ASSESSMENT REPORT

2019 SOIL GEOCHEMISTRY, PROSPECTING AND PETROGRAPHY

at the

MM & BLACKBEAR PROJECT

MM 1 – 10: YD132001 – YD132010
BLACKBEAR 1 – 5: YF08691 – YF08695
BLACK BEAR 6 – 25: YD132051 – YD132070

located at
NTS 115N/15
Latitude 63°54'N; Longitude 140°34'W
Dawson Mining District
Yukon, CANADA

for
WILLIAM MANN & MAX MIKHAILYTCHEV

prepared by
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December 2019

YMEP PROJECT 19- 046

Field Work Performed July 23 to 26, 2019

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INTRODUCTION

The MM & Blackbear project hosts high grade silver-lead-gold veins along with potential for porphyry and skarn deposits, located in the Sixtymile placer gold camp of western Yukon Territory. The project is comprised of 10 MM claims and 25 Blackbear claims which are owned by William Mann and Max Mikhailytchev. The claim blocks are not contiguous and are separated by about 2km, however assessment work from both properties is combined in this report.

This report describes a program of soil sampling, prospecting and petrography performed by the owners and assistant Alex Mikhailytchev between July 23 and 26, 2019. Petrographic work was conducted by Dr. Timothy Liverton, and is presented in an Appendix.

PROPERTY LOCATION, CLAIM DATA AND ACCESS

The MM & Blackbear project consists of 35 mineral claims in two blocks located in western Yukon at latitude 63°54' north and longitude 140°34' west on NTS map sheet 115N/15 (Figure 1). The claims are all registered with the Dawson Mining Recorder. The MM claims are filed in the name of William Mann, and the Black Bear claims are filed in the name of Max Mikhailytchev however both claim blocks are jointly owned by the two prospecting partners. Claim data are listed below while the locations of individual claims are shown on Figure 2.

Claim Name	Grant Number	Expiry Date*
MM 1 – 10	YD132001 – YD132010	2024/03/17
BLACKBEAR 1 – 5	YF08691 – YF08695	2022/02/24
BLACK BEAR 6 – 25	YD132051 – YD132070	2021/03/17

* Expiry dates include 2019 work which has been filed for assessment credit but not yet accepted.

The property lies 65 km due west of Dawson City and can be reached by four wheel drive vehicle via the Sixtymile Road, which runs south from the Top of the World Highway. An extensive system of bush roads and trails exist on the alpine ridge but to reach them, the Sixtymile River must be forded. During spring runoff and following major storms, this ford is sometimes impassable. The Top of the World Highway extends west from Dawson City into Alaska. It is open during summer and fall when the ferry across the Yukon River is in service. Dawson City is situated 536 km by road north of Whitehorse, the Yukon's main supply centre, and is reached via the all-season Klondike Highway. Total road distance from Dawson City to the property is 115km. Helicopters are based in Dawson City. A temporary road accessible tent camp was located in an existing clearing adjacent to the No. 9 vein on the Blackbear claims.

PREVIOUS WORK

This section summarizes pre-2019 exploration activities in the project area.

1890s - silver-lead-gold veins were likely found in the Sixtymile area, but are not documented. Hand dug pits in the magnetite skarn showing at the MAG claims are an example of this work.

1899 - old hand pits are present and about a dozen copper claims were staked in the vicinity of Fifty Mile Creek in 1899-1900 by H.E. Porter. The "Fifty" minfile occurrence (115N 043) is located south of the MM claims. Evidence of old workings, most of which expose traces of malachite in skarn, can be found along a zone some 300 m in length.

1917 – Reconnaissance geological mapping conducted for government of Canada (Cockfield, 1921). Focus on placer mining, with some discussion of possible bedrock sources.

1965 - the first reported discovery was made by J. Lerner and M. Chefkoi. Exploration consisted of "cold extraction" soil geochemistry and prospecting, which led to claim staking. The claims were optioned to A. Moisey, who later transferred them to the Sixtymile Mining Company Ltd.

1966 and 1967 - Sixtymile Mining carried out bulldozer trenching and electromagnetic (EM) surveys. The trenching uncovered substantial lenses of massive galena on the No. 1 and No. 3 veins. In summer 1966, a total of 22.7 tonnes of hand sorted material as collected from open cuts on the No. 1 and No. 3 veins, and shipped to the Cominco smelter at Trail, BC (Harper, 1967). This shipment averaged 2297 g/t Ag, 67.3% Pb and 2.1 g/t Au (Cholach, 1969).

1968 and 1969 - the property was optioned by Connaught Mines Ltd, which completed geological mapping, geochemical sampling, 35,200 m^3 of bulldozer trenching and 431.8 m of diamond drilling in eight holes (Archer, 1969 & Cholach, 1969). The 1969 soil sampling covered a very large area - 10,542 soil samples collected on 225 claims were analyzed for Pb, Cu and Mo. This work generated new silver-lead targets and also identified strong copper response in irregular clusters away from the veins. Bulldozer trenching on the geochemical anomalies led to the discovery or delineation of more vein zones, including the No. 4, No.5 & 6, No. 7, No. 8 and No. 9. Note that the No. 9 vein was discovered in trench 69- 6, and some subsequent explorers have mistakenly called this vein No. 6. 8 diamond drill holes tested the No. 1 and No. 3 Veins. Most of the holes intersected variably mineralized vein structures (Cholach, 1969). Skarn alteration was noted in several locations, with weak mineralization. Some weakly galena bearing quartz- arsenopyrite veins were discovered by bulldozer trenching in this program, but not sampled or named.

1972 – The No. 9 vein was trenched at regular intervals for 350m (King, 2004).

1976 - Connaught Mines transferred its interest to A. Tottrup, who optioned the property to J. Lerner. That summer J. Lerner extracted an additional 218 tonnes of ore from shallow pits on the No. 1 and No. 3 Veins and shipped it to the Asarco smelter in East Helena, Montana.

Combined, the 1966 and 1976 shipments totalled 240.7 tonnes at an average grade of 2228.5 g/t Ag, 60% Pb and 1.0 g/t Au.
Note also that the No. 9 vein was stripped off and likely bulk sampled during the 1970s, though documentation of this work is not available.

1981 - J. Lerner staked sixteen additional claims. The entire claim block was then sold to Lougheed Resources Ltd., which cut trenches on the No. 1 Vein totalling 4134 m^3. These trenches were mapped and sampled in 1982. The claims were held in good standing until 1986.

1987 - Walhalla Exploration Ltd. restaked the core of the property and optioned the claims to Croesus Resources Inc., which sub-optioned part of the claim block to Red Fox Minerals Ltd. and Kelan Resources Ltd. Aurum Geological Consultants Inc. was contracted to conduct an exploration program that consisted of geological mapping, geochemical sampling (2,545 samples analyzed for Au, Ag, Pb, Sb & As), geophysical surveys and bulldozer trenching (Price, 1988a and Keyser, 1988). A petrographic examination of two vein specimens is included as an appendix in the Keyser report.

1988 - Kelan Resources and Croesus Resources completed 315.8 m of diamond drilling in ten (short!) holes. Three of the holes tested the No. 9 Vein target, which is partially on the Black Bear claims (Price, 1988b). The first two holes were collared west of the stripped area, near the current claim boundary, with one of these testing a VLF geophysical anomaly. The third hole tested beneath the vein outcrop within the stripped area, with poor core recovery at the target. Strong sericite- clay alteration with molybdenite mineralization and fault gouge was seen in all holes near the No. 9 vein. Another of the holes tested the No. 8 Vein and the other six holes explored beneath a nearby magnetite skarn which lie immediately north of the MM claims. It is worth noting that two of the holes were not analyzed despite geological descriptions favourable for gold. The core from the 1988 diamond drilling program is stored at a site along the road close to the No. 8 vein.

1990 – Tombstone Explorations optioned 59 claims (including the No. 9 vein area) from Walhalla.

1992 – Tombstone Explorations explored two areas within a large copper in soil anomaly identified in the 1960s (Smith, 1993). A truck-mounted auger drill was used to test bedrock along two pre-existing trenches. 36 holes totalling 357 feet were drilled. The best results were from trench #5, where the 23 samples averaged 410 ppm Cu with elevated Au, Ag and Mo. This trench is on the current Black Bear claims, but was backfilled to form the current road to Cheryl creek. All of the claims in the area were allowed to lapse.

1997 – The federal government performed a Phase II environmental assessment of the No. 9 vein area (Environmental Services, Public Works and Government Services Canada, 1997). They erroneously called the area "Connaught", which is an occurrence located about 5km west of the "Butler" minfile occurrence which hosts the No.9 vein. The environmental impact of work at the site was not considered to be significant.

1998 - 17363 Yukon Inc. restaked the main Connaught showings (MOS claims) and the No. 8 vein and magnetite skarn area (Mag claims). It conducted minor prospecting and geochemical

sampling before contracting Equity Engineering Ltd. to perform geological mapping and geochemical sampling across the known veins and showings (Harris, 1998). Harris's report contains detailed sampling information for the No. 9 vein from a prior report that is unavailable to this author. Soil samples were analyzed for Au, Ag, Pb, Sb & As.
Also in 1998 P. Ledwidge staked 12 OM claims to cover the No. 9 vein, and optioned them to Carta Resources.
Also in 1998 Nordling and Rudis prospected the Monica claims at the Enchantment minfile occurrence (115N 042) located about 4km southeast of the current Black Bear claims at the headwaters of Cheryl creek (Rudis, 1999).

1999 – Carta Resources staked 22 Tom claims. Carta established a baseline and grid lines and conducted soil sampling and geological mapping on the Om & Tom claims (King, 1999). 109 soil samples were collected from 4 grid lines at 50m intervals by auger and analyzed for 36 elements. The exploration target was both high grade silver lead veins and porphyry style copper molybdenum. Also in 1999 Prospector International Resources conducted silt sampling of the creeks around Mt. Hart to the east, which returned strongly anomalous gold from four creeks (Jaworski & Meyer, 2000).

2001 - An additional 10 MI claims were added on the east side of the Tom claims. The property was transferred to Grid Capital Corp. The soil grid was expanded and 335 samples collected on 10 additional lines (Ledwidge, 2001).

2003 – 19 kilometres of additional gridlines were cut, and an IP geophysical survey was conducted on the OM-TOM-MI property (Dziuba, 2003). 17 line-kilometres of IP and resistivity survey were conducted on 10 of the grid lines, targeting disseminated porphyry mineralization and sulphide-rich veins. Later that year a diamond drill program was conducted to test the property (King, 2003). 813m were drilled in 5 holes to test the No. 9 vein, a tourmaline breccia structure, and coincident geochemical and IP anomalies. A high grade section of vein was intersected, along with broad sections of weakly altered and Cu- Mo- Au- Ag mineralized quartz monzonite. Core from the 2003 drilling is stacked at the clearing near the No. 9 vein.

2005 - R. Nordling staked the Mag claims, which cover the No. 8 vein and nearby magnetite skarn. These claims are currently in good standing, and lie immediately north of the MM claims. The access trail to the No. 9 vein was extended southeast to placer claims at the Cheryl creek tributary of Fiftymile creek around this time.

2006 - the CN and NC claims were staked to the west of the property by ATAC, which immediately optioned a 50% interest in them to Klondike Silver. A property-wide helicopter borne VTEM survey was flown that summer (Wengzynowski, 2007). The survey produced time domain electromagnetic and magnetic data over the claims.

2007 - Klondike Silver performed prospecting, soil sampling, excavator trenching and 556 m of diamond drilling in seven holes (Wengzynowski, 2008). Soil sampling totalling 1621 samples was conducted on two grids. Trenching led to the discovery of a new vein (Stirling Vein) and the formal recognition of another, previously identified structure (Core Shack Vein). Diamond drilling confirmed down dip continuity of mineralization at the No. 1, No. 3, and No. 4 veins.

Also in 2007 ATAC and Klondike Silver optioned the Mag claims from R. Nordling. This property contains the No. 8 vein and a gold-bearing magnetite skarn zone.

2008 - ATAC and Klondike Silver continued with soil sampling, excavator trenching and excavator stripping of veins. 4,000 soil samples were collected in 3 grids, and analyzed for 34 elements, but not for gold (Eaton & Mundhenk, 2009). Prospecting and excavator trenching extended some known veins and resulted in the discovery of the AC/DC, Ice, Rain and PP veins. 41 trenches were excavated on 10 targets, with only 36 reaching bedrock due to permafrost. 254 rock samples were analyzed. Parts of the No. 1, No. 7, Stirling and No. 8 (Mag) veins were stripped in preparation for bulk sampling.

2009 - a program of prospecting, soil sampling and excavator stripping was undertaken by Klondike Silver on behalf of the Joint Venture (Mann, 2010). The number 1, 3, Stirling and 8 veins were stripped within existing excavations with the intention of improving access for future bulk sampling. Prospecting was conducted in areas of anomalous soils identified by 2007 and 2008 sampling. This program was successful in discovery or re-discovery of several mineralized veins not previously documented, notably the 69-3 vein and a north-easterly extension of the No. 7 vein. The Nordling option was terminated at the end of 2009.

2010 – A program of soil geochemistry, prospecting and geological mapping was conducted on the Connaught property (Mann, 2011a). A total of 654 samples were collected on 20 lines, including one line on the current MM claims. The prospecting resulted in the discovery of new high grade epithermal veining at the Woodpecker and New veins, as well as the rediscovery of epithermal veins in bulldozer trenches that were low in lead (and therefore ignored in 1969), specifically Sandro's vein, 69-2 vein, Ridge vein and the Kitchen vein. Geological mapping focused on outlining the intrusive rocks that extend the length of the Connaught property to the west side of Mt. Hart. Also in 2010 the Hart and Art claims were staked by Klondike Silver immediately east of the current Blackbear claims. A program of soil geochemistry and prospecting was conducted (Mann, 2011b). Also in 2010 a very large block of claims was staked to the north, south and east of the area by Ryangold.

2011 – Ryangold conducted ridge and spur soil geochemistry over their claim block. Numerous gold anomalies were identified proximal to the current Black Bear claims (Jin, 2011).

2014 – The governments of Canada and Yukon flew an airborne magnetic survey over NTS 115N/15, which includes the property (Kiss & Coyle, 2014). Flight lines were spaced 400m apart, with 2400m control lines and a nominal terrain clearance of 125m.

2015 – ATAC Resources conducted a program of prospecting, mapping and soil geochemistry funded in part by YMEP grant 2015-026 (Burrell, 2015). Prospecting up to 1000 m along strike of the No. 9 Vein resulted in the discovery of three mineralized quartz vein float occurrences on the OM claims. Four composite grab samples were collected and returned peak values of 7.13 g/t gold, 1040 g/t silver, 15% lead. Extensive skarn was mapped adjacent to the Black Bear claims on the OM claims.

GEOMORPHOLOGY AND VEGETATION

The MM & BLACKBEAR project is situated in the Klondike Plateau ecoregion, part of the Boreal Cordillera ecozone (Smith et al, 2004). The property lies about 45 km southwest of the Tintina Trench. The area features rounded ridges and low peaks, which represent the top of an ancient peneplane that has been deeply incised by dendritic drainages (plate 2). Continental ice sheets did not cover the area but there is evidence of localized alpine glaciation. The property is drained by creeks that flow into the Sixtymile River, part of the Yukon River watershed.

Local elevations range from about 2900' in the valley of a tributary to Butler Gulch to a 4600' peak at the south of the Black Bear claim block. Terrain is subdued with gentle to moderately steep hillsides flanking broad, rounded hilltops. Outcrop is rare and is mostly confined to ridge crests. In areas where drilling has been done, rocks are typically weathered to about 30 m below surface. Soil development is fair, but there has been considerable solifluction on steeper slopes.

Vegetation consists of stunted spruce and buckbrush along with mosses and grasses near ridge tops. South and west facing slopes support grasslands. The project lies within the zone of extensive discontinuous permafrost, with north and east facing slopes that are often moss covered and permanently frozen. This may presents an obstacle to soil sampling, trenching and road construction. Part of the MM property was burned by a wildfire in the summer of 2009, which has been favourable for exposing rock in outcrop and float.

Plate 2. View looking south from Black Bear claims. Number 9 vein clearing, road and campsite visible in upper right. MM claims are in middle distance, left side of photo.

GEOLOGY

Geology in the vicinity of the MM & BLACKBEAR project was most recently mapped at 1:50,000 scale by Mortensen (1996) and put into broader context by Gordey and Makepeace (1999). The Stewart River Area was mapped at 1:250,000 by Gordey and Ryan (2005), however no new mapping was done in the project area at that time. The Yukon Tanana Terrane has been recently examined and compiled as a whole (Colpron, 2006). The Sixtymile – Pika fault zone area was described by Allan & Mortensen in 2012.

The property lies between the Tintina and Denali Faults within a part of Yukon that is mostly underlain by Yukon-Tanana Terrane. That tectonic terrane is composed of continental margin sediments, island arc volcanics and coeval intrusions, which were metamorphosed and deformed during accretion to the North American continent during Mesozoic times. In the Sixtymile district, the Yukon-Tanana Terrane is subdivided into two stratigraphic elements (the Nasina or Finlayson Assemblage) and a metaplutonic package (the South Fiftymile Batholith). The Yukon-Tanana units are intruded by undeformed, Late Cretaceous plugs and stocks.

Regional Geological Setting

(modified from Allan & Mortensen, 2012)

The project area is underlain by Yukon Tanana terrane Paleozoic metaplutonic and metasedimentary rocks of Devonian to Mississippian age. Basement rocks include K-feldspar augen orthogneiss of the Fiftymile batholith. The batholith is structurally overlain to the north along a north-dipping, low angle normal fault by metamorphic rocks of the Nasina assemblage of the Yukon Tanana terrane. The Nasina assemblage is composed of variably carbonaceous quartzite, semipelite, and lesser marble.

Exhumation of the Fiftymile batholith domain to upper crustal levels is inferred to have taken place in the mid-Cretaceous. The Fiftymile domain is therefore interpreted as a mid-Cretaceous core complex accommodated by a major north-dipping normal fault along its northern margin, named for convenience herein as the Fifytmile fault. Metamorphic basement units in the upper plate of the Fiftymile fault have been intruded by plutonic rocks of Late Cretaceous (67-71Ma) age.

Pebble conglomerate assigned to the Indian River Formation and ranging from <1m to >25m thick unconformably overlies metamorphic basement rocks locally. The sedimentary package is in turn overlain by Late Cretaceous volcanic and volcaniclastic rocks of Carmacks Group affinity that are best preserved where accommodated by extensional faulting in the Late Cretaceous.

The Yukon Tanana terrane as mapped by Colpron in the project area is identified as belonging to the Finlayson Assemblage instead of the Nasina assemblage. The Finlayson Assemblage of the Yukon Tanana terrane comprises Late Devonian to Mid-Mississippian fine grained, moderately to non-carbonaceous, metavolcanic quartz-muscovite-chlorite schist and quartzite with locally

abundant interlayered mafic schist and amphibolite. In the Sixtymile River area, some higher grade metamorphic equivalent rocks are also present including coarse grained, locally garnetiferous biotite-quartz-muscovite schist and amphibolite. Lenses of recrystallized limestone are present on the MM property, and extend northward towards Mt. Nolan.

A string of Late Cretaceous Plugs and Stocks of the Prospector Mountain Suite (67-71Ma) intrude the Nasina Assemblage and South Fiftymile Batholith in the project area. These plutons consist of fine to medium grained, equigranular biotite-hornblende quartz monzonite and granodiorite.

Structure
(modified from Allan & Mortensen, 2012)

All rock units are cut by a major northeast-trending fault zone, which was first published on geological maps as a coherent structure in 2012. This newly named "Sixtymile-Pika fault" is interpreted to have accommodated regionally significant sinistral displacement.

The Sixtymile-Pika fault segments are derived from some combination of historic or current field mapping, interpretations from airborne magnetic surfaces, and topographic lineament analysis.

Detailed mapping by Mortensen in the Sixtymile region demonstrated an asymmetric graben structure centred on the Sixtymile River valley, in which Late Cretaceous volcanic rocks are preserved. On the basis of mapped fault traces, this graben structure is well explained as a pull-apart basin within a stepover in the transpressive Sixtymile-Pika fault system. This graben hosts a porphyry Au- Cu target (minfile 116C 153). A series of shorter secondary fault strands with north-northwesterly trends in the Connaught area is also consistent with a sinistral transpressive regime. These structures are important for controlling mineralization, and are discussed in greater detail in the following sections.

On the basis of regional map patterns alone, Allan & Mortensen propose that the Sixtymile-Pika fault is a coherent structure with at least 140km of strike length and up to 17km of sinistral offset. This fault is truncated to the north by the mainly early Tertiary Tintina fault. Its continuation to the southwest could be speculated to follow a major magnetic discontinuity for an additional 35km along a segment of the upper Ladue River, and ultimately terminate in the Tanana River valley.

Property Geological Mapping

There has been little geological mapping conducted during exploration of the area, and no complete detailed property geology maps. The intrusive complex outline between Mt. Hart and the western end of the mineralized trend was mapped in 2010 (Figure 3, Mann, 2010a, b), and parts of the ATAC ground including the OM claims adjacent to the Black Bear claims were mapped at 1:10,000 in 2015 (Burrell, 2015).
The intrusive rocks are now seen to occupy a nearly continuous east- west trending band from the west side of Mt. Hart across to the Connaught showing, a distance of about 20 kilometres.

Considerable volumes of hornfels +/- skarn is present proximal to the intrusive, particularly in the vicinity of the MM & Blackbear claims.

Most of the geology is present on surface as felsenmeer boulders, with very little true outcrop. The recent mapping is consistent with the airborne magnetic signature of the area, which shows an extensive magnetic high that corresponds to the intrusive complex and associated hornfels zone (Kiss, 2014).

MINERALIZATION

The MM & BLACKBEAR project area has been explored as both a high-grade silver- lead ± gold epithermal vein prospect similar to mines in the Keno Hill district, located about 250 km to the east and a porphyry Cu- Mo- Au- Ag target similar to the Casino deposit, located about 100km to the southeast. Some exploration has also been directed to skarn mineralization on ground now covered by the MAG claims immediately north of the MM property, and at the "Fifty" minfile occurrence located immediately south of the MM claims. The potential for porphyry Cu- Mo- Au- Ag mineralization was recognized as early as the 1960s era work, and was the primary target for much of the work on the BlackBear claims and claims owned by ATAC which lie between the MM and BlackBear claims during work conducted in the 1990s and 2000s. Porphyry occurrences are found in the Sixtymile valley to the north, and at the Taurus and Bluff occurrences to the southwest in Alaska. Significant gold-rich skarns have recently been discovered at the Peak occurrence in Alaska, associated with a 70ma intrusion proximal to the southwest extension of the Sixtymile-Pika fault. Placer gold has been mined from many creeks in the area, including the creeks that drain the claims for over 120 years. The property lies within the Tintina Gold Belt, and at the north-western end of the White Gold District.

About twenty veins are known in the overall area, with two (No. 8 & 9) known on or adjacent to the MM & Blackbear. These vein zones are hosted by dilatent fault structures up to several metres in thickness. Individual vein structures have been traced for lengths in excess of 1000m, and most are open in both directions along strike. Soil geochemical anomalies indicate some much longer mineralized structures. Typical vein exposures consist of multiphase quartz that is variable mineralized with blebby to massive arsenopyrite + galena ± chalcopyrite ± covellite ± stibnite ± sulphosalts. Massive galena ± anglesite lenses are intermittently exposed in the core of some veins. The galena is usually coarsely cubic and contains scattered blebs of chalcopyrite. Anglesite weathered surfaces often exhibit botryoidal textures and some show shear textures. The veins and their selvages are usually light coloured compared to the surrounding units and are often tinted green, because of oxidization of arsenopyrite to scorodite and sericitization of mafic minerals. Coarse white crystals of barite are present as a significant vein accessory mineral at the No. 9 vein. Bleached phyllic- and argillic-altered halos extend up to six metres into adjacent wallrocks at the No. 9 vein, but only a few centimetres at the other veins (Plate 3).

The No. 1, 3, 8 and Stirling veins strike 050 to 094° and dip subvertically to 070° to the south, while the No. 2, 4, 5, 6, 7 and Core Shack veins strike 020 to 038° and dip steeply toward the west or east (Harris, 1998). The AC/DC vein is anomalous in orientation, with a strike of roughly 020° and steep dip. The north-easterly striking veins structures are thought to be related to the Sixtymile- Pika fault.

The greatest number of veins in the area are found at the Connaught and Lerner minfile occurrences (115N 039, 040) on the claims of ATAC Resources, about 5 to 10km west of the MM claims. These include veins number 1 to 7, Stirling, Ice, Rain, PP, Ridge, Kitchen, Core Shack, AC/DC, 69-2 and 69-3. The MM & Black Bear claims are associated with the Butler minfile occurrence (115N 042), which include the number 8 & 9 veins, Matt's vein, gold-bearing magnetite skarns and a large Cu- Mo- Au- Ag porphyry target area. A few minor showings are

known between the Connaught and Butler areas, including Sandro's vein, New vein and Woodpecker.

A magnetite skarn zone located on competitors ground immediately north of the MM claims and east of the No. 8 vein was tested by a series of very short drill holes (Price, 1989). Some significant gold intersections were returned from this drilling, with best values of 0.219 oz/ton over 5 feet.

Southwest of the No. 8 Vein and west of the MM claims on the ATAC property is the "Mom 18" skarn mineralization in an area of hand pits where skarn mineralization was noted in 1969. This material returned values up to 0.874 g/t Au, 312 g/t Ag, 7.24% Zn, In (68 ppm), W (201 ppm), Ga (13.95 ppm) with elevated values for Fe, Cu, Bi, As & Cd within coarse garnet- diopside skarn (Mann, 2010a). Ratios of Ag: Pb are very high compared to the local veins. Arsenic values are very low compared to vein mineralization. The "Fifty" copper minfile showing (115N 043) which is plotted a few hundred meters south of the MM claims is thought to be related to this trend, with some prominent marble outcrops on the ridge crest between Mom 18 and Fifty. The carbonate and skarn trend from Mom 18 to Fifty is currently on open ground, and should be investigated by prospecting and soil geochemistry.

Plate 3. No. 9 Vein stripped area 2019.

2019 EXPLORATION PROGRAM

The 2019 field program was conducted by the author William Mann, senior field technician Max Mikhailytchev, and field technician Alex Mikhailytchev.

2019 Soil Geochemistry – MM Claims

The 2019 soil sampling was designed to build on earlier grid sampling that was conducted between 1969 and 2010. One soil line from 2010 lies on the MM claims, on UTM gridline 517400E (Mann, 2010a). In 2019 samples were collected along north- south UTM gridline 517800E, with a 50m sample spacing, and also sporadically in the vicinity of mineralized float at the Matt's vein target.

The 2019 soil samples were located using handheld GPS units, with supplemental navigation by compass. The sites are marked by flagging tape marked with the sample numbers. Soil samples were collected using an auger or shovel. They were placed into Kraft paper bags along with an analytical sample tag. Soil descriptions were recorded in a notebook.

On the property there are many areas where permafrost is well developed near surface under moss (due to the relatively high elevation) and therefore deep sampling is often not possible. Both auger and shovel were used to collect samples. The bedrock which underlies much of the area sampled in 2019 tends to form boulder-rich soils that also hamper deep sampling, however samples were collected from as deep as possible. Ash and loess were not observed to be thick or extensive where sampling was conducted, however in the Matt's vein area the soil appears to be cryoturbated and possibly diluted by loess. Soils in this area were less metal-rich than expected considering the presence of well mineralized float rock.

Soil sample locations from 2019 and 2010 are shown on Figure 4. Silver and Lead in soil results are shown in figures 5 & 6. Certificates of Analysis for soil samples are in Appendix IV.

Statistical analysis of the previous soil samples from the Sixtymile area revealed correlation coefficients between Ag and Pb of 0.966, between Au and Ag of 0.105, and between Au and As of 0.147 (Mann, 2010a). There were no strong correlation between gold and any of the other elements analyzed in individual samples. The highest gold values did tend to occur within broad areas that were anomalous in silver, base metals and pathfinder elements.

2019 Prospecting – MM Claims

Prospecting was conducted in conjunction soil sampling, and to follow up on an area of previously noted mineralized float called Matt's Vein in 2009 . This work was successful in the confirmation and expansion of gold and silver in rock float, with results up to 1.849 g/t Au and 413 g/t Ag. Rock assay highlights, locations and descriptions are presented in Table 1. Certificates of analysis are in Appendix III. Rock sample locations are plotted in figure 7.

Matt's zone is found on the MM claims, in a string of vein cobbles with a north-easterly trend that was discovered by following up a soil anomaly in 2009. The mineralized float is located in an area with abundant felsic dykes that lies just below the ridge crest.

Plate 4. Matt's zone. Polylithic float in silty soil near ridge crest.

Plate 5. Matt's vein boulder.

Plate 6. Breccia near Matt's vein. Petrographic B6.

Table 1. MM & BB Rocks 2019 BV certificate: WHI19000380

			MA370					FA530	GC817	FA430
	Location		**Cu**	**Zn**	**Fe**	**As**	**S**	**Ag**	**Pb**	**Au**
Sample	E	N	%	%	%	%	%	GM/T	%	PPM
72902	517584	7085937	0.036	0.13	7.86	5.55	0.54	72	2.5	0.314
72903	517581	7085929	0.225	0.26	19.91	>10.00	1.82	413	11.46	1.849
72904	517531	7085830	0.098	0.08	11.53	8.85	1.32	350	9.25	0.676
72905	517533	7085796	0.003	<0.01	1.18	0.02	<0.05	<2	0.02	0.009
72906	521054	7087037	1.597	0.04	0.08	0.04	10.8	2503	74.81	N.A.

Sample	DESCRIPTION
72902	Felsic dyke float w/ vuggy quartz veins, orange-yellow-red pits after sulphides
72903	Rusty Quartz Vein float, pits after sulphides. See plate 5.
72904	Single cobble float vuggy quartz vein, orange and green stain.
72905	Single cobble float quartz vein, rusty. Not vuggy.
72906	High grade Pb-Ag float from trench 6-6 at No. 9 vein.

Petrography – MM Claims

There are two specimens described in the Petrography appendix from the MM claims – samples B5 and B6. B5 is an epidote-rich skarn or hornfels. B6 is a brecciated hornfels. Both samples were collected at the Matt zone. See details in Appendix V.

2019 Soil Geochemistry – Black Bear Claims

In the No. 9 vein area there are a series of trenches excavated along the vein trend. To the east and west of the main stripped area are bulldozer trenches that have slumped in during the decades since excavation, obscuring the vein. The original trench work documentation is not available, therefore the exact vein location isn't known. In order to determine the location of the vein within each trench a series of closely spaced (5m apart) soil samples were collected along the base of the trenches. The soils were then tested by XRF (described below), and elevated Pb, Zn and As values used to determine the location of the vein under cover (Table 3, Appendix VI). This technique was moderately successful for vein location.

Plate 7. Trench 6-7, No. 9 vein. Soils analyzed along trench to located the vein.

2019 Prospecting – Black Bear Claims

The hill southeast of the No. 9 vein was prospected in the area of the FVD magnetic low anomaly. This area was found to have unaltered, unveined and magnetic boulders of Quartz Monzonite in a magnetic low area with no outcrop. It is possible that these boulders have tumbled downslope, and cover a recessive weathering, low magnetite rock type that may be hydrothermally altered and mineralized. The north side of the hill is dominantly equigranular Quartz Monzonite (QM 1 & 2, petrographic samples B1 & B2, plate 9).

The area immediately north of the No. 9 vein was prospected, and unusual types of granitic rock were found. A relatively porphyritic phase of Quartz Monzonite with feldspar phenocrysts and possibly secondary biotite was found (petrographic sample B4), along with a fine-grained granitic rock with bleached hornblende and biotite (QM4, petrographic sample B3, plate 10) .

The drillhole collars from 4 of 5 holes of the 2003 drill program were located by GPS, as this had not been done at the time (Table 2, Figure 8). The trenches and drill access trails were also located by GPS. The drill core from 2003 is stacked at the edge of the No. 9 vein clearing, and is in fair to good condition. The drill core from 1988 drilling that tested the No. 9 vein (and other targets) is in poor condition, and is stored beside the access road on the MAG claims near the No. 8 vein.

Table 2. 2003 DRILLHOLE COLLAR LOCATIONS

Hole	E	N	UTM NAD 83, Zone 7
DDH03-1	521478	7087086	
DDH03-2	521084	7087104	
DDH03-3	520710	7086531	
DDH03-4	520880	7087085	
DDH03-5	Not located		

Plate 8. Sample 72906, No. 9 vein. Galena, tetrahedrite, barite. 2503 g/t Ag, 74.81% Pb.

Plate 9. Sample QM2, petrographic sample B2. Plate 10. Sample QM4, B3.

Petrography – Black Bear Claims

Four rock samples from the Black Bear claims were selected for Petrographic evaluation. All four are intrusive rocks, with the first two thought to represent typical unaltered rock (B1 & B2) collected from the hill on the south side of the claims, and two collected proximal to the No. 9 vein thought to be altered or atypical (B3 & B4).

2019 Portable XRF Utilization

A Niton XL3t portable hand-held XRF was used in the field to provide rapid qualitative evaluation of soils and rocks. The information provided by the XRF can be useful in determining anomalous soils for possible followup during the program. 76 XRF readings were taken in 2019 (Appendix VI).

At slumped trenches at the No. 9 vein XRF of soils collected every 5m along the trench was used to approximately locate veins under thin recent slump cover. This method was somewhat successful, as the narrow vein tends to have a broad altered envelope that is anomalous in several metals. This method was particularly effective in trench 6-6, which returned a cluster of 3 consecutive highly anomalous samples. The method was less useful in the trench near the road which is short and in trench 6-7 which is deeper. Both these trenches returned multiple moderately anomalous samples throughout their lengths. In some cases vein float and altered

soils were apparent at surface, confirming approximate location. These results are presented in Table 3.
Samples of lead rich rock were analyzed for 3 minutes to determine the approximate silver grade. For example rock sample 72906 which returned 2503 g/t Ag by assay had XRF values of 350 and 416 g/t Ag. It is likely that this lead-rich sample contained small domains of silver-rich minerals (tetrahedrite?) that were not under the XRF instrument window, with the galena containing lower levels of silver. Regardless, the XRF indicated high silver levels.

XRF readings were taken for 30 seconds through the soil sample bags, and high values of Pb, Zn, Cu and As used as indicators of mineralization. Comparison of XRF values to geochemical analysis for soils indicates a good general correlation in that elevated values for Pb, As, Cu and Zn by XRF generally return anomalous values for these metals by geochemistry. Rock samples were also analyzed by XRF, and this information was used to reduce the number of rock samples submitted for assay. Complete XRF readings from this project are presented in a .xls file as a digital appendix to this report.

SAMPLE PREPARATION, ANALYSES AND SECURITY

The 2019 samples were placed into rice bags in the field by the author, sealed and secured. The samples were transported and delivered directly by the author to the Whitehorse preparation facility of Bureau Veritas Minerals (Acmelab). The samples were shipped by BVM to their Vancouver laboratory. Bureau Veritas Mineral Laboratories is accredited and certified to the International Organization for Standardization for Quality ISO9001:2008, Environmental Management: ISO14001 and Safety Management OH SAS 18001 and AS4801.

At the laboratory samples were dried at 60°C. Soil samples were sieved to -80 mesh. Rocks were crushed, then a 250g split was pulverized to 200 mesh. The soil samples were analyzed by BVM method AQ201 for 36 elements by ICP-MS after digestion of 15g by 1:1:1 aqua regia.

Rock samples were analyzed by method MA370 for 23 elements, with a 4-Acid digestion of 0.5g subsample and ICP-ES finish. Samples were obviously mineralized, mostly with high lead, arsenic and expected silver and gold content, and were therefore also analyzed by method FA530 - Lead collection fire assay fusion with gravimetric finish of a 30g subsample for Au and Ag. The very high lead content was determined by method GC817 - Lead Assay by classical titration on a 0.5g subsample. Gold was also determined for 4 of the 5 samples by method FA430 - Lead Collection Fire Assay Fusion - AAS finish on a 30g subsample.

Quality control procedures were implemented at the laboratory, involving the regular insertion of blanks and standards and repeat analyses on the samples. Quality Assurance data is provided for each batch of samples and included with each analytical certificate (Appendices III & IV).

There was no evidence of any tampering with the samples during collection or shipping. All sample preparation was conducted by the laboratory. The quality control report for the analyses is considered to show acceptable variations.

DISCUSSION AND CONCLUSIONS

The MM & Blackbear project hosts significant high grade epithermal silver-lead-gold veins, along with gold bearing skarns and potential for significant porphyry copper- gold-molybdenum- silver. The area is located at the headwaters of the placer gold bearing streams. The No. 9 vein is associated with an east-north-easterly trending alteration and structural zone that cuts the intrusives and extends for hundreds of meters to the west onto competitor's ground. Mineralization is likely intrusion- related and associated with Late Cretaceous Prospector Mountain Suite plutonism. The No. 9 vein appears to be the longest, widest and richest vein in the Sixtymile area, with by far the strongest associated wallrock alteration. One assay from this vein in 2019 returned 2503 g/t silver from a lead-rich sample.

Work at the MM claims was successful in the confirmation and expansion of gold and silver in rock float, with results up to 1.849 g/t Au and 413 g/t Ag in an area of anomalous soils.

Despite the presence of weathering, local soil solifluction and permafrost, soil geochemistry has proven to be an excellent tool for identifying veins that are covered by overburden.

A small excavator (Candig or larger) may be suitable for low impact testing at Matt's vein and soil anomalies on the Black Bear. However a larger excavator (20 or 40 ton) would be required to obtain solid bedrock exposures. The No. 9 vein within the stripped area could also be excavated to provide better exposure of the vein, as slumping has almost totally obscured vein outcrop. This vein may be suitable for bulk sample testing and direct shipping to a smelter.

There is an oval FVD magnetic low anomaly within a strong magnetic high at the northern base of the slope of the main hill on the Black Bear claims that should be examined by soil geochemistry, ground geophysics and drilling. This magnetic low may represent a magnetite-destructive hydrothermal altered zone. Boulders of unaltered, magnetic rock are present at this location on surface, and appear to have tumbled down slope on top of the recessive magnetic low target.

Future exploration should also include detail geological mapping to delineate phases within the granitic body, carbonate rocks, and skarn and hornfels mineralogy of country rocks proximal to the intrusives.

The 2003 drill core is still in fair to good condition. The drill core should be photographed, as this was not done at the time. Considerable sections of core were not split. The core should be reviewed and relogged, with possible sampling of mineralized sections not previously sampled.

Finally, the next phase of work should include claim staking along the east side of the Black Bear claim block to cover favourable intrusive geology, and to the south and west of the MM claims to cover a carbonate and skarn unit and a minfile occurrence.

Respectfully submitted,
William D. Mann, M.Sc., P.Geo.

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Appendix I - Blackbear Claims STATEMENT OF EXPENDITURES

Black Bear 1 - 25 Claims 2019		Field Work July 23, 24, 26 2019			
		Activity	**Units**	**Rate**	**Total**
Labour	Geologist	Geology, travel	2.5	500	$1,250
	Max Mikhailytchev	Soil geochemistry, Prospecting	2	350	$700
	Alex Mikhailytchev	Soil geochemistry, Prospecting	2	250	$500
Field Costs	$100 per worker-day		6.5	100	$650
Assays	Bureau Veritas	soils		30	$0
	(ESTIMATED)	rocks			$93.74
Thin Sections	(ESTIMATED)	Preparation - VanPetro	5		$108.47
	(ESTIMATED)	Analysis - Tim Liverton	5	100	$500
		Slab rocks - W. Mann	0.2	500	$100.00
XRF	Niton XL3t XRF	$110 per day of use	2	110	$220
Trucks	$.60 per km	Whitehorse- Property return	625	0.6	$375
	(HALF)	Dawson- Property return	165	0.6	$99
Maps	Stewart Basin	GIS & map preparation	est		$0
	Integraphics	plotting	est		$0
Report	W.D.Mann		2		$1,000
		Black Bear total			$5,596.21

Appendix I - MM claims STATEMENT OF EXPENDITURES

		Actual final expenditures			
MM 1 - 10 claims		Field Work July 25, 26 2019			
		Activity	**Units**	**Rate**	**Total**
Labour	William Mann	Prospecting/ Mapping/ travel	1.5	500	$750
	Max Mikhailytchev	Soil geochemistry, Prospecting	1	350	$350
	Alex Mikhailytchev	Soil geochemistry, Prospecting	1	250	$250
Field Costs	$100 per worker-day		3.5	100	$350
Trucks	$.60 per km	Whitehorse- Property return	625	0.6	$375
	(HALF)	Dawson- Property return	165	0.6	$99
Assays	Bureau Veritas	soils	31	30	$948.83
	(ESTIMATED)	rocks	4	50	$374.94
Thin Sections	(ESTIMATED)	Preparation - VanPetro	3		$54.23
	(ESTIMATED)	PETROGRAPHY - Tim Liverton	3	100	$300
		Slab rocks - W. Mann	0.3	500	$150.00
XRF	Niton XL3t XRF	$110 per day of use	1.5	110	$165
Maps	Stewart Basin	GIS & map preparation	est		$0
	Integraphics	plotting	est		$0
Report	W.D.Mann		2		$1,000
		MM Total			$5,167

APPENDIX II

STATEMENT OF QUALIFICATIONS

WILLIAM D. MANN, M.Sc., P.Geo.

19 HAYES CRESCENT, WHITEHORSE, YUKON Y1A 0E1

1. I am a member in good standing of Engineers and Geoscientists, British Columbia, Licence #31907.

2. I am a Graduate of Queen's University, 1986, with a Master of Science Degree in Mineral Exploration Geology.

3. I am a Graduate of the University of British Columbia, 1983, with a Bachelor of Science Degree in Geology.

4. I have worked in mineral exploration and mining continuously since 1979.

5. I designed, supervised and participated in the work program on the MM & Black Bear claims in 2019.

6. I am a co-owner of the MM & Black Bear claims.

February 15, 2020

William D. Mann, M.Sc., P.Geo.

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Client: **Bill Mann**
19 Hayes Cres.
Whitehorse Yukon Y1A 0E1 Canada

Submitted By: Bill Mann
Receiving Lab: Canada-Whitehorse
Received: August 15, 2019
Report Date: September 11, 2019
Page: 1 of 2

CERTIFICATE OF ANALYSIS WHI19000380.1

CLIENT JOB INFORMATION

Project: MM & BB
Shipment ID:
P.O. Number
Number of Samples: 5

SAMPLE DISPOSAL

DISP-PLP Dispose of Pulp After 90 days
RTRN-RJT Return After 60 days

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
PRP70-250	5	Crush, split and pulverize 250 g rock to 200 mesh			WHI
MA370	5	4-Acid Digestion ICP-ES Finish	0.5	Completed	VAN
EN001-MA	5	Environmental disposal fee - Multi-acid neutralization			WHI
FA530	5	Lead collection fire assay fusion - gravimetric finish	30	Completed	VAN
GC817	5	Lead Assay by Classical Titration	0.5	Completed	VAN
SLBHP	5	Sort, label and box pulps			WHI
SHP01	5	Per sample shipping charges for branch shipments			VAN
FA430	4	Lead Collection Fire Assay Fusion - AAS Finish	30	Completed	VAN
EN002	5	Environmental disposal charge-Fire assay lead waste			VAN

ADDITIONAL COMMENTS

Invoice To: Bill Mann
19 Hayes Cres.
Whitehorse Yukon Y1A 0E1
Canada

CC:

BRITISH COLUMBIA CERTIFIED ASSAYER
MARCUS LAU
Production Manager

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.
All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
"*" asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.

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Project: MM & BB
Report Date: September 11, 2019

CERTIFICATE OF ANALYSIS WHI19000380.1

		Method	WGHT	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370
		Analyte	Wgt	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Sr	Cd	Sb	Bi	Ca	P	Cr	Mg	Al
		Unit	kg	%	%	%	%	ppm	%	%	%	%	%	%	%	%	%	%	%	%	%	%
		MDL	0.01	0.001	0.001	0.02	0.01	2	0.001	0.001	0.01	0.01	0.02	0.01	0.001	0.01	0.01	0.01	0.01	0.001	0.01	0.01
72902	Rock		0.33	<0.001	0.036	1.94	0.13	74	<0.001	0.002	<0.01	7.86	5.55	0.08	<0.001	0.01	0.01	0.33	0.04	<0.001	0.06	4.93
72903	Rock		0.66	<0.001	0.225	>10	0.26	414	<0.001	<0.001	<0.01	19.91	>10	0.09	0.054	0.05	0.02	0.09	0.06	<0.001	0.03	1.23
72904	Rock		0.44	<0.001	0.098	9.17	0.08	362	<0.001	<0.001	0.02	11.53	8.85	0.02	0.005	0.06	0.01	0.07	0.07	<0.001	0.06	1.76
72905	Rock		0.58	<0.001	0.003	0.02	<0.01	<2	<0.001	<0.001	0.03	1.18	0.02	0.09	<0.001	<0.01	<0.01	0.53	0.04	<0.001	0.16	7.31
72906	Rock		2.64	0.024	1.597	>10	0.04	>1500	<0.001	<0.001	<0.01	0.08	0.04	0.02	0.022	0.50	<0.01	<0.01	<0.01	<0.001	<0.01	0.03

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Project: MM & BB
Report Date: September 11, 2019

CERTIFICATE OF ANALYSIS WHI19000380.1

		Method	MA370	MA370	MA370	MA370	FA530	FA530	GC817	FA430
		Analyte	Na	K	W	S	Ag	Au	Pb	Au
		Unit	%	%	%	%	gm/t	gm/t	%	ppm
		MDL	0.01	0.01	0.01	0.05	20	0.9	2	0.005
72902	Rock		1.72	0.77	<0.01	0.54	72	<0.9	2.50	0.314
72903	Rock		0.06	0.61	<0.01	1.82	413	2.7	11.46	1.849
72904	Rock		0.02	0.64	<0.01	1.32	350	<0.9	9.25	0.676
72905	Rock		4.01	1.53	<0.01	<0.05	<20	<0.9	<2	0.009
72906	Rock		<0.01	<0.01	<0.01	10.80	2503	<0.9	74.81	

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Project: MM & BB
Report Date: September 11, 2019

QUALITY CONTROL REPORT WHI19000380.1

		Method	WGHT	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370	MA370
		Analyte	Wgt	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Sr	Cd	Sb	Bi	Ca	P	Cr	Mg	Al
		Unit	kg	%	%	%	%	ppm	%	%	%	%	%	%	%	%	%	%	%	%	%	%
		MDL	0.01	0.001	0.001	0.02	0.01	2	0.001	0.001	0.01	0.01	0.02	0.01	0.001	0.01	0.01	0.01	0.01	0.001	0.01	0.01
Pulp Duplicates																						
72906	Rock		2.64	0.024	1.597	>10	0.04	>1500	<0.001	<0.001	<0.01	0.08	0.04	0.02	0.022	0.50	<0.01	<0.01	<0.01	<0.001	<0.01	0.03
REP 72906	QC																					
Reference Materials																						
STD AGPROOF	Standard																					
STD CDN-ME-14	Standard			0.002	1.271	0.50	3.17	45	0.002	0.017	0.09	18.06	<0.02	<0.01	0.009	<0.01	<0.01	0.75	0.02	<0.001	1.31	4.51
STD CDN-ME-9	Standard			<0.001	0.664	<0.02	0.01	3	0.957	0.018	0.12	13.86	<0.02	0.03	<0.001	<0.01	<0.01	4.17	0.06	0.030	4.16	6.77
STD CPB-2	Standard																					
STD CPB-2	Standard																					
STD OXC152	Standard																					
STD OXH139	Standard																					
STD OXN134	Standard																					
STD OXQ114	Standard																					
STD SP49	Standard																					
STD CDN-ME-14 Expected					1.221	0.495	3.17	43.5	0.002	0.0172	0.0883	18.04	0.0088		0.0088		0.0094	0.747	0.0147	0.0014	1.28	4.47
STD CDN-ME-9 Expected					0.654		0.012		0.93	0.0169	0.121	13.84		0.03				4.21	0.06	0.0284	4.05	6.74
STD CPB-2 Expected																						
STD AGPROOF Expected																						
STD SP49 Expected																						
STD OXQ114 Expected																						
STD OXC152 Expected																						
STD OXH139 Expected																						
STD OXN134 Expected																						
BLK	Blank			<0.001	<0.001	<0.02	<0.01	<2	<0.001	<0.001	<0.01	<0.01	<0.02	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01
BLK	Blank																					
BLK	Blank																					
BLK	Blank																					
Prep Wash																						
ROCK-WHI	Prep Blank			<0.001	<0.001	<0.02	<0.01	<2	<0.001	<0.001	0.06	2.14	<0.02	0.02	<0.001	<0.01	<0.01	1.55	0.04	<0.001	0.52	7.22

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Client: **Bill Mann**
19 Hayes Cres.
Whitehorse Yukon Y1A 0E1 Canada

Project: MM & BB
Report Date: September 11, 2019

QUALITY CONTROL REPORT WHI19000380.1

		Method	MA370	MA370	MA370	MA370	FA530	FA530	GC817	FA430
		Analyte	Na	K	W	S	Ag	Au	Pb	Au
		Unit	%	%	%	%	gm/t	gm/t	%	ppm
		MDL	0.01	0.01	0.01	0.05	20	0.9	2	0.005
Pulp Duplicates										
72906	Rock		<0.01	<0.01	<0.01	10.80	2503	<0.9	74.81	
REP 72906	QC						2520	<0.9	75.15	
Reference Materials										
STD AGPROOF	Standard						96	<0.9		
STD CDN-ME-14	Standard		0.52	1.69	<0.01	16.68				
STD CDN-ME-9	Standard		1.79	0.64	<0.01	2.57				
STD CPB-2	Standard								63.42	
STD CPB-2	Standard								63.28	
STD OXC152	Standard									0.219
STD OXH139	Standard									1.332
STD OXN134	Standard									7.930
STD OXQ114	Standard						124	34.8		
STD SP49	Standard						60	17.8		
STD CDN-ME-14 Expected			0.53	1.7		16.14				
STD CDN-ME-9 Expected			1.86	0.616		2.58				
STD CPB-2 Expected									63.52	
STD AGPROOF Expected							94	0		
STD SP49 Expected							60.2	18.34		
STD OXQ114 Expected							127.1	35.2		
STD OXC152 Expected										0.216
STD OXH139 Expected										1.312
STD OXN134 Expected										7.667
BLK	Blank		<0.01	<0.01	<0.01	<0.05				
BLK	Blank						<20	<0.9		
BLK	Blank									<0.005
BLK	Blank									<0.005
Prep Wash										
ROCK-WHI	Prep Blank		3.31	1.60	<0.01	<0.05	<20	<0.9	<2	

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9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Bill Mann**
19 Hayes Cres.
Whitehorse Yukon Y1A 0E1 Canada

Submitted By: Bill Mann
Receiving Lab: Canada-Whitehorse
Received: August 15, 2019
Report Date: August 30, 2019
Page: 1 of 3

CERTIFICATE OF ANALYSIS WHI19000379.1

CLIENT JOB INFORMATION

Project: MM & BB
Shipment ID:
P.O. Number
Number of Samples: 31

SAMPLE DISPOSAL

DISP-PLP Dispose of Pulp After 90 days
RTRN-RJT Return After 60 days

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
DY060	31	Dry at 60C			WHI
SS80	31	Dry at 60C sieve 100g to -80 mesh			WHI
AQ201	31	1:1:1 Aqua Regia digestion ICP-MS analysis	15	Completed	VAN
SHP01	31	Per sample shipping charges for branch shipments			VAN

ADDITIONAL COMMENTS

Invoice To: Bill Mann
19 Hayes Cres.
Whitehorse Yukon Y1A 0E1
Canada

CC:

BRITISH COLUMBIA CERTIFIED ASSAYER
MARCUS LAU
Production Manager

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.
All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
"*" asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.

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Client: **Bill Mann**
19 Hayes Cres.
Whitehorse Yukon Y1A 0E1 Canada

Project: MM & BB
Report Date: August 30, 2019

CERTIFICATE OF ANALYSIS WHI19000379.1

		Method	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201
		Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La
		Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm
		MDL	0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01	0.5	0.5	0.1	1	0.1	0.1	0.1	2	0.01	0.001	1
72010	Soil		1.2	104.4	95.5	112	0.8	19.1	12.7	427	2.72	63.0	17.2	2.8	116	0.7	1.0	4.0	75	0.50	0.073	10
72011	Soil		0.9	226.9	46.1	78	0.7	18.2	20.0	477	3.76	30.0	1.8	2.2	240	0.3	0.6	5.3	105	1.34	0.071	7
72012	Soil		1.0	56.5	150.7	122	0.3	19.7	12.9	449	3.25	57.6	3.3	3.2	169	0.5	0.9	1.4	80	0.52	0.045	9
72013	Soil		0.6	98.4	249.6	194	0.6	17.7	12.8	554	3.44	48.1	2.6	2.7	210	1.2	0.8	2.0	100	0.95	0.080	11
72014	Soil		1.3	44.9	21.1	84	0.2	28.5	13.4	390	3.82	12.1	3.1	3.1	32	0.4	0.7	2.6	72	0.20	0.043	10
72015	Soil		0.7	57.4	14.2	76	0.1	20.8	12.2	400	3.23	10.1	1.9	2.8	120	0.3	0.4	1.4	73	0.34	0.048	9
72016	Soil		0.4	92.8	35.9	98	<0.1	26.6	17.1	660	3.98	6.2	1.0	3.0	102	0.2	0.3	2.1	99	0.42	0.039	10
72017	Soil		0.5	101.3	21.6	98	0.3	19.9	14.0	836	4.40	8.0	3.0	2.5	150	0.4	0.3	0.3	122	0.70	0.117	8
72018	Soil		0.5	48.2	33.2	67	0.2	20.4	9.2	321	2.67	12.1	1.9	3.7	90	0.3	0.4	0.8	69	0.48	0.062	11
72019	Soil		0.5	58.3	35.6	77	0.4	21.7	8.7	299	2.67	14.7	3.3	4.0	83	0.3	0.6	0.9	70	0.57	0.073	12
72020	Soil		0.3	71.6	57.9	75	0.1	20.7	9.3	376	2.90	35.2	2.2	3.0	120	0.3	0.4	0.9	74	0.62	0.087	9
72021	Soil		0.6	89.0	40.5	97	0.4	24.8	12.5	324	3.27	11.3	3.4	3.8	88	0.4	0.5	1.2	76	0.55	0.067	10
72022	Soil		0.5	59.0	60.2	92	0.1	19.4	11.1	405	2.79	14.3	1.1	3.7	80	0.4	0.4	0.3	73	0.59	0.100	10
72023	Soil		0.4	85.3	36.8	98	0.2	22.8	14.7	563	3.46	9.4	1.4	2.9	172	0.3	0.3	0.3	88	0.70	0.091	8
72024	Soil		0.5	38.5	17.4	63	0.2	34.8	14.1	361	2.82	7.1	4.3	5.7	79	0.2	0.4	0.2	72	0.50	0.067	14
72025	Soil		0.7	44.2	14.2	54	<0.1	22.5	12.3	378	3.18	7.9	1.2	3.7	69	0.2	0.4	0.2	77	0.40	0.054	10
72026	Soil		0.7	55.7	36.9	89	0.3	20.4	11.7	439	2.92	8.2	3.3	3.8	63	0.3	0.3	0.1	77	0.52	0.072	11
72027	Soil		0.6	67.6	34.0	80	0.3	27.0	12.7	352	3.13	7.4	2.3	4.7	86	0.2	0.4	0.2	75	0.45	0.065	12
72028	Soil		0.4	67.7	184.8	160	0.3	19.8	9.2	483	3.37	7.5	1.5	2.7	329	0.3	0.5	0.1	82	0.63	0.062	9
72029	Soil		0.6	60.0	9.8	74	<0.1	25.6	15.8	408	3.07	5.9	1.6	3.0	67	0.2	0.3	0.1	71	0.44	0.043	8
72030	Soil		0.2	44.7	16.5	67	0.1	19.4	8.8	470	2.24	2.3	<0.5	1.5	225	0.4	0.2	<0.1	53	1.18	0.070	4
72031	Soil		0.5	75.7	13.0	88	0.1	27.4	14.8	451	3.29	6.1	1.9	3.4	92	0.4	0.4	0.1	76	0.42	0.074	10
72032	Soil		0.8	35.9	14.7	80	0.4	23.3	12.1	421	3.13	8.6	0.6	3.9	34	0.4	0.5	0.1	68	0.29	0.066	11
72033	Soil		0.8	56.9	16.0	82	0.2	26.2	13.7	445	3.43	9.1	3.7	3.8	53	0.3	0.5	0.2	77	0.36	0.064	11
72034	Soil		0.4	55.7	19.1	69	0.6	18.8	8.0	329	2.77	5.1	4.0	2.3	100	0.2	0.3	0.1	75	0.48	0.072	7
72035	Soil		0.6	47.2	9.9	66	0.2	20.0	10.9	424	2.80	5.2	1.6	2.9	58	0.2	0.3	0.1	67	0.48	0.074	11
72036	Soil		0.7	38.8	9.4	63	<0.1	21.4	9.5	385	2.60	6.7	2.6	3.6	48	0.1	0.3	0.1	68	0.39	0.057	14
72947	Soil		0.6	56.2	22.0	81	0.2	23.7	10.6	301	2.89	14.3	1.4	3.7	57	0.3	0.5	0.4	71	0.50	0.074	15
72948	Soil		0.8	67.0	66.7	171	0.5	23.9	11.2	377	3.04	73.6	2.9	4.7	60	0.7	0.8	0.6	72	0.48	0.070	17
72949	Soil		0.4	69.3	103.7	585	1.4	19.7	11.3	546	2.64	34.6	6.2	4.4	94	3.7	2.2	2.1	66	0.64	0.071	14

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Client: **Bill Mann**
19 Hayes Cres.
Whitehorse Yukon Y1A 0E1 Canada

Project: MM & BB
Report Date: August 30, 2019

CERTIFICATE OF ANALYSIS WHI19000379.1

		Method	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201
		Analyte	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se	Te
		Unit	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
		MDL	1	0.01	1	0.001	1	0.01	0.001	0.01	0.1	0.01	0.1	0.1	0.05	1	0.5	0.2
72010	Soil		25	0.58	153	0.098	<1	2.20	0.028	0.15	0.4	0.04	4.5	0.2	<0.05	8	<0.5	<0.2
72011	Soil		24	0.90	170	0.131	<1	3.97	0.043	0.32	0.2	0.02	6.1	0.4	<0.05	12	<0.5	<0.2
72012	Soil		27	0.60	193	0.101	2	3.05	0.022	0.11	0.2	0.04	4.8	0.2	<0.05	8	<0.5	<0.2
72013	Soil		28	0.83	162	0.117	1	3.03	0.032	0.18	0.2	0.02	7.2	0.3	<0.05	11	<0.5	<0.2
72014	Soil		34	0.56	165	0.087	2	3.04	0.015	0.08	0.3	0.06	4.7	0.1	<0.05	7	<0.5	<0.2
72015	Soil		29	0.71	180	0.114	2	3.01	0.019	0.11	0.2	0.04	5.6	0.1	<0.05	8	<0.5	<0.2
72016	Soil		32	1.11	338	0.218	2	3.57	0.027	0.31	0.2	0.03	7.6	0.4	<0.05	12	<0.5	<0.2
72017	Soil		32	1.40	224	0.248	1	3.64	0.055	0.85	0.1	<0.01	13.9	0.5	<0.05	14	<0.5	<0.2
72018	Soil		31	0.62	120	0.115	1	2.14	0.027	0.07	0.1	0.02	4.9	0.1	<0.05	7	<0.5	<0.2
72019	Soil		33	0.72	182	0.118	1	1.81	0.027	0.13	0.1	0.01	6.0	0.1	<0.05	6	<0.5	<0.2
72020	Soil		33	0.92	225	0.146	1	1.91	0.028	0.34	0.1	<0.01	5.3	0.3	<0.05	7	<0.5	<0.2
72021	Soil		38	0.83	183	0.140	1	2.33	0.023	0.18	0.2	0.02	6.8	0.2	<0.05	8	<0.5	<0.2
72022	Soil		27	0.80	250	0.136	1	1.73	0.032	0.29	0.2	<0.01	4.8	0.2	<0.05	6	<0.5	<0.2
72023	Soil		32	1.15	325	0.188	1	2.62	0.025	0.47	0.1	0.02	5.1	0.3	<0.05	9	<0.5	<0.2
72024	Soil		60	0.87	170	0.139	2	2.39	0.034	0.15	0.2	0.02	4.8	0.3	<0.05	7	<0.5	<0.2
72025	Soil		33	0.74	187	0.153	1	2.77	0.023	0.11	0.2	0.03	4.7	0.2	<0.05	8	<0.5	<0.2
72026	Soil		30	0.75	179	0.130	2	2.48	0.026	0.17	0.2	0.03	4.7	0.2	<0.05	7	<0.5	<0.2
72027	Soil		39	0.87	228	0.130	2	3.00	0.022	0.17	0.1	0.03	5.7	0.2	<0.05	8	<0.5	<0.2
72028	Soil		34	1.04	272	0.089	<1	3.28	0.014	0.20	<0.1	0.02	6.3	0.3	<0.05	10	<0.5	<0.2
72029	Soil		33	0.95	256	0.185	<1	2.36	0.021	0.19	0.1	0.02	3.9	0.2	<0.05	6	<0.5	<0.2
72030	Soil		28	0.82	220	0.091	<1	2.49	0.014	0.26	<0.1	<0.01	3.0	0.2	<0.05	8	<0.5	<0.2
72031	Soil		35	1.01	237	0.169	<1	2.48	0.019	0.26	0.1	0.02	4.2	0.3	<0.05	7	<0.5	<0.2
72032	Soil		33	0.63	144	0.111	1	2.51	0.016	0.08	0.2	0.03	4.2	0.1	<0.05	6	<0.5	<0.2
72033	Soil		37	0.86	242	0.136	2	2.58	0.015	0.14	0.1	0.03	4.9	0.2	<0.05	7	<0.5	<0.2
72034	Soil		32	0.78	224	0.130	2	2.69	0.017	0.22	<0.1	0.04	4.8	0.2	<0.05	8	<0.5	<0.2
72035	Soil		31	0.75	220	0.107	1	2.29	0.022	0.14	0.1	0.03	4.9	0.2	<0.05	7	<0.5	<0.2
72036	Soil		32	0.71	215	0.109	1	2.02	0.018	0.11	0.1	0.01	4.7	0.1	<0.05	6	<0.5	<0.2
72947	Soil		35	0.71	234	0.116	<1	2.18	0.023	0.10	0.2	0.02	5.3	0.1	<0.05	7	<0.5	<0.2
72948	Soil		37	0.75	247	0.118	1	2.32	0.023	0.10	0.2	0.02	6.2	0.2	<0.05	7	<0.5	<0.2
72949	Soil		31	0.71	183	0.103	1	2.18	0.025	0.08	0.1	0.03	6.9	0.2	<0.05	7	<0.5	<0.2

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Project: MM & BB
Report Date: August 30, 2019

CERTIFICATE OF ANALYSIS WHI19000379.1

	Method	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201
	Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La
	Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm
	MDL	0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01	0.5	0.5	0.1	1	0.1	0.1	0.1	2	0.01	0.001	1
72950	Soil	1.0	36.4	149.9	128	0.4	10.7	6.6	435	3.11	115.6	1.5	1.4	39	0.6	0.8	0.9	70	0.21	0.064	7

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Report Date: August 30, 2019

CERTIFICATE OF ANALYSIS WHI19000379.1

	Method	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201
	Analyte	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se	Te
	Unit	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
	MDL	1	0.01	1	0.001	1	0.01	0.001	0.01	0.1	0.01	0.1	0.1	0.05	1	0.5	0.2
72950	Soil	20	0.32	105	0.068	<1	1.72	0.018	0.06	<0.1	0.05	2.6	0.1	<0.05	7	<0.5	<0.2

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QUALITY CONTROL REPORT WHI19000379.1

	Method	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201
	Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La
	Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm
	MDL	0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01	0.5	0.5	0.1	1	0.1	0.1	0.1	2	0.01	0.001	1
Pulp Duplicates																					
72029	Soil	0.6	60.0	9.8	74	<0.1	25.6	15.8	408	3.07	5.9	1.6	3.0	67	0.2	0.3	0.1	71	0.44	0.043	8
REP 72029	QC	0.5	60.4	9.8	70	<0.1	24.7	15.3	406	2.94	5.4	1.2	3.0	64	0.1	0.4	0.1	71	0.47	0.043	8
Reference Materials																					
STD DS11	Standard	15.6	147.3	137.2	321	1.6	77.0	13.3	1053	3.17	42.0	62.9	9.5	70	2.2	8.9	11.6	51	1.02	0.070	20
STD OREAS262	Standard	0.7	115.4	58.3	149	0.4	64.9	28.0	534	3.40	35.9	68.2	10.9	35	0.6	5.7	1.0	23	3.07	0.041	20
STD DS11 Expected		14.6	149	138	345	1.71	77.7	14.2	1055	3.1	42.8	79	7.65	67.3	2.37	8.74	12.2	50	1.063	0.0701	18.6
STD OREAS262 Expected		0.68	118	56	154	0.45	62	26.9	530	3.284	35.8	65	9.33	36	0.61	5.06	1.03	22.5	2.98	0.04	15.9
BLK	Blank	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.01	<0.5	<0.5	<0.1	<1	<0.1	<0.1	<0.1	<2	<0.01	<0.001	<1

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Whitehorse Yukon Y1A 0E1 Canada

Project: MM & BB

Report Date: August 30, 2019

QUALITY CONTROL REPORT WHI19000379.1

	Method	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201	AQ201
	Analyte	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se	Te
	Unit	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
	MDL	1	0.01	1	0.001	1	0.01	0.001	0.01	0.1	0.01	0.1	0.1	0.05	1	0.5	0.2
Pulp Duplicates																	
72029	Soil	33	0.95	256	0.185	<1	2.36	0.021	0.19	0.1	0.02	3.9	0.2	<0.05	6	<0.5	<0.2
REP 72029	QC	32	0.93	243	0.186	1	2.43	0.020	0.19	0.1	0.03	4.3	0.2	<0.05	7	<0.5	<0.2
Reference Materials																	
STD DS11	Standard	58	0.81	385	0.094	8	1.16	0.074	0.42	3.0	0.24	3.5	4.8	0.21	5	2.1	4.6
STD OREAS262	Standard	46	1.19	254	0.003	3	1.52	0.069	0.33	0.2	0.16	3.7	0.5	0.25	4	<0.5	<0.2
STD DS11 Expected		61.5	0.85	385	0.0976		1.1795	0.0762	0.4	2.9	0.26	3.4	4.9	0.2835	5.1	2.2	4.56
STD OREAS262 Expected		41.7	1.17	248	0.0027	4	1.3	0.071	0.312	0.2	0.17	3.24	0.47	0.253	3.73	0.4	0.23
BLK	Blank	<1	<0.01	<1	<0.001	<1	<0.01	<0.001	<0.01	<0.1	<0.01	<0.1	<0.1	<0.05	<1	<0.5	<0.2

MM & BLACKBEAR PETROGRAPHY 2019 – DR. TIM LIVERTON

B1

Hornblende quartz monzonite.

This granitoid has both plagioclase and orthoclase as prominent phenocrysts, the K-feldspar showing one megacryst to 6mm long. It is usually anhedral and ≤ 3mm grainsize. Plagioclase is subhedral and 0.5-2mm size. Its composition (from limited Michel-Lèvy and Carlsbad-Albite extinction angles is approximately Ab 70%.) Hornblende is the dominant ferromagnesian mineral – up to 3mm, euhedral and about 5% volume. Biotite is deep to pale brown and about 2%. Quartz amounts to about 20%. Sphene is unusually prominent as mostly euhedral crystal to 1mm, but content is under 1%. Pyrite is often found with the sphene as ≤ 0.4mm crystals. A dozen 0.1-0.3mm apatite crystals were noted.

B2

Hornblende micro-quartz monzonite.

In this rock plagioclase forms the largest phenocrysts – 3mm subhedral forms although most are ≤ 1mm. Anhedral orthoclase is ≤ 2.5mm and is the dominant feldspar (60-40). Quartz is in a few coarse grains (0.5mm), but mostly as more frequent small, subrounded grains. Hornblende is the coarsest mineral – often euhedral and ≤ 3mm. It often has inclusions of 0.3mm sized anhedral biotite, which is deep brown. Proportions are: hornblende 2%, biotite ≤ 1%. Sphene is obvious, but finer-grained than that of B1 (much less than 1% content).

B3

Hornblende micro monzogranite.

Only a few subhedral plagioclase phenocrysts reach 3mm long. Orthoclase is to 2mm. Most are 0.5-2mm. These are in roughly subequal proportions. Quartz is anhedral, up to 2mm size and ≈ 20% volume. Amphibole is the only ferromagnesian present. It is very light coloured (just a hint of green). Sphene is mostly anhedral and ≤ 0.8mm (under 1%). Biotite is absent and neither apatite nor zircon were noted. Only one grain of pyrite is present.

B4

Hornblende micro-quartz monzonite.

This granitic rock is considerably more porphyritic than the previous three. Plagioclase is from mostly 0.5-2mm size and orthoclase ranges up to 3mm. Much of the groundmass is 0.2mm. The feldspar phenocrysts are about equal in proportion. Quartz is in 1-2mm often equant shaped grains (≤ 10% volume). Amphibole (v. pale green) forms euhedral crystals to 2mm, with some smaller very ragged anhedral material, often associated with biotite, rare apatite and pyrite. The biotite is deep brown to golden, very ragged anhedral, 0.5mm and ≈ 1% volume. There is no included monazite. A few anhedral sphene crystals were noted.

B5

Skarn or hornfels.

Consists of three layers, the centre being 20mm wide. One end of the section has amphibole (mid green to colourless pleichroic actinolite) which is mostly euhedral and fairly constant in size (≈ 1mm). A high degree of preferred orientation is evident. The matrix (50-60%) to these crystals is quartz and feldspar, 0.1-0.3mm grainsize and completely anhedral. Some albite twinning is evident, so likely both feldspars are present. Other than the foliation no metamorphic fabric is present.

A sharp contact separates this lithology from the central layer, which consists of epidote (0.1-0.3mm long subhedral forms) with elongate masses of quartz (polygonized) up to 4mm long. A distinct foliation is evident in this layer. Tiny anhedral grains of sphene (0.02mm) accompany the epidote. The opposite layer is similar to the first.

B6

Hornfels.

This rock is of similar mineralogy to the outer part of B5. Foliated (but not as distinctly as B5) quartz-feldspar-amphibole predominates. The amphiboles are anhedral and form 2mm long lenticular masses. A quartz-feldspar matrix occupies ≈ 60% of the volume. Sphene is rare. Approximately 1% pyrite is found as 0.04mm euhedral crystals. This foliated rock is in sharp contact with a much coarser grained variant. The contact is very discordant and irregular shaped. Relatively coarse amphibole (1mm) with ≈ 20% quartz in 0.1-0.2mm grains fills this region. Coarse grained pyrite (0.2mm crystals) forms a ring-shaped mass 8mm across.

COBALTINITRITE STAINED SLABS

Examined under the stereo microscope

B1 Orthoclase phenocrysts stain; about equal feldspar proportions.

B2 Phenocrysts and some finer material stained. About equal feldspar proportions.

B3 Not stained.

B4 A few K-feldspar megacryst have stained. Of the finer crystals K feldspar < plagioclase.

B5 Not stained.

B6 Not stained.

HAND SPECIMEN PHOTOS

QM1 = B1

QM2 = B2

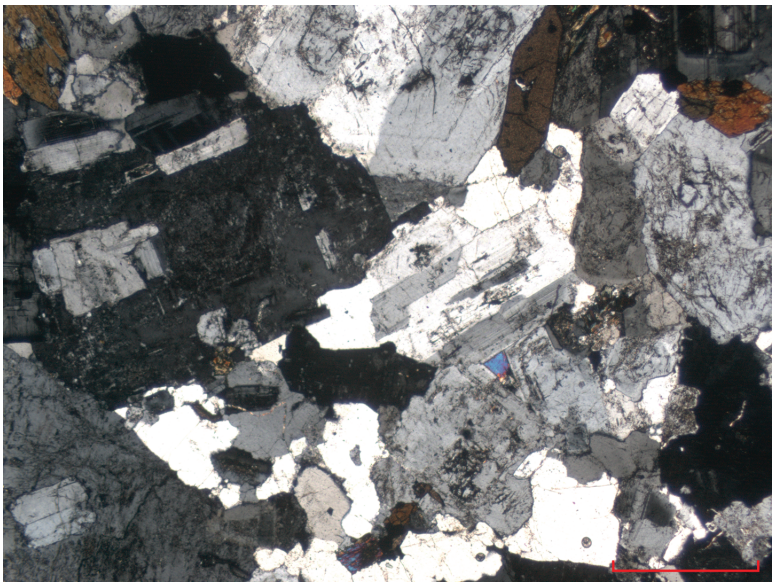
QM4 = B3


QM5 = B4

MM epidote = B5

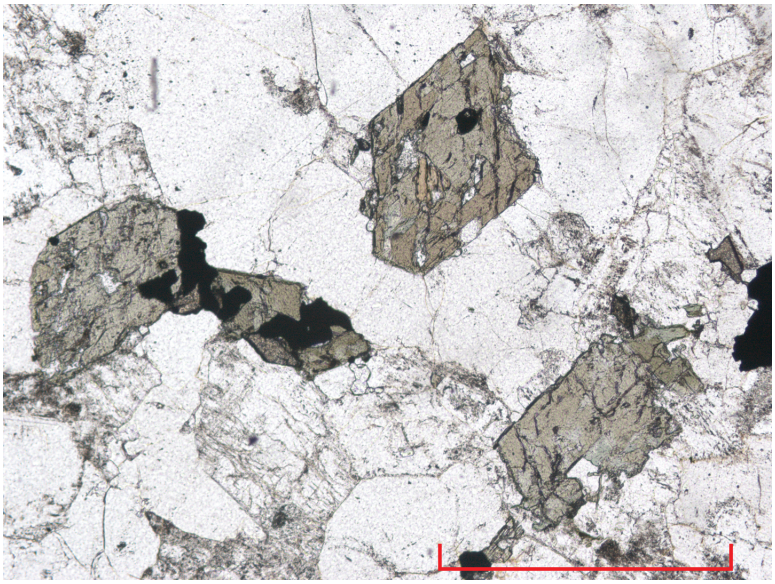
MM Bxia = B6

B1

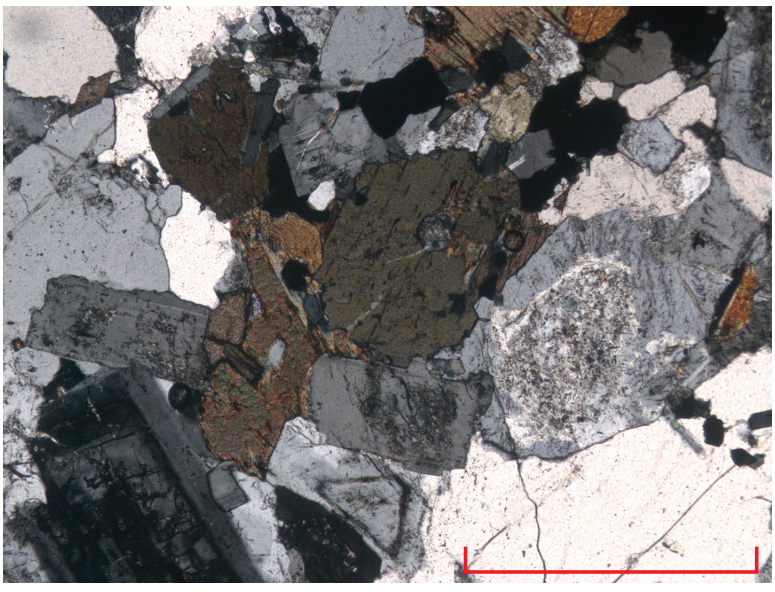


A hornblende quartz monzonite. This granitoid has both plagioclase and orthoclase as prominent phenocrysts, the K-feldspar showing one megacryst to 6mm long. Usually it is anhedral and < 3mm. Plagioclase is subhedral and 0.5 to 2mm grainsize. Its composition (from Michel-Levy and Carlsbad-albite extinction angles) is approximately Ab 70%.

Feldspars, hornblende and sphene.

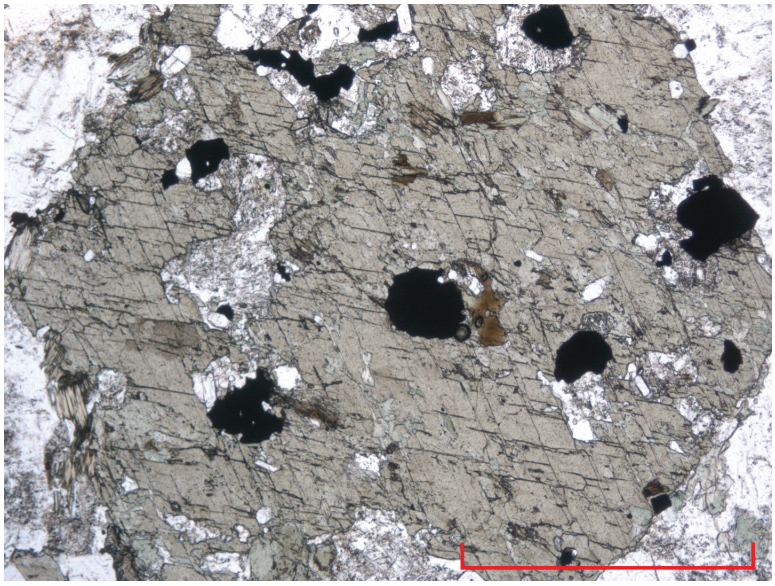


Euhedral hornblende.



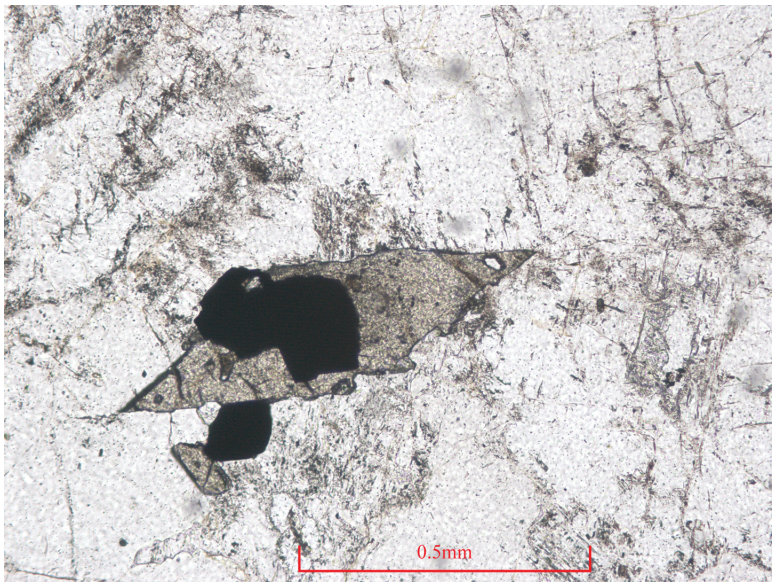
Hornblende and biotite.

B1 (continued)

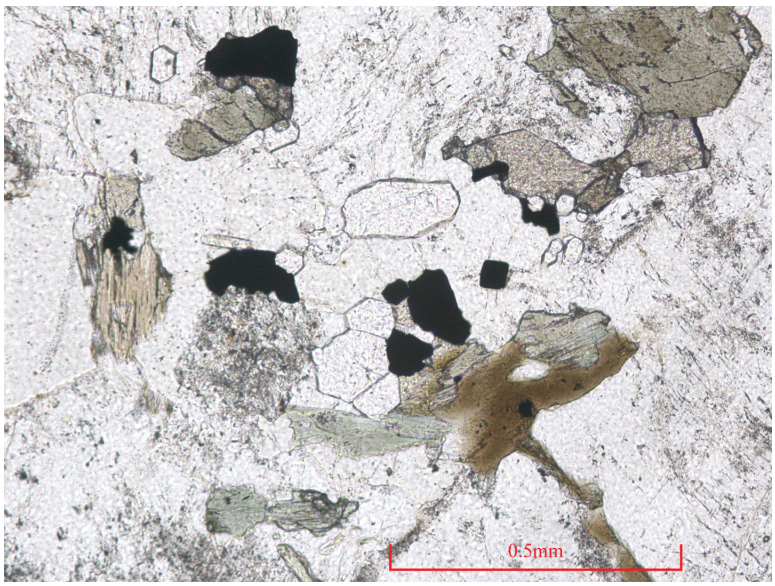


Hornblende is the dominant ferromagnesian mineral - up to 3mm grainsize, euhedral and about 5% of the volume. Biotite is deep to pale brown and about 2%. Quartz amounts to about 20%. Sphene is unusually prominent as mostly euhedral crystals to 1mm. Pyrite is often found with the sphene as < 0.4mm crystals. A dozen 0.1-0.3mm apatite crystals were noted.

Hornblende with pyrite and biotite.

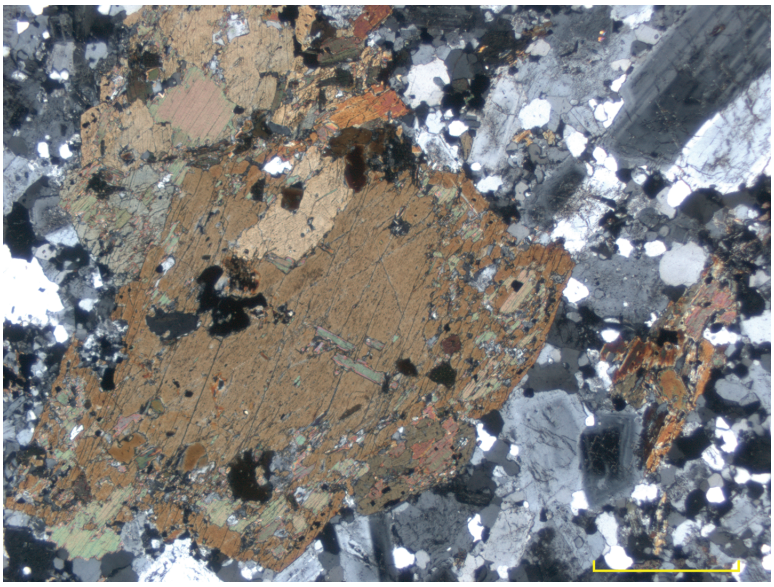


Sphene with included pyrite.

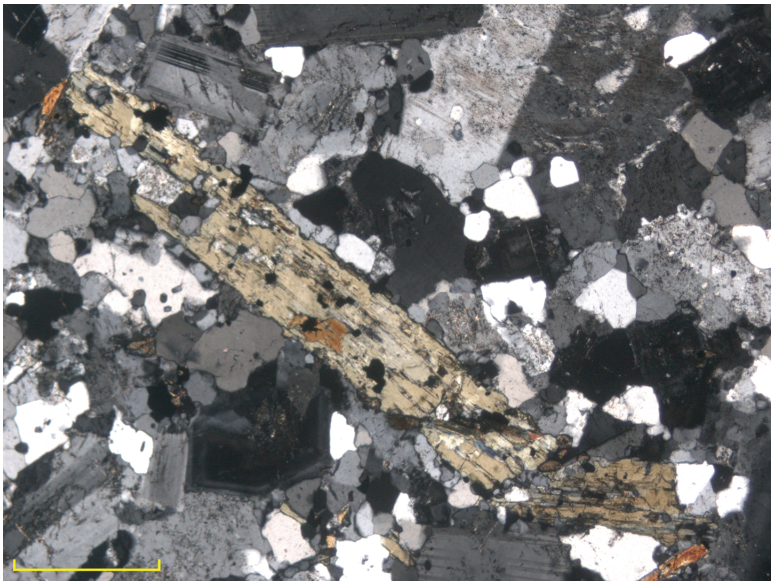


Hornblende, biotite, sphene and apatite with pyrite.

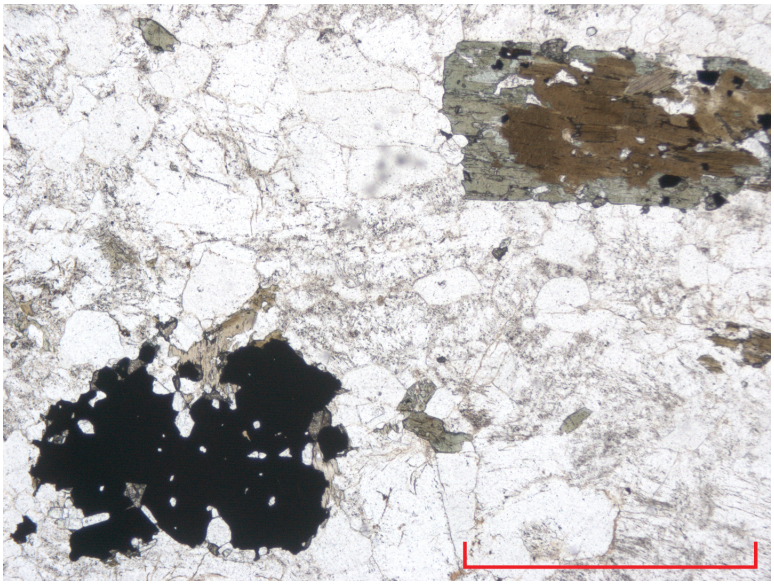
B2



A hornblende micro-quartz monzonite. Plagioclase forms the largest phenocrysts - 3mm subhedral forms, although most are < 1mm. Anhedral orthoclase is < 2.5mm and is the dominant feldspar (60-40). Quartz is as a few 0.5mm grains, but it is mostly as small, subrounded forms. Hornblende is the coarsest grained mineral - often euhedral and to 3mm. It often ahs inclusions of 0.3mm sized anhedral biotite, which is deep brown. Proportions are: hornblende 2%, biotite < 1%. Sphene is present (<< 1%), but is finer-grained than in B1.

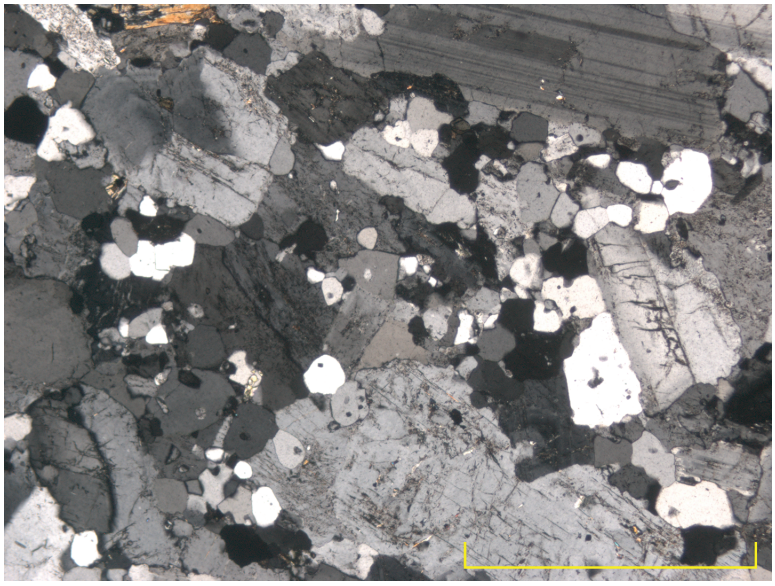


Hornblende.



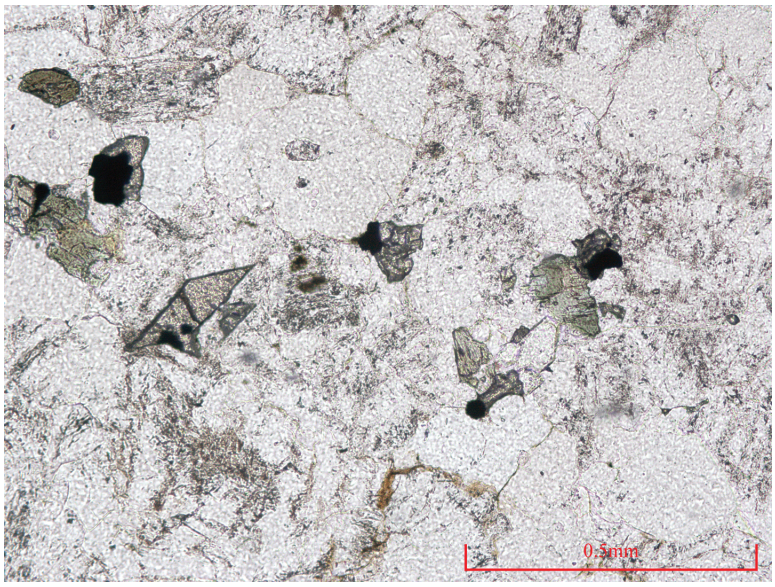
Hornblende and pyrite.

B2 (continued)



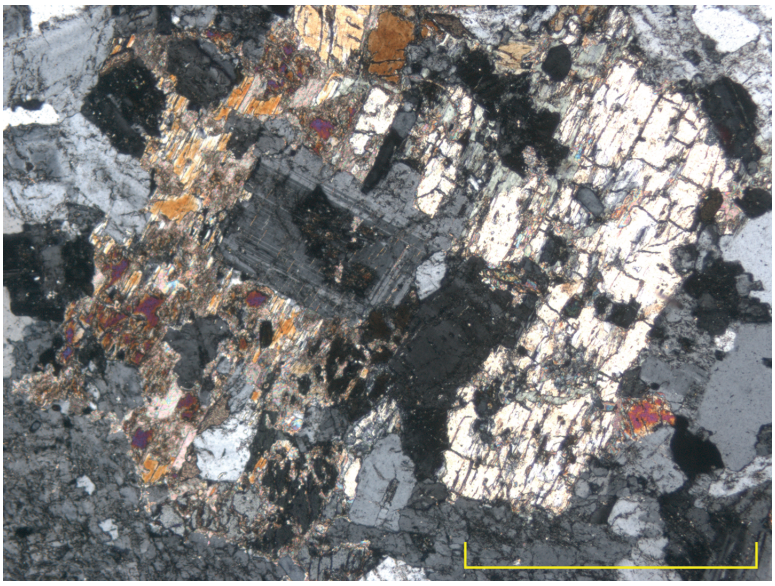
Both feldspars and the equant quartz grains.

Zoning in feldspar.

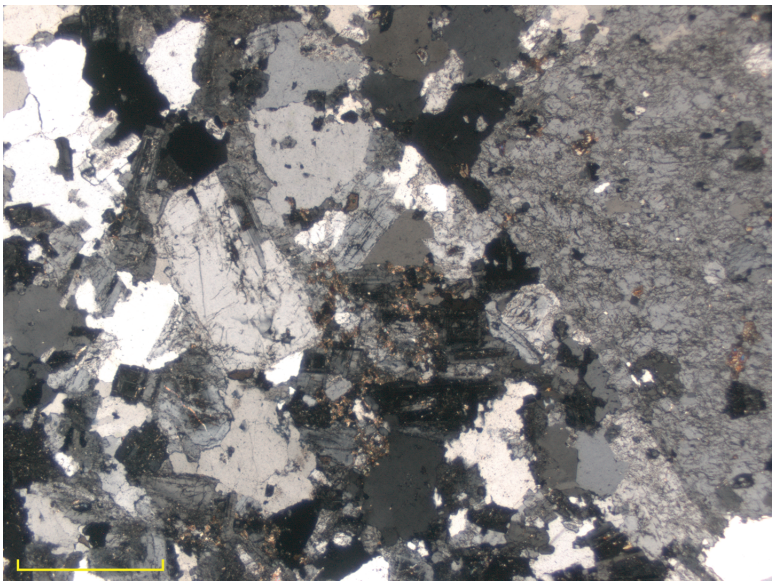


Sphene and pyrite.

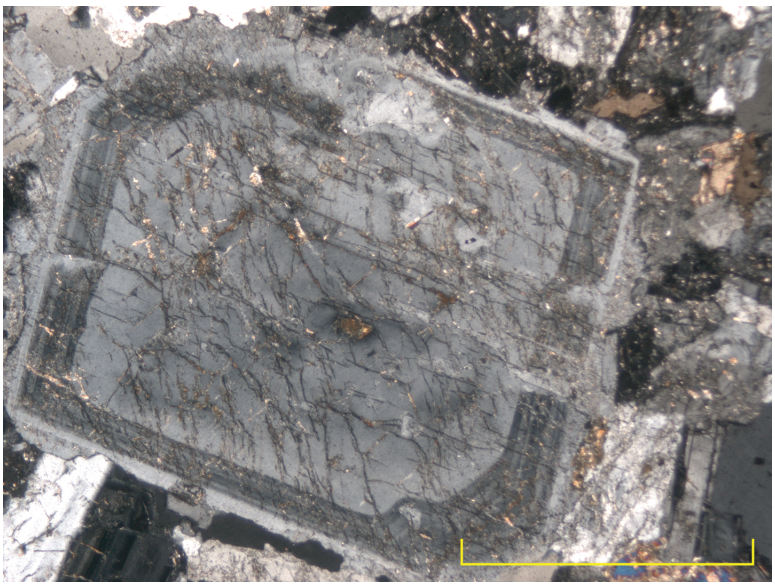
B3



B3 is a hornblende micro-monzogranite. Only a few plagioclase phenocrysts reach 3mm length. Orthoclase is up to 2mm, most from 0.5mm. Feldspars are in subequal proportion. Quartz is anhedral, up to 2mm size and about 20% of the bulk. Hornblende is the only ferromagnesian and is very pale coloured: just a hint of green. Sphene is mostly anhedral and < 0.8mm (< 1%). Neither apatite nor zircon were noted. Only one grain of pyrite was seen.

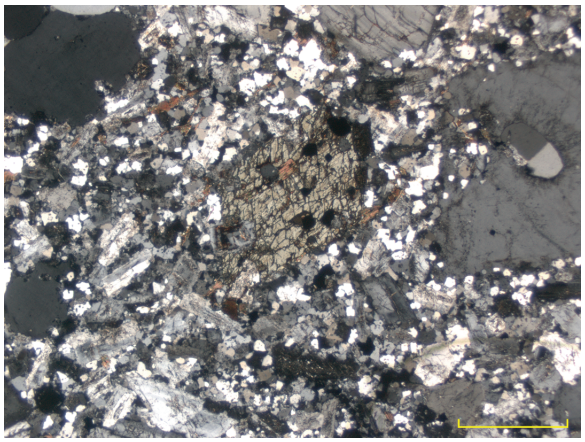


Large orthoclase phenocryst

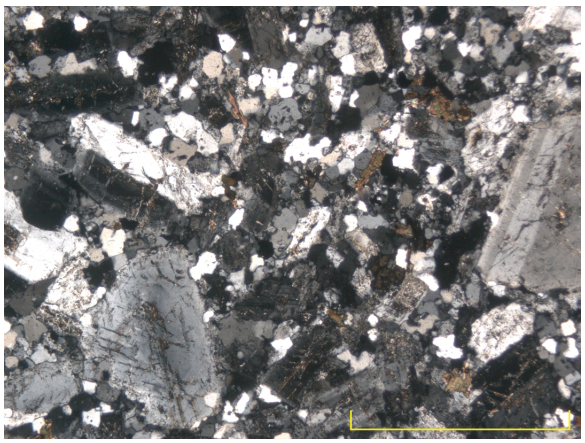


Oscillatory zoned plagioclase

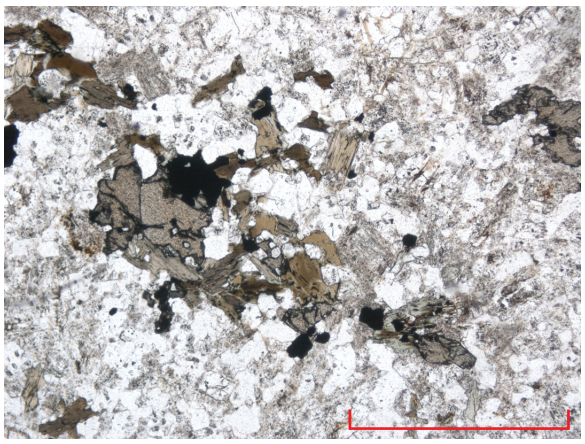
B4



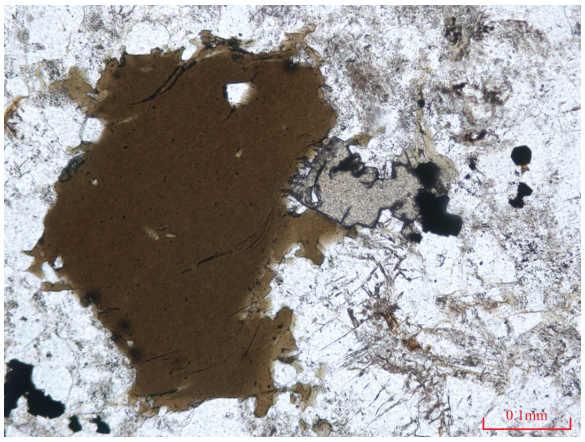
B4 is a hornblende micro-quartz monzonite. It is considerably more porphyritic than the B1 to B3. Plagioclase forms phenocrysts from 0.5 - 2.0 mm and orthoclase ranges u to 3 mm. Much of the groundmass is of 0.2 mm grainsize. Quartz, < 10%, forms often equant grains. The amphibole is a very pale green and forms euhedral crystals to 2 mm plus some smaller very 'ragged' grains, which are often associated with biotite, rare apatite and pyrite. The mica is a deep brown to golden colour, quite anhedral, 0.5 mm grainsize and about 1% of the volume. There is no included monazite. A few anhedral sphene grains were noted.



Biotite grains.

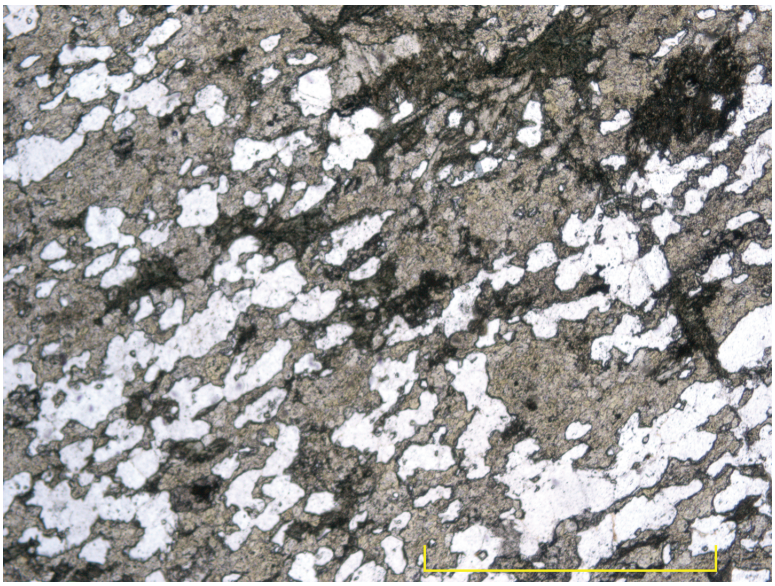


Biotite, sphene & pyrite

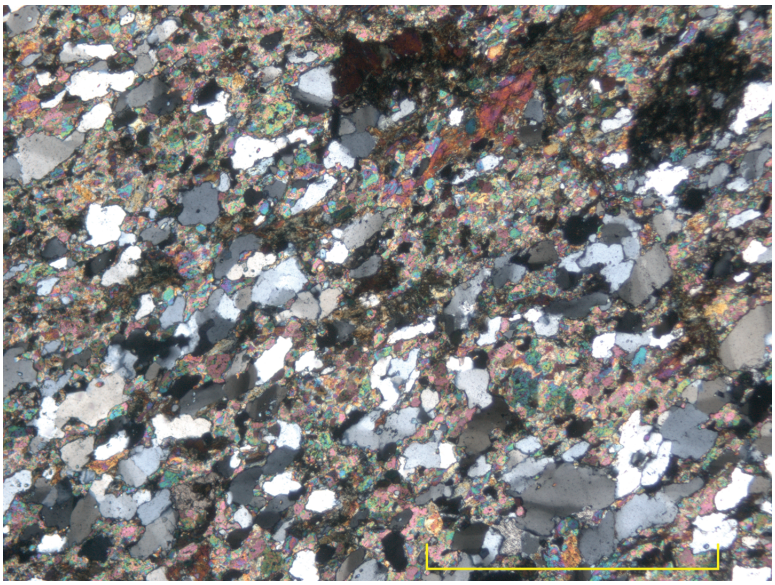


Biotite with sphene and pyrite

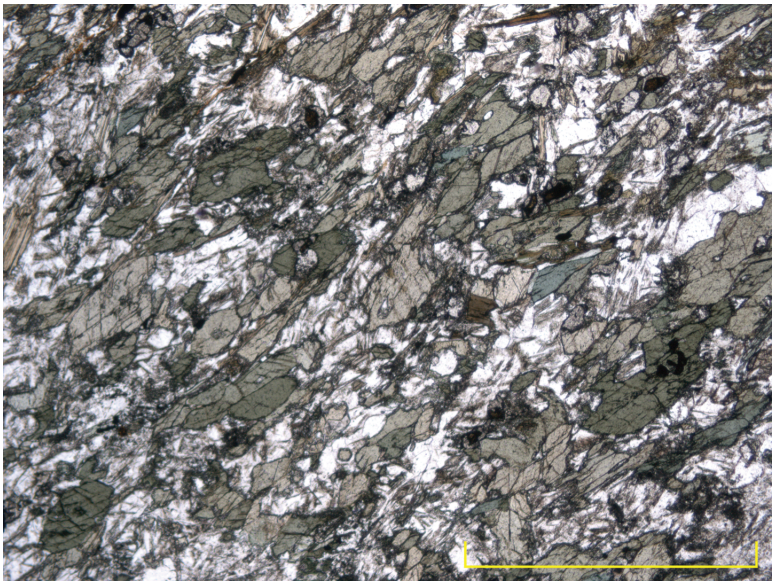
B5



A skarn or hornfels. The specimen shows three layers, teh centre being 20 mm wide. One end has mid green to colourless pleochroic actinolite, which is mostly euhedral with a high degree of preferred orientation. The matrix (50-60%) is quartz and feldspar 0.1-0.3mm grainsize and completely anhedral. Some albite twinning is evident, so plagioclase is present.
A sharp contact separates this layer from the central portion, which is of epidote (0.1-0.3 mm long subhedral forms) with masses of polygonized quartz up to 4 mm long. this layer is also distinctly foliated. Tiny (0.02 mm) grains of sphene accompany the epidote. The third layer is similar to the first.



Epidote-rich central layer

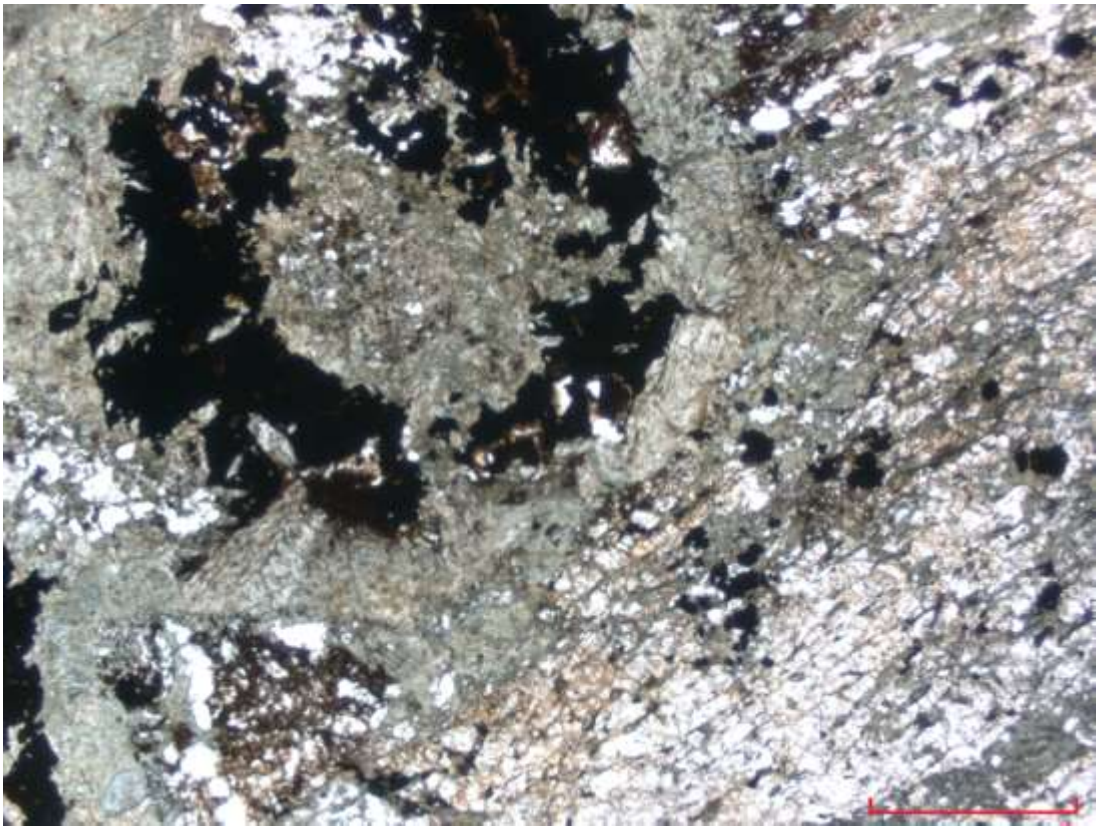


Outer layer: actinolite in pp light

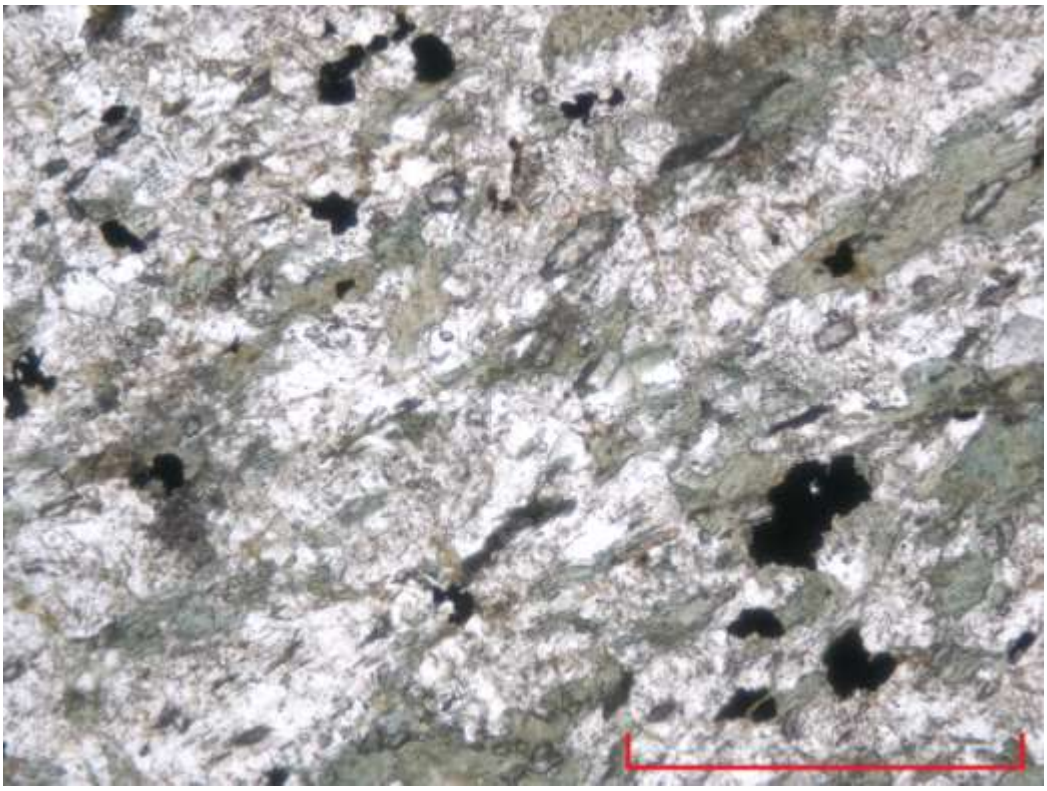
B6

Hornfels.

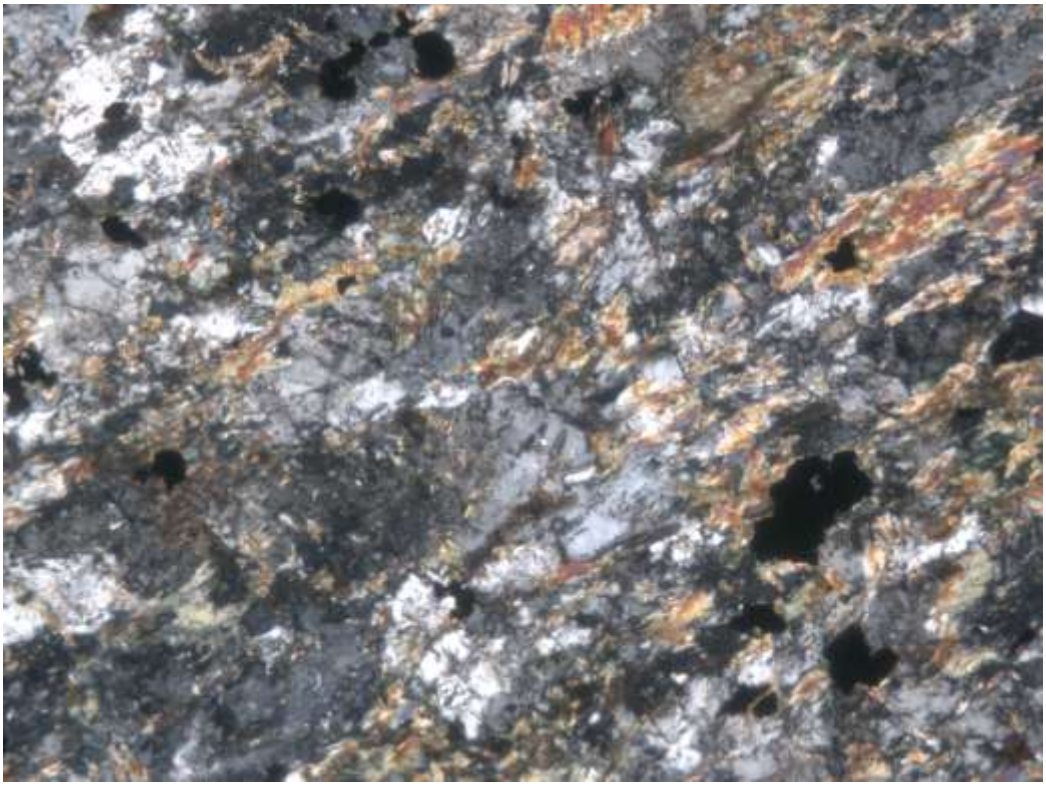
This rock is of similar mineralogy to the outer part of B5. Foliated (but not as distinctly as B5) quartz-feldspar-amphibole predominates. The amphiboles are anhedral and form 2mm long lenticular masses. A quartz-feldspar matrix occupies ≈ 60% of the volume. Sphene is rare. Approximately 1% pyrite is found as 0.04mm euhedral crystals. This foliated rock is in sharp contact with a much coarser grained variant. The contact is very discordant and irregular shaped. Relatively coarse amphibole (1mm) with ≈ 20% quartz in 0.1-0.2mm grains fills this region. Coarse grained pyrite (0.2mm crystals) forms a ring-shaped mass 8mm across.



pyrite ring structure and contact



B6 General view pp



B6 General view xp

Appendix VI - XRF Soils Blackbear trenches 2019 ppm 2 Sigma

Sample	Reading	Duration	Mo	Mo Error	Pb	Pb Error	As	As Error	Zn	Zn Error	Cu	Cu Error	Fe	Fe Error	E	N
Trench 6-6																
72037	**1069**	30.12	14.32	5.02	37.75	9.96	< LOD	11.24	43.07	14.91	230.62	32.29	13980.66	336.07	521016	7087130
72038	**1070**	30.13	47.83	5.58	72.68	12.48	20.71	10.21	92.55	18.32	282.52	34.08	18583.44	380.4		
72039	**1071**	30.12	47.48	5.69	67.4	11.93	< LOD	14.36	246.84	26.83	240.72	32.56	14872.64	343.55		
72040	**1072**	30.14	323.74	11.36	5037.61	104.53	468.57	83.1	437.02	42.13	801.28	63.25	46095.63	704.58		
72041	**1073**	30.13	106.7	7.16	2433.39	66.13	163.48	51.87	434.71	36.92	588.67	49.71	21622.14	438.88	521026	7087117
72042	**1074**	30.12	70.79	7.3	4282.85	96.99	767.2	80.23	450.18	42.51	822.19	64.3	38173.25	644.8		
72043	**1075**	30.12	22.34	5.22	212.84	19.8	< LOD	23.01	256.46	27.72	171.46	29.8	19699.93	403.44		
72044	**1076**	30.13	19.91	5.17	28	9.14	20.85	8.11	114.22	19.7	113.36	26.17	12600.35	321.82		
72045	**1077**	30.14	14.56	5.56	297.98	24.77	40.96	19.99	93.87	20.24	74.84	26.68	18896.92	426.96	521023	7087096
Trench at Camp and road																
72046	**1078**	30.12	14.89	5.11	184.45	18.5	41.18	15.35	140.5	21.77	160.51	29.09	19869.47	404.91	520803	7087141
72047	**1079**	30.09	18.67	5.23	43.38	10.75	36.55	9.96	116.64	20.27	114.65	26.56	16315.89	367.82		
72048	**1080**	30.11	28.24	5.75	221.93	21.46	60.38	18.16	219.14	27.91	200.94	33.82	20657.54	438.82		
72049	**1081**	30.14	16.19	4.97	53.45	11.1	14.36	8.95	387.26	32.1	165.01	28.38	12433.91	311.66		
72050	**1082**	30.12	15.33	5.04	179.85	18.09	70.69	15.96	371.81	32.04	205.55	31.02	16497.28	363.71		
72051	**1083**	30.14	38.87	5.72	340.28	24.8	79.95	20.8	289.36	29.77	310.96	37.09	24589.73	454.21		
72052	**1084**	30.08	56.68	5.87	42.48	10.33	30.41	9.25	148.71	21.4	231.56	31.54	15487.42	345.34		
72053	**1085**	30.15	29.41	5.27	251.04	20.96	57.13	17.46	257.4	27.5	253.65	33.27	19730.17	396.23		
72054	**1086**	30.14	34.54	5.64	187.21	19.03	77.05	16.9	276.06	29.32	224.58	33.33	20696.56	420.37	520802	7087102
Trench 6-7																
72055	**1087**	30.13	7.54	4.73	21.48	8.06	16.79	7.14	59.8	15.44	57.4	21.19	21077.02	400.55	521085	7087086
72056	**1088**	30.13	< LOD	7.13	23.83	8.48	< LOD	9.79	28.93	13.19	63	22.19	18758.04	382.14		
72057	**1089**	30.14	10.69	4.9	21.36	8.3	< LOD	9.27	36	13.92	117.57	25.85	17415.59	371.12		
72058	**1090**	30.12	33.45	5.53	202.73	19.26	40.64	15.86	256.08	27.6	141.71	28.06	19706.97	402.77		
72059	**1091**	30.14	29.62	5.37	68.38	12.42	33.15	10.84	288.34	28.95	172.08	29.57	17932.57	382.65	521088	7087107
72860	**1092**	30.14	30.46	5.45	88.17	13.49	17.92	10.93	283.4	28.86	138.39	27.61	21777.32	421.51	521087	7087112
72861	**1093**	30.11	28.02	5.51	290.54	22.98	68.91	19.31	189.7	24.85	153.82	29.35	19328.98	403.94		
72862	**1094**	30.09	31.55	5.56	194.63	19.14	48.61	16.02	188.44	24.52	134.89	27.81	14435.9	347.88		
72863	**1095**	30.14	52.33	6.04	579.84	31.96	84.24	25.94	266.26	28.68	156.46	29.54	20525.96	417.36		
72864	**1096**	30.12	40.11	5.69	52.45	11.42	204.28	16.65	281.35	28.78	150.44	28.56	19536.78	399.44		
72865	**1097**	30.12	54.87	6.05	83.36	13.49	110.45	14.7	243.63	27.5	196.86	31.57	22163.04	431.44	521088	7087135

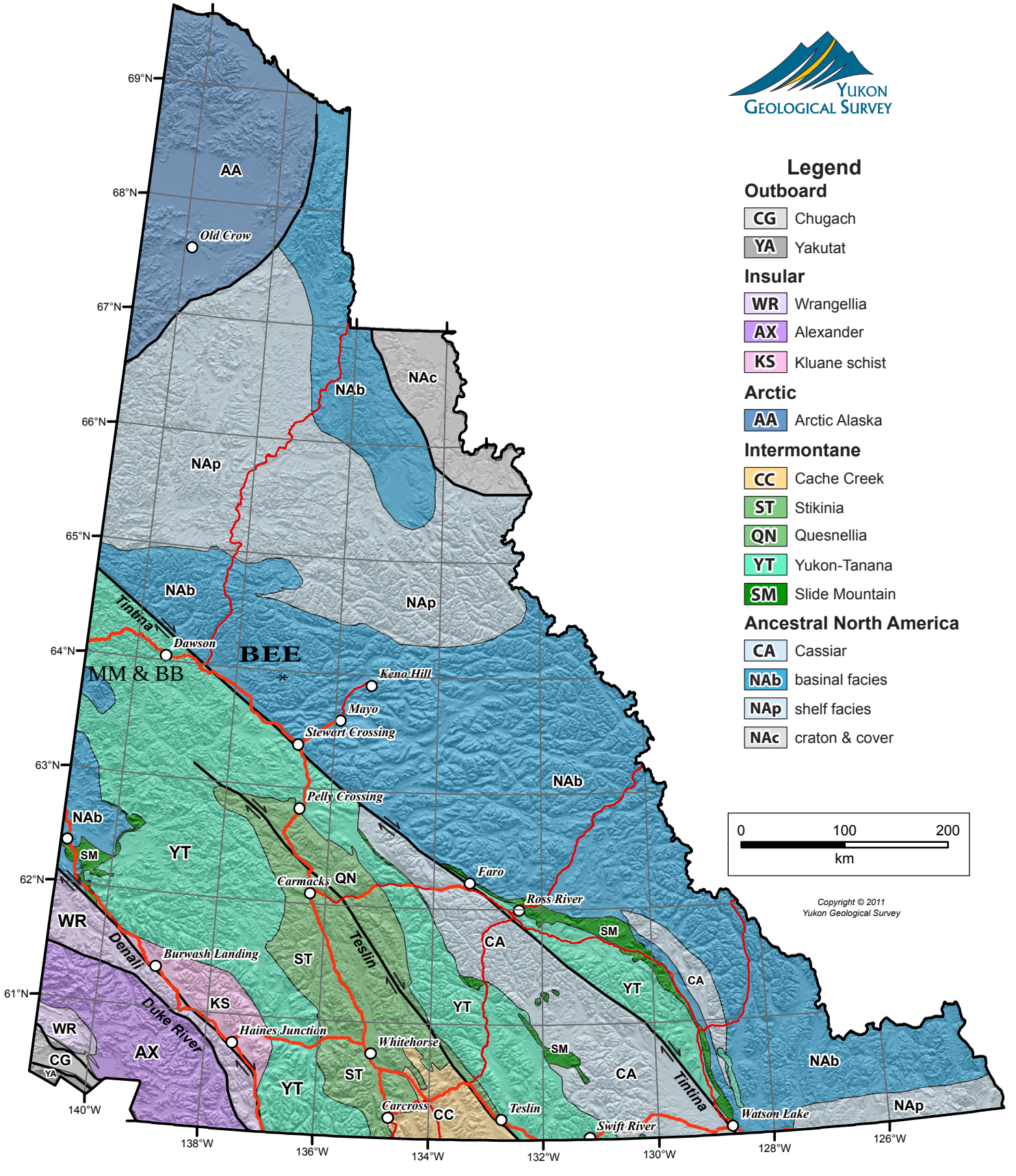
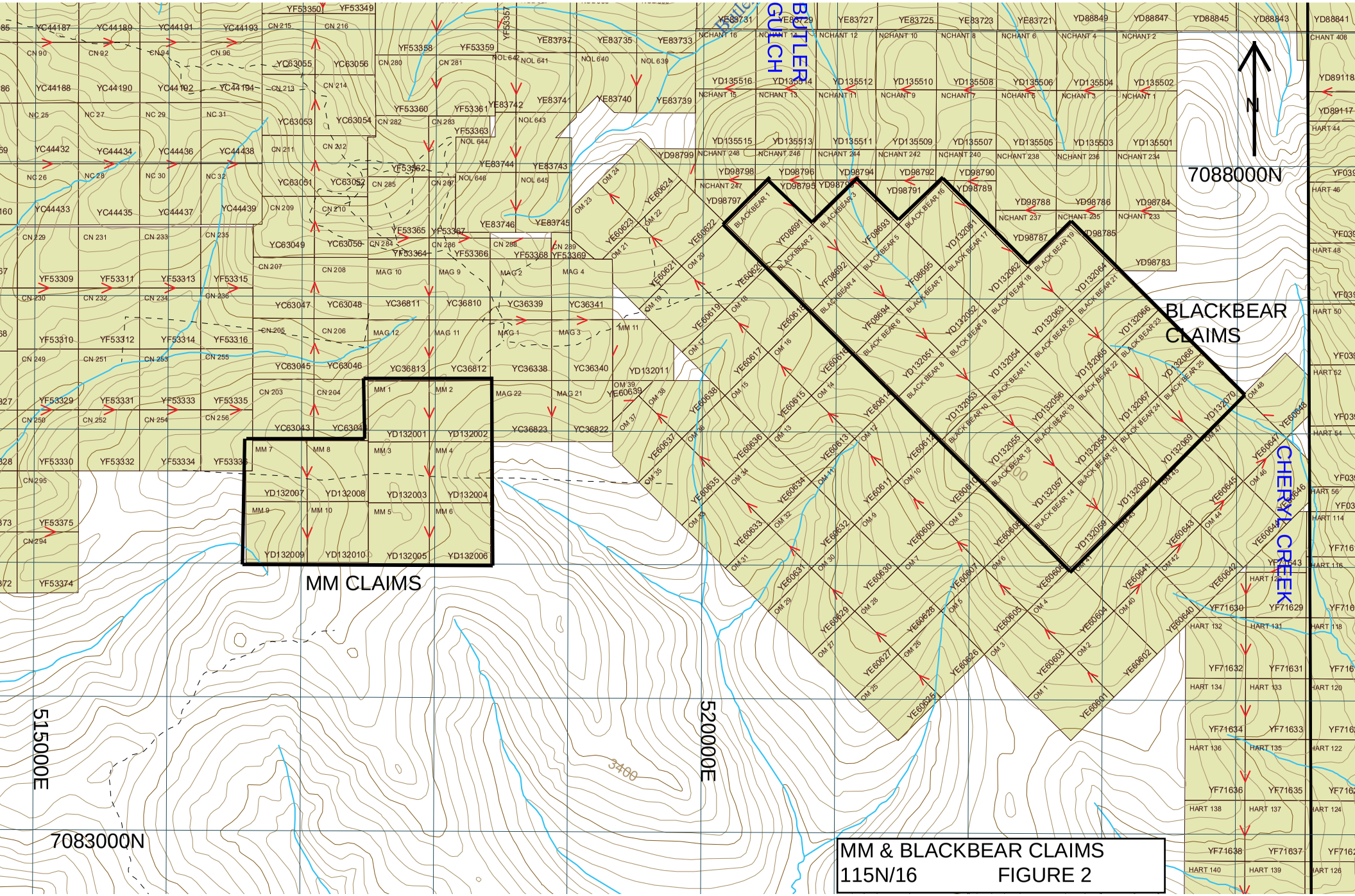
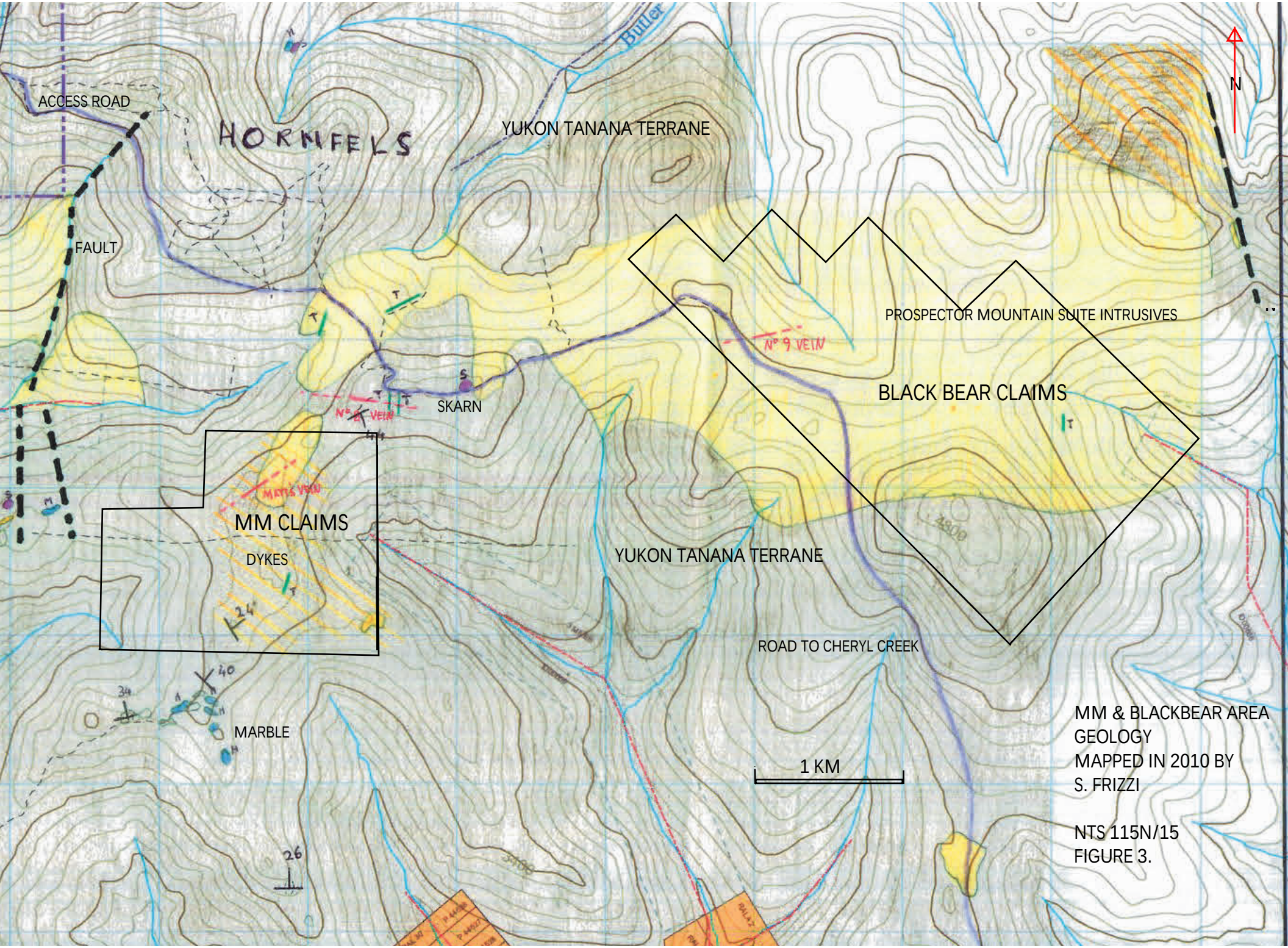


Fig. 1. LOCATION AND BEDROCK TERRANES - BEE PROJECT MM & BB PROJECT
W.D. Mann



MM & BLACKBEAR CLAIMS
115N/16 FIGURE 2


ACCESS ROAD
HORNFELS
YUKON TANANA TERRANE
Butler
N
FAULT
PROSPECTOR MOUNTAIN SUITE INTRUSIVES
Nº 9 VEIN
BLACK BEAR CLAIMS
SKARN
Nº 2 VEIN
MATIS VEIN
MM CLAIMS
DYKES
YUKON TANANA TERRANE
ROAD TO CHERYL CREEK
MARBLE
1 KM
MM & BLACKBEAR AREA
GEOLOGY
MAPPED IN 2010 BY
S. FRIZZI
NTS 115N/15
FIGURE 3.

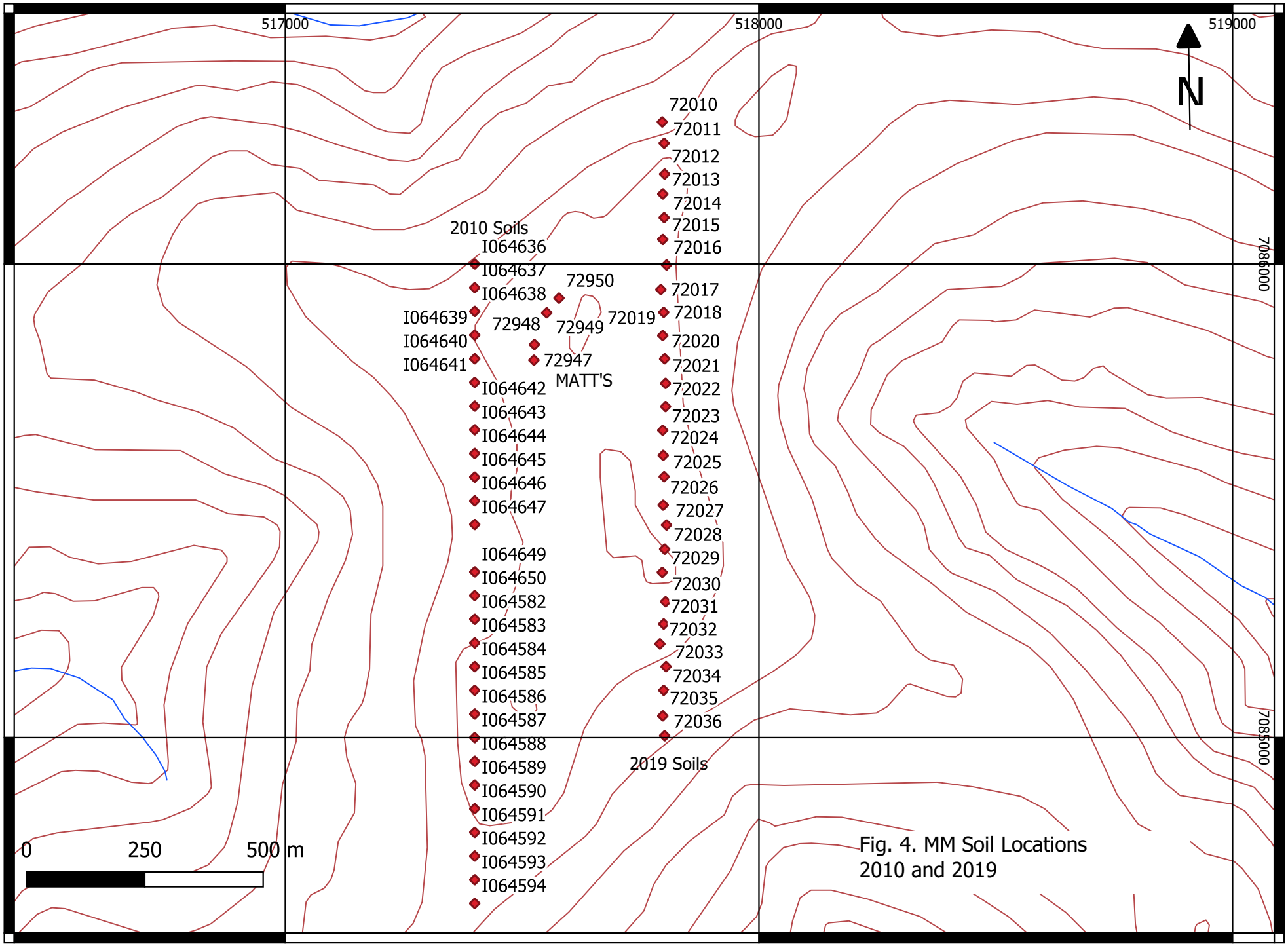


Fig. 4. MM Soil Locations
2010 and 2019

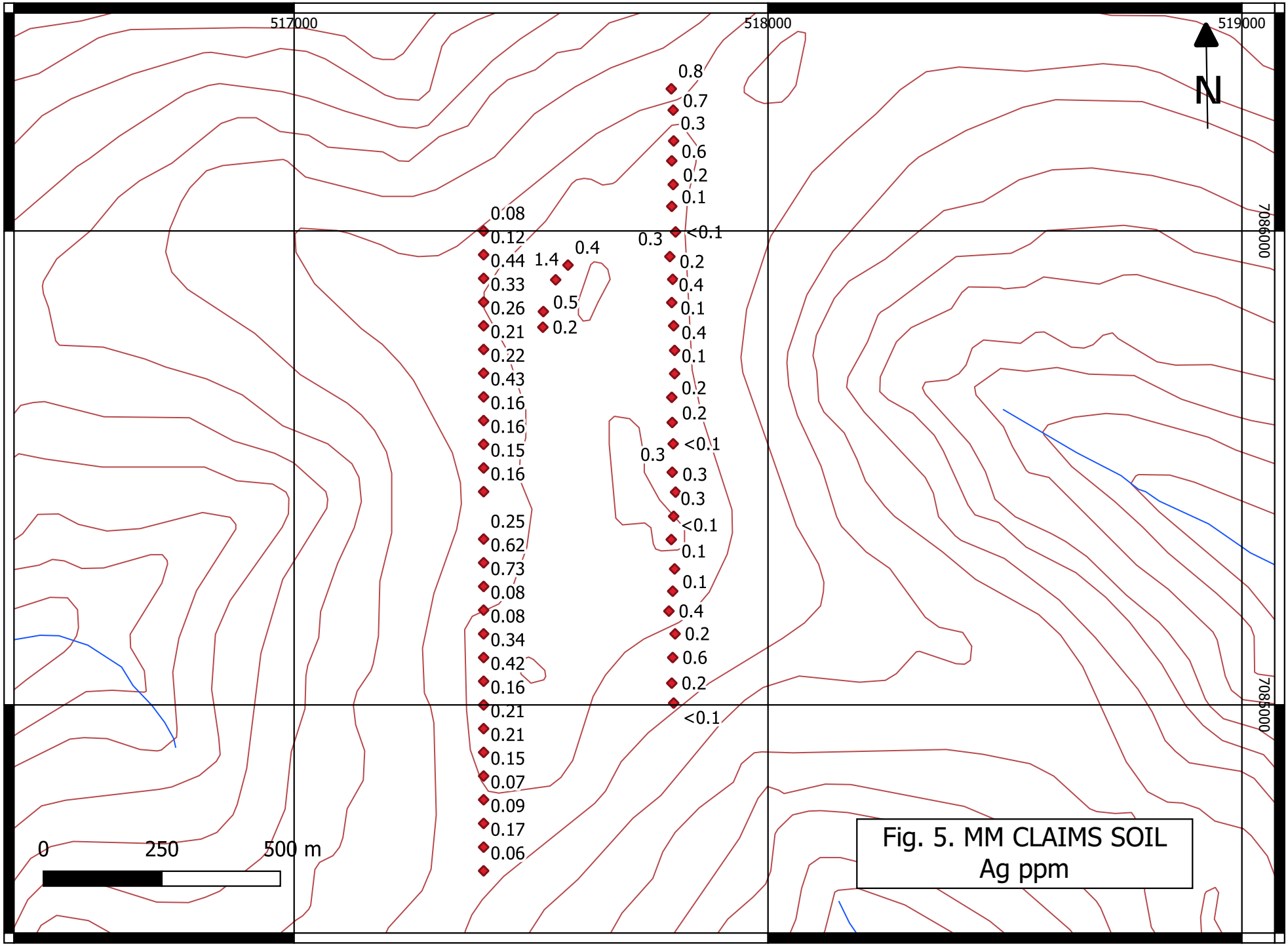


Fig. 5. MM CLAIMS SOIL
Ag ppm

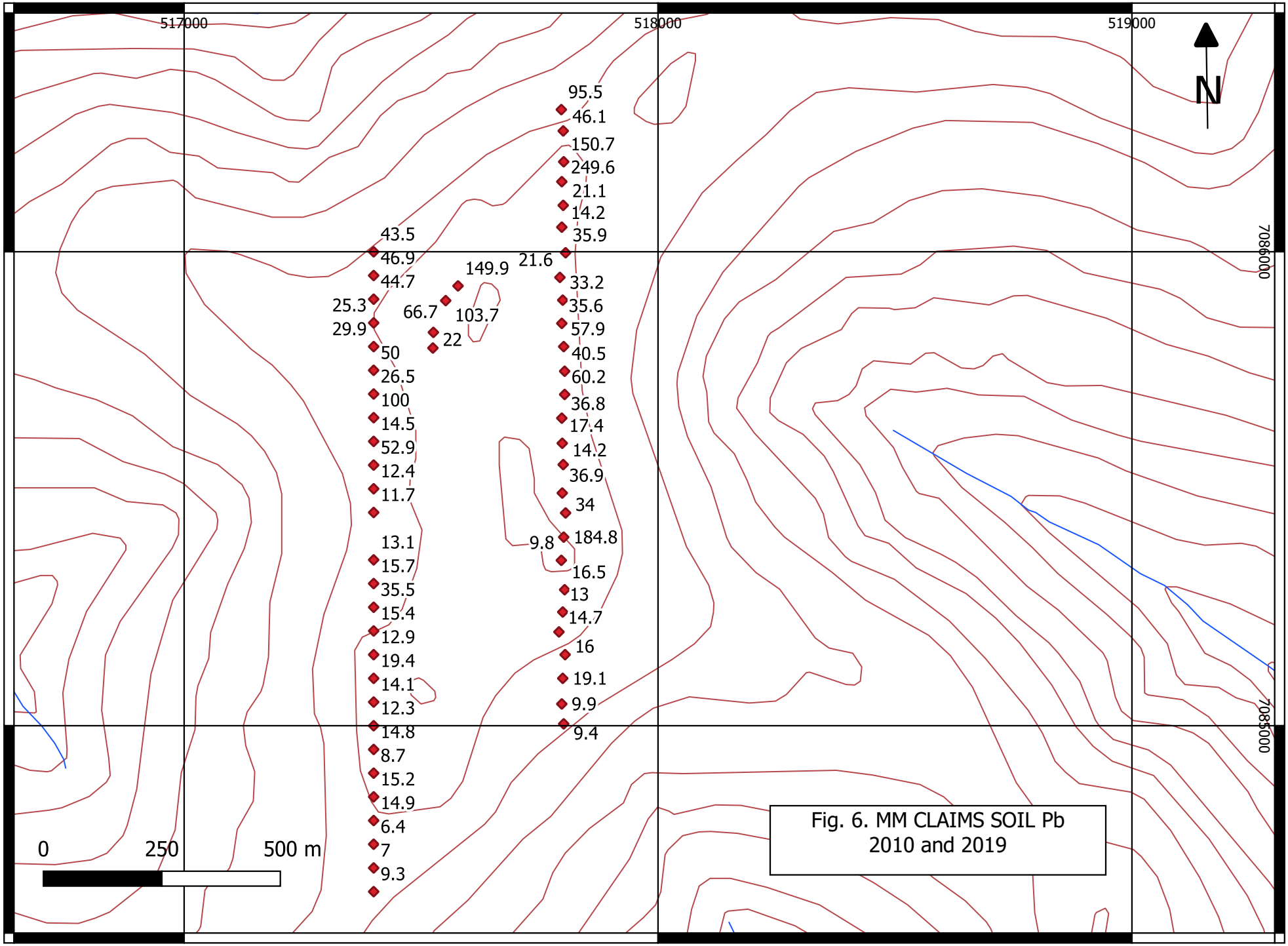


Fig. 6. MM CLAIMS SOIL Pb
2010 and 2019

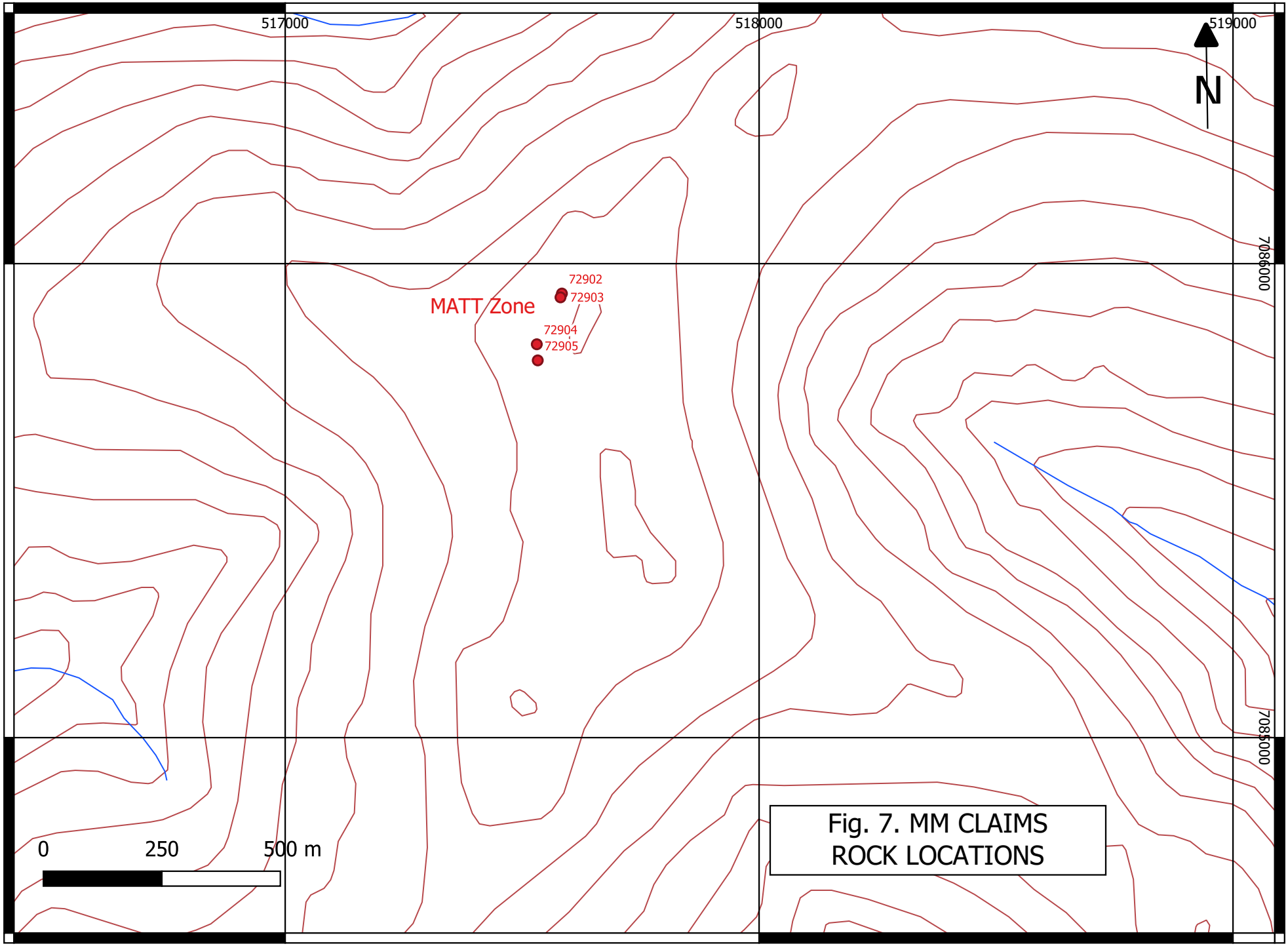


Fig. 7. MM CLAIMS
ROCK LOCATIONS

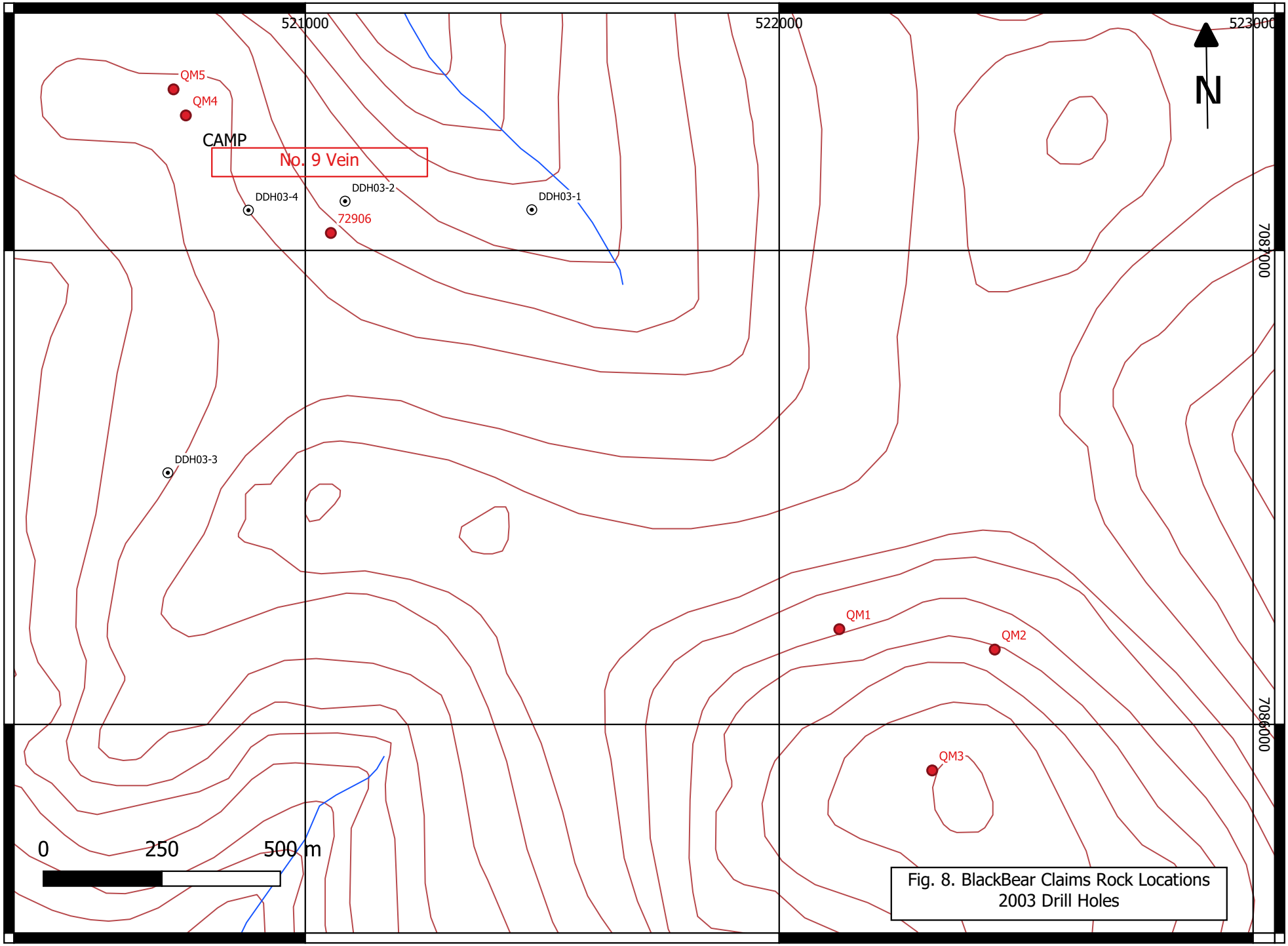


Fig. 8. BlackBear Claims Rock Locations
2003 Drill Holes