BRITISH COLUMBIA

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Ministry of Energy, Mines & Petroleum Resources
Mining & Minerals Division
BC Geological Survey

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Geological mapping and spectral analysis

TOTALCOST: $24,975.03

AUTHOR(S): John McClintock PEng

SIGNATURE(S): John McClintock P.Eng APEGBC 12078

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):

YEAR OF WORK: 2015

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): **5587159**

PROPERTY NAME: North Island Project (Hushamu)

CLAIM NAME(S) (onwhich the work was done): 231690, 231691, 231687, 231688, 231689, 231684, 231686, 231704, 231703, 231680, 231682, 231685, 232212, 513909, 513910, 513914

COMMODITIES SOUGHT: Copper, Gold

MINERAL NVENTORY MINFILE NUMBER(S), F KNOWN:

MINING DIVISION: Nanaimo

NTS/BCGS: 92 L12

LATITUDE: 50 ° 42.5' LONGITUDE: 127 ° 58 (at centre of work)

OWNER(S):

1) North Island Mining Corp

2)

MAILING ADDRESS:

1800, 570 Granville Street, Vancouver, BC, V6C 3P1

OPERATOR(S) [who paidfor the work]:

1) Northilse Copper and Gold Inc.(operator)

2)

MAILING ADDRESS:

1800, 570 Granville Street, Vancouver, BC, V6C 3P1

PROPERTY GEOLOGY KEYWORDS (lIhology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Jurassic Bonanza Group andesite, Jurassic Island Intrusions, Red dog Stock, copper gold molybdenum porphyry type mineralization, advanced argillic alteration, intermediate argillic alteration, hornfels alteration.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 12027, 18023, 20610, 21,352

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TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (INMETRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping	1500 hec	231680 - 231682, 231684 - 231691 231703, 231704, 232212, 232271 513909 513910 513 914	$22,775.03
Photo hterpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Electromagnetic			
Radiometric			
Seismic			
other			
Airborne			
GEOCHEMICAL (numberofsamplesanalysedfor ...)			
Soll			
Silt			
Rock			
Other	42 TerraSpec Analyses	231684, 231704, 231703 231680, 231686, 231687, 231689, 231691, 231690 513909 513914	$2,200.00
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mlneralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres) 39:08@ 111et1es			
TopographicfPhotogrammetri c (scale, area)			
Legal surveys (scale, area)			
Road, bcal access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres) Other			
			$24, 975.03

2015 TECHNICAL ASSESSMENT REPORT ON Geological MAPPING and SPECTRAL ANALYSIS on THE RED DOG PROPERTY

Nanaimo Mining Division
British Columbia

NTS 94D/11E 50 42.5' N/127 58' W

Event # 5587159

Tenure #'s:
231680,231681, 231682, 231684,231685, 231686,

2311687, 231688, 231689, 231690, 231691, 231703,

231704, 232212, 513909, 513910, 513914

Prepared for:
Northisle Copper and Gold Inc.

Prepared by:
John McClintock, P.Eng,

January 2016

Tables

Figures

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1.0 SUMMARY

The Red Dog mineral property is held under option by Northisle Copper and Gold (Northisle) from William Botel and Tanya Veerman.

The geological mapping was carried out by John McClintock P. Eng and Blake Macdonald in the fall of 2015 during the periods September 27 through October 5, 2015 and November 15 to November 18, 2015. The objective of the program was to better defining the contacts between the alteration types identified by an earlier program and to extend mapping to the east on to the Slide Showing. To help characterize the alteration types, spectral analysis and thin section studies were included in the fall program.

The Red Dog Property is underlain by a monotonous sequence of andesitic to basaltic flows, tuff-breccias and tuffs of the lower Jurassic-age Bonanza Group that have been intruded by three compositionally different intrusions that are part of the Jurassic –age Island Intrusions. The largest and presumed oldest intrusion is the Red Dog Intrusion and its related dykes which form a greater than 1km by 0.5 km body occupying the northern part of the property. The Red Dog Intrusion is tonalitic in composition and is everywhere porphyritic. Intrusion of the Red Dog Intrusion hornfelsed a 300 metre zone of the Bonanza Group along the southern contact. In the central and eastern part of the property, the contact between the Red Dog Intrusion and the Bonanza Group appears vertical. Based on historical drilling, the contact west of the gully between Red Dog Mountain and Red Dog Knoll is a moderately southwesterly dipping, west northwest striking fault separating the Red Dog Intrusion from the Bonanza Group rocks.

Two smaller intrusions; a quartz monzonite and a diorite porphyry are located in the western and southeastern part of the property respectively. The quartz monzonite intrusive is relatively fresh and is reported to cut mineralization (Richards, J.B. ,1991 & 1990). The diorite porphyry is the most extensively altered of the intrusions; however, it is less altered than the enclosing Bonanza rocks. This may be a function of its small size and more fractured contacts which allowed hydrothermal fluids more ready access to the interior of this intrusion compared to the larger Red Dog Intrusion.

The main porphyry related alterations are CMG (intermediate argillic), QMB (quartz magnetite breccia) and SCP (advanced argillic alteration) and Propyllitic alteration. These alterations postdate the Red Dog Intrusion and the diorite porphyry, but predates the quartz monzonite porphyry. The QMB and CMG alteration are the most economically important alterations and contain the best copper mineralization. The CMG alteration over prints the older hornfels and is in turn over printed by the SCP alteration. No confirmation of a fault separating the CMG alteration from the SCP was found.

The combined CMG and SCP alteration zone is of significant size measuring more than 1. 5 km by 0.75km. The area of most economic importance to Northisle Copper and Gold Inc. remains the 300m by 150m area of QMB where past work identified a historical resource of copper and gold. Nevertheless, the broad area of advanced argillic alteration remains a valid secondary target for a more deeply buried copper – gold mineralization.

The historical resource associated with the QMB and adjacent CMG alteration should be verified by a number of drill-holes as no historical core remains, only a portion of the drill holes have original assay sheets and there was no QA / QC carried out during the historical drilling. It estimated at least 10 holes will need to be re drilled.

It is also recommended that 3 deep holes be drilled on the south and southeast flank of Red Dog Knoll. Drilling holes of 400 metres length at each of the historical holes DDH 145, 146 and 148 is recommended.

2.0 INTRODUCTION AND TERMS OF REFERENCE

The Red Dog mineral property was optioned by Northisle Copper and Gold (Northisle) in March 2015 from William Botel and Tanya Veerman. Subsequently to optioning the property, Northisle carried out a limited program of geochemical and reconnaissance geological mapping on the Red Dog Property. In the fall of 2015, a second program of geological mapping was carried out with the objective of better defining the contacts between the alteration types identified by the initial program and to extend mapping to the east on to the Slide Showing. To help characterize the alteration types, spectral analysis and thin section study were included in the fall program.

This report quotes from historical assessment reports of the area. A list of the referenced reports is provided in the Bibliography.

3.0 PROPERTY DESCRIPTION AND LOCATION

3.1 LOCATION AND ACCESS

The Red Dog property is located at the northern end Vancouver Island, in British Columbia Canada. Geographic coordinates are 50° 42.5’north latitude and 127° 57.75' west longitude. The claims are surrounded by Northisle’s North Island Claim Block ·

Access to the claim block is from Port Hardy by the Holberg Road to a point about 45 kilometres from Port Hardy where forestry access road NE 62 leads northward to the property. A number of now reclaimed forestry roads provided access to historical drill sites on the property. At the time of the work program, the roads were largely overgrown and would require significant work to rehabilitate them for use by vehicular traffic. Tide water is 15 km away by road at Holberg.

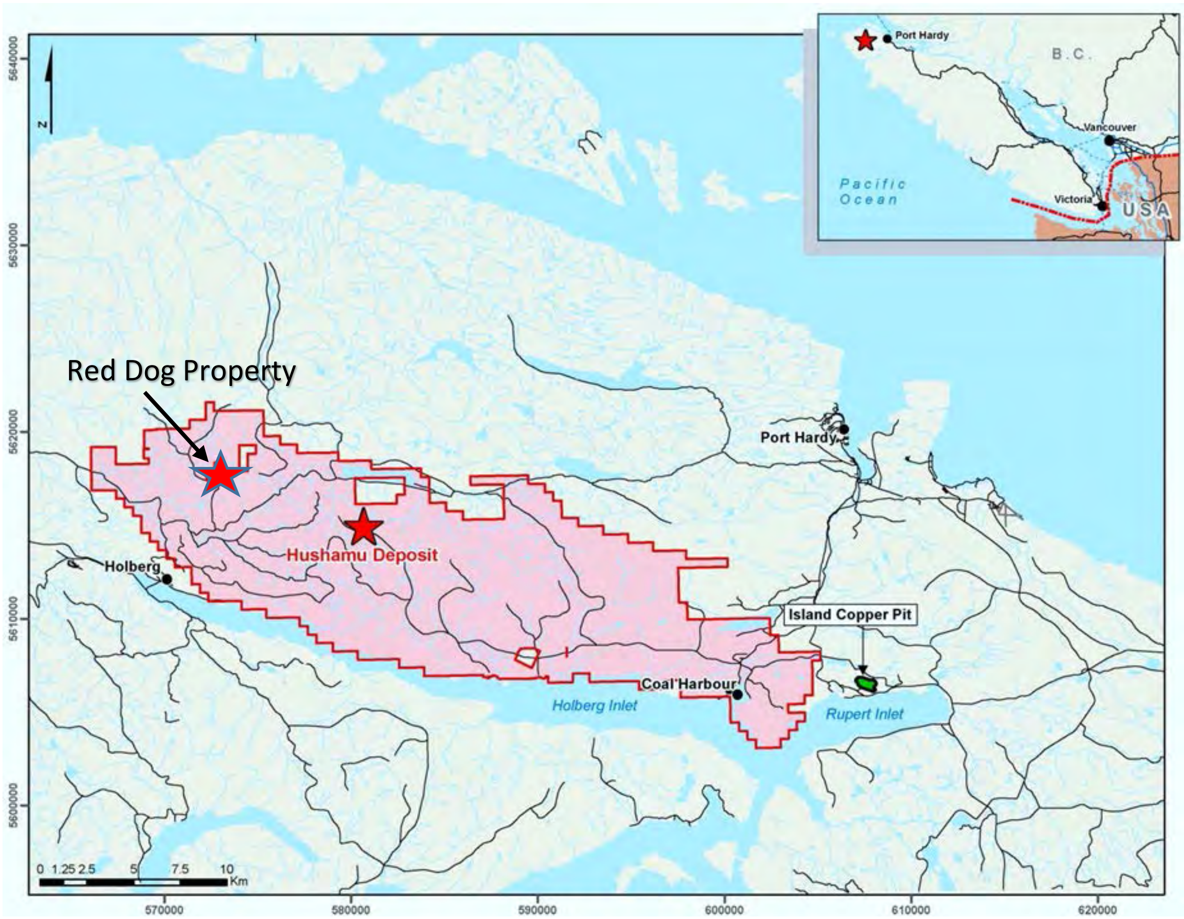
3.2 Mineral Tenure Information

The Red Dog property consists of sixteen (16) mineral claims totaling 400 ha (Table 1). The property is located on NTS map sheet 94L/12W in the Nanaimo Mining Division, approximately 45km west of Port Hardy, BC, Vancouver Island B.C. The geographic coordinates of the approximate property centre are 50 42.5' N latitude 127 57.75' W longitude (Figures 2).

Table 1: Mineral Tenures

Record No.	Claim Name	Issue Date	Good to Date	New Good to Date	Area Hec.
231680	Red Dog 1	1966/Dec/13	2018/May/23	2021/May/23	25
231681	Red Dog 2	1966/Dec/13	2018/May/23	2021/May/23	25
231682	Red Dog 3	1966/Dec/13	2018/May/23	2021/May/23	25
231683	Red Dog 4	1966/Dec/13	2017/May/23	2021/May/23	25
231684	Red dog 5	1966/Dec/13	2017/May/23	2021/May/23	25
231685	Red Dog 6	1966/Dec/13	2017/May/23	2021/May/23	25
231686	Red Dog 7	1966/Dec/13	2017/May/23	2021/May/23	25
231687	Red Dog 8	1966/Dec/13	2017/May/23	2021/May/23	25
231688	Red Dog 9	1966/Dec/13	2017/May/23	2021/May/23	25
231689	Red Dog 10	1966/Dec/13	2017/May/23	2021/May/23	25
231690	Red Dog 11	1966/Dec/13	2017/May/23	2021/May/23	25
231691	Red Dog 12	1966/Dec/13	2017/May/23	2021/May/23	25
231703	Red Dog 14	1967/May/23	2017/May/23	2020/May/23	25
231704	Red Dog Fr.	1967/May/23	2017/May/23	2020/May/23	25
232212	Red Dog 29 Fr.	1967/Dec/01	2017/May/23	2020/May/23	25
232271	Red Dog 13 Fr.	1968/Jun/17	2017/May/23	2020/May/23	25

The claims are currently registered in the name of North Island Mining Corp., a wholly owned subsidiary of Northisle Copper and Gold Inc.



Location Map Red Dog Property, Fig. 1

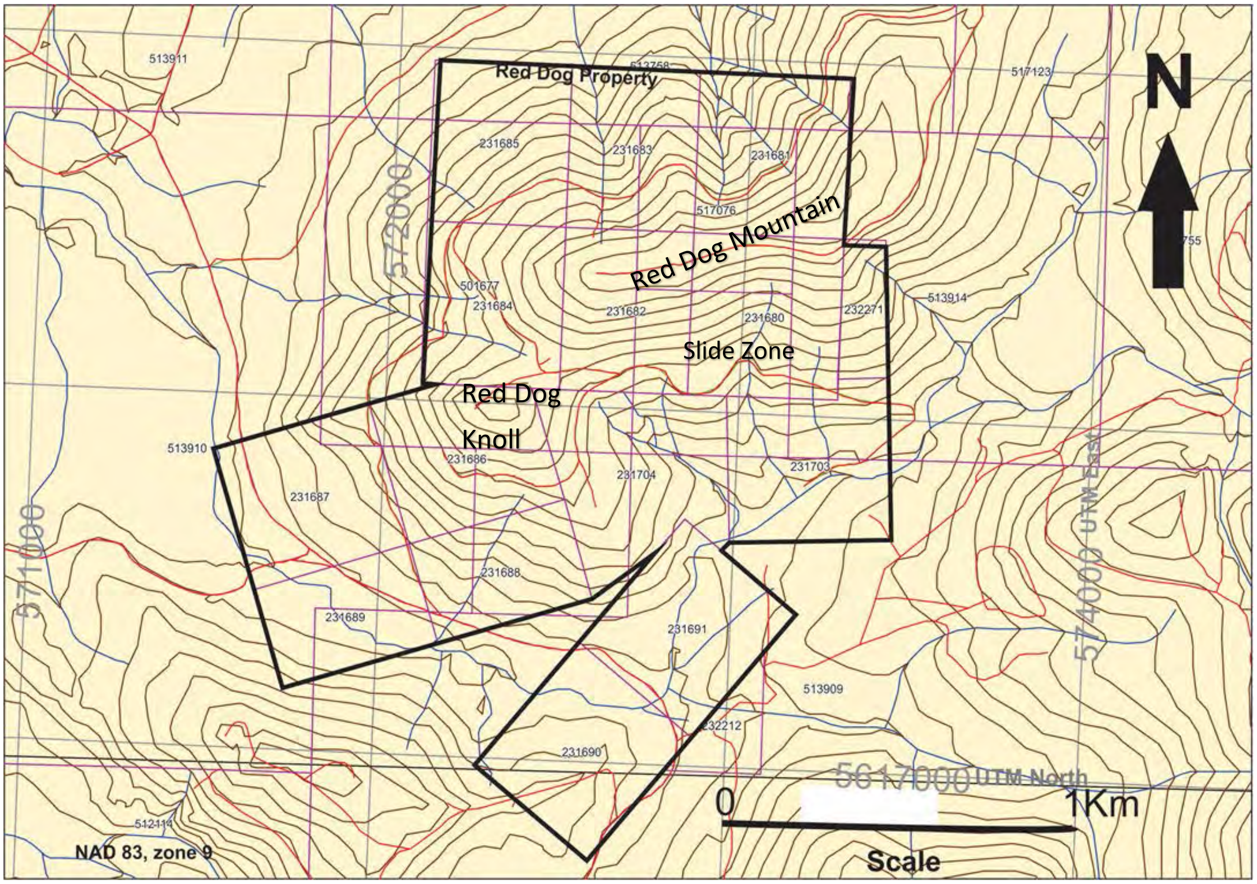


Fig. 2 Claim Location Map

3.3 PHYSIOGRAPHY AND CLIMATE

The area is characterized by moderate relief in the order of 360 metres between valley bottoms and hill tops. Slopes are generally moderate although some areas of the west and south slope of Red Dog Hill are precipitous. The main Red Dog mineralization crops out on the summit of Red Dog Knoll at an elevation of 470 metres.

With the exception of small areas adjacent to the Goodspeed River, the entire area of interest was clear-cut logged and replanted at various times over the past 60 years. Secondary growth is very dense, and movement through the bush away from abandoned roads or creek beds can be difficult particularly in areas of the most recent logging.

Climate in the area of the Property is typical of coastal areas of British Columbia with an annual precipitation of 3,911mm, and a daily average temperature of 8.8°C (Environment Canada, 1971-2000). Winters are very wet, with 75% of the annual precipitation occurring from October to March, mostly as rainfall at lower elevation (Holberg is at sea level), but with significantly increasing percentage of snowfall accumulation above 300 m elevation. Generally, exploration and development work is possible for most of the year, allowing for a long exploration field season.

4.0 HISTORY

The following history of exploration of the Red Dog Claims is taken from Richards (1990):

The Red Dog property is a geochemical find, having been first detected by a regional program in 1962. Follow-up on a 1962 anomaly during the 1966 field season led to the discovery of the mineralization in the bed of a creek and the subsequent staking of the Red Dog claims. Three holes were drilled with a winkie drill in 1967 but core recovery was very poor.

In 1968, a two stage drilling program was carried out; 1,722 metres in 20 holes, with a soil geochemistry survey run in between stages. In 1970 very-low frequency electromagnetic (VLF- EM) and ground magnetic surveys were completed. Four anomalies located in by the geophysical surveys were tested by 4 diamond drill holes totalling 453 metres The roads and creeks were geologically mapped. In 1972 the claims were optioned to Cities Services who remapped the property, relogged the previous drilling and drilled three holes totalling 903 metres. In 1973 Cities Services was joined by Westminex Development. A program of rock geochemistry and 7.7 km. of road l.P. survey were done. Three deep core drill holes were recommended as well as a line l.P. survey, but were not done.

In 1974 Westminex Development drilled the three core holes recommended in 1973, totalling 613 metres as well as 2 winkie holes.

The property was not worked again until 1982 when Utah Mines optioned it and completed the line I.P. work over the Red Dog hill as recommended in 1973, and 664 meters of core drilling in 6 holes in the first stage and 1,059 metres in 6 more holes plus one earlier one deepened. The final work program on the property by Utah Mines was a program of five core holes drilled in the fall of 1983, totalling 779 metres, to test various I.P. anomalies on the south slope of Red Dog hill. The I.P. anomalies were all found to be caused by a zone of advanced argillic alteration with associated pyrite.

In 1988 Crew Capital Corp. drilled 4 holes on Red Dog hill totalling 1041.8m to test the depth and eastern extent of the mineralization.

In 1989 Moraga Resources Ltd drilled 1850.6 m in 10 new holes, and in deepening one old hole, with the objective delineating the quartz-magnetite breccia on the Red Dog Hill zone.

A final drilling program was undertaken by Moraga in 1990 with the drilling of an additional 1240.88 m. Based on all of the previous drilling in the Red Dog Mineralized body, Richards estimated a resource for the Red Dog Deposit of 20 million tonnes grading 0.30% copper, 0.55 gpt gold and 0.012% molybdenum. This resource estimated pre dates National Instrument 43-101 and does not meet current standards of reporting resources. Additional work including re drilling of some holes would be required to confirm the estimate. Moraga completed a scoping study on the mineralization and concluded that the deposit might be feasible as a small open pit mine, but decided to return the property to its owner.

After Moraga relinquished its option, no work was carried out on the property until Northisle acquired an option on the property.

In March 2015, subsequently to optioning the property, Northisle carried out a program of soil and rock sampling and reconnaissance geological mapping on the property.

5.0 Geology

5.1 Regional Geology

The regional geology of the Rupert area was mapped by Nixon et al. (2006) and the following summary is a synopsis of Nixon's paper. Figure 3 shows the bedrock geology of northern Vancouver Island. Vancouver Island is comprised of Upper Paleozoic to Lower Mesozoic rocks of Wrangellia – a tectonostratigraphic terrane that occurs discontinuously northward as far as central Alaska. This terrane was amalgamated to the Alexander Terrane of the Alaskan Panhandle (together comprising the Insular Superterrane) by Late Carboniferous time. Subsequently, these terranes were accreted to North America between the Middle Jurassic and the mid-Cretaceous. Thus, Vancouver Island records an early allochthonous history, and a later history with commonality to the North American margin.

The pre-accretion history of Wrangellia is represented by the Paleozoic Sicker Group and the Middle Triassic Karmutsen Formation. The Sicker Group comprises marine Devonian to Early Permian volcanic and sedimentary rocks that host VMS deposits such as at Myra Falls. The Karmutsen conformably overlies the Sicker Group and comprises basaltic and minor sedimentary rocks that underlie about 50% of Vancouver Island. This unit is up to 6000 m thick. Richards et al. (1991) argued that the Karmutsen was initiated by, and extruded above a mantle plume and recent geochemical data support an oceanic plateau origin for the Karmutsen (Greene et al., 2006). The Karmutsen is in turn conformably overlain by the Quatsino Formation of limestone consistent with a period of quietude following impingement of a mantle plume.

The Bonanza Arc (DeBari et al., 1999) formed along the length of Vancouver Island during accretion of Wrangellia. Owing to later tiling, products of this arc from various crustal depths are all preserved. These include the Westcoast Crystalline Complex, Island Intrusions and the Bonanza Group volcanic rocks. DeBari et al. (1999) argue that all these components have similar ages and geochemical signatures and that they are therefore all products of a single arc. Ages for these rocks range from ca 190 to 169 Ma. Intrusive rocks of the Island Intrusions are responsible for porphyry copper mineralization on Vancouver Island.

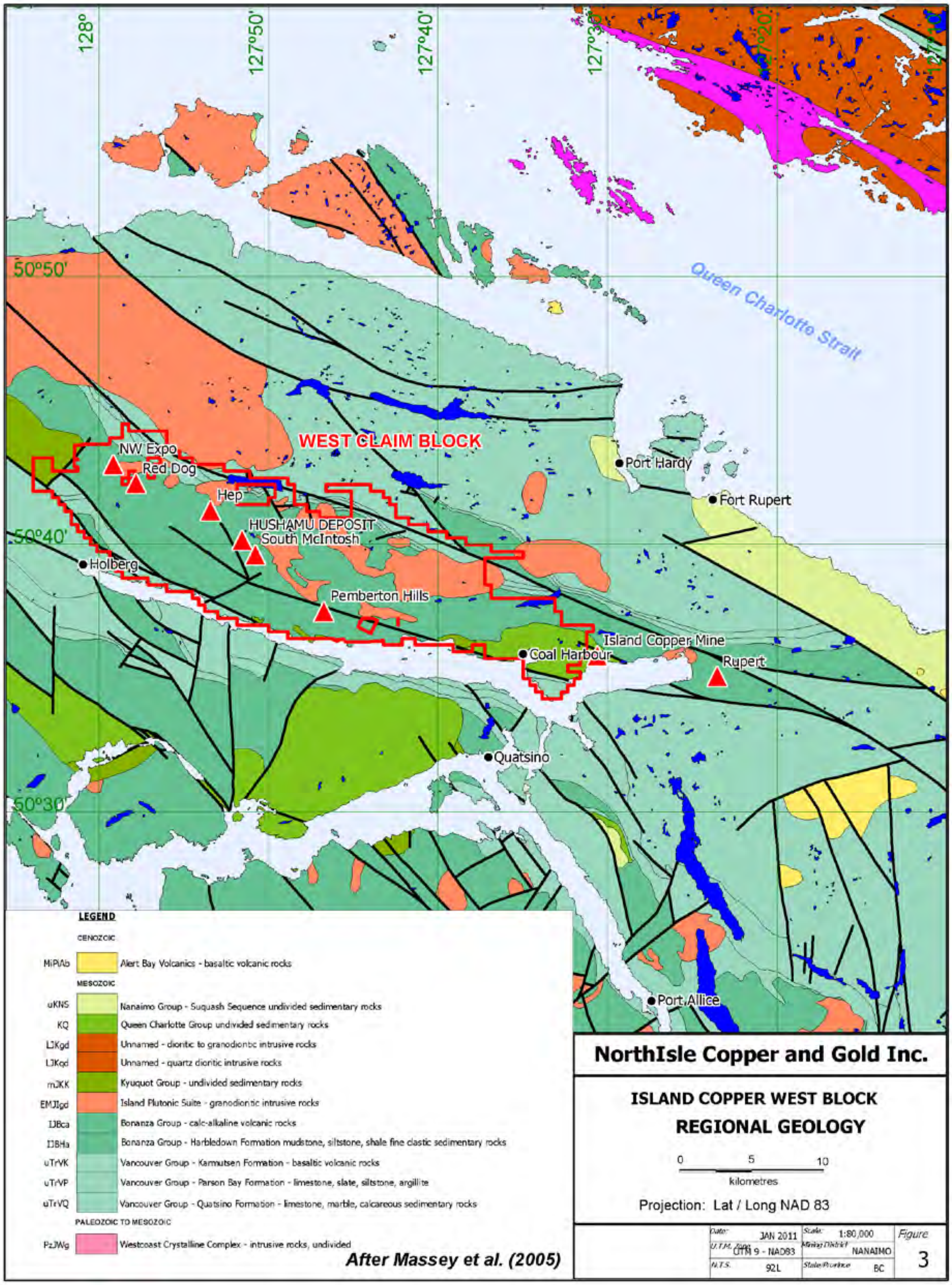


Fig. 3 Regional Geology

5.2 RED DOG GEOLOGY

5.2.1 Work Program

The geological mapping was carried out by John McClintock P. Eng and Blake Macdonald in the fall of 2015 during the periods September 27 through October 5, 2015 and November 15 to November 18, 2015. During both mapping campaigns, the crew stayed in Port Hardy and drove daily to the property.

The dense vegetation and current condition of the now decommissioned forestry roads made progress slow. The forestry access roads were zealously deactivated by Western Forestry Products in the early 2000s. In many places the roads were re-contoured. Subsequent regrowth of alder, salmon berries, salal and juvenile hemlock now make following the roads on foot difficult and slow. The pulling down of road banks has likely covered up many of the rock exposures previously present along the roads. Off of the roads, the type of vegetation depends on the age of the cut blocks. The easiest progress is in cut blocks greater than 30 years old. Here, the forest canopy has been re-established and there is little or no under growth. The canopy; however, cuts out much of the natural light making for twilight conditions and difficulty in proper identification of rocks and minerals. In cut blocks roughly 10 to 20 years old, travel is difficult and extremely slow. In many places, particularly where salal is the dominant undergrowth, progress can be measured in a few metres a minute. In these conditions, finding bedrock exposure is a matter of chance. Acting on the recommendation of one of the underlying owners, W. Botel P.Eng, it was found the best outcrop exposures are in the creeks. Progress on foot is generally much easier in the creeks because the heavy rains cause the creeks to flush debris from the creek beds and banks.

Plate 1: *Typical stream course showing bed rock exposure and little debris. During mapping these water courses provided the best rock exposures and easiest access through the property. Near Waypoint RM 88*

Location of outcrops was done with a Garmin HCx GPS unit. Accuracy of the location depended on the vegetation cover and ranged from +/- 3 m to +/- 12 m. The least accurate positioning was in areas where the forest canopy was re-established. Mapping traverses used the existing road network, stream channels and random traverses between creeks and the roads. The location of the waypoints are shown on Fig 4 and a listing of the geographical locations of the way points is in Appendix III.

The mapping program focused on extending mapping to the eastern part of the property; better understanding of the contact relationships between the various alteration types; and determining the relationship between the copper bearing mineralization and the intrusive bodies.

Location Way Points

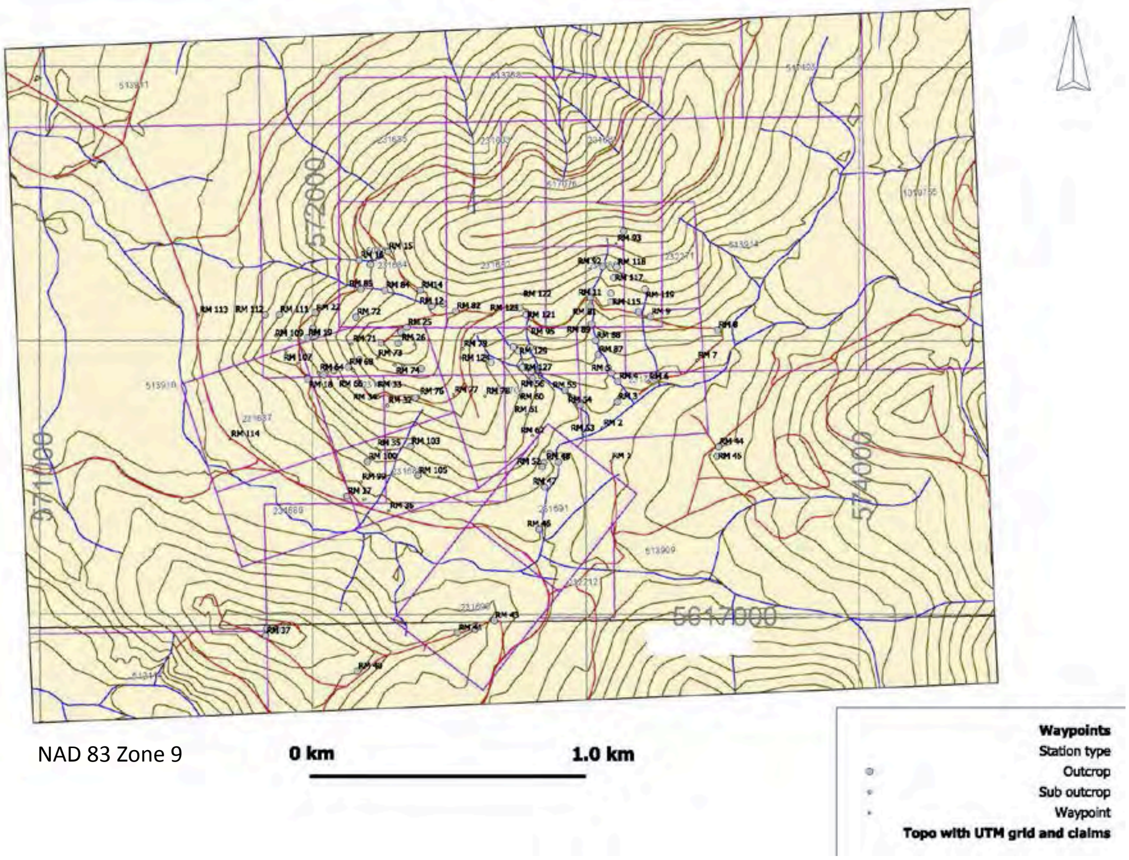


Fig. 4

To assist with characterization of rock and alteration types, 7 rock samples were selected for thin section analysis and 42 samples were analysed by TerraSpec X-ray diffraction. The Figures 5 and 6 show the site location of the thin section and TerraSpec samples. The geographic co-ordinates of the site locations of the thin section and TerraSpec samples are in Appendix III. A report by K Heberlein, P. Geo describing the results of the X-ray analysis is provided in Appendix II.

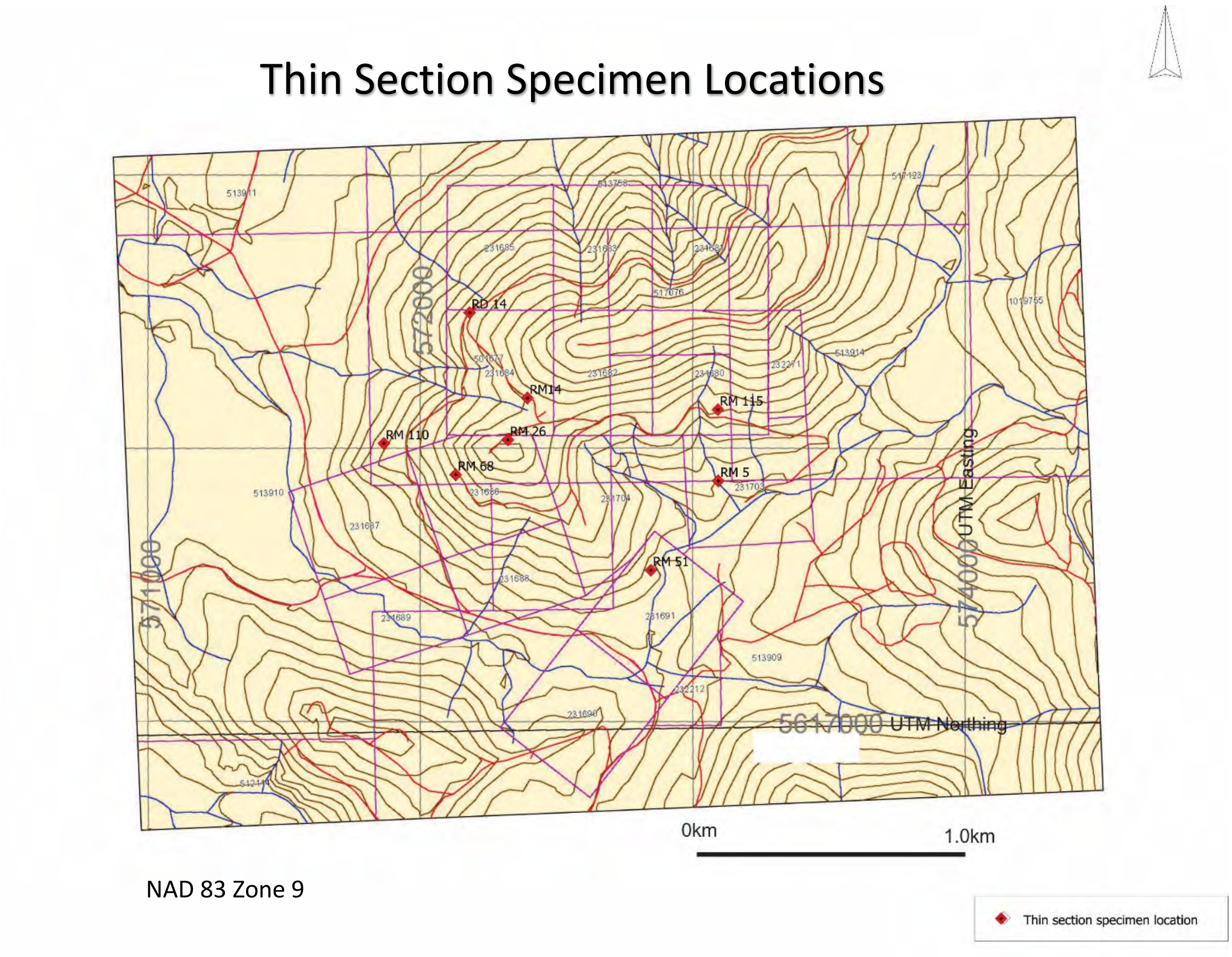

Thin Section Specimen Locations
RD 14
RM14
RM 115
RM 110
RM 26
RM 68
RM 5
RM 51
572000
571000
574000 UTM Easting
5617000 UTM Northing
0km
1.0km
NAD 83 Zone 9
Thin section specimen location

Fig. 5

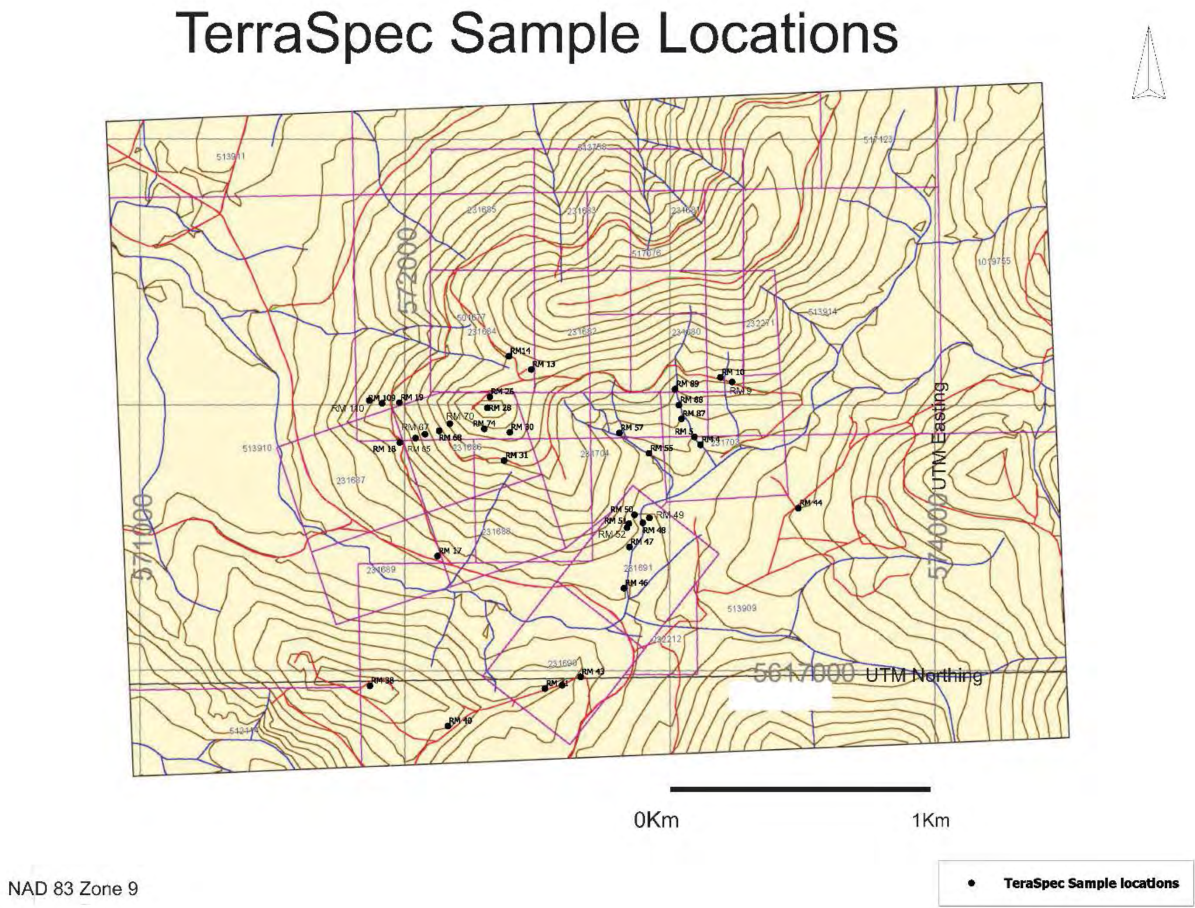


Fig. 6

5.2.2 Geology

The oldest rocks exposed on the Red Dog property are the lower Jurassic age Bonanza Group. These rocks underlie most of the southern portion of the claims and prior to alteration were dominantly of andesitic to basaltic andesitic composition (Fig. 7). Most of the volcanic rocks are auto brecciated flows, tuff-breccia and much lesser fine tuffs and very fine grained sills. Due to later alteration and the general monotonous makeup of the Bonanza Group rocks subdivision of the volcanic package was not possible at the scale of the mapping carried out. No conclusive bedding attitudes were found. Based on mapping by Nixon et. al. 2006, the Bonanza Group rocks in the area of Red Dog dip gently to the southwest.

Plate 2 Bonanza Group Auto Brecciated Flow near Waypoint 68

Intruding the Bonanza Group are four (4) intrusive events. The oldest is the Red Dog Intrusions of likely Jurassic age. This rock type crops out on Red Dog Mountain and forms a westerly trending elongate stock occupying the northern half of the property. Additionally to the main body, there are numerous apophyses of the Red Dog Intrusion cutting the Bonanza Group rocks. These range from a few metres to 10s of metres thick.

The Red Dog intrusive is invariably porphyritic ranging from a crowded (>50% phenocrysts) to sparse porphyritic texture (<25% phenocrysts) depending on the distance from its contact with the Bonanza Group rocks and dyke thickness. Where little altered, it consists of tabular phenocryst of plagioclase to 4mm, lesser finer grained hornblende and rounded quartz phenocrysts in a fine grained felted matrix of the same minerals. The rock contains less than 10% Kspar and best fits the tonalite classification. In the smaller bodies and close to the contacts of the main stock, the intrusion takes on a rose or pale salmon pink colour due to hematization of the feldspar. The contact of the main Red Dog Intrusion with the Bonanza is near vertical in the eastern part of the property; however, west of the prominent gully separating the main part of Red Dog Mountain and Red Dog Knoll the contact is a southwest dipping fault based on drill results reported by J. B. Richards in his 1991 and 1990 reports on drilling. It has been speculated in the past that the surface trace of the fault passes through the topographic depression separating the Red Dog Knoll from the main Red Dog Mountain. No surface evidence for this fault was observed by this year's mapping other than the topographic depression.

A second intrusion occurs in the south eastern part of the property. The rock is given the generic name Feldspar Porphyry as everywhere it is altered and occurs as a white to pale grey coloured rock comprised of tabular, 2 to 3 mm plagioclase phenocrysts in a fine grained felsic ground mass. The mafic mineral, which forms both 1-2m phenocrysts and part of the groundmass are completely altered to chlorite. Fine grained disseminated pyrite forms about 3% and is often oxidized to limonite. Quartz forms about 5% of the rock and is confined to the matrix. Based on the low Kspar content, the rock is classified as a diorite porphyry.

The Feldspar Porphyry is poorly exposed except in one creek where it forms a continuous outcrop for over 50 metres. Much of its assumed areal extent is covered by Quaternary lacustrine and sandy sedimentary rocks. If the Feldspar Porphyry is in fact a single body, its areal extend would be about 250 metres by 120 metres. It maybe; however, a number of smaller dyke – like bodies based on its matrix dominated character.

The third intrusion is located in the western part of the property on the flank of Red Dog Mountain. It forms a small stock like body that may extend to the southeast under the hill based on reported historical drill results by Richards, J.B. (1990, 1991). The intrusion is a medium grained hypidiomorphic granular textured quartz monzonite. It is the least altered of the intrusions and appears to postdate the mineralization. It has characteristic pink colour due to hematization of the Kspar. The contact between the quartz monzonite and Red Dog Intrusion is covered by Quaternary Sedimentary rocks and thus the relationship between the two intrusions is unclear. It may be that the fault identified in historical drilling separating the Bonanza Group from the Red Dog Intrusion also separates the quartz monzonite from the Red Dog Intrusion

The youngest intrusions are basalt dykes that for the most part trend westerly and are near vertical to steeping dipping both to the north and south. They are rarely more than 3 metres thick. The basalt dykes are very fine grained, dark grey to black in colour. The dykes are of uncertain age, but cut all rock types, They are not common and volumetrically unimportant.

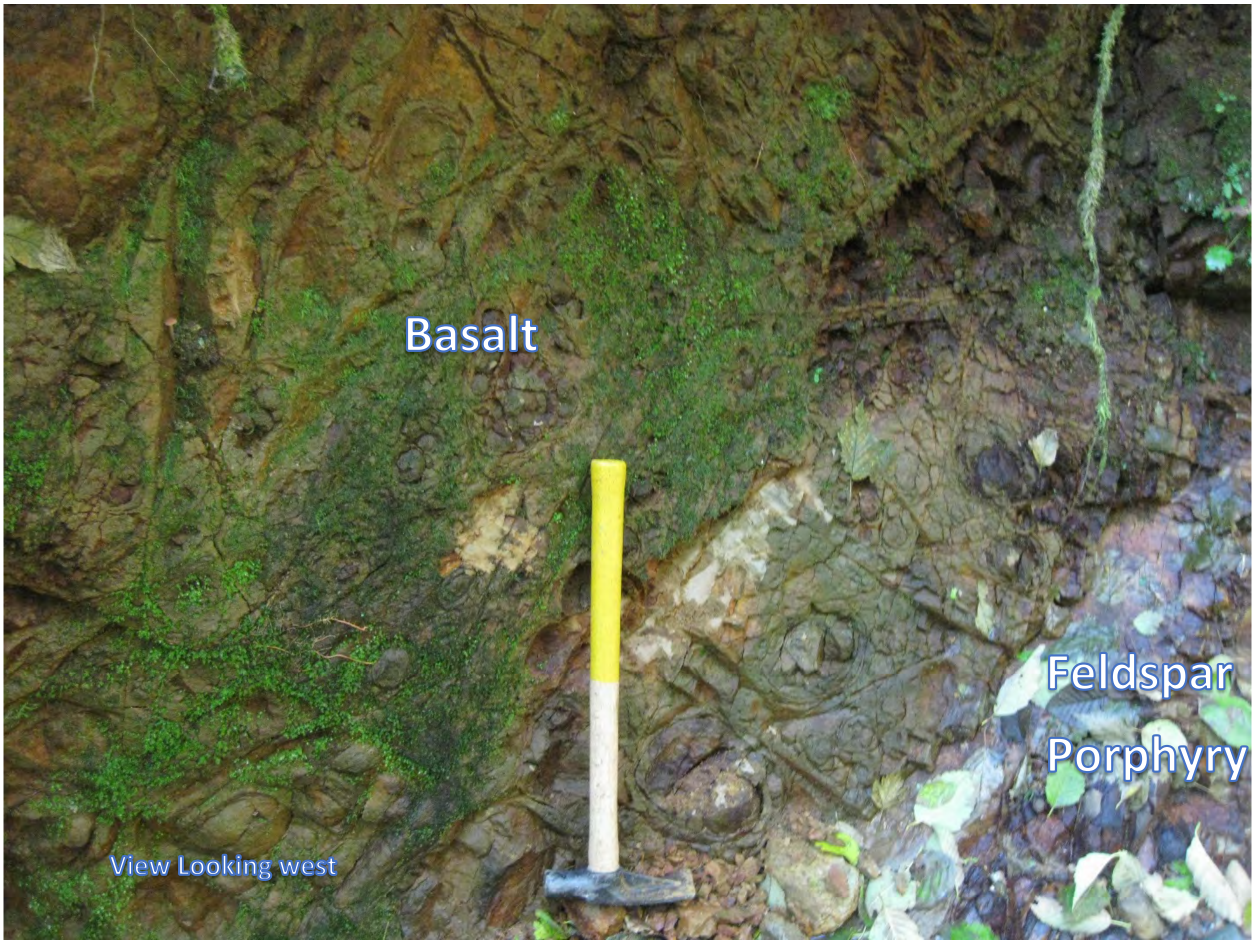


Plate 3: Basalt Dyke with characteristic orbicular weathering near Waypoint 56

The youngest unit is Quaternary semi consolidated siltstones, sandstones, conglomerates breccia and lacustrine clay. This unit rests on the basement units and is in turn overlain by younger glacial till. It forms apron-like benches on the lower to mid slopes of Red Dog Mountain and Knoll. Higher on the hillsides it is dominantly interbedded clast supported conglomerate, breccia, coarse sandstone with finer siltstone. The siltstones are clay rich and are probably responsible for the numerous slide events that have occurred both recently and in the past. The thickest sections occur in the stream basin of the northwest side of Red Dog Knob and the upper and lower southeast slopes of Red Dog Knob. The thickness of the Quaternary Sedimentary rocks is variable ranging from a few metres to over 10 metres.

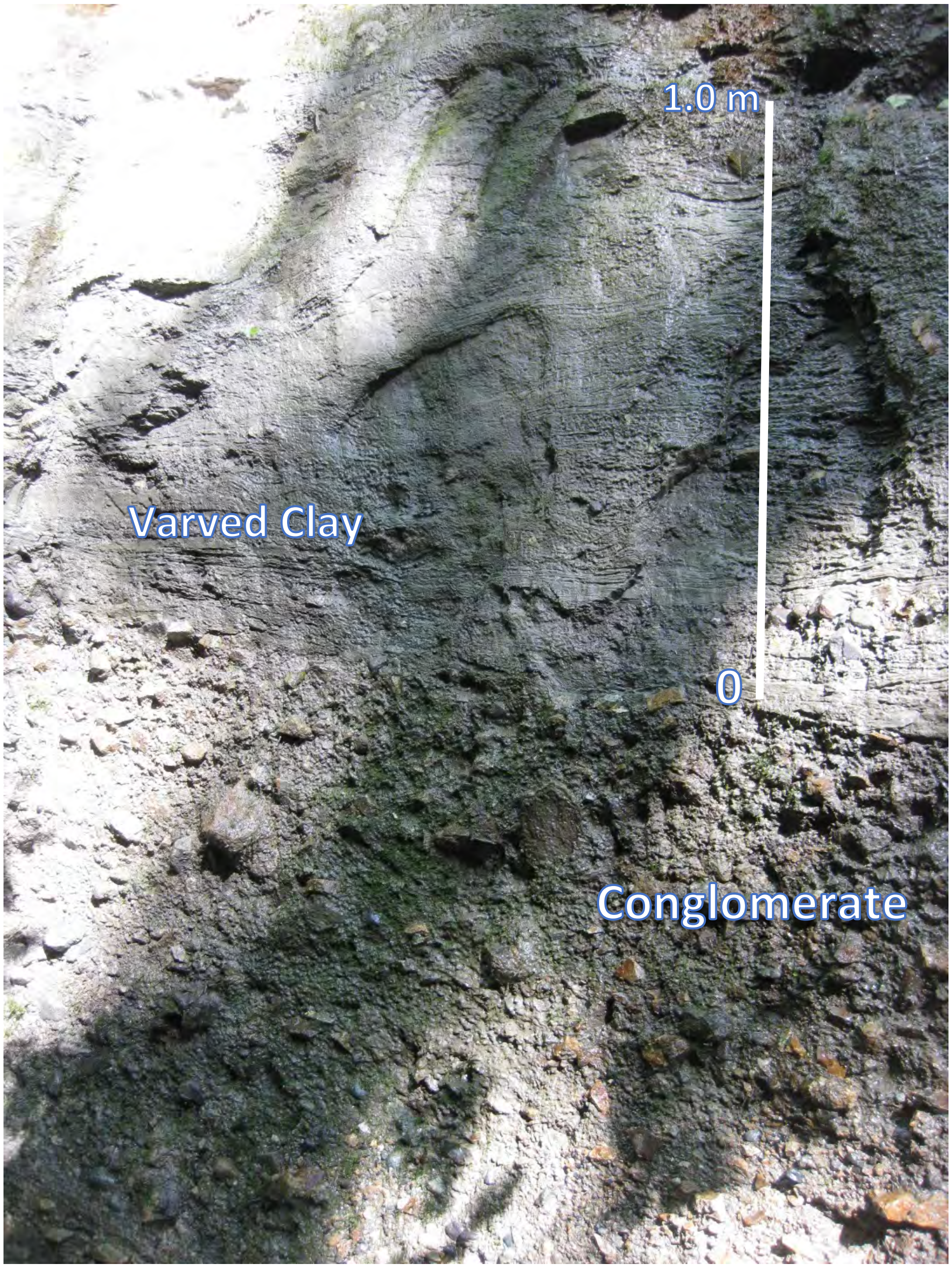


Plate 4: Quaternary varved clays overlying conglomerate near Waypoint 55

5.2.3 Alteration and Mineralization

There are six principal alteration types present of the property (Fig. 8). These are from oldest to youngest: Hornfels (H); Intermediate Argillic (CMG); Quartz- Magnetite Breccia (QMB); Advanced Argillic (SCP); Propyllitic (PROP); and Zeolite- Carbonate.

The Hornfels facies alteration forms a band of alteration within the Bonanza Group rocks approximately 300 metres wide parallel to the contact with the Red Dog Intrusive. Within the contact metamorphic band the andesite has been thermally altered to an assemblage of albite, actinolite, biotite and lesser chlorite.

Spectral analysis found minor amounts of scapolite. Magnetite primarily as disseminated grains is ubiquitous. Minor pyrite is present as hairline width fracture filling. The rock is very fine grained, very well indurated and most primary textures are destroyed.

The Hornfels is best developed in the eastern part of the Red Dog intrusive – Bonanza Group contact. To the west, the hornfels becomes overprinted with intermediate argillic alteration referred to by its property name as CMG. The transition zone is marked by inter fingering of the CMG alteration along more porous volcanic units such as tuffs and breccias as well as along fracture zones. Remnants of the earlier hornfels alteration persist to the west side of the property within more massive and less fractured units of the Bonanza. On figure 8, the contact between the two units is marked where CMG dominates over hornfels as the prominent alteration type.

The CMG alteration based on the TerraSpec and thin section analysis is characterized by pervasive replacement of the primary mafic minerals and plagioclase by sericite, chlorite, quartz and secondary magnetite. Quartz occurs both as pervasive replacement and as veins. Magnetite occurs as pervasive alteration and as secondary veins. Associated with the CMG alteration is pyrite with variable amounts of chalcopyrite. Chalcopyrite is generally in areas of the most intense alteration especially where secondary quartz is present as veins. For the most part, CMG alteration is restricted to the Bonanza Group rocks and does not extend into the Red Dog Intrusion dykes more than a few metres. It appears that the fluids responsible for the alteration were limited to the fractured contacts of the dykes suggesting that the dykes predate the mineralizing event.

The Quartz Magnetite Breccia forms a 350 metre by 150 metre wide, west north-west trending body. To the south and east the breccia is gradational into intense CMG alteration. To the north, J. B. Richards (1991), reports the Quartz Magnetite Breccia is in fault contact with the Red Dog Intrusion. Traverses over the north contact found the projected area of the fault to be covered by overburden and post mineralization Quaternary sedimentary rocks. The fault therefore could not be confirmed by the 2015 mapping. To the west, the breccia appears to thin before it disappears beneath glacial till. The Quartz Magnetite Breccia is mainly hosted in the Bonanza andesite, but does extend in to dyke margins of the Red Dog intrusion.

The Quartz Magnetite Breccia is predominantly quartz supported fragments replaced by silica, magnetite with lesser chlorite and sericite. Chalcopyrite and pyrite in equal amounts are present in the breccia.

Advanced argillic alteration referred to as SCP forms a large area mainly to the south of the CMG alteration. This alteration is primarily hosted in the Bonanza rocks although it locally extends into dykes of the Red Dog Intrusion and into the contact areas of the Feldspar Porphyry.

Based on the TerraSpec analysis supported by thin section examination of SCP samples, the main alteration minerals are pyrophyllite, diaspore, pervasive silicification, kaolinite and pyrite. Topaz and alunite are also noted both in the fall collected samples and from a sample of SCP collected during the spring work program.   Zunyite, found in sample collected in the Spring, was not noted in this program.

The reconnaissance mapping in April 2015 concluded that the contact between the CMG and SCP alteration was structurally controlled. The more detailed mapping of the fall did not confirm the fault nature of the contact. As in the case of the CMG overprint on the Hornfels alteration, the contact is an area of over printing of the CMG by SCP where the younger alteration follows fracture zones and more permeable pyroclastic units of the Bonanza Group. The contact is much sharper than that between the Hornfels and the CMG. The transition between the CMG and the SCP occurs within a distance of 10 to 15 metres based on exposures in the creeks draining the south slope of Red Dog Mountain.

The SCP alteration occurs over a broad area of the southern half of the property. In areal extent, it is the most prominent alteration type on the property. The SCP is transitional to the south and southwest in to Propyllitic alteration.

Propyllitic alteration on the property varies in composition depending on the host rock. It the Bonanza Group rocks is consists of extensive chloritization of the primary mafic minerals, epidote and pyrite generally occurring in cross cutting fractures. In the intrusions, it consists of incipient to complete chloritization of the mafic minerals and incipient sauceritization and sericitization of the plagioclase phenocrysts. Intensity of the alteration is dependent on the distance from the contact with the Bonanza Group rocks. Pyrite in the intrusions is generally as disseminations with minor dry fracture fillings.

The youngest alteration is a zeolite – carbonate alteration consisting of late veins cutting all rock types. The principal zeolite is laumontite. The carbonate mineral occurring with the zeolite is often pale pink in colour.

6.0 CONCLUSIONS

The Red Dog Property is underlain by a monotonous sequence of andesitic to basaltic flows, tuff-breccias and tuffs of the lower Jurassic-age Bonanza Group that have been intruded by three compositionally different intrusions. The largest and presumed oldest intrusion is the Red Dog Intrusion and its related dykes which form a greater than 1km by 0.5 km body occupying the northern part of the property. The Red Dog Intrusion is tonalitic in composition and is everywhere porphyritic. Intrusion of the Red Dog Intrusion hornfelsed a 300 metre zone of the Bonanza Group along the southern contact. In the central and eastern part of the property, the contact between the Red Dog Intrusion and the Bonanza Group appears vertical. Based on historical drilling, the contact west of the gully between Red Dog Mountain and Red Dog Knoll is a is a moderately southwesterly dipping, west northwest striking fault separating the Red Dog Intrusion from the Bonanza Group rocks.

Two smaller intrusions; a quartz monzonite and a diorite porphyry are located in the western and southeastern part of the property respectively. The quartz monzonite intrusive relatively fresh and is reported to cut mineralization (Richards, J.B. ,1991 & 1990). The diorite porphyry is the most extensively altered of the intrusions; however, it is much less altered than the enclosing Bonanza rocks. The more intense alteration of the Feldspar Porphyry may be a function of its small size, more fractured contacts allowing hydrothermal fluids more ready access to the interior of the intrusion.

The main porphyry related alterations are CMG (intermediate argillic), QMB (quartz magnetite breccia) and SCP (advanced argillic alteration) and Propyllitic alteration. These alterations postdate the Red Dog Intrusion and the diorite porphyry, but predates the quartz monzonite porphyry. The QMB and CMG alteration are the most economically important alterations and contain the best copper mineralization. The CMG alteration over prints the older hornfels and is in turn over printed by the SCP alteration. No confirmation of a fault separating the CMG alteration from the SCP was found.

The combined CMG and SCP alteration zone is of significant size measuring more than 1. 5 km by 0.75km. The area of most economic importance to Northisle Copper and Gold Inc. remains the 300m by 150m area of QMB where past work identified a historical resource of copper and gold. Nevertheless, the broad area of advanced argillic alteration remains a valid secondary target for a more deeply buried copper – gold mineralization.

7.0 RECOMMENDATIONS

The historical resource associated with the QMB and adjacent CMG alteration should be verified by a number of drill-holes. As no historical core remains, only a portion of the drill holes have original assay sheets and there was no QA / QC carried out during the historical drilling, it estimated at least 10 holes will need to be re drilled.

It is also recommended that 3 deep holes be drilled on the south and southeast flank of Red Dog Knoll. Drilling holes of 400 metres length at each of the historical holes DDH 145, 146 and 148 is recommended.

8.0 STATEMENT of COSTS

Preparatory Work

September 15 through 18		
J. McClintock: Planning / Maps / Supplies 3hrs@ $125/ hr		**$ 375.00**
Field Related		
John McClintock P. Eng: Mapping, Sampling, Supervision		
Sept 27 through Oct 5: 68hrs @ $125 / hr	$8,500.00	
Nov 15 to 18: 16hrs @ $125 / hr	$2,000.00	
Blake Macdonald BSc. Sampling, mapping, site logistics		
Sep 27 through Oct 5: 9 days @ $600 / day	$5,400.00	
Nov 15 to 18: 4 days @ $600 / day	$2,400.00	
Accommodation Port Hardy	$1,350.00	
Thin sections	$ 225.75	
Meals Port Hardy & Holberg	$ 768.09	
Truck and fuel, 13 days @ $75 per day	$975.00	
TerraSpec analysis K Heberlein	$1,480.19	
		$23,099.03
Report Preparation		
J. McClintock P.Eng January 4-Feb 12, 12hrs@$125/hr	$1,500.00	
		$1,500.00
Total Expenditures		**$24,975.03**

9.0 REFERENCES

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10.0 CERTIFICATION

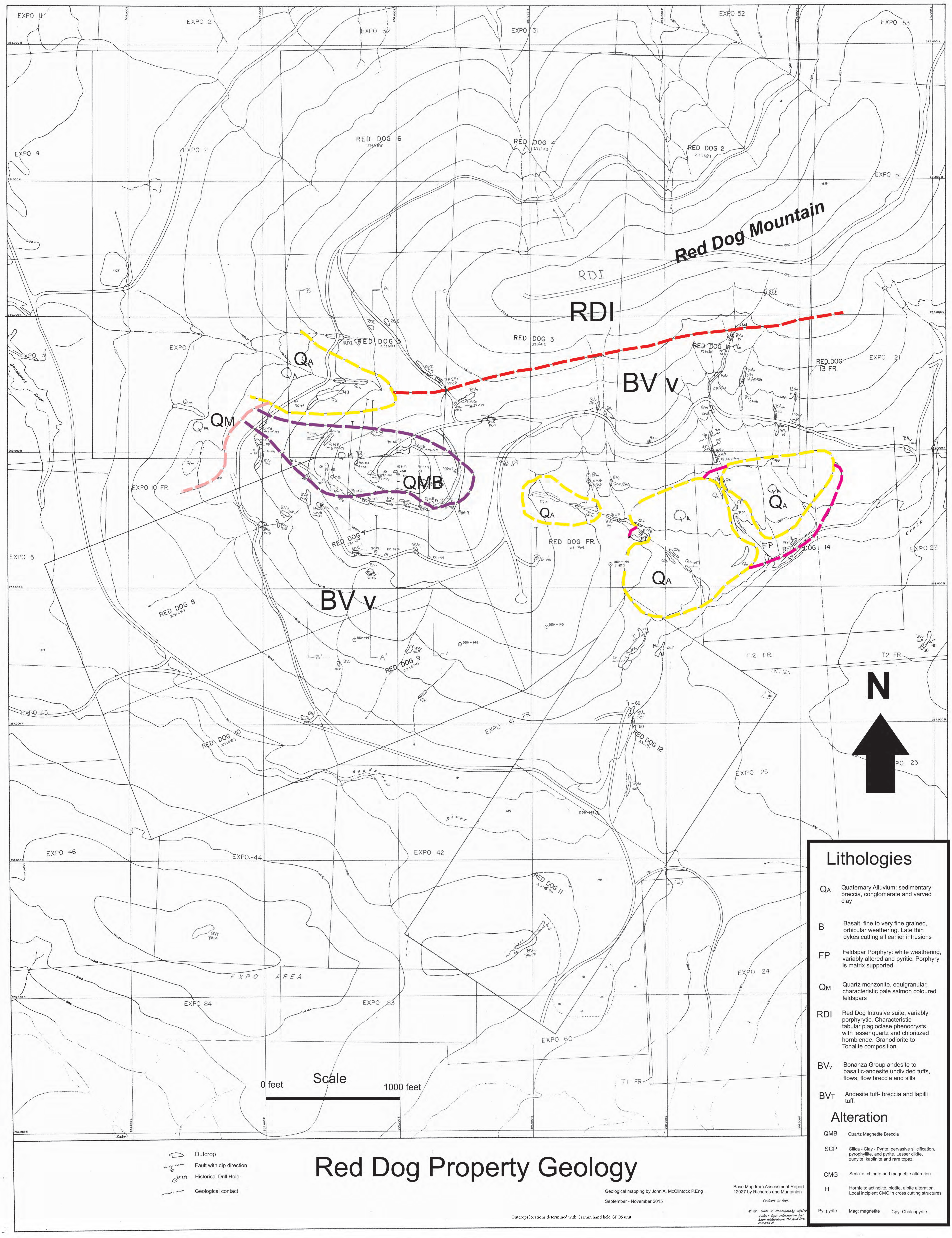
I, John McClintock, residing at 902 – 1470 Pennyfarthing Drive, Vancouver, British Columbia, do hereby certify that:

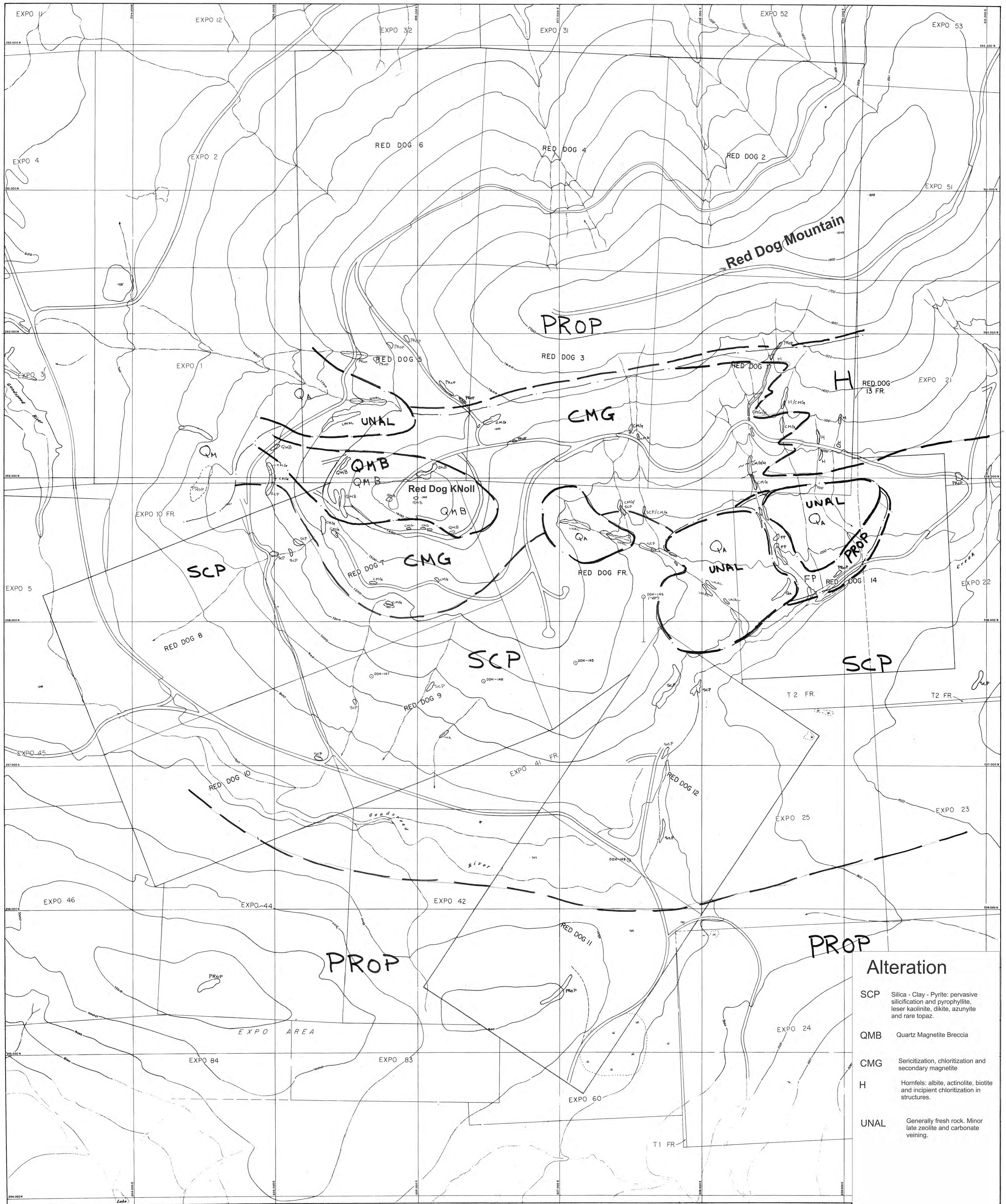
1. I am a consulting Geologist;
2. I obtained a BSc (Hons) from the University of British Columbia in 1973 and an MBA from Simon Fraser University in 1989;
3. I have continually practised my profession as a geologist since 1973;
4. I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia registration number 12078;
5. I visited the property from September 27 to October 5, 2015 and from November 15 through November 18, 2015 and supervised the work carried out on the property;
6. I own shares and have share options in Northisle Copper and Gold Inc. and am the President of the company.

Dated at Vancouver, British Columbia, January 14, 2015

Appendix 1

Geology and Alteration Maps


Red Dog Mountain
RDI
BV v
QMB
QM
QA
FP
RED DOG 6
RED DOG 4
RED DOG 2
RED DOG 3
RED DOG 5
RED DOG 8
RED DOG 9
RED DOG 10
RED DOG 11
RED DOG 12
RED DOG 13 FR.
RED DOG 14
RED DOG FR.
EXPO 1
EXPO 2
EXPO 3
EXPO 4
EXPO 5
EXPO 10 FR.
EXPO 11
EXPO 12
EXPO 21
EXPO 22
EXPO 24
EXPO 25
EXPO 31
EXPO 32
EXPO 41 FR.
EXPO 42
EXPO 44
EXPO 45
EXPO 46
EXPO 51
EXPO 52
EXPO 53
EXPO 60
EXPO 83
EXPO 84
EXPO AREA
T1 FR.
T2 FR.
Goodspeed River
N
Scale
0 feet
1000 feet
Lithologies
QA Quaternary Alluvium: sedimentary breccia, conglomerate and varved clay
B Basalt, fine to very fine grained, orbicular weathering. Late thin dykes cutting all earlier intrusions
FP Feldspar Porphyry: white weathering, variably altered and pyritic. Porphyry is matrix supported.
QM Quartz monzonite, equigranular, characteristic pale salmon coloured feldspars
RDI Red Dog Intrusive suite, variably porphyrytic. Characteristic tabular plagioclase phenocrysts with lesser quartz and chloritized hornblende. Granodiorite to Tonalite composition.
BVV Bonanza Group andesite to basaltic-andesite undivided tuffs, flows, flow breccia and sills
BVT Andesite tuff- breccia and lapilli tuff.
Alteration
QMB Quartz Magnetite Breccia
SCP Silica - Clay - Pyrite: pervasive silicification, pyrophyllite, and pyrite. Lesser dikite, zunyite, kaolinite and rare topaz.
CMG Sericite, chlorite and magnetite alteration
H Hornfels: actinolite, biotite, albite alteration. Local incipient CMG in cross cutting structures
Py: pyrite
Mag: magnetite
Cpy: Chalcopyrite
Outcrop
Fault with dip direction
Historical Drill Hole
Geological contact
Red Dog Property Geology
Geological mapping by John A. McClintock P.Eng
September - November 2015
Base Map from Assessment Report 12027 by Richards and Muntanion
Contours in feet.
Note: Date of Photography 13/8/79
Latest topo information has been added above the grid line 254 800 N
Outcrops locations determined with Garmin hand held GPOS unit



Outcrop

Alteration Contact

Lithology Contact

Red Dog Alteration Map

Geological mapping by John A. McClintock P.Eng

Base Map from Assessment Report 12207 by Richards & Muntanion

Contours in feet.

Outcrops located with hand held Garmin GPS

Appendix II

Report by K. Heberlein P.Geo

Kim Heberlein
21146 Stonehouse Avenue
Maple Ridge, B.C.
Canada V2X 8L9
Cell: 778-228-5231
Tel: 604-466-2087

29th October 2015

Northisle Copper and Gold Inc
1800 – 570 Granville Street
Vancouver, BC
V6C 3P1

Attn: Jack McClintock
Re: TerraSpec Analysis (KH224/Red Dog)

TerraSpec spectral analysis was run on 41 grab samples from the Red Dog area of Vancouver Island. A minimum of two readings were taken off each sample. Spectral quality ranged from weak and noisy to excellent. Some spectra were noisy due to the presence of abundant disseminated sulphides. The results are on the attached Excel sheet.

Minerals identified include illite, smectite, kaolinite, chlorite, amphibole, pyrophyllite, dickite, diaspore, topaz, gypsum, zeolite, prehnite, epidote, jarosite, Fe oxyhydroxides, probable gypsum, silica, scapolite, and alunite. Alteration could be described as ranging from propylitic to argillic to advanced argillic.

Smectite is montmorillonite and is the most common alteration mineral present.

Illite mainly appears to be of “normal” composition but ranges to high Al (RM044, probably 052) and low Al bearing compositions (RM026).
Crystallinity varies from smectite-illite to highly crystalline (e.g. RM019, 26, 68, 74)

Pyrophyllite is present in several samples, with diaspore and kaolinite and/or dickite (e.g. RM017).

Topaz is present in one sample (RM017) with pyrophyllite, diaspore and kaolinite/dickite.

Alunite is weakly suggested in one sample (RM051), present with pyrophyllite+kaolinite+diaspore. Composition is sodic as indicated by the 1400nm feature (see Alun_wave).

Amphibole spectra are somewhat noisy but appear to be likely actinolite (e.g RM009, RM088).

Chlorite composition ranges from intermediate Fe-Mg to Fe-rich.

Zeolite spectra are uncomplicated, similar to e.g. laumontite (RM107)

A couple of samples (RM010, 31) show what appears to be either a mix of prehnite and smectite, or possibly scapolite. Absorption features are not distinct enough to narrow it down (see Figures 1 through 3). Features at 1477nm and 2357nm are consistent with either. Prehnite with montmorillonite seems more likely given their presence in other samples; however, the mizzonite scapolite reference spectrum is a very slightly better match. If so this would indicate a higher temperature alteration. Epidote is also identified in RM010.

The weak gypsum features from sample RM004 may be due to anhydrite.

Jarosite is present on a leached surface in sample RM019b, which is otherwise aspectral.

Fe oxyhydroxides include goethite and hematite.

Silica is not infrared active but is suggested by the presence of large water features in the spectra.

If you have any questions regarding this analysis, please don't hesitate to contact me.

Best Regards

Kim Heberlein, P.Geo.
kimheberlein@telus.net

TerraSpec SPECTRAL ANALYSIS
Red Dog (KH224)

SAMPLE ID	1400 WAVE	2200 WAVE	2250 WAVE	2300 WAVE	AMPH WAVE	Fe E_WAVE	White Mica XLN	White mica:Chl-Ca	HiX ILL	ILL	SMEC	KAO	CHL	EPID	CAR	AMPH	ALUN	DIK	PYRO	DIA	TOP	GOE	HEM	JAR	SIL	GYP/ANH	ZEO	PREH	SCAP	COMMENTS	Mineral ID_1	Mineral ID_2	Mineral ID_3
RM004.000		2199.8	2249.9	2344			0.378	1.86			X	q	x													tr				Grey/white mottled, hard, fine diss sus	Montmorillonite	Int FeMg Chlorite	Tr Kaolinite
RM004.001		2203	2250	2352			0.343	2.381			X	tr	x													tr				Grey/white mottled, hard, fine diss sus	Montmorillonite	Int FeMg Chlorite	Tr Kaolinite
RM004.002		2203	2249.7	2350			0.57	1.703			X		x																	lim fract	Montmorillonite	Int FeMg Chlorite	
RM005.000		2209	2260	2360			0.177	1.122			X		x																	chalky offwhite fs in gy mx/feox fract	Montmorillonite	Fe Chlorite	
RM005.001	1432	2206	2261				0.0776	1.364			X		tr														x			Offwhite chalky fract	Montmorillonite	Zeolite	
RM009.000		2213	2251	2322	2385		0.219	0.196			x		X			x														Dk gnbk, vfg dense heavy. Weak. Very noisy upper waves. Probable amphibole (actinolite?)	Int FeMg Chlorite	Amphibole	
RM009.001			2253	2332	2385		0.0354	0.149					x			x									q					Dk gnbk, vfg dense heavy. Large water feature.	Int FeMg Chlorite	Amphibole	
RM010.000	1477	2208	2302	2356	2390		0.179	0.259																				q	X	Lt gygn fg mod hard, heavy. FG diss sus	Scapolite		
RM010.001		2205.7	2254.1	2345			0.153	0.279			X			x													q			Lt gygn fg mod hard, heavy. FG diss sus	Montmorillonite	Epidote	
RM013.000		2208.4	2251	2341	2390		0.323	0.804			X	x	x			p														Lt gygn/brown mottled vfg hard HF. Noisy weak spectra	Montmorillonite	Int FeMg Chlorite	Amphibole?
RM013.001		2209		2340			0.412	0.924			X		p		q	q														Lt gygn/brown mottled vfg hard HF. Noisy weak spectra. Noncalc.	Montmorillonite		Chlorite?
RM014.000		2207	2251	2344			0.448	0.957			X	tr	x																	Offwhite fs in grey qf gm, f diss sus	Montmorillonite	Int FeMg Chlorite	Tr Kaolinite?
RM014.001		2207	2251	2344			0.404	1.263			X	tr	x																	Offwhite fs in grey qf gm, f diss sus	Montmorillonite	Int FeMg Chlorite	Tr Kaolinite?
RM017.000		2209						5.175				X						tr	q	x										bngy fg massive/ochre frac throut	Kaolinite	Diaspore	Tr Dickite
RM017.001		2209					2.266	3.289				x						q	X	x	x									ochre sfce	Pyrophyllite	Kaolinite	Diaspore
RM017.002		2208.6						5.149				x						q	X	x	X									white dusty sfce	Topaz	Pyrophyllite	Diaspore
RM018.000		2168		2322						q		x							X	x										Gy hard, white dusty altn	Pyrophyllite		Kaolinite
RM018.001		2068		2322						q		x							X	x										white dusty sfce	Pyrophyllite	Diaspore	Kaolinite
RM019.000		2199.6		2350			1.273	2.585		X															p					Gybn mottled hard HF, fine white dusty altn	Illite		Silica?
RM019.001		2199.7		2350			1.952	2.279	X																p					Gybn mottled hard HF, fine white dusty altn	Illite_HiX		Silica?
RM019b.001		2211.2	2264				0.468																	x	p					Partly leached bx?	Jarosite		Silica?
RM019b.002		2210					0.519	1.312				q													p					Bx? Dk gy masses in bn gy silic gm, fdiss sus to semi mass	Silica?		Kaolinite?
RM026.000		2213.2	2255	2356			1.709	1.258	X			tr	x												q					Med gngy fg mass, mod hard. Weak noisy spectra. Low Al illite (phengite?)	Illite_low Al	Fe Chlorite	Silica?
RM026.001		2211	2250	2354			1.739	0.808	X				x												q					Med gngy fg mass, mod hard. Weak noisy spectra	Illite_low Al	Int FeMg Chlorite	Silica?
RM028.000		2203	2254.5	2355			0.839	0.829		x			x																	Gnbk to mass gn, abundant sus. Weak noisy spectra	Fe Chlorite	Illite	
RM028.001		2196	2225				0.916	1.238		q																				Gnbk to mass gn, abundant sus. Weak noisy spectra	Aspectral		
RM030.000		2206	2253	2343			0.47	0.705			x	x	X	q																Gngy/brown mottled massive mod hard	Int FeMg Chlorite	Montmorillonite	Kaolinite
RM030.001		2207	2253	2338			0.485	0.534			x	x	X	q																Gngy/brown mottled massive mod hard	Int FeMg Chlorite	Montmorillonite	Kaolinite
RM031.000	1477	2209		2357			0.365	0.566			X																	x	q	Dk gy/gngy fg massive hard, lt pkor fract. Noisy upper waves. 1477/2357 most likely prehnite?	Montmorillonite	Prehnite	

X=major component;x=minor component;tr=trace;p=probably present;q=questionable

K. Heberlein

TerraSpec SPECTRAL ANALYSIS
Red Dog (KH224)

SAMPLE ID	1400 WAVE	2200 WAVE	2250 WAVE	2300 WAVE	AMPH WAVE	Fe E_WAVE	White Mica XLN	White mica:Chl-Ca	HiX ILL	ILL	SMEC	KAO	CHL	EPID	CAR	AMPH	ALUN	DIK	PYRO	DIA	TOP	GOE	HEM	JAR	SIL	GYP/ANH	ZEO	PREH	SCAP	COMMENTS	Mineral ID_1	Mineral ID_2	Mineral ID_3
RM031.001	1426																										X			Pk orange fract coating	Zeolite		
RM038.000		2204	2251	2347			0.766	1.895		q	X		x																	Lt gngy fg mass mod soft, wh & or speck & fracts	Montmorillonite	Int FeMg Chlorite	
RM038.001		2207	2254	2348			0.739	1.559		p	X	tr	x																	Lt gngy fg mass mod soft, wh & or speck & fracts	Montmorillonite	Int FeMg Chlorite	Tr Kaolinite
RM040.000		2212	2257	2357		772	0.253	1.766			X	tr	x									x								White chalky fs in bn gy/feox gm	Montmorillonite	Fe Chlorite	Goethite
RM040.001	1433	2212					0.0541	1.716			x																X			white fract coating	Zeolite	Montmorillonite	
RM041.000		2168		2322								x						q	X						p					lt bngy hard, f white speckled altn. Weak leaching. Feox fracts. More likely kaolinite than dickite?	Pyrophyllite	Kaolinite	Silica?
RM041.001		2168		2322								x						q	X											lt bngy hard, f white speckled altn. Weak leaching. Feox fracts	Pyrophyllite	Kaolinite	
RM041.002		2166		2322		755	0.854	1.846				x						q	X			x	p							Lim fract	Pyrophyllite	Kaolinite	Goethite
RM042.000		2206	2251	2351		755	0.564	3.496		x	X	tr	p									x								Lt gy mod hard fg, abund feox	Montmorillonite	Illite	Tr Kaolinite
RM042.001		2207	2251	2351		763	0.479	2.947		p	X		x									x								Lt gy mod hard fg, abund feox	Montmorillonite	Int FeMg Chlorite	Goethite
RM043.000	1433						0.0278	0.445																			X			Lt gngy mod hard fg,ochre speckled, feox fract, leached	Zeolite		
RM043.001	1433		2255	2344			0.0183	0.259					p														X			Lt gngy mod hard fg,ochre speckled, feox fract, leached	Zeolite		Fe Chlorite?
RM044.000		2196	2254	2344			1.005	1.205		X			X																	Lt gngy mod hard fg,ochre speckled. Fdiss sus	Illite_Hi Al	Int FeMg Chlorite	
RM044.001		2196	2253	2346			1.27	2.403		X			x																	White earthy fract	Illite_Hi Al	Int FeMg Chlorite	
RM046.000		2168		2325		757	1.108	4.106		q		x						tr	X	x		x								Gy hard mass, abund white/or fracts & masses	Pyrophyllite	Kaolinite	Diaspore
RM046.001		2208.6		2322		760	2.476	3.248		q		X						tr	X	x		x								White mass	Pyrophyllite	Kaolinite	Diaspore
RM047.000		2168		2322		784				x	x	p							X			x								Lt gn gy massive mod soft	Pyrophyllite	Illite	Goethite
RM047.001		2168		2322						x	x		tr						X											Lt gn gy massive mod soft	Pyrophyllite	Illite	Tr Chlorite?
RM048.000		2207	2254			748	0.0666	0.766			x												x				X			Gngy fg mod hard	Zeolite	Montmorillonite	Tr Chlorite?
RM048.001		2207	2254	2357			0.169	1.203			X		x																	Gngy fg mod hard	Montmorillonite	Int FeMg Chlorite	
RM049.000		2208.4					2.216	3.903				X						x	p	x										Lt gn gy massive mod soft. Sharp 2168nm likely pyrophyllite.	Kaolinite	Dickite	Diaspore
RM049.001		2208.7					8.018	6.483				X						x	p	x										Lt gn gy massive mod soft. Sharp 2168nm likely pyrophyllite.	Kaolinite	Dickite	Diaspore
RM050.000		2209		2322			8.786	4.207				x						X	x	x										Gy hard/white dusty altn throught, feox	Kaolinite	Pyrophyllite	Dickite
RM050.001		2209	2258.7			769	5.717	3.552				x						X	x	x		x								Gy hard/white dusty altn throught, feox. Whiter sfce	Dickite	Pyrophyllite	Diaspore
RM051.000	1491	2168		2320								x					tr		X	x	q									Pale bngy fg variably soft. Dusty white altn	Pyrophyllite	Kaolinite	Diaspore
RM051.001	1490	2168		2320								x					q		X	x										Pale bngy fg variably soft. Dusty white altn	Pyrophyllite	Kaolinite	
RM052.000		2169	2245.7	2322		776				p		x							X			x			p					Lt bngy mod hard, offwhite dusty altn, FeOx fracts. Small feature at 2197nm may be illite (paragonite)?	Pyrophyllite	Kaolinite	Illite_Hi Al?
RM052.001		2168		2322								x							X											White fract	Pyrophyllite	Kaolinite	
RM052.002		2168		2322		797						x							X						p					weathd qv	Pyrophyllite	Kaolinite	Silica?
RM055.000		2206	2253	2350			0.91	1.203		q	X		x																	white fs/frags? In gngy soft gm	Montmorillonite	Int FeMg Chlorite	
RM055.001		2207	2254	2352			0.637	1.038		q	X		x																	white fs/frags? In gngy soft gm	Montmorillonite	Int FeMg Chlorite	

X=major component;x=minor component;tr=trace;p=probably present;q=questionable

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TerraSpec SPECTRAL ANALYSIS
Red Dog (KH224)

SAMPLE ID	1400 WAVE	2200 WAVE	2250 WAVE	2300 WAVE	AMPH WAVE	Fe E_WAVE	White Mica XLN	White mica:Chl-Ca	HiX ILL	ILL	SMEC	KAO	CHL	EPID	CAR	AMPH	ALUN	DIK	PYRO	DIA	TOP	GOE	HEM	JAR	SIL	GYP/ANH	ZEO	PREH	SCAP	COMMENTS	Mineral ID_1	Mineral ID_2	Mineral ID_3
RM057.000		2203	2253	2349			0.22				X	tr	x																	mottled bn/gngy, mass, f diss sus	Montmorillonite	Int FeMg Chlorite	Tr Kaolinite
RM057.001		2206	2253	2347			0.275	2.124			X	tr	x																	mottled bn/gngy, mass, f diss sus	Montmorillonite	Int FeMg Chlorite	Tr Kaolinite
RM065.000		2200		2350			1.135	1.283		X		p	q												q					Dk gy mod soft/abund f to semi mass sus. Very noisy upper waves	Illite		
RM065.001		2170	2264	2343		740	0.504	1.331				x							X				x							FeOx fract	Pyrophyllite	Kaolinite	Hematite
RM065.002		2208.3	2261			718	0.737	1.248				x							X						q					Semi mass sus. Deep 1900 water feature not "clay" shaped, probably some other species?	Pyrophyllite	Kaolinite	
RM065b.000		2168		2320			1.898	1.359				x						q	X	x										Bngy mass mod soft, white dusty altn	Pyrophyllite	Kaolinite	Diaspore
RM065b.001		2168		2319						q		x						q	X	x										Bngy mass mod soft, white dusty altn	Pyrophyllite	Kaolinite	Diaspore
RM067.000		2168		2319			2.029	2.891		q								x	X											Bngy mottled, white dusty altn throught	Pyrophyllite	Dickite	
RM067.001		2207.9	2258.2	2304			3.859	3.652				x						X	p											Bngy mottled, white dusty altn throught	Dickite	Kaolinite	
RM068.000		2201.4	2254	2353			2.153	1.394	X			q	x																	Dk gngy massive, diss sus	Illite_HiX	Int FeMg Chlorite	
RM068.001		2200	2254	2353			2.432	1.196	X			q	x																	Dk gngy massive, diss sus	Illite_HiX	Int FeMg Chlorite	
RM070.000		2200	2253.4	2340			1.069	0.718		X		tr	x												q					Gngy/bn mottled hard, diss sus. Noisy	Illite	Int FeMg Chlorite	Silica?
RM070.001		2199	2253.3	2348			1.243	0.779		X			x																	Gngy/bn mottled hard, diss sus	Illite	Int FeMg Chlorite	
RM074.000		2206.2	2252.6	2349			1.548	1.129	X				x																	Gngy fg mod soft	Illite_HiX	Int FeMg Chlorite	
RM074.001		2207	2254	2349			0.931	1.031		X			x																	Gngy fg mod soft	Illite	Int FeMg Chlorite	
RM087.000	1424	2202.3	2251	2349			0.126	1.12			X		x														p			Gy/bn gy mottled hard, f diss sus. 1400 feature high for smectite - possible zeolite?	Montmorillonite	Int FeMg Chlorite	Zeolite?
RM087.001		2207	2250	2349			0.236	1.387			X		x																	Gy/bn gy mottled hard, f diss sus	Montmorillonite	Int FeMg Chlorite	
RM088.000		2209	2255	2334	2395		0.206	0.505			X		x			x														Gngy fg massive, feox.	Montmorillonite	Amphibole	Chlorite
RM088.001		2213.4		2322	2386		0.776	0.442			x		p			X														Gngy fg massive, feox. Noisy upper waves. Actinolite?	Amphibole	Montmorillonite	
RM088b.000		2200	2251	2331			0.44	0.35			x		x			p														Dkbngy/bk massive fg dense/heavy. Noisy upper waves. Probable actinolite?	Int FeMg Chlorite	Amphibole?	Smectite
RM088b.001		2202.4	2251.9	2318	2394		0.48	0.314			p		tr			X														Dkbngy/bk massive fg dense/heavy. Noisy upper waves. Probable actinolite?	Amphibole		Montmorillonite
RM089.000			2250.7	2321	2390		0.396	0.267			p		p			X														Dkbngy/bk massive fg dense/heavy. Noisy upper waves. Probable actinolite?	Amphibole		
RM089.001	1475	2208	2251	2332							p		x			p												q		Dkbngy/bk massive fg dense/heavy. Small feature 1476 possible prehnite?	Int FeMg Chlorite		
RM109.000		2209	2255	2351		760		1.378			X	tr	x									x								Lt bn gy mod hard, pale ochre speckled/masses	Montmorillonite	Fe Chlorite	Goethite
RM109.001		2205		2351		765	0.712	2.725		X	X		p									x								Offwhite earthy coating	Illite	Montmorillonite	Goethite
RM110.000		2207.8		2359			0.357	4.174		x	X	p																		Pinkywhite/dk bn mottled, soft	Montmorillonite	Illite	Tr Kaolinite?
RM110.001		2207.2		2351		790	0.405	2.272		x	X	tr																		Pinkywhite/dk bn mottled, soft	Montmorillonite	Illite	Tr Kaolinite?

X=major component;x=minor component;tr=trace;p=probably present;q=questionable

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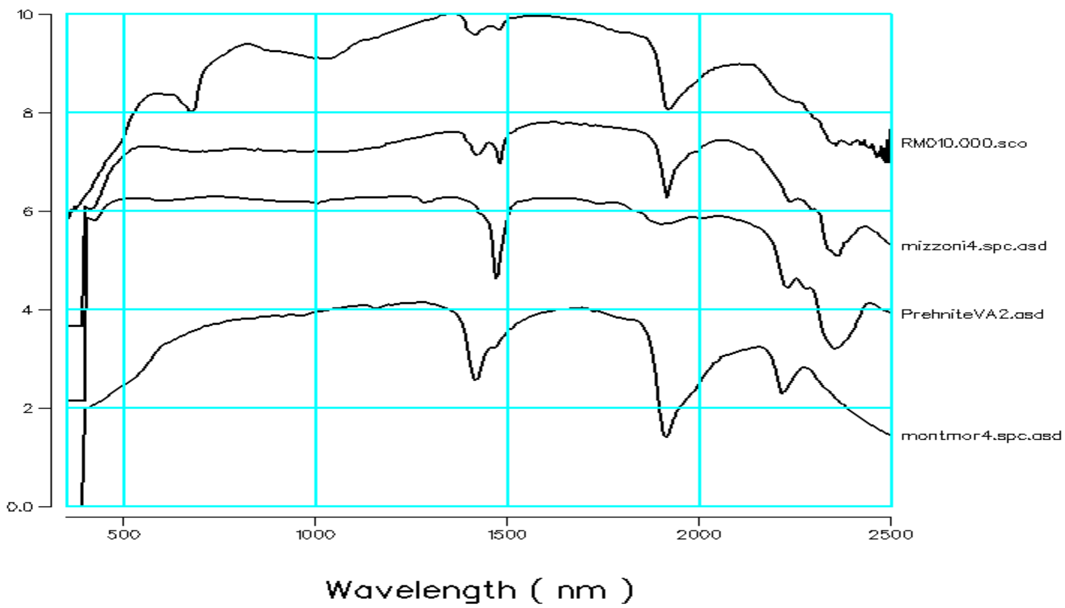

Figure 1: Comparison spectra for RM010 from the USGS and JPL spectral libraries. From top: RM010, mizzonite (scapolite), prehnite, and montmorillonite

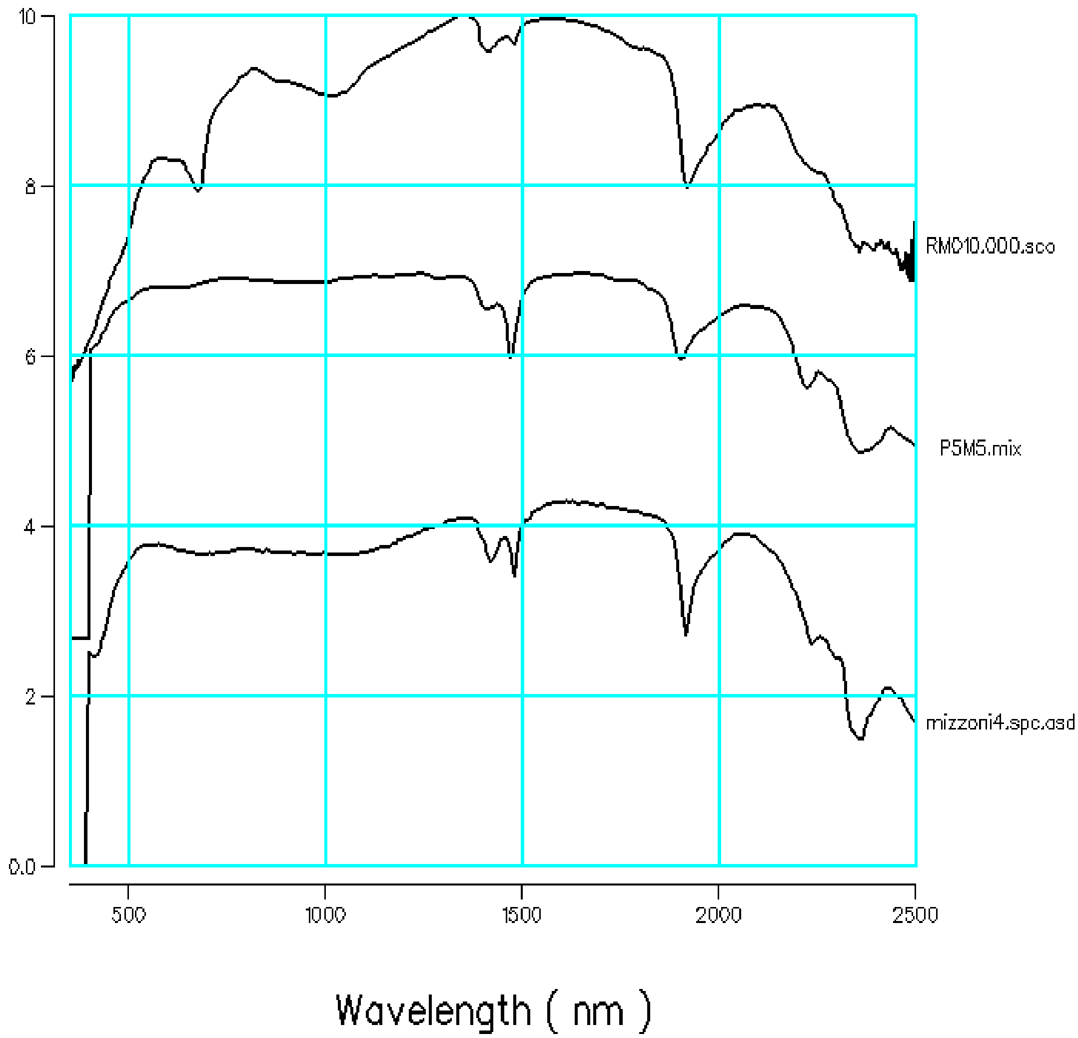

Figure 2: Stacked plot of RM010 spectrum, an artificial mix of prehnite+montmorillonite (P5M5), and mizzonite.

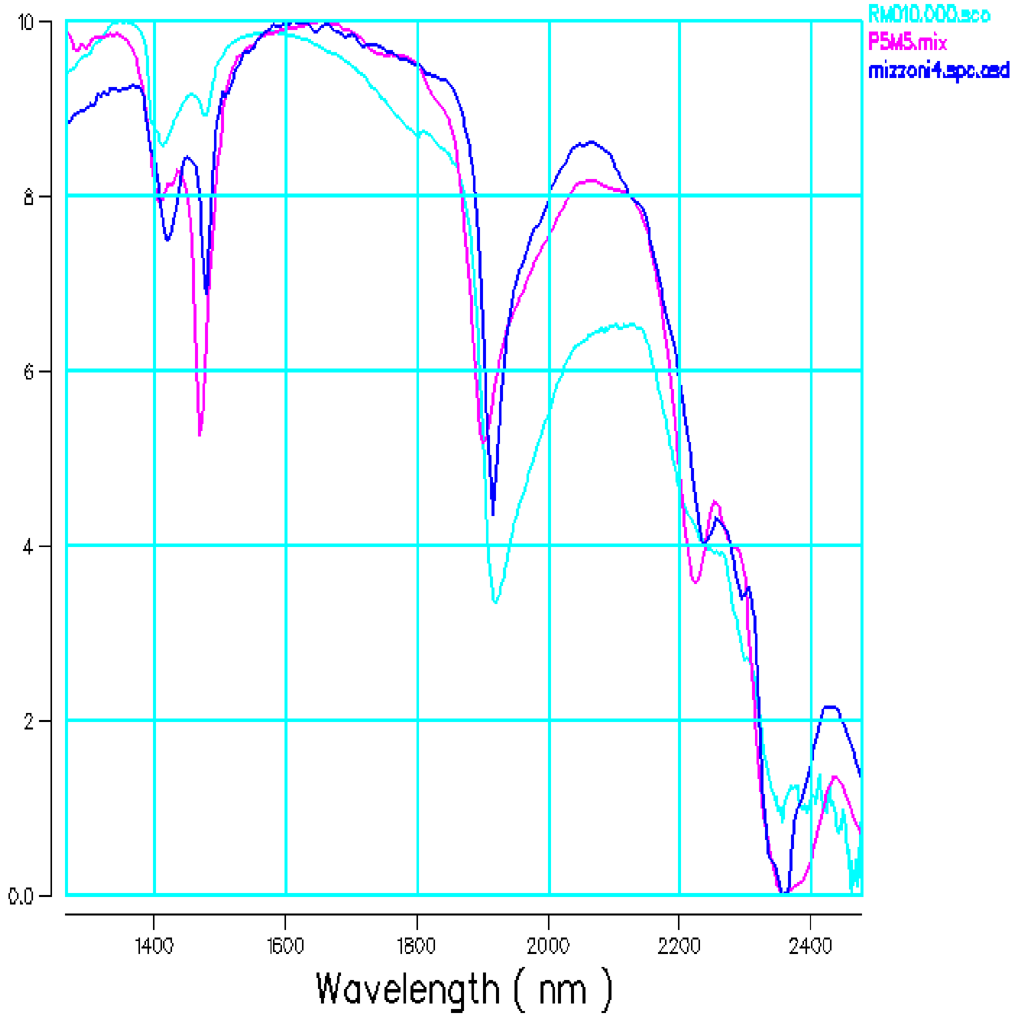

Figure 3: Comparison of RM010 with an artificial mix of prehnite and montmorillonite (P5M5 mix), and mizzonite, overlaid for comparison. The mizzonite appears to be a slightly better fit.

Appendix III

Geographical Co-ordinates of Waypoints, TerraSpec Samples and Thin Section Specimens

Locations of Waypoints

name	lat	lon	ele	time	cmt	Station type	Rock type	Alteration	Mineralization
RM 1	50.70522	-127.965	341.6316	2015-09-29T00:31:54Z	27/09/2015 9:14	End of road			
RM 10	50.71012	-127.963	363.0208	2015-09-29T00:31:54Z	27/09/2015 12:30	Outcrop	BVv	CMG	Py
RM 11	50.71061	-127.966	354.1287	2015-09-29T00:31:54Z	27/09/2015 13:06	Outcrop	BVv	CMG	Py
RM 12	50.7104	-127.974	431.5143	2015-09-29T00:31:54Z	27/09/2015 14:13	Outcrop	BVv	CMG	Py
RM 13	50.71048	-127.973	434.3982	2015-09-29T00:31:54Z	27/09/2015 14:25	Outcrop	BVv	CMG	Py
RM 15	50.71223	-127.976	415.6526	2015-09-29T00:31:54Z	27/09/2015 15:14	Outcrop	RDfp	Prop	
RM 16	50.71195	-127.978	369.0291	2015-09-29T00:31:54Z	27/09/2015 15:34	Outcrop	RDfp	Prop	
RM 17	50.70419	-127.979	203.2028	2015-09-29T00:31:54Z	28/09/2015 8:27	Outcrop	BVv	SCP	Py
RM 18	50.70806	-127.981	263.2848	2015-09-29T00:31:54Z	28/09/2015 9:05	Outcrop	BVt	SCP	Py
RM 19	50.70941	-127.981	346.1979	2015-09-29T00:31:54Z	28/09/2015 9:30	Outcrop	BVv	SCP	Py
RM 2	50.70632	-127.965	277.4641	2015-09-29T00:31:54Z	27/09/2015 9:34	Waypoint at creek			
RM 20	50.70948	-127.98	325.2893	2015-09-29T00:31:54Z	28/09/2015 10:02	Outcrop	QMB	CMG	Py, Mag
RM 21	50.70973	-127.98	323.1265	2015-09-29T00:31:54Z	28/09/2015 10:16	Outcrop	Feldspar prpr	Prop	
RM 22	50.71025	-127.98	336.1041	2015-09-29T00:31:54Z	28/09/2015 10:36	Outcrop	QMB	CMG	Py, Mag
RM 23	50.71181	-127.977	369.9904	2015-09-29T00:31:54Z	28/09/2015 11:08	Outcrop	RDfp	Prop	
RM 24	50.71215	-127.977	380.3245	2015-09-29T00:31:54Z	28/09/2015 11:17	Outcrop	RDfp	Prop	
RM 25	50.70972	-127.975	444.4919	2015-09-29T00:31:54Z	28/09/2015 11:57	Outcrop	QMB	CMG	Py, Mag
RM 26	50.70956	-127.976	457.4696	2015-09-29T00:31:54Z	28/09/2015 12:12	Outcrop	QMB	CMG	Py, Mag
RM 27	50.70922	-127.977	458.6711	2015-09-29T00:31:54Z	28/09/2015 12:25	Outcrop	QMB	CMG	Py, Mag
RM 28	50.7092	-127.976	459.8728	2015-09-29T00:31:54Z	28/09/2015 12:44	Outcrop	QMB	CMG	Py, Mag
RM 29	50.70915	-127.975	455.7874	2015-09-29T00:31:54Z	28/09/2015 12:54	Waypoint end of road			
RM 3	50.70718	-127.965	308.2261	2015-09-29T00:31:54Z	27/09/2015 9:50	Outcrop 50m long	Quaternary Sd		
RM 30	50.70836	-127.975	431.2739	2015-09-29T00:31:54Z	28/09/2015 13:07	Outcrop	QMB	CMG	Py, Mag
RM 31	50.7074	-127.975	386.8132	2015-09-29T00:31:55Z	28/09/2015 13:30	Outcrop	BVv	CMG	Py
RM 32	50.70715	-127.976	446.6549	2015-09-29T00:31:55Z	28/09/2015 13:42	Float	BVv	CMG	Py
RM 33	50.70786	-127.977	401.7136	2015-09-29T00:31:55Z	28/09/2015 14:01	Waypoint			
RM 34	50.70744	-127.977	386.573	2015-09-29T00:31:55Z	28/09/2015 14:11	Sub OC	BVv	CMG	Py
RM 35	50.70576	-127.977	315.1956	2015-09-29T00:31:55Z	28/09/2015 14:29	Waypoint west of Utah line			
RM 36	50.70368	-127.976	226.9954	2015-09-29T00:31:55Z	28/09/2015 14:49	Waypoint at NE 62			
RM 37	50.69963	-127.983	342.8333	2015-09-29T23:48:02Z	29/09/2015 8:11	Outcrop	BVv	Prop	Py
RM 38	50.69982	-127.982	337.0654	2015-09-29T23:48:02Z	29/09/2015 8:22	Outcrop	BVv	Prop	Py
RM 39	50.69987	-127.983	333.7008	2015-09-29T23:48:02Z	29/09/2015 8:43	Outcrop	BVv	Prop	Py
RM 4	50.70784	-127.964	321.6844	2015-09-29T00:31:55Z	27/09/2015 10:02	Outcrop SE end	Feldspar Prpr	Phyllic strong	
RM 40	50.69843	-127.978	281.069	2015-09-29T23:48:02Z	29/09/2015 9:09	Outcrop	BVv	Prop	Py
RM 41	50.69965	-127.973	265.4478	2015-09-29T23:48:02Z	29/09/2015 9:24	Outcrop	BVv	Prop	Py
RM 42	50.69975	-127.972	278.9061	2015-09-29T23:48:02Z	29/09/2015 9:43	Outcrop	BVv	Prop	Py
RM 43	50.70003	-127.971	268.572	2015-09-29T23:48:02Z	29/09/2015 9:55	Outcrop	BVv	SCP	Py
RM 44	50.70564	-127.959	343.3138	2015-09-29T23:48:02Z	29/09/2015 10:26	Outcrop	BVt	SCP	Py
RM 45	50.70534	-127.959	317.3586	2015-09-29T23:48:02Z	29/09/2015 10:43	Outcrop	BVt	SCP	Py
RM 5	50.70812	-127.965	344.0349	2015-09-29T00:31:55Z	27/09/2015 10:18	Outcrop end	Feldspar Prpr	Phyllic strong	
RM 6	50.70782	-127.963	325.0491	2015-09-29T00:31:55Z	27/09/2015 10:41	Sub OC	Feldspar Prpr	Phyllic strong	

RM 7	50.7085	-127.96	317.8392	2015-09-29T00:31:55Z	27/09/2015 11:20	Waypoint road			
RM 8	50.70949	-127.959	292.1241	2015-09-29T00:31:55Z	27/09/2015 11:49	Outcrop	BVv	Prop	Py
RM 9	50.70996	-127.963	365.6644	2015-09-29T00:31:55Z	27/09/2015 12:20	Outcrop	BVv	Prop	Py
RM14	50.71094	-127.975	439.2047	2015-09-29T00:31:55Z	27/09/2015 14:54	Outcrop	RDfp	Prop	Py
RM 46	50.70302	-127.969	273.8593	2015-09-30T22:31:03Z	30/09/2015 8:23	Outcrop	BVt	SCP	Py
RM 47	50.70441	-127.968	308.2261	2015-09-30T22:31:03Z	30/09/2015 8:47	Outcrop	BVt	SCP	Py
RM 48	50.70523	-127.968	121.0107	2015-09-30T22:31:03Z	30/09/2015 9:12	Outcrop	BVt	SCP	Py
RM 49	50.70539	-127.967	314.2343	2015-09-30T22:31:03Z	30/09/2015 9:25	Outcrop	BVt	SCP	Py
RM 50	50.7055	-127.968	293.0854	2015-09-30T22:31:03Z	30/09/2015 9:45	Outcrop	BVt	SCP	Py
RM 51	50.7052	-127.968	277.7045	2015-09-30T22:31:03Z	30/09/2015 10:08	Outcrop	BVt	SCP	Py
RM 52	50.70507	-127.968	347.1591	2015-09-30T22:31:03Z	30/09/2015 10:21	Outcrop	BVt	SCP	Py
RM 53	50.70615	-127.966	298.1323	2015-09-30T22:31:03Z	30/09/2015 10:50	Waypoint confluence			
RM 54	50.70708	-127.966	349.5625	2015-09-30T22:31:03Z	30/09/2015 11:06	Outcrop	Quaternary		
RM 55	50.70758	-127.967	303.6599	2015-09-30T22:31:03Z	30/09/2015 11:18	Outcrop	Quaternary		
RM 56	50.70798	-127.969	293.3257	2015-09-30T22:31:03Z	30/09/2015 11:49	Outcrop	Jb		
RM 57	50.70828	-127.969	301.2566	2015-09-30T22:31:03Z	30/09/2015 11:53	Outcrop	BVv	SCP	Py
RM 58	50.70828	-127.969	339.709	2015-09-30T22:31:03Z	30/09/2015 12:00	Outcrop	BVv	SCP	Py
RM 59	50.70791	-127.969	347.1591	2015-09-30T22:31:03Z	30/09/2015 12:18	Waypoint			
RM 60	50.70739	-127.97	318.3198	2015-09-30T22:31:03Z	30/09/2015 12:31	Waypoint			
RM 61	50.70679	-127.969	331.2975	2015-09-30T22:31:03Z	30/09/2015 12:51	Waypoint			
RM 62	50.70609	-127.969	307.5051	2015-09-30T22:31:03Z	30/09/2015 12:58	Waypoint			
RM 63	50.70559	-127.968	284.1934	2015-09-30T22:31:03Z	30/09/2015 13:12	Waypoint			
RM 64	50.70826	-127.98	362.7804	2015-10-02T03:48:14Z	01/10/2015 8:51	Waypoint			
RM 65	50.7082	-127.98	205.6062	2015-10-02T03:48:14Z	01/10/2015 9:08	Outcrop	BVv	SCP / CMG	Py
RM 66	50.70807	-127.979	346.4381	2015-10-02T03:48:14Z	01/10/2015 9:32	Waypoint			
RM 67	50.70833	-127.979	358.6948	2015-10-02T03:48:14Z	01/10/2015 9:49	Outcrop	BVv	SCP	Py
RM 68	50.70844	-127.978	384.6504	2015-10-02T03:48:14Z	01/10/2015 10:12	Outcrop	BVv	CMG	Py
RM 69	50.70833	-127.978	409.6444	2015-10-02T03:48:14Z	01/10/2015 10:37	Sub outcrop	BVv	CMG	Py
RM 70	50.70868	-127.978	380.8052	2015-10-02T03:48:14Z	01/10/2015 10:59	Outcrop	QMB	QMB	Py
RM 71	50.7092	-127.978	386.0923	2015-10-02T03:48:14Z	01/10/2015 11:22	Waypoint			
RM 72	50.71008	-127.978	411.8073	2015-10-02T03:48:14Z	01/10/2015 11:42	Outcrop	QMB	QMB	Py
RM 73	50.70871	-127.977	403.6362	2015-10-02T03:48:14Z	01/10/2015 12:06	Waypoint			
RM 74	50.70849	-127.976	399.0699	2015-10-02T03:48:14Z	01/10/2015 12:28	Sub outcrop	BVv	CMG	Py
RM 75	50.70845	-127.976	414.4509	2015-10-02T03:48:14Z	01/10/2015 12:39	Sub outcrop	BVv	CMG	Py
RM 76	50.70744	-127.975	389.9375	2015-10-02T03:48:14Z	01/10/2015 13:03	Drill collar			
RM 77	50.70748	-127.973	382.0067	2015-10-02T03:48:14Z	01/10/2015 13:17	Waypoint			
RM 78	50.70742	-127.971	373.1146	2015-10-02T03:48:14Z	01/10/2015 13:28	Drill collar			
RM 79	50.70899	-127.973	384.41	2015-10-02T03:48:14Z	01/10/2015 13:51	Waypoint			
RM 80	50.71035	-127.971	399.791	2015-10-02T03:48:14Z	01/10/2015 14:05	Waypoint			
RM 81	50.70998	-127.967	372.1532	2015-10-02T03:48:14Z	01/10/2015 14:24	Waypoint			
RM 82	50.71023	-127.973	440.166	2015-10-02T03:48:14Z	01/10/2015 14:52	Outcrop	FP		
RM 84	50.71095	-127.977	397.1473	2015-10-02T03:48:14Z	01/10/2015 15:10	Outcrop	Quaternary		

RM 85	50.71101	-127.978	385.3713	2015-10-02T03:48:14Z	01/10/2015 15:18	Outcrop	Quaternary		
RM 86	50.70827	-127.965	281.069	2015-10-02T22:58:50Z	02/10/2015 8:46	Outcrop	FP	Phyllic	Py
RM 87	50.70873	-127.965	267.3704	2015-10-02T22:58:50Z	02/10/2015 8:55	Outcrop	FP	Phyllic	Py
RM 88	50.7092	-127.966	340.6703	2015-10-02T22:58:50Z	02/10/2015 9:14	Outcrop	BVv	CMG	Py
RM 89	50.70974	-127.966	408.4427	2015-10-02T22:58:50Z	02/10/2015 9:52	Outcrop	BVv	CMG	Py
RM 90	50.71033	-127.966	396.6667	2015-10-02T22:58:50Z	02/10/2015 10:27	Outcrop	BVv	CMG	Py
RM 91	50.71082	-127.966	398.349	2015-10-02T22:58:50Z	02/10/2015 10:39	Outcrop	BVv	CMG	Py
RM 92	50.71163	-127.965	440.887	2015-10-02T22:58:50Z	02/10/2015 11:01	Outcrop	BVv	CMG	Py
RM 93	50.71239	-127.964	444.4919	2015-10-02T22:58:50Z	02/10/2015 11:21	Waypoint			
RM 94	50.71278	-127.964	450.9807	2015-10-02T22:58:50Z	02/10/2015 11:37	Outcrop	Dio	Hornfels	Py, Mag
RM 95	50.70971	-127.969	371.4323	2015-10-02T22:58:50Z	02/10/2015 12:18	Waypoint			
RM 96	50.70901	-127.969	331.2975	2015-10-02T22:58:50Z	02/10/2015 12:26	Outcrop	BVv	SCP / CNG	
RM 97	50.7081	-127.969	322.4054	2015-10-02T22:58:50Z	02/10/2015 12:41	Waypoint			
RM 100	50.70532	-127.978	267.6106	2015-10-04T22:06:37Z	04/10/2015 12:28	Outcrop	BVv	SCP	
RM 101	50.70563	-127.977	282.511	2015-10-04T22:06:37Z	04/10/2015 12:48	Waypoint			
RM 102	50.70564	-127.976	305.3422	2015-10-04T22:06:37Z	04/10/2015 12:56	Sub outcrop	BVv	SCP	
RM 103	50.7058	-127.975	314.4745	2015-10-04T22:06:37Z	04/10/2015 13:07	Outcrop	BVv	SCP	
RM 104	50.7061	-127.975	317.3586	2015-10-04T22:06:37Z	04/10/2015 13:13	Waypoint			
RM 105	50.70484	-127.975	289.4805	2015-10-04T22:06:37Z	04/10/2015 13:26	Outcrop	Quaternary		
RM 106	50.70478	-127.974	309.6681	2015-10-04T22:06:37Z	04/10/2015 13:36	Waypoint			
RM 98	50.70409	-127.978	233.0034	2015-10-04T22:06:37Z	04/10/2015 12:11	Waypoint			
RM 99	50.70466	-127.978	248.1442	2015-10-04T22:06:37Z	04/10/2015 12:17	Waypoint			
RM 107	50.7086	-127.981	298.6129	2015-10-06T18:42:50Z	05/10/2015 8:43	Waypoint			
RM 108	50.70899	-127.982	315.6761	2015-10-06T18:42:50Z	05/10/2015 9:01	Waypoint			
RM 109	50.7094	-127.981	338.0267	2015-10-06T18:42:50Z	05/10/2015 9:22	Sub crop	BVv	CMG	Mag, Py
RM 110	50.70951	-127.982	293.3257	2015-10-06T18:42:50Z	05/10/2015 9:38	Sub crop	Grdr		
RM 111	50.71019	-127.982	274.0995	2015-10-06T18:42:50Z	05/10/2015 10:11	Outcrop	Grdr		
RM 112	50.7102	-127.983	266.1687	2015-10-06T18:42:50Z	05/10/2015 10:21	Outcrop	Grdr		
RM 113	50.71022	-127.986	225.0728	2015-10-06T18:42:50Z	05/10/2015 10:46	Waypoint			
RM 114	50.70611	-127.985	243.5779	2015-10-06T18:42:50Z	05/10/2015 10:58	Waypoint IP Station			
RM 115	50.71047	-127.965	395.7053	2015-11-18T01:02:37Z	16/11/2015 10:41	Outcrop	BVv	Hornfels	Py
RM 116	50.71075	-127.965	412.2881	2015-11-18T01:02:37Z	16/11/2015 10:52	Outcrop	BVv	Hornfels	
RM 117	50.71126	-127.965	432.7159	2015-11-18T01:02:37Z	16/11/2015 11:02	Outcrop	BVv	Hornfels	
RM 118	50.71161	-127.964	453.8647	2015-11-18T01:02:37Z	16/11/2015 11:14	Outcrop	RDI		
RM 119	50.71087	-127.963	428.6304	2015-11-18T01:02:37Z	16/11/2015 11:58	Outcrop	BVv	Hornfels	Py
RM 120	50.71115	-127.963	430.7933	2015-11-18T01:02:37Z	16/11/2015 12:11	Waypoint			
RM 121	50.71008	-127.969	445.934	2015-11-18T01:02:37Z	16/11/2015 12:47	Outcrop	BVv	CMG	Mag, Py
RM 122	50.71077	-127.969	431.0336	2015-11-18T01:02:37Z	16/11/2015 13:03	Waypoint			
RM 123	50.71032	-127.97	425.9866	2015-11-18T01:02:37Z	16/11/2015 13:14	Outcrop	BVv	CMG	Mag, Py
RM 124	50.70869	-127.973	389.2166	2015-11-18T01:02:37Z	17/11/2015 9:50	Waypoint			
RM 125	50.70868	-127.971	366.1451	2015-11-18T01:02:37Z	17/11/2015 10:02	Outcrop	Quaternary		
RM 126	50.70853	-127.971	331.2975	2015-11-18T01:02:37Z	17/11/2015 10:07	Outcrop	Quaternary		

RM 127	50.70835	-127.969	327.4523	2015-11-18T01:02:37Z	17/11/2015 10:21	Outcrop	Quaternary		
RM 128	50.70823	-127.969	312.3116	2015-11-18T01:02:37Z	17/11/2015 10:35	Outcrop	FP / BVv	SCP	Py
RM 129	50.70889	-127.97	371.6726	2015-11-18T01:02:37Z	17/11/2015 11:04	Outcrop	BVv	CMG	Py
RM 130	50.70903	-127.97	362.2998	2015-11-18T01:02:37Z	17/11/2015 11:14	Outcrop	FP	Phyllic	Py
RM 131	50.71006	-127.971	401.4733	2015-11-18T01:02:37Z	17/11/2015 11:41	Waypoint	Waypoint		

Location of TerraSpec Samples on following page

name	lat	lon	ele	time	cmt	Station type	Rock type	Alteration	Mineralization
RM 10	50.71012	-127.963	363.0208	2015-09-29T00:31:54Z	27/09/2015 12:30	Outcrop	BVv	CMG	Py
RM 13	50.71048	-127.973	434.3982	2015-09-29T00:31:54Z	27/09/2015 14:25	Outcrop	BVv	CMG	Py
RM 17	50.70419	-127.979	203.2028	2015-09-29T00:31:54Z	28/09/2015 8:27	Outcrop	BVv	SCP	Py
RM 18	50.70806	-127.981	263.2848	2015-09-29T00:31:54Z	28/09/2015 9:05	Outcrop	BVt	SCP	Py
RM 19	50.70941	-127.981	346.1979	2015-09-29T00:31:54Z	28/09/2015 9:30	Outcrop	BVv	SCP	Py
RM 26	50.70956	-127.976	457.4696	2015-09-29T00:31:54Z	28/09/2015 12:12	Outcrop	QMB	CMG	Py, Mag
RM 28	50.7092	-127.976	459.8728	2015-09-29T00:31:54Z	28/09/2015 12:44	Outcrop	QMB	CMG	Py, Mag
RM 30	50.70836	-127.975	431.2739	2015-09-29T00:31:54Z	28/09/2015 13:07	Outcrop	QMB	CMG	Py, Mag
RM 31	50.7074	-127.975	386.8132	2015-09-29T00:31:55Z	28/09/2015 13:30	Outcrop	BVv	CMG	Py
RM 38	50.69982	-127.982	337.0654	2015-09-29T23:48:02Z	29/09/2015 8:22	Outcrop	BVv	Prop	Py
RM 4	50.70784	-127.964	321.6844	2015-09-29T00:31:55Z	27/09/2015 10:02	Outcrop SE end	Feldspar Prpr	Phyllic strong	
RM 40	50.69843	-127.978	281.069	2015-09-29T23:48:02Z	29/09/2015 9:09	Outcrop	BVv	Prop	Py
RM 41	50.69965	-127.973	265.4478	2015-09-29T23:48:02Z	29/09/2015 9:24	Outcrop	BVv	Prop	Py
RM 42	50.69975	-127.972	278.9061	2015-09-29T23:48:02Z	29/09/2015 9:43	Outcrop	BVv	Prop	Py
RM 43	50.70003	-127.971	268.572	2015-09-29T23:48:02Z	29/09/2015 9:55	Outcrop	BVv	SCP	Py
RM 44	50.70564	-127.959	343.3138	2015-09-29T23:48:02Z	29/09/2015 10:26	Outcrop	BVt	SCP	Py
RM 5	50.70812	-127.965	344.0349	2015-09-29T00:31:55Z	27/09/2015 10:18	Outcrop end	Feldspar Prpr	Phyllic strong	
RM 9	50.70996	-127.963	365.6644	2015-09-29T00:31:55Z	27/09/2015 12:20	Outcrop	BVv	Prop	Py
RM14	50.71094	-127.975	439.2047	2015-09-29T00:31:55Z	27/09/2015 14:54	Outcrop	RDfp	Prop	Py
RM 46	50.70302	-127.969	273.8593	2015-09-30T22:31:03Z	30/09/2015 8:23	Outcrop	BVt	SCP	Py
RM 47	50.70441	-127.968	308.2261	2015-09-30T22:31:03Z	30/09/2015 8:47	Outcrop	BVt	SCP	Py
RM 48	50.70523	-127.968	121.0107	2015-09-30T22:31:03Z	30/09/2015 9:12	Outcrop	BVt	SCP	Py
RM 49	50.70539	-127.967	314.2343	2015-09-30T22:31:03Z	30/09/2015 9:25	Outcrop	BVt	SCP	Py
RM 50	50.7055	-127.968	293.0854	2015-09-30T22:31:03Z	30/09/2015 9:45	Outcrop	BVt	SCP	Py
RM 51	50.7052	-127.968	277.7045	2015-09-30T22:31:03Z	30/09/2015 10:08	Outcrop	BVt	SCP	Py
RM 52	50.70507	-127.968	347.1591	2015-09-30T22:31:03Z	30/09/2015 10:21	Outcrop	BVt	SCP	Py
RM 55	50.70758	-127.967	303.6599	2015-09-30T22:31:03Z	30/09/2015 11:18	Outcrop	Quaternary		
RM 57	50.70828	-127.969	301.2566	2015-09-30T22:31:03Z	30/09/2015 11:53	Outcrop	BVv	SCP	Py
RM 65	50.7082	-127.98	205.6062	2015-10-02T03:48:14Z	01/10/2015 9:08	Outcrop	BVv	SCP / CMG	Py
RM 67	50.70833	-127.979	358.6948	2015-10-02T03:48:14Z	01/10/2015 9:49	Outcrop	BVv	SCP	Py
RM 68	50.70844	-127.978	384.6504	2015-10-02T03:48:14Z	01/10/2015 10:12	Outcrop	BVv	CMG	Py
RM 70	50.70868	-127.978	380.8052	2015-10-02T03:48:14Z	01/10/2015 10:59	Outcrop	QMB	QMB	Py
RM 74	50.70849	-127.976	399.0699	2015-10-02T03:48:14Z	01/10/2015 12:28	Sub outcrop	BVv	CMG	Py
RM 87	50.70873	-127.965	267.3704	2015-10-02T22:58:50Z	02/10/2015 8:55	Outcrop	FP	Phyllic	Py
RM 88	50.7092	-127.966	340.6703	2015-10-02T22:58:50Z	02/10/2015 9:14	Outcrop	BVv	CMG	Py
RM 89	50.70974	-127.966	408.4427	2015-10-02T22:58:50Z	02/10/2015 9:52	Outcrop	BVv	CMG	Py
RM 109	50.7094	-127.981	338.0267	2015-10-06T18:42:50Z	05/10/2015 9:22	Sub crop	BVv	CMG	Mag, Py
RM 110	50.70951	-127.982	293.3257	2015-10-06T18:42:50Z	05/10/2015 9:38	Sub crop	Grdr		

Locations Thin Section Specimens

name	lat	lon	ele	time	cmt	Station type	Rock type	Alteration	Mineralization
RM 26	50.70956	-127.976	457.4696	2015-09-29T00:31:54Z	28/09/2015 12:12	Outcrop	QMB	CMG	Py, Mag
RM 5	50.70812	-127.965	344.0349	2015-09-29T00:31:55Z	27/09/2015 10:18	Outcrop end	Feldspar Prpr	Phyllic strong	
RM14	50.71094	-127.975	439.2047	2015-09-29T00:31:55Z	27/09/2015 14:54	Outcrop	RDfp	Prop	Py
RM 51	50.7052	-127.968	277.7045	2015-09-30T22:31:03Z	30/09/2015 10:08	Outcrop	BVt	SCP	Py
RM 68	50.70844	-127.978	384.6504	2015-10-02T03:48:14Z	01/10/2015 10:12	Outcrop	BVv	CMG	Py
RM 110	50.70951	-127.982	293.3257	2015-10-06T18:42:50Z	05/10/2015 9:38	Sub crop	Grdr		
RM 115	50.71047	-127.965	395.7053	2015-11-18T01:02:37Z	16/11/2015 10:41	Outcrop	BVv	Hornfels	Py
RD 14	50.71378	-127.978	387.2939	2015-04-09T03:47:51Z	08/04/2015 15:02	Outcrop	RDfp	Prop	Mag, py

Appendix IV

Thin Section Descriptions

General

The samples reviewed were collected during the fall 2015 work program with the exception of sample RD 14, which was collected in April 2015. The geographic coordinates of the samples are listed in Appendix III and the locations are plotted in Figure 5.

The thin sections were prepared by Vancouver Petro Graphics of Langley B.C. The prepared sections are standard thin sections of 0.03mm in thickness with a reported thickness variation of +/- 1 micron.

The microscope used was an XTL model K83PTR petrographic microscope and John McClintock P.Eng carried out the microscopic analysis.

Sample RM 5

Hand Specimen Description – Feldspar Porphyry

Porphyritic textured rock consisting of white, tabular feldspar phenocrysts 2 to 3 mm long with lesser 1mm phenocrysts of chloritized mafic mineral presumed to be hornblende in a pale grey green very fine grained to aphanitic felsic groundmass. The rock is weathered with limonite filled fractures and psuedomorphs after primary pyrite. Some limonite pseudomorphs have remnant pyrite grains. A late zeolite vein cuts the rock.

Thin Section Description

Minerals:

Plagioclase phenocrysts (An 35)	25%
Chlorite (replacing primary amphibole phenos +gm)	15%
Plagioclase groundmass	18%
Kspar groundmass	10%
Quartz	7%
Montmorillonite	7%
Sericite	5%
Limonite	5%
Epidote	3%

Zeolite	3%
Pyrite	tr.
Accessory minerals	2%

Plagioclase and lesser, completely chloritized and sericitized amphiboles form phenocryst in a hyalopilitic groundmass of lath shaped plagioclase, Kspar, quartz and chloritized amphibole. Plagioclase phenocrysts occur in glomeroporphyritic – like clusters. Alteration of the primary mafics to chlorite is complete. Plagioclase and to a lesser extent Kspar have undergone incipient alteration to sericite and epidote (sauceritization). Montmorillonite replaces feldspars along the oxidized fractures. Zeolite (tentatively identified as laumontite (based on Spectral analysis)) fills late fractures.

Rock name: Propyllitically altered Diorite Porphyry

Sample RM 14

Hand Specimen Description – Quartz – Feldspar Porphyry

Tabular phenocrysts of plagioclase to 3mm and rounded phenocrysts of quartz to 4mm and 1 to 2mm chloritized amphibole combine to form 45 to 50% of the rock in a felsic groundmass of feldspar and quartz. Pyrite occurs as disseminated grains and as replacement of former amphibole mineral. The groundmass has a faint salmon pink colour suggesting hematization of the groundmass feldspars.

Thin Section Description

Plagioclase phenos (An 35)	20%
Plagioclase groundmass	25%
Chlorite (replacing mafics phenos & gm)	20%
Quartz (5% phenos, 10% gm)	15%
Sericite	7%
Kspar	5%
Kaolinite	3%
Opaques / limonite / hematite	3%
Pyrite	2%

Crowded porphyritic texture of plagioclase, quartz, amphibole (now chloritized) and rare Kspar in a felted groundmass of or fine grained plagioclase, quartz and chloritized amphibole and lesser Kspar.

Chlorite, pyrite and lesser sericite replace the primary amphibole minerals. Incipient sericitization of the plagioclase with plagioclases up to 10% altered. Extremely fine grained hematite dusts the Kspar of the groundmass. Minor kaolinization of the feldspar phenocrysts is present.

Rock name: Propyllitized Tonalite Porphyry

Sample RD 14

Hand specimen description – Granodiorite Porphyry

Crowded quartz feldspar porphyry with the phenocrysts forming 45 to 50% of the rock. The matrix is a finer grained felted texture of feldspar, quartz and hornblende. Hornblende is weakly chloritized and minor pyrite present as disseminations often in or adjacent to the hornblende phenocrysts.

Thin Section Description

Plagioclase (25% phenos & 15%gm)	40%
Quartz (10% pheno & 15% gm)	25%
Hornblende (15% phenos & 5% gm)	20%
Kspar	5%
Chlorite	5%
Sericite	2%
Epidote	1%
Pyrite	1%
Opaques and acc. minerals	1%

Porphyritic texture of plagioclase, hornblende and quartz in a two stage ground mass of finer grained minerals of the same minerals. The larger phenocrysts are in the order of 2 to 4 mm with plagioclase the largest and slightly finer grained quartz and hornblende. Between the larger set of phenocysts and the groundmass is a second set of finer grained (1 to 2mm) plagioclase, quartz and hornblende phenocrysts. Both sets of phenocrysts are in a felted groundmass of quartz, Kspar, plagioclase and hornblende. The large phenocrysts of plagioclase show normal zoning with An content ranging from near 30% to 38%.

Alteration is significantly less than in RM 14 with hornblendes showing incipient alteration to chlorite and much lesser sericite. Plagioclase likewise shows incipient seritization and sericitization. Kspar is confined to the matrix and shows a very fine dusting of a semi opaque mineral believe to be hematite. Pyrite occurs as minor disseminated grains associate with the hornblende.

Rock Name: Propylitized Tonalite Porphyry

Sample RM 26

Hand Specimen Description: Quartz Magnetite Breccia

The rock consists of dark coloured fragments of magnetite, chlorite and sericite in a matrix of massive quartz. Sulphide minerals occur primarily in the fragments and are chalcopyrite and pyrite in approximately equal amounts. Magnetite and lesser sulphides also occur in the quartz matrix as impregnations and disseminated grains and streaks.

Thin Section Description

Quartz	45%
Opaques (magnetite with much lesser sulphides)	15%
Sericite	20%
Chlorite	15%
Albite	4%
Rutile and accessory minerals	1%

The matrix is comprised of coarser grained allotriomorphic – textured quartz filling around rock fragments now completely replaced by very fine grained sericite, chlorite, magnetite and sulphides. Magnetite forms variously sized anhedral grains, blebs and wormy veinlets in the original fragments.

Rock Name: Quartz Magnetite Breccia

Sample RM 51

Hand Specimen Description: Silicified and Clay altered Tuff

Beige to cream coloured fine grained tuff. Faint ghost –like lapilli can be seen. Very fine to extremely fine grained pyrite disseminated through the rock.

Thin Section Description

Pyrophyllite	50%
Quartz	20%
Kaolinite	11%
Diaspore	7%
Alunite	5%
Pyrite	3%
Flourite	2%
Plagioclase	tr.
Rutile and other accessory minerals	2%

The rock is a very fine grained assemblage dominated by pyrophyllite (identity confirmed by spectral analyses), quartz and kaolinite with minor alunite. Quartz occurs as very fine rounded grains and kaolinite and pyrophyllite as felted intergrowths. Alunite forms coarser, subhedral grains. Diaspore forms a band of ragged grains through part of the thin section. Rare remnant plagioclase grains partially replaced by pyrophylite and kaolinite are present. No topaz noted although reported in spectral data. Flourite is seen as fine to very fine subhedral grains throughout the section and in a discontinuous veinlet. No primary rock features are visible and the lapilli noted in hand specimen is not apparent in thin section. Pyrite forms very fine grains which are disseminated through the slide.

Rock Name: Advanced Argillic altered Tuff

Sample RM 68

Hand Specimen Description: CMG altered Tuff or Flow Breccia

The host primary volcanic is cut by a quartz – magnetite – pyrite – chalcopyrite vein. The primary minerals of the wall rock are altered to chlorite, sericite and magnetite with minor pyrite and chalcopyrite occurring as disseminated grains and impregnations in the altered wall rock.

Thin Section Description

Magnetite	25%
Quartz	35%
Chlorite	19%
Sericite	15%
Sulphides	3%
Biotite	2%
Accessory minerals	1%

A vein of quartz and magnetite cuts a now chloritized, sericitized , silicified and magnetite replaced volcanic. No primary features remain of the host volcanic rock. Quartz in the vein is similar to that in sample RM 26 with interlocking anhedral grains. Magnetite in the veins occurs as streaks and disseminated grains. Chlorite and sericite occurs as fine to very fine subhedral grains with sericite beginning to replace chlorite. Magnetite and quartz in the fragments are finer grained than that in the veins. Very minor amounts of biotite remain and may be remnants of the earlier hornfels alteration. The sulphide minerals are concentrated in the quartz veins.

Sample RM 110

Hand Specimen Description: Quartz Monzonite

The specimen is a salmon pink coloured, medium grained hypidiomorphic granular rock. The dominant minerals are quartz, Kspar and lesser plagioclase, biotite and hornblende. The salmon pink colour of the Kspar phenocrysts indicated hematization. The rock contains limonite along an extensive network of hairline fractures fractures.

Thin Section Description

Kspar	30%
Quartz	20%
Plagioclase	15%
Biotite	15%
Iron Oxides	5%
Hornblende	4%
Sericite	3%
Montmorillonite	3%
Kaolinite	2%
Epidote	2%
Accessory minerals	1%

Medium grained hypidiomorphic granular rock comprised dominantly of kspar, quartz and plagioclase. Plagioclase is An 30. Kspar is heavily charged with extremely fine grained hematite. Biotite and hornblende are fresh. Limonite is restricted to fracture fillings and lesser pseudo morphs after probable pyrite. Sericite occurs as weak incipient alteration of plagioclase with very fine kaolinite. Epidote is present as sauceritization of plagioclase and occasional coarser grained euhedral crystals clusters between larger plagioclase and Kspar grains. Montmorillonite replaces feldspar along the margins of the limonite filled fractures that criss cross the specimen.

Rock Name: Quartz Monzonite

Rock Sample RM 115

Hand Specimen Description: Hornfels

Very fine grained well indurated with dark green to greenish black colour. Pyrite occurs as very fine grains and as dry fracture fillings. Magnetite occurs as very fine barely discernable grains.

Thin Section Description

Plagioclase (albite dominant)	35%
Actinolite	20%
Biotite	15%
Magnetite	15%
Chlorite	10%
Epidote	2%
Pyrite	2%
Accessory minerals	1%

Very fine grained hyalopilitic textured with intergrowth of albite, biotite, actinolite. Biotite occurs as generally coarser grains while albite and actinolite are extremely fine grained. Chlorite occurs as a retrograde replacement of biotite. and with pyrite along fractures. Magnetite occurs as disseminated grains with pyrite as disseminated grains a fracture fillings. Epidote occurs as very fine disseminated grains dispersed throughout the slide.