with ownership, some using the name Hazelton View, however, the Victoria was the first claim located and practically all of the underground workings are on that claim. The Rocher Deboule property adjoins to the southeast.

New Hazelton Gold-Cobalt Mines, Limited was incorporated in June 1916 to acquire 8 claims variously named the Victoria, Hazelton View or Indian groups. Development work began in open cuts on No. 1 vein. A 305-metre aerial tram-way was installed in 1917 and some ore was shipped the following year. The 8 claims, the Hazelton View, Lead Pick, Moose, Elk, Victoria, Belle, View Fr., and Belle Fr. (Lots 3299-3306 respectively) were Crown-granted to the company in 1917. The No. 1 drift adit (elev. 1679 metres) was extended to 217 metres in 1918. At 113 metres from the portal a 60 degree raise was driven 27.4 metres, and from that point a drift was run 26 metres westerly. The No. 2 adit (elev. 1605 metres) was begun in 1918 and driven as a crosscut for 23 metres to the vein, which was drifted on for 45.7 metres. In subsequent years No. 2 adit was extended to a length of 165 metres.

During the summer of 1918 some work was done on the more southerly claims, to prospect for the extensions of the gold-copper veins on the adjacent Rocher Deboule property. A crosscut was driven 7.6 metres and about 300 metres of drifting was done along the supposed strike of one of the veins. Work on the property was discontinued later in the year. Adjacent claims surrounding the Victoria group on 3 sides, and including the Homestake, Tiger, etc. (Lots 3307-3316), were Crown-granted in 1918 to The Cats Mining Company, Limited. The only work reported is a 30 metre adit on the Homestake-Tiger boundary.

New Hazelton Gold-Cobalt reopened the mine in 1925. A new drift adit No.00 adit, (elev. 1795 metres) was driven about 46 metres on No. 1 vein and some ore was shipped. Due to financial difficulties the company mortgaged the property in 1926 and the mortgagee's interest was transferred to a share interest in a new company, Aurimont Mines, Limited which was incorporated in August 1927. During 1928 the aerial tramway was extended to a length of 580 metres and some ore was shipped. Development work was done in the No.00 adit, which was extended to a length of 52 metres. The mine closed in the latter part of the year.

During subsequent years some of the claims reverted to the Crown. Three of the Crown-grants, the Victoria, Belle, and Belle Fr. were retained by R.C. McCorkell. During 1940 the claims were under lease to Jack Lee and A.S. Barker of Hazelton. Some mining was carried out and small lots of ore were shipped in 1940 and 1941 to the Government Sampling Plant at Prince Rupert.

In 1948 it was recognized that the ore in these veins contained uranium.

Western Uranium Cobalt Mines, Limited was incorporated in June 1949 to acquire the property, in part under option from McCorkell and as Mineral Leases from the Government. The Homestake and Tiger claims, formerly held by Cats Mining and in 1949 held as mineral leases by George Royles of Prince Rupert, were purchased by the company. During 1949 the 00 adit was extended to a total length of 65 metres. A new lower crosscut, No. 3 adit, (elev. 1570 metres) was begun during 1949 and was advanced 69 metres to the vein, which was drifted on for 6.7 metres. The mine closed in the fall of 1950. Total development work to that date comprised about 567 metres of drifts, crosscuts, and a raise in 4 main adits, the 00, 1, 2, and 3.

Rocher Deboule Mountain Mines Ltd in 1952 carried out diamond drilling on the Moose, Elk, and Lead Pick claims to test for the westward extension of the copper-gold veins of the Rocher Deboule property.

In 1975 the Crown-grants were owned by W. McGowan and J .M. Hutter, of Telkwa. Work during 1975-76 included re-opening the workings, underground geological mapping and sampling, and road construction. In 1978, J. Hutter Jr. rehabilitated two adits. The property was then leased to Arbor Resources Inc and unspecified work was reported in 1979.

In 1982-1983, on adjacent ground to that of Arbor, on one of the veins, D. Groot Logging carried out geological mapping, sampling, and 385 metres of diamond drilling in 3 holes.

In 1986, reserves were reported as 1 000 tonnes at 42.55 grams per tonne gold, 2.84 grams per tonne silver, and 2 per cent cobalt (Preliminary Map 65, BC Department of Mines, 1986) .

In 1987, Southern Gold Resources Limited identified, an untested, coincidental geophysical and geochemical anomaly associated with a possible easterly extension of the No. 1 vein.

In 1990 (George Cross Newsletter 1990) International Kengate Ventures Inc reported the No. 2 Porphyry Zone about 366 metres to the north of the Rocher Deboule mine (as reported in Assessment Report 29338). It is thought that this zone may be the area of the No. 2 vein at the Victoria mine. This porphyry zone is reported as a hydrothermal zone that has “estimated” dimensions of 762 metres length, 610 metres in depth and 12.2 metres in width. Mineralization is reported from a surface trench that yielded values as high as 30.5 grams per tonne gold and 0.35 per cent cobalt (as reported in Assessment Report 29338).

In 2002, Ameridex Corp conducted geological surveying and geochemical rock and stream sediment sampling on the Rocher Deboule and Victoria mines on their RD claims (Assessment Report 26984).

In 2004, Ameridex Corp conducted work on several locations but apparently not on the Victoria (Assessment Report 27558).

In March 2007, Rocher DeBoule Minerals Corp contracted Fugro Airborne Survey Corporation to complete a Dighem electromagnetic, magnetic, radiometric geophysical survey over the Rocher Deboule property in a survey block amounting to 1089 line kilometres. Assessment Report 29338). The company also conducted limited prospecting and rock and soil sampling and diamond core drilling program of 1106.1 meters over 6 drill holes on the Highland Boy Showing (093M 070).

In 2011, American Manganese Inc carried out a program that entailed 22 kilometres of ground magnetometer survey, 841 soil samples, 455 rock samples and 68 silt samples. The most significant soil sample returned 8650 parts per billion gold, 72.4 parts per million silver, 0.58 per cent copper, 1.31 per cent arsenic and 20.09 per cent iron (V STOCKWATCH, November 20, 2012; Assessment Report 33297). At this time, the Rocher Deboule property consisted of 35 tenures, covering an aggregate of 9,937 hectares, These tenures contained three small, past-producing mines and five significant prospects including: Highland Boy (093M 070), Rocher Deboule (093M 071), Victoria (093M 072), Great Ohio (093M069), Cap (093M073), Golden Wonder (093M074), Three Hills (093M075) and Daley West (093M053). Sampling and geological work was done in the Victoria Mine area in 2011.

See Rocher Deboule (093M 071) for related details of work done on the Rocher Deboule property of American Manganese, of which the Victoria was part of in the late 2000s.

Also refer to the new "Hazelton View" MINFILE occurrence, just south of the Victoria area, which was described by American Manganese in 2011.

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Date Coded:	1985/07/24	**Coded By:**	BC Geological Survey (BCGS)	**Field Check:**	N
Date Revised:	2015/02/17	**Revised By:**	Garry J. Payie (GJP)	**Field Check:**	N

Location/Identification

MINFILE Number: 093M 073
National Mineral Inventory Number: 093M4 Cu5
Name(s): **CAP**
COMEAU, LOUDEL, GOLDEN WONDER, HUCKLEBERRY, MANDON, ROCHER DEBOULE, RD

Status: Past Producer
Mining Method Underground
Regions: British Columbia
BCGS Map: 093M012
NTS Map: 093M04E
Latitude: 55 10 22 N
Longitude: 127 41 21 W
Elevation: 600 metres
Location Accuracy: Within 500M
Comments: Location from Assessment Report 8323.

Mining Division: Omineca
Electoral District: Bulkley Valley-Stikine
Resource District: Skeena Stikine Forest District

UTM Zone: 09 (NAD 83)
Northing: 6114802
Easting: 583489

Mineral Occurrence

Commodities: Copper, Silver, Gold, Zinc

Minerals
Significant: Chalcopyrite, Arsenopyrite, Sphalerite
Associated: Quartz, Calcite, Pyrite, Siderite
Mineralization Age: Unknown

Deposit
Character: Vein, Shear
Classification: Hydrothermal, Epigenetic
Type: M01: Flood Basalt-Associated Ni-Cu, I05: Polymetallic veins Ag-Pb-Zn+/-Au
Dimension: 100x1x0 metres **Strike/Dip:** 070/75N
Comments: Altered and fractured zone.

Host Rock

Dominant Host Rock: Volcanic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Upper Cretaceous	Kasalka	Brian Boru	------

Isotopic Age	Dating Method	Material Dated
72 Ma	Potassium/Argon	72 Ma

Lithology: Tuff, Porphyritic Flow, Breccia
Comments: Isotopic age date is from Geological Survey of Canada Open File 2322.

Geological Setting

Tectonic Belt: Intermontane
Physiographic Area: Hazelton Ranges
Terrane: Overlap Assemblage

Inventory

No inventory data

Summary Production

		Metric		Imperial	
Mined:		26	tonnes	28	tons
Milled:		0	tonnes	0	tons
Recovery	Silver	7,838	grams	252	ounces
	Gold	93	grams	3	ounces
	Copper	1,531	kilograms	3,375	pounds

Capsule Geology

The Cap showing is located 8 kilometres south of South Hazelton, on the west slope of Rocher Deboule.

The host rocks are porphyritic flows, breccias and fine grained tuffs of the Upper Cretaceous Brian Boru Formation (Kasalka Group) which has been dated at 72 million years in the area (Geological Survey of Canada Open File 2322). The strata strike northeast in the area, dipping 20 to 30 degrees southeast.

The showing is an altered and fractured zone which strikes 070 degrees, dipping 70 to 80 degrees northwest. The zone ranges in width from 15 to 120 centimetres, containing pyrite, quartz, siderite, calcite, chalcopyrite and arsenopyrite. The zone has been traced for 100 metres on surface by several trenches and has been explored by two short adits and shafts. A 26 tonne shipment, to the Ladysmith smelter in 1917, produced 7,838 grams of silver, 93 grams of gold and 1,531 kilograms of copper. A subsidiary vein is located some distance east of the main vein. It strikes parallel to the main vein, is up to 1 metre in width and contains pyrite, sphalerite and chalcopyrite.

Two claims, the Cap and Belton, were owned by Denis Comeau from about 1914. The adjoining Huckleberry claim was owned by Victor Preston. Exploration and development work was begun in open cuts, a shaft, and a short adit. In 1915 the Comeau property was reported to be under bond to P.E. Lessard and R.S. Shaw, of Edmonton. Four claims, the Cap, Belton, Beatty, and Hermes, were owned in 1916 by Messrs. Comeau, Johnson, and Norberg. Intermittent development work continued until March 1918. A crosscut tunnel was driven for 24.7 metres and the vein drifted on for 20.4 metres to the northeast, where a flat fault cut off the vein and for 27 feet to the southwest to connect with the shaft. At elevation 628 metres a tunnel was driven 62 metres very nearly parallel to the strike of the vein. Further exploration work was reported by Mr. Comeau in 1923 and 1929.

The Huckleberry claim (Lot 4272) and the adjoining Mandon claim (Lot 4273) (Mineral Leases M 90 and M 91, respectively) were part of a larger claim group purchased by Chapparal Mines Ltd. in 1970 from a private company, Loudel Explorations Ltd. Additional claims were staked, bringing the property to 94 claims and 11 mineral leases. Included in the Mineral Leases were the Golden Wonder property, about 1 mile to the west, and the Homestake (Lot 3309) and other old Crown grants about 2 mile to- the east ; these probably formed part of the Victoria and Hazelton View properties. Work during 1970 included magnetometer and induced polarization surveys, and 6 percussion drill holes totalling 314 metres. This work was confined to the Loudel group of located claims. Drilling on Loudel 1 and 2 claims cut low-grade copper mineralization. Adjacent ground to the north, formerly held by others as the Mark and Park claims, was staked by the company in 1971. Work during 1971 included a geochemical soil survey over 32 line-kilometres covering Loudel 1-6, aeromagnetic and induced potential surveys covering Loudel 58-68, trenching, and diamond drilling in 4 holes totalling 332 metres on Loudel 1, 2, and 7; diamond drilling in 1970 totalled 288 metres in 4 holes.

In the period 1969 to 1972 the claim was explored by Chapparal Mines Ltd, which conducted Induced Polarization and soil-sampling surveys, and drilled one hole to a depth of 282 metres. The company also made numerous long bulldozer trenches on the crest of the ridge.

In 1979 the claim, having again reverted to the Crown, was acquired by F.B. Lilhiting, who staked three claims totalling 41 units over surrounding ground. He later assigned a 70 per cent interest to Cobre Exploration Ltd. In 1980 work consisted of prospecting, geological examinations, and sampling of road cuts and bulldozer trenches in the pyritized zone.

In 1980 an airborne VLF-EM and Magnetometer Survey was flown Mandon 1-3, Mandon, Huckleberry claims for Cobre Exploration Limited on their Mandon project (Assessment Report 8705).

In 2006 and 2007, Crucible Resources Ltd held the RD property and conducted sampling on the Cap (Assessment Report 29082, 29502).

In March 2007, Rocher DeBoule Minerals Corp contracted Fugro Airborne Survey Corporation to complete a Dighem electromagnetic, magnetic, radiometric geophysical survey over the Rocher Deboule property in a survey block amounting to 1089 line kilometres. Assessment Report 29338). A diamond core drilling program of 1106.1 meters over 6 drill holes on the Highland Boy Showing was also conducted.

In 2011, American Manganese collected 188 soil samples along the road system and the Capp soil grid. Of these 49 samples were greater than 2 grams per tonne silver, indicating a significant system 1500 metres east to west and 600 metres north to south and open to the north and south (Assessment Report 33297). Some rock sample was also completed.

See Rocher Deboule (093M 071) for related details of work done on the Rocher Deboule property, of which the Cap was part of in the late 2000s.

Bibliography

EMPR AR 1914-200, 1916-115, 1918-113, 1923-106, 1929-155
EMPR ASS RPT 3463, *8323, 8705, 25674, 26984, 27558, 28625, 29082, 29502, *29338, *33297
EMPR BULL 10; 43-51
EMPR EXPL 1979-230
EMPR GEM 1970-173, 1971-189, 1972-430
EMPR OF 1990-32; 1992-1; 1992-3; 1998-10; 2008-6
EMPR MAP 69-1 (#284)
GSC MEM 110-22, 223-36
GSC MAP 971A, 44-24, 1731
GSC OF 551; 720; 2322; 5705
EMPR PFD 883812, 883811, 800010

Date Coded:	1985/07/24	**Coded By:**	BC Geological Survey (BCGS)	**Field Check:**	N
Date Revised:	2015/02/17	**Revised By:**	Garry J. Payie (GJP)	**Field Check:**	N

Location/Identification

MINFILE Number: 093M 203

Name(s): **SILVER BASIN**
SILVER CREEK, ROCHER DEBOULE, RD, AREAS A-D

Status: Prospect

Regions: British Columbia

BCGS Map: 093M012

NTS Map: 093M04E

Latitude: 55 09 54 N

Longitude: 127 38 03 W

Elevation: 1700 metres

Location Accuracy: Within 100M

Mining Division: Omineca

Electoral District: Bulkley Valley-Stikine

Resource District: Skeena Stikine Forest District

UTM Zone: 09 (NAD 83)

Northing: 6114000

Easting: 587000

Comments: Location of Silver Basin stockwork zone (Figure 26, Assessment Report 33297).

Mineral Occurrence

Commodities: Copper, Gold, Silver

Minerals **Significant:** Chalcopyrite, Magnetite

Deposit
Character: Stockwork, Vein
Classification: Porphyry, Hydrothermal, Epigenetic
Type: L04: Porphyry Cu +/- Mo +/- Au, I05: Polymetallic veins Ag-Pb-Zn+/-Au, I06: Cu+/-Ag quartz veins

Host Rock

Dominant Host Rock: Plutonic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Cretaceous	Bowser Lake	Unnamed/Unknown Formation	------
Upper Cretaceous	------	------	Babine Intrusions

Isotopic Age	Dating Method	Material Dated
------	------	------
------	------	-

Lithology: Granodiorite, Greywacke, Siltstone, Hornfels

Geological Setting

Tectonic Belt: Intermontane

Terrane: Plutonic Rocks, Overlap Assemblag

Physiographic Area: Skeena Ranges

Inventory

Ore Zone: SAMPLE

Category: Assay/analysis

Year: 2011

Report On: N

NI 43-101: N

Sample Type: Chip

Commodity	Grade
Silver	3.2 grams per tonne
Gold	0.25 grams per tonne
Copper	0.33 per cent

Comments: From a 4 metre chip sample.

Reference: Assessment Report 32297.

Capsule Geology

The Silvertip Basin stockwork zone occurs in the small cirque at the head of Silvertip Creek, in an area locally known as Silvertip basin. It is above 1700 metres elevation, surrounded by rugged mountains on three sides and to a large extent floored in coarse, blocky talus. It is midway between the Rocher Deboule (093M 071) and Highland Boy (093M 070) mines, on the immediate easterly projection of the Rocher Deboule #4 vein, which would pass through the stockwork zone. The stockwork has limited exposure as small, isolated areas of altered and mineralized outcrop along the creek, amongst the talus and on the immediate walls of the cirque.

The area of the Silvertip Basin occurrence is underlain by hornfelsic greywackes and siltstones of the Jurassic to Lower Cretaceous Bowser Lake Group which are intruded by the Rocher Deboule porphyritic granodiorite stock of the Late Cretaceous Bulkley Plutonic Suite.

The granodiorite underlying the stockwork zone is broken and altered and lighter in colour than found on the overlying mountain slopes. It is more or less bleached to a whitish colour through the removal of mafic minerals and it has developed a light tan colour.

Locally, the granodiorite is associated with pegmatite. Altered and bleached granodiorite is often intimately associated with coarse hornblende-feldspar-quartz pegmatite that contains magnetite, chalcopyrite. A similar pegmatite area at the “Shower Show” has alteration but it is otherwise unmineralized.

In the stockwork zone, the altered granodiorite commonly contains limonitic hairline fractures and it locally contains veins and pods of quartz that are either weakly or strongly correlated with pegmatite, malachite and more rarely, chalcopyrite. Numerous showings were located in-amongst the talus; however, they tend to cluster and area described as five discrete locations (Areas A to E) (Figures 14-18, Assessment Report 33297).

In 2011, American Manganese collected a total of 224 rock samples from 180 sites in an area of approximately 1000 by 2000 metres. Of these, 119 were found to be anomalous in at least one metal. However, most contained a combination of greater than 0.5 gram per tonne gold, greater than 1.5 grams per tonne silver and greater than 0.1 per cent copper; an average of 4 one-metre samples (over a consecutive surface interval) assayed 0.25 gram per tonne gold, 3.2 grams per tonne silver and 0.33 per cent (Assessment Report 33297). Another 1 metre chip sample of a "black calcite" pod assayed 82.1 grams per tonne gold, 10.7 grams per tonne silver and 0.03 per cent copper (Assessment Report 33297). The full extent of the stockwork zone was yet to be delineated.

Bibliography

EMPR ASS RPT 16575, 16714, 25674, 26984, 27558, 28625, 29338, *33297
EMPR FIELDWORK 1978, pp. 102,103; 2006, pp. 1-17
EMPR MAP 22; 53; 58; 65, 1989
EMPR OF 1990-32; 1992-1; 1990-32; 1992-1; 1992-3; 1998-10; 2008-6
GSC OF 551; 720; 2322; 5705
GSC P 44-24; 51-10, p. 43

Date Coded:	2014/08/25	**Coded By:**	Garry J. Payie (GJP)	**Field Check:**	N
Date Revised:	2015/04/10	**Revised By:**	Garry J. Payie (GJP)	**Field Check:**	

Location/Identification

MINFILE Number: 093M 204
National Mineral Inventory Number: 093M4 Co1
Name(s): **HAZELTON VIEW**
ROCHER DEBOULE, VICTORIA, RD
Status: Showing
Mining Division: Omineca
Electoral District: Bulkley Valley-Stikine
Regions: British Columbia
Resource District: Skeena Stikine Forest District
BCGS Map: 093M012
NTS Map: 093M04E
UTM Zone: 09 (NAD 83)
Latitude: 55 09 48 N
Northing: 6113800
Longitude: 127 39 24 W
Easting: 585570
Elevation: 1420 metres
Location Accuracy: Within 100M
Comments: Location of the Hazelton View occurrence (Figure 26, Assessment Report 33297).

Mineral Occurrence

Commodities: Gold, Silver, Copper, Cobalt

Minerals
Significant: Chalcopyrite
Associated: Magnetite, Biotite
Mineralization Age: Unknown

Deposit
Character: Shear, Vein
Classification: Hydrothermal, Epigenetic
Type: I05: Polymetallic veins Ag-Pb-Zn+/-Au
Shape: Regular
Modifier: Sheared
Strike/Dip: 000/000

Host Rock

Dominant Host Rock: Sedimentary

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Jurassic-Cretaceous	Bowser Lake	Unnamed/Unknown Formation	------
Upper Cretaceous	------	------	Bulkley Intrusions

Isotopic Age	Dating Method	Material Dated
------	------	------
------	------	-

Lithology: Hornfels, Greywacke, Siltstone, Granodiorite, Diorite Dike, Feldspar Porphyry Dike

Geological Setting

Tectonic Belt: Intermontane
Physiographic Area: Hazelton Ranges
Terrane: Bowser Lake, Plutonic Rocks

Inventory

Ore Zone: SAMPLE
Year: 2011

Category: Assay/analysis

Report On: N

NI 43-101: N

Sample Type: Grab

Commodity	Grade
Silver	65 grams per tonne
Gold	6 grams per tonne
Cobalt	0.27 per cent
Copper	10.14 per cent

Comments:

Reference: Assessment Report 33297.

Capsule Geology

The Hazelton View area is unerlain by hornfelsic greywackes and siltstones of the Middle Jurassic to Lower Cretaceous Bowser Lake Group which are intruded by the Rocher Deboule porphyritic granodiorite stock of the Late Cretaceous Bulkley Plutonic Suite. The stock is cut by vein/dike systems which follow east trending fractures.

American Manganese states in Assessment Report 33297 that "old reports speak of the Hazelton View and the Victoria as being the same occurrence, however while prospecting the area (in 2011) a set of railroad tracks protruding from a collapsed tunnel was found." Presumably American Manganese is implying that this is possibly the Hazelton View occurrence, which appears to be on strike to the west of the northern Rocher Deboule veins and south of the Victoria area.

The showing accessed by the tunnel is covered but the mineralization is reflected in local debris. Sample 11 DE 814, is a high-grade sample, collected near the mouth of the tunnel. It is the most significant indication of mineralization in the Hazelton View area and was found to contain 6 grams per tonne gold, 65 grams per tonne silver, 10.14 per cent copper, 0.27 per cent cobalt and 1.0 per cent arsenic (Assessment Report 33297). Elsewhere in the Hazelton View area, there is a 1 metre wide shear zone that contains frothy quartz, and there are several areas of rock stained by malachite. Sample DE 820 consists of hornfelsed sediment that contains disseminations of chalcopyrite and assays 9 grams per tonne silver and 0.27 per cent copper. Sample KM 747 is a biotite, magnetite and chalcopyrite rich rock that contains 2.3 per cent copper and 17 grams per tonne silver (Assessment Report 33297).

WORK HISTORY

In 2011, American Manganese held the Rocher Deboule property which covered three small, past-producing mines and five significant prospects including: Highland Boy (093M 070), Rocher Deboule (093M 071), Victoria (093M 072), Great Ohio (093M069), Cap (093M073), Golden Wonder (093M074), Three Hills (093M075) and Daley West (093M053). American Manganese Inc. carried out a program that entailed 22 kilometres of ground magnetometer survey, 841 soil samples, 455 rock samples and 68 silt samples. The most significant soil sample returned 8650 parts per billion gold, 72.4 parts per million silver, 0.58 per cent copper, 1.31 per cent arsenic and 20.09 per cent iron (Stockwatch, November 20, 2012; Assessment Report 33297).

See Victoria (093M 072) and Rocher Deboule (093M 071) for details of related work done.

Bibliography

EMPR AR 1916-114,115; 1917-103,104,372; 1918-112,113; 1925-134; 1926-126; 1927-132; 1928-159; 1948-80-82; 1949-82-93; 1950-99; 1952-89,92

EMPR ASS RPT 7779, 8336, 10368, 11019, 11513, 16575, 16714, 25674, 26984, 27558, 28625, 29338, *33297

EMPR FIELDWORK 1978, pp. 102,103; 2006, pp. 1-17

EMPR MAP 22; 53; 58; 65, 1989

EMPR OF 1990-32; 1992-1; 1990-32; 1992-1; 1992-3; 1998-10; 2008-6

GSC OF 551; 720; 2322; 5705

GSC P 44-24; 51-10, p. 43

STOCKWATCH Nov.20,2012

Date Coded: 1985/07/24 **Coded By:** BC Geological Survey (BCGS) **Field Check:** N

Date Revised: 2015/04/10 **Revised By:** Garry J. Payie (GJP) **Field Check:** N

APPENDIX B

Memo

Date: October 6, 2020

To: Andris Kikauka, P.Geo, American Manganese

From: Ron Parent, P.Geo
C.H. Marais P.Geo

Re: Rocher Deboule Property Site Visit, conducted September 14, 2020.

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1. Introduction

C.H. Marais, a Professional Geoscientist (APEG BC) was contracted to conduct a site visit at the Rocher Deboule Property in Hazelton, BC, Canada for American Manganese. This site visit was conducted in support of a NI 43-101 Technical Report update scheduled for release in October 2020.

This memo is a summary of the site visit that was conducted. Mr. Marais visited the Property on Monday, September 14, 2020, and was accompanied and supported by Mr. Dan Ethier, a local prospector with intimate knowledge of the Property and immediate area.

The Rocher Deboule Property is an Au/Ag, base metal exploration property near the Town of Hazelton. Several different owners worked various areas of the property throughout the years, and parts of the property were mined in the early and mid-20th century. The property was consolidated by American Manganese and contains the Victoria Mine, Cap Zone, Greater Ohio, old Rocher Deboule Mine and various other mineral occurrences.

2. Summary of Visit

Mr. Marais drove to the site from Smithers, BC on the morning of September 14, 2020 and met Mr. Ethier at his property on Highway 16, which is 16 km southwest of the Town of Hazelton. After a brief review of the general location and a discussion of areas to be visited, they departed for the property via ATV, and at about 11:00 a.m. they reached the intended area at the base of the creek running up towards the old Victoria Mine workings. Further access was gained by travelling on foot using old trails. Three sites on the Property were visited, observed and documented during this visit.

Site A: The first area to be visited was the lower end of the Victoria Mine No. 2 Vein, on the lower slopes where existing road access was available.

Site B: The initial plan was for Mr. Marais to then continue to the old mine workings and surface outcrop of the Victoria Mine by following trails and the old tram line, and to be spotted by Mr. Ethier with two-way radios. This plan was abandoned as visibility was less than 50 m at the time, and it was slightly raining. Both Mr. Ethier and Mr. Marais followed the old trail up the mountain on foot. They departed shortly after 11:00 a.m., and finally reached the old workings of the Victoria Mine No. 1 Adit access at the top of the old tramway at about 2:30 p.m.

They proceeded to inspect the entrance of the old Victoria Mine No. 1 adit, and sampled some float at the entrance of the adit. They then proceeded down the mountain and reached the ATVs at about 5:00 p.m.

Site C: The next area visited was some surface showings in the Cap Zone. The general area was reached at 5:30 p.m. ATVs were left at the side of the road, and the old workings were accessed on foot. Two old working areas were visited; an old shaft, and an old cutting where the vein was exposed. Samples and photographs were taken, and the area was departed at 6:30 p.m. Mr. Maris and Mr. Ethier then used the ATV's to travel back to Mr. Ethier's property, to which they arrived at about 7:00 p.m.

2.1. Site A: Victoria Mine

The Victoria Mine location that was visited is in the vicinity of Drillhole No. 9. Mineralization is hosted in the volcanics of the Hazelton Group in the Victoria Mine No. 2 vein.

The collar location of Drillhole No. 9 was shown to Mr. Marais by Mr. Ethier (***Figure 1***). The collar location was marked with wood and burlap, but it was not clearly demarcated with the hole number.

Figure 1: Collar of Drillhole No. 9. The collar location of Drillhole No. 9 is defined, but with no clear markings.

At Drillhole No. 9, the mineralization is in the form of fine grained, and 1 cm long veins of arsenopyrite. No clear direction of these veins was observed *(**Figure 2**)*.

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Figure 2: Hand sample showing hypersthene alteration and arsenopyrite from sample taken in Victoria Mine No. 2 Vein close to Drillhole No. 9.

The mineralized andesite dyke is poorly mineralized with arsenopyrite and minor amounts of pyrite. Some float material in the area of Drillhole No. 9 was high felspathic alteration and showed minor mounts of molybdenum as shown in ***Figure* 3.**

Figure 3: Float near Drillhole 9. Highly altered rock with minor amounts of molybdenum on left, with allanite present on the right.

The Victoria Mine No. 2 Vein is exposed within 10 m of Drillhole No. 9. The actual vein itself is mostly covered by scree, but the relative position could be seen as shown in ***Figure 4.*** Contacts could not be observed. The sheared area is 1 m wide and consists of fine grained intrusive andesites with arsenopyrite mineralization and minor pyrite. The andesite dike carries mineralization in a late stage cross cutting steeply dipping shear structure, and accompanying dyke material consists of fine grained grey diorite material with a high amount of hornblende alteration.

Figure 4: This photograph shows the location of the Victoria Mine No. 2 Vein in close proximity to Drillhole No. 9. The photograph is not on strike, and the vein is steeper dipping than shown on the photograph.

2.2. Site B: Victoria Mine

The second area that was visited was close to Victoria Mine No. 1 Vein, at the Victoria Mine No. 1 Adit of the old workings of the Victoria Mine. The entrance of the workings is shown in ***Figure 5***. The entrance of the adit is covered by granodiorite scree as it is next to a creek on the side of the mountain. Mr. Marais had originally planned to climb even further up the mountain to observe the Victoria Mine No. 1 Vein where in situ, but was running out of time as the Cap Zone still had to be visited before nightfall. The host lithology of the porphyritic mineralized zones consisted of light grey medium to coarse grained granodiorite without any fabric. The Victoria Mine No. 1 Vein was not observed in situ.

The Victoria Mine No. 1 Adit is partially open and could be accessed further if dug out. The tunnel is partially open for at least the first 15 m, and it was possible to look into the tunnel to approximately that distance (***Figure 6***) but no further due to lack of light and access. It was noted by Mr. Ethier that this was the first time he had observed the tunnel, as it was previously covered by scree, and access may thus be only considered temporary.

The photographs shown in ***Figure 7*** and ***Figure 8*** are views above and below Victoria Mine No. 1 Adit. The photograph is indicative of conditions during the majority of the site visit. It only started clearing up at about 3:30 p.m. while Mr. Marais and Mr. Ethier were descending back towards the ATVs.

Figure 5 Mine entrance to Victoria Mine No. 1 Adit at the Victoria Mine Workings.

Figure 6: View inside Victoria Mine No. 1 Adit.

Figure 7: View of the creek up the slope form the entrance of Victoria Mine No. 1 Adit showing granodiorite scree in the creek, and poor visibility during the visit.

Figure 8: Photograph showing the area below the entrance to Victoria Mine No. 1 Adit.

The old working level near the adit served as an access to the tramline which was slightly to the south of the mine entrance. **Error! Reference source not found.** shows the working level of the Victoria Mine No. 1 Adit. The in situ rock was massive medium to coarse grained granodiorite. Some loose material typical of the mineralization at Victoria Mine No. 1 Vein was found on the working level. The tramline is visible on the horizon, and a wooden support on the working level is also visible in the foreground. From where the photo was taken, the access to the Victoria Mine No. 1 Adit is about 5 m behind the place from where the photograph was taken,

Figure 9: Working level at Victoria Mine No. 1 Adit looking south. Note the tramline that was used to move material from the mine to the railway sighting north of Highway 9. This picture was taken close to the top of the tramline.

There was some mineralized andesitic material on the working level that had originated from the mine workings. The material was sampled. The dyke material is andesitic in nature with quartz alteration and is moderately mineralized. Mineralization is in the form of arsenopyrite and minor amounts of pyrite.

Figure 10: Victoria Mine No. 1 Vein sample taken on the working level at the entrance to Victoria Mine No. 1 Adit observed to be andesitic rock showing moderately to highly mineralized vein material with arsenopyrite mineralization.

During the ascent from Victoria Mine Site B, the clouds lifted and some photographs were taken at that time.

Figure 121 shows a view from the mountain looking southwest towards the Copper Hill area, showing the Vent Zone. This Vent Zone is currently one of the highly prospective areas for American Manganese(Mr. Ethier). It could not be visited due to time constraints.

Figure 12 shows a view looking east towards the Victoria Mine No. 1 Adit. The trail that was historically used by miners is visible to the left of the creek, but the tramline and mine working was not visible. The scree slope consisted of mainly granodiorite, with some vein material in places.

Figure 11: Looking southwest towards the Copper Hill area, with highlighted area showing the Vent Zone in the Hazelton rocks, one of the prospective areas on the property.

Figure 12: Looking east towards Victoria Mine showing the granodiorite scree from the creek where the Victoria Mine No. 1 Adit was located.

2.3. Site C: Cap Zone

Several veins with associated shear structures are found throughout the Cap Zone. Outcrops are rare, and veins are mostly exposed in older workings. ***Figure 13*** shows an old shaft in the Kasalka volcanics in the Cap Zone. It was deemed unsafe to enter and no mineralization was observed.

Figure 13: Small shaft in the Cap Zone for accessing mineralization.

An old cutting in the Cap Zone gave the best exposure of typical mineralization found in this area. The host rock is a highly altered andesite rock, which appears massive and is light yellow. This is cross cut by a steeply dipping shear structure containing a mineralized intrusive andesitic dyke. The intrusive material was highly altered, brecciated green andesite (***Figure 14***) and is easy to discern from the host rock.

Figure 14: Highly altered Kasalka andesite in an old cutting, with the vein exposed as indicated.

The mineralized vein is roughly 30 cm wide (***Figure 15***). The vein is steeply dipping and has sharp contacts with the surrounding andesitic host (***Figure 15***). The intense iron staining is only found in the actual structure.

Figure 15: Mineralized vein in the Kasalka Group. The rock in the hanging wall appears to be slightly brecciated, is much lighter in colour than the vein material which contains iron staining on fracture planes.

The vein is highly oxidized on fracture planes, with iron staining on fracture surfaces, and fine grained pyritic mineralization as shown in ***Figure 16***. This andesite is slightly greener in color, completely altered and started breaking down when washed. The surrounding Kasalka volcanics is yellow, highly weathered and breaks down on touch.

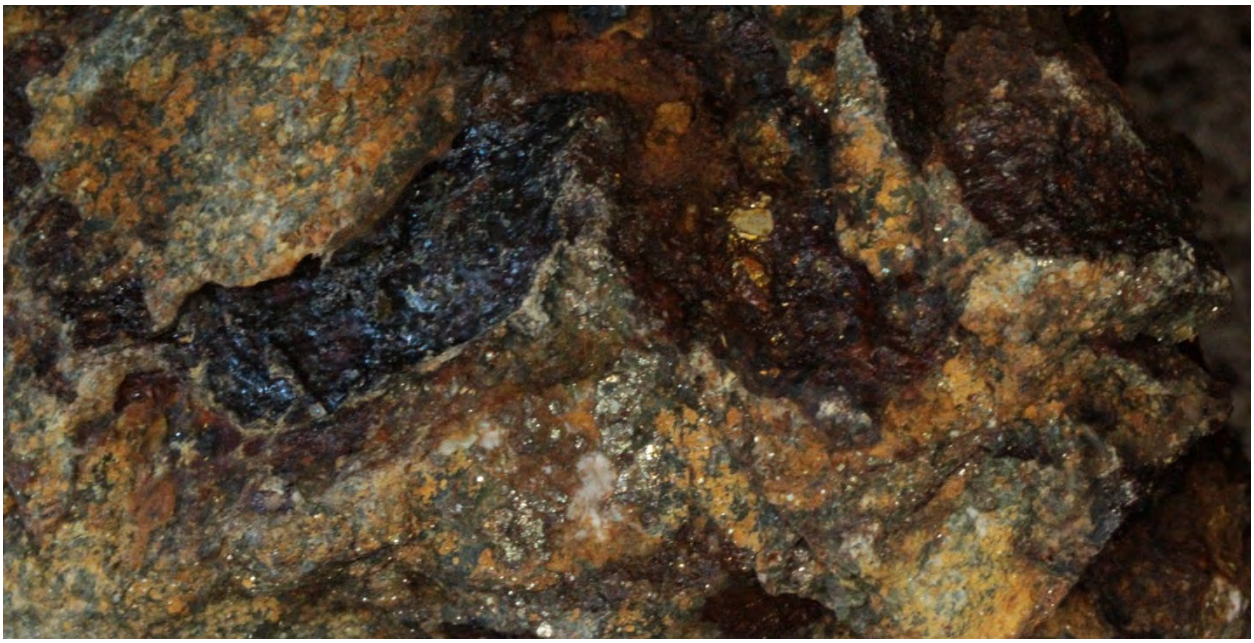

Figure 16: Disseminated pyrite in the mineralized andesites in the Kalka volcanics.

3. Summary Statement and Conclusions

The site visit confirmed the presence of mineralization in the Victoria Mine and Cap Zone areas. Mineralization appears to be associated with andesite dyke-like intrusions that follow strong steeply dipping cross cutting shear structures, with sharp contacts with hosting lithology. The intrusions are structurally controlled and follow the shear structures. Mineralization in the granodiorites is mostly arsenopyrite, with hornblende alteration observed in veins and float material originating from the Victoria Mine No. 1 Vein. Minor molybdenum mineralization was also seen in a highly felspathic altered rock at Victoria Mine No. 2 Vein at Drillhole No. 9.

Mineralization in the Cap Zone is associated with highly oxidized alteration of the rocks. The vein material appears to be a brecciated andesite with iron staining on fracture surfaces. Mineralization is mostly in the form of euhedral pyrite.

The following was confirmed during the site visit:

- The presence of the old mine workings and mining activities in both the Cap Zone and Victoria Mines.
- The presence of drilling conducted in the Victoria Mine area.
- The presence of mineralization in discrete steeply dipping structurally controlled amphibolite veins in three areas on the property.
- The style of mineralization in the form of mostly arsenopyrite at Victoria Mine and pyrite at the Cap Zone.

- Mineralization in the granodiorite pluton in the Victoria Mine area, as well as the Kasalka volcanics in the Cap Zone.
- The thickness of well-developed veins between 50 cm and 1 m carrying mineralization for both the Cap Zone and Victoria Mine areas.
- The structural control of mineralization for both the Victoria and Cap Zone areas.

In summary, during the course of the site visit to the Rocher Deboule Property Mr. Marais visited three areas; Site A Victoria Mine, Site B Victoria Mine, and Site C Cap Zone. During the visit Mr. Marais confirmed the style of mineralization, geological setting, structural control, host lithology, presence of old mine workings and evidence of more recent drilling.