ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: More Petrography, Lithochemistry, and Magnetic Studies on the Kringle-Consolidated Claim Group

TOTAL COST: 15596.82

AUTHOR(S):Mikkel Schau P.Geo
SIGNATURE(S):

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):not applicable
STATEMENT OF WORK EVENT NUMBER(S)/DATE(S): 5446565 2013/MAY/02

YEAR OF WORK: 2012-2013

PROPERTY NAME:**Kringle-Consolidated Claim Group**

CLAIM NAME(S) (on which work was done):515033, 515930, 529780, 797082, 797102, 845313

COMMODITIES SOUGHT:Cu, minor Ag,Au

MINERAL INVENTORY MINFILE NUMBER(S),IF KNOWN:092L-163, 092L-165, 092L-166, 092L-167, 092L-168, 092L-169, 092L-170, 092L-222, 092L-249, 092L-355, 092L-356, 092L-357, 092L-359

MINING DIVISION: Nanaimo Mining Division
NTS / BCGS:092L08
LATITUDE: ______50____° ___18______’ ____15______"
LONGITUDE: ___126_______° ______06____’ ___30_______" (at centre of work)
UTM Zone: EASTING: NORTHING:

OWNER(S):Mikkel Schau

MAILING ADDRESS:
3919 Woodhaven Terrace
Victoria, BC, V8N 1S7

OPERATOR(S) [who paid for the work]::Mikkel Schau

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REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. **Do not use abbreviations or codes**)
upper Triassic Karmutsen basalts, middle Jurassic feldspar porphyry, amygdale rich zones, veins in shear zones, bornite, chalcopyrite, chalcocite and alteration products, size unknown,

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:
1859, 1993, 2379, 3235, 3306, 3403, 3795, 14284, 18255, 22409, 23906, 26930, 27070, 27463, 27736, 27745, 28327, 28328, 28747, 28927, 30121, 31039, 31516, 31856, 32553, 33012

TYPE OF WORK IN THIS REPORT		EXTENT OF WORK (in metric units)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)				
Ground, mapping				
Photo interpretation				
GEOPHYSICAL (line-kilometres)				
Ground				
Magnetic				
Electromagnetic				
Induced Polarization				
Radiometric				
Seismic				
Magnetic susceptibility		61	515930, 797102 529780, ,845313 797082, 515033	3050
Airborne				
GEOCHEMICAL (number of samples analysed for …)				
Soil 3 3				
Silt				
Rock	ACME ICP-ES	33	515930, 797102 529780, ,845313 797082,	3300
Other				
DRILLING (total metres, number of holes, size, storage location)				
Core				
Non-core				
RELATED TECHNICAL				
Sampling / Assaying	ACME FA finish ICP-MS	33	515930, 797102 529780, ,845313 797082,	1100
Petrographic		28 thin section (4 polished)	515930, 797102 529780, ,845313 797082,	5600
Mineralographic				
Metallurgic				
PROSPECTING (scale/area)	Varying scales, depends on outcrop	5 00 ha.		2546.82
PREPATORY / PHYSICAL				
Line/grid (km)				

Topo/Photogrammetric (scale, area)		
Legal Surveys (scale, area)		
Road, local access (km)/trail		
Trench (number/metres)		
Underground development (metres)		
Other		
	TOTAL COST	15596.82

Assessment Report

including

More Petrography, Lithochemistry, and Magnetic studies

on

The Kringle-Consolidated Claim Group

(Tenures 509556*, 515027, 515028. 515029, 515030, 515032, 515033, 515034, 515386, 515924, 515925, 515926, 515930, 516017, 521073, 529780, 797082, 797102, 845313*, 845314*, 845315*),

About 250 km north of Nanaimo straddling Highway 19,

Nanaimo Mining District,

Vancouver Island, BC

for

Mikkel Schau, owner

by

Mikkel Schau, P.Geo.

For May 2, 2013

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SUMMARY

This assessment report is applied to Tenures (Tenures 509556*, 515027, 515028. 515029, 515030, 515032, 515033, 515034, 515386, 515924, 515925, 515926, 515930, 516017, 521073, 529780, 797082, 797102, 845313*, 845314*, 845315*),.

Location and ownership

The Kringle-Consolidated claim group, consists of 21 claims totaling 4,641 ha. The claims are located at 50 deg 19 min N and 126 deg 6 min W on northern Vancouver Island, adjacent to the Island Highway, about 250 km north of Nanaimo. The claim group is elongate in a northwesterly direction and is about 14.5 km by 3 to 4 km wide. (Figure 1, 2). The claims start west of Keta Lake and stretch north to Rooney Lake, and south toward the Tlowils Lake junction along Adam River south main logging road. Various parts of the claims are largely accessible from logging road mains and spurs that result from recent logging operations.

The Kringle Consolidated Group is easily reached via Highway 19 and is about 30-40 km west along the highway from the communities of Sayward/Kelsey Bay, a deep water port.

The mineral rights are 100% held by Mikkel Schau (Free miner 142134).

Geology and mineralization

The geology of the region features early, orogen parallel faults cutting Triassic Vancouver Group rocks along which later (mid)Jurassic granodiorite plutons were emplaced, followed by a subsequent long history of transverse faulting and dyking (Figure 3).

A mineralized hydrothermal system, associated with a contact between the Triassic Vancouver Group (Karmutsen basalts, Quatsino limestone and Parsons Bay siltstones) and the mid-Jurassic Adam River granodiorite pluton, is manifested in copper mineral occurrences in breccias, shears, veins, amygdales and dispersed disseminations in Karmutsen basalts as well as near contacts of andesite and dacite dykes found within in a several km wide, highly magnetic, bounding, contact zone along the west edge of the pluton. Local veins or disseminations of bornite and chalcopyrite give rise to local high assay values (Figure 5).

Alteration in the claims is widespread and propylitic attended by a local influx of mineralizing fluids marked by chlorite and salmon colored, hematite stained alkalic feldspars in veins and amygdales. This alteration is locally superposed on contact metamorphism (locally up to amphibolite grade) near the pluton, as well as lower grade (greenschist and prehnite-pumpellyite) regional metamorphism in the adjacent country rock. The variably and metasomatically altered rocks occur within the parallel positive aeromagnetic anomaly, caused, in part, by breakdown of titaniferous ores in basalt in altered rocks, and, in part, due to introduction of magnetite as veins and stringers.

Exploration concept

The target is a large bulk copper deposit with local high grade pockets with minor credits in precious metals and possibly molybdenum.

In the Kringle Consolidated claims copper bearing showings are located in the periphery of a plutonic system. Based on a small data-set, there is a possible zoning from a bornite-chalcopyrite rich region (including Linzer Showing) through a chalcopyrite/pyrite region (near Puff showing) to pyrite rich portions further to the north. To the south of Linzer, the Adam West prospect (Minfile 092L222) is a “manto” like deposit of copper (bornite-chalcopyrite) mineralization formed at the contact of basalt and a within Karmutsen limestone lens. Dykes of several compositions (andesite to rhyodacite) and ages, within the bounding magnetic response are locally associated with mineralization. Local magnetite veining, combined with mineralized (dyke) breccias and local exoskarns showing grandite garnets and epidote, and a paucity of widespread sericitization or argillic alteration suggests that any exploration strategy might consider utilizing one of the following mineral deposit models: *alkalic copper porphyry, IOCG* or *copper red bed deposit models* rather than a traditional porphyry copper model.

Status of exploration

The area has a history of preliminary exploration and prospecting following recent logging activity has added new showings to the inventory of mineralized localities.

Post World War One, government reports indicate copper gold showings were present in region and explored but interest lapsed during the depression and Second World War years.

Prospecting in the sixties and early seventies followed the first wave of logging. Exploration in the area was encouraged by the locating of rich samples at Boyes Creek prospect (Minfile 092L165) which resulted in trenching and preliminary geophysics surveys performed in the vicinity of a mineralized shear zone/vein. Results include a weighted average of 3.9% of 7 samples over 116 m strike length (average width 1.2 metres). Adam West prospect (Minfile 092L222) became the most advanced prospect, with drilling and trenching from the 70's detailing the presence of a copper mineralized layer beneath a shallow north dipping limestone lens. 11 trenches yielded up to 2.7% over 3 m and drilling intersections up to 2.96% over 5 m.(AR22409).

A resurgence in logging (clearing areas and building new roads) has encouraged a second round of prospecting. Recent assessment reports (ARIS: 26930, 27070, 27463, 27736, 27745, 28327, 28328, 28747, 28927, 30121, 31039, 31516, 31856, 32553, and 33012) by this author have recorded hundreds of new assays; many with more than one percent copper, silver values up to 67 ppm and gold values up to 6,582 ppb. These assays indicate the abundant presence of locally interesting mineralization (but give no indication *of* grades or volumes*).*

Assessment work since 1968 have totaled in excess of $260,000 in dollars not adjusted for inflation. Of this total about $150,000 worth of assessment work has been performed by the author since first staking the property in 2001.

Current Work

This assessment report includes aqua regia based geochemistry and fire assay for Au, Pd and Pt. Magnetic susceptibility measurements at 61 sites and petrographic description of 30 thin sections

Assay of samples with ore-like grade are shown in table below

ID	Rock type	UTME	UTMN	Au ppb	Ag ppm	Cu ppm
1415705	Mass basalt	706110	5578173	<2	1.2	8210
1415710	SHZ in basalt	706001	5578248	**436**	**10.4**	**10000 plus**
1415711	SHZ in basalt	706001	5578248	378	2.4	10000 plus
1415732	Vein in basalt	708984	5575244	22	1.1	6565
1415754	Vein in basalt	709017	5575273	110	3.2	7872
1415719	Basalt host	704547	55795258	226	0.9	4942

The other 27 analyzed samples have less mineralized to barren assay values.

Conclusions

As prospecting and mapping progresses, more and more mineralized occurrences are discovered. Of special interest are the new mineralized samples in the vicinity of Adam West (Minfile 092L 222). and enlarging of Linzer showing area.

Basalts with mineralized sections continue to be located.

Local areas with elevated gold tenor are of interest, no particular reason has been discerned for their sporadic appearance.

Since mineralization in basalt seems concentrated in amygdaloidal sections of flows, and thicker flows generally have a thick section of non amygdaloidal basalt, a prudent exploration effort would concentrate on thinner flows.

The claims are in the vicinity of the Adam River, a prolific fish river, in an area within the SOI of the Tlowitsis First Nation.

Recommendations

It is recommended that the copper mineralization be better characterized, by providing some dimensions and grade to the local high grade grab sample locations.

The current prospecting has been limited by the difficulty in finding outcrops in second growth forest. Therefore a well financed (company) exploration program would include a **detailed airborne survey** locating magnetic and electromagnetic anomalies to locate further showings and extensions.

Formal company work would include appropriate geological mapping, geochemical and geophysical work on selected grids derived from airborne data and also focus on formal re-sampling of anomalous locations.

Other follow up work might also include prospector based work such as silt sampling of all creeks, systematic till sampling near known showings, chip sampling at localities returning high assay values from grab samples, and use of a beep mat or self potential methods to locate shallow magnetic and conductive subcrop locations along strike of previously located showings.

A study of the stratigraphy to delineate areas with thin flows ..

Twig sampling (bio-geochemistry) could help delineating areas of interest in the forest.

Systematic samples (with assays of Cu, Ag, Au, and Pd, known to be locally anomalous) would be instrumental in the assessment of area as bulk low grade deposit.

A compilation of all available data on alteration and mineralization would help future selection of drill testable sites

The area is not likely to get environmental clearance for an open pit mine should that prove a possibility, but the claims are suitable for a field school teaching prospecting and basic geological skills to young potential workers in the field.

Introduction and Terms of Reference

Mikkel Schau, the current tenure holder, has prepared this report for submission as an assessment report for tenures 509556*, 515027, 515028. 515029, 515030, 515032, 515033, 515034, 515386, 515924, 515925, 515926, 515930, 516017, 521073, 529780, 797082, 797102, 845313*, 845314*, 845315*.

The main source of information was field work during August 6,7,9,10, 2012 which collected magnetic susceptibility data, mineralized prospecting samples from which aqua regia soluble assays and thin sections were obtained. Other sources of information and data contained in this assessment report or used in its preparation are cited and given in the list of references at the back. Some information is derived from private data banks held by Mikkel Schau. Other data used in this report is mainly from government assessment reports including many authored by the owner,

Property Description and Location

The Kringle Consolidated claim group are centered on 50 deg 19 min N and 126 deg 6 min W on northern Vancouver Island, adjacent to the Island Highway, about 250 km north of Nanaimo. They are located within NTS 092L, and more specifically, mainly within the 092L040 trim sheet (Figure 2) but extend south into 092L030. They straddle the Adam River, as well as the Island Highway (19), and contain the easily identifiable 250 km marker located between Keta Lake to the east of the border and Rooney Lake in the west, and extend south along logging roads to the vicinity of Tlowils Lake. The claim group is elongate in a northwesterly direction and is about 14.5 km by 3 to 4 km wide. (Figures 1 and 2). The claims start just west of Keta Lake and stretch north to Rooney Lake, and south to the Tlowils Lake junction. Various parts of the claims are largely accessible from logging road mains and spurs that reflect recent logging operations.

The property consists of 21 claims totaling 4,641.76 ha (or 10,549 acres). Some of these claims were staked by location and later converted, other were claimed using MTO. The claims are called the Kringle-Consolidated Claims. They include the claim tenures listed below. The mineral rights expire as shown in the above table. This assessment report based on recent work is currently being submitted to extend the “good until” date.

Tenure number	Good to date	Area (ha)
509556	2013/may/02	165.19
515027	2013/sep/12	247.37
515028	2013/sep/12	226.82
515029	2013/sep/12	82.50
515030	2013/sep/12	123.67
515032	2013/sep/12	20.62
515033	2013/sep/12	61.86
515034	2013/sep/12	103.08
515386	2013/sep/12	20.61
515924	2013/sep/12	41.23
515925	2013/sep/12	20.61
515926	2013/sep/12	20.62
515930	2013/sep/12	206.21

Tenure number	Good to date	Area (ha)
516017	2013/sep/12	20.62
521073	2013/sep/12	495.08
529780	2013/sep/12	206.30
797082	2013/sep/12	516.05
797102	2013/sep/12	515.85
845313	2013/may/02	516.03
845314	2013/may/02	516.07
845315	2013/may/02	515.37

The mineral rights are 100% held by Mikkel Schau (Free Miner 142134) There are no royalties, back in rights, payments or other agreements and encumbrances to which the property is subject.

All claims are on crown lands and are focused on copper and precious metal mineralization, but include an ancillary interest in other base and industrial metals.

No environmental liabilities are currently known, but notice is given that the Adam River, which traverses claim area, is a “fish river”, and any development must be cognizant of this fact. A large waste dump or tailings pile is not likely to receive environmental approval should it abut or even possibly leak into the Adam River. It is considered that the Kim Creek drainage area (which is not classified as a fish creek) can be used, to prevent disturbance of the Adam River. This would require damming the creek. Much of the area is in Timber Management zones and has been logged (sometimes several times), but small sections of old forest away from areas of current interest still remain as “OGBA” lots. The claims adjacent to and straddling the Adam River, a prolific fish river., are unlikely to recieve clearance for a large open pit mine in this area.

No permits are required for the hand based work or aerial surveys suggested in this report. Any machine based excavation would require work permits.

The land situation is typical; I believe I have claimed and hold the mineral rights in a lawful manner.

The area covered by the Kringle-Consolidated claims is mentioned in a number of discussions between the Province and local first nations with regards to land-claims although there is no current treaty involving these lands. Letters have gone to relevant First Nation treaty groups indicating my intent to prospect in region, following guidelines laid down by AME. To the best of my knowledge the land claim treaty process has not directly discussed these lands. It was, however, listed on MapPlace as part of the Kwakiutl_Laich_Kuul_Tach and now the area is indicated to be part of the Nanwakolas Treaty process and/or the SOI of the Tlowitsis First Nation. I have introduced myself to the chief(s) at conference meetings and via the recommended notifications of field work. Consultations with affected First Nations are ongoing but at a preliminary state. There has been no impediment to my claiming or working the land to time of writing; In fact, people of nearby communities would like there to be more exploration, and possibly mining, to shore up the local economy.

A map showing the position of current Minfiles on a regional geological map and newer mineralized locations are shown with respect to claim boundaries and is shown in Figure 3

Accessibility, Climate, Local Resources, Infrastructure and Physiography

The claim area lies within the Vancouver Island Mountains and shows a moderately rugged topography with a lower elevation of 180 m,.found in the Adam River Valley at the north of the claims, and highest points on unnamed tops at about 1000 m at the south of the claims. The northwest flowing Adam River is joined by north flowing creeks such as Kim Creek and Rooney Creek cutting through earlier glacial fluvial deposits. Rainfall is considerable and local windstorms affect area causing back country roads to be blocked.

The hemlock forests have been logged, sometimes twice, and a wide network of old alder covered roads mark the earlier logging efforts. Old overgrown road metal quarries are located along some of these roads. Much of the area has been replanted.

Highway 19 traverses the area and several logging main roads (including Upper Adam, Lower Adam, Kim Creek Mains) provide general access to the area. Many logging road spurs traverse the area, so that most of the claims are accessible. Off road, the landscape is rugged and the forest litter deep and difficult to traverse.

The nearest population center is Sayward and Kelsey Bay about 30 to 40 km to the east. These resource extraction based communities are served by the Island Highway (19). Kelsey Bay, on Johnston Strait, has a well protected deep water port once widely used by coastal steam ships. To the east, Campbell River is about an hour away by the highway. Port McNeil and Port Hardy lie to the west.

The current main industry in these villages is fish farming and lesser amounts of logging related work. Once this was a major logging center and mining expertise was locally acquired in the nearby, now defunct, magnetite mines. There are large staging areas (once used for logs) available for industrial use in Sayward. Plans for a gravel extraction project in the area are currently in discussion.

Previous Work and History

Prior ownership of property and ownership changes of the claims are tracked using Assessment Reports as a guide.

Logging opened up the area in the 1960's and regional prospecting campaigns located scattered copper rich showings. A large block was staked in 1965 by W.R. Boyes, and was taken over shortly thereafter by Western Standard Silver Mines. The area has been the locus of subsequent exploration as shown in table below:

Company	Year	Type of work	Assessment Report	Assessment Value	Results
Newconex Canadian Exploration	1969	16 chip samples for copper, 503 soil/silt samples for copper	1859	2601.41	Located copper showings near Rooney Lake, best .23% Cu/20', grid values low. (092L 170)
Bethlehem Copper	1969	Prospecting, geology, minor magnetics, minor soil sampling, minor stream sediment sampling	1993	2400.00	Located minfiles 092L165, Boyes Creek now classified as a prospect and minfiles 092L166-169 inclusive classified as showings
Armeda Copper	1970	Magnetometer work/geochemical-soil sampling	2379	63720	Possible conjoint anomaly NW of Rooney Lake

Company	Year	Type of work	Assessment Report	Assessment Value	Results
Conoco Silver Mines	1971	Geochemical study 1300 soil samples	3235	None reported	Three geochemical anomalies located near (092L222)
Western Standard Silver Mines	1971	Prospecting, geological, geochemical survey	3306	5574.46	No commercial mineralization
Conoco Silver Mines	1971	IP Survey, gradient SP survey, depth probe	3403	5115.62	Geophysical anomalies found near 092L165, 222
Sayward Explorations Ltd	1972	Prospecting, verified previous results, reported on 6 diamond drill holes (1748') in area south of Rooney Lake	3795	8919.00	Minfiles 092L163, 092L249 now classified as showings.
Craven resources	1985	Geology, drilling 6BQ holes (2747'), 300' of X-ray drilling	14284	4963.81	More work on 092L222, copper of interest, low precious metals
Germa Minerals	1989	Geology, soil sampling, VLF,	18255	18409.30	Work south east of Rooney Lake, minor geochemical anomalies
West Pride Industries	1991	Geological, geochemical and compilation	22409	10768.00	More work on 092L222, summarized work and drill core from 7 BQ holes, Reported on another 7 holes from 1973 totaling another 3000' of drilling. Main zone better delineated - 1500' strike length x 1000' down dip x 15' thick. Other also targets located.
Lucky Break Gold	1995	Geophysical studies	23906	Not known	Surveyed one of above favorable targets.
Schau	2002	Geology, Geochemistry, and petrophysics	26930	12194.00	Local high grade skarn at contact and mineralized dykes (Kringle)
Schau	2002	Geology, Geochemistry, and petrophysics	27070	6300.00	Dyke breccia and shear zone in Puff quarry
Schau	2004	Geology, Geochemistry, and petrophysics	27463	4800.18	Three new showings: Pastry, Macaroon, and Oreo
Schau	2005	Prospector's report	27736	3288.00	Krisp copper showing along highway
Schau	2005	Prospectors report/ Klejne	27745	2262.00	Work near Boyes Creek prospect (minfile 165)
Schau	2006	Prospectors report/ Kringle south	28327	13500.00	Verification of minfiles 222 , 166, 167, 168.
Schau	2006	Prospectors report/ Kringle north	28328	3500.00	New showings
Schau	2007	Prospectors report/ Kringle center	28747	2499.00	New high grade showings
Schau	2007	Petrography, magnetic susceptibility and density studies (Kringle south)	28927	17000.00	Petrological studies, and new showings. Details of Veins and alkalic alterations
Schau	2008	Alteration studies (Kringle north)	30121	6550.99	Petrological studies and new showings
Schau	2009	Geology (Dykes) in northern Kringle	31039	1450.00	Petrological studies and new showings

Company	Year	Type of work	Assessment Report	Assessment Value	Results
Schau	2010	Geochemical and biogeochemical studies at Klejne	31516	2650.00	Assessed viability of biogeochemical methods in this environment
Schau	2010	Assays and lithochemistry, Kim Creek, Kringle-consolidated	31856	11000.00	New copper showings; as veins and disseminations in basalt
Schau	2011	Petrography, Lithochemistry, Assays and Geochemistry on The Kringle Consolidated Claim Grou	32553	45000	New copper showing, gold bearing vein
Schau	2012	Petrography, Lithochemistry and Magnetic Studies on Kringle Consolidated Group	33012	6000	Magnetic susceptibility and Alteration and relation to mineralization
Schau	2013	This report	This report	15896.62	Petrologic studies and new showings

The total value of assessment work in original dollars is $26,0475 + (not all reports were costed) spread over 44 years and 27 assessment reports as well as the value of unreported work. Of the reported amount, an excess of $150,000 has been spent by myself (in 16 reports) since 2001.

In 1974 the GSC published a map of the area (Muller et al, 1974) that generally follows the geology determined by previous consultants. Quatsino limestone was shown as less widely spread than indicated by Sheppard’s mapping (AR3795).

The most comprehensive work has been on Minfile 092L222 (Adam West). In the early seventies and as late as the nineties, work on the Adam west prospect found stratabound copper mineralization below thin limestone beds within the Karmutsen basalts south of the Billy Claims and north of Boyes Creek. The details of exploration on this prospect are discussed in AR 14284, 22409, and 23906. A soil geochemical anomaly was trenched and several drill holes returned favorable results at or near the lower contact of a limestone lens in the Karmutsen: A drill core sample was seen to contain 1.4 gm per tonne gold and 0.57% copper (AR 14284) and drill hole assays that included 0.84% copper over 23.5 m (see Minfile 092L 222 discussion). .Cross trenches across this interface were, on average, 5 m long and extended over a 450 m strike length and graded a weighted average of 0.89% Cu. 11 drill holes, probing the lower contact (both 150 m along strike and 200 m down dip) indicated mineralization was concentrated about 13 m below a limestone horizon and all holes crossed copper mineralization with drill hole A6 returning 2.1% Cu over 5 m. (AR22409, and 23906). No historical mineral resources have been recorded, although at Minfile 092L222, a volume of mineralized material of unspecified grade was estimated to be at least 1000' X 1500' X 15' and open in all directions (AR22409). This volume estimate does not meet requirements of a NI 43-101 report and is only reported to give a rough and historical indication of a possible volume of mineralization at one of the many prospects. Some of the unlabeled old drill sites have been located by this author under the duff and undergrowth but the locations of the drill positions that yielded a cache of rotten and decrepit core boxes located on site is not known. Thus we are heavily dependent on the summary of the drilling provided by Leriche in the nineties (AR 22409 and 23930).

A geological compilation of area in digital form (Massey, 1994, 2005) contains contacts assembled in part from previous assessment reports. The Quatsino limestone in this compilation occupies a larger area in the vicinity of the claims than on Muller's map (ibid).

Thus, work to date, has shown sporadic and widespread mineralization of copper and silver with occasional gold values that occurs in veins, amygdales and shears in basaltic country rock adjacent to a large granodiorite batholith and associated(?) felsic dykes as well as proximal and distal skarn showings. The country rock is part of the Karmutsen Formation comprising mainly feldspar-phyric basalt, as amygdaloidal or massive flows, or as thin sills (+/- dykes) intercalated with minor beds of limestone and associated clastics, overlain by thicker beds of Quatsino limestone and locally by Parsons Bay formation.

An early government sponsored airborne aeromagnetic survey outlined a large magnetic anomaly adjacent to the intrusive contact; it effectively encloses the mineralization located to date.

New logging roads have exposed new subcrops and the claims are mainly underlain by the Karmutsen Formation. Since the turn of the century another 26 Assessment Reports have been filed and numerous new showings have been located, including gold bearing veins with up to 5 gm/t Au and bornite-chalcocite veins with excess of 25% Cu, as well as well mineralized several percent copper) basalt units with disseminated copper.

Figure 1: Location of Claims

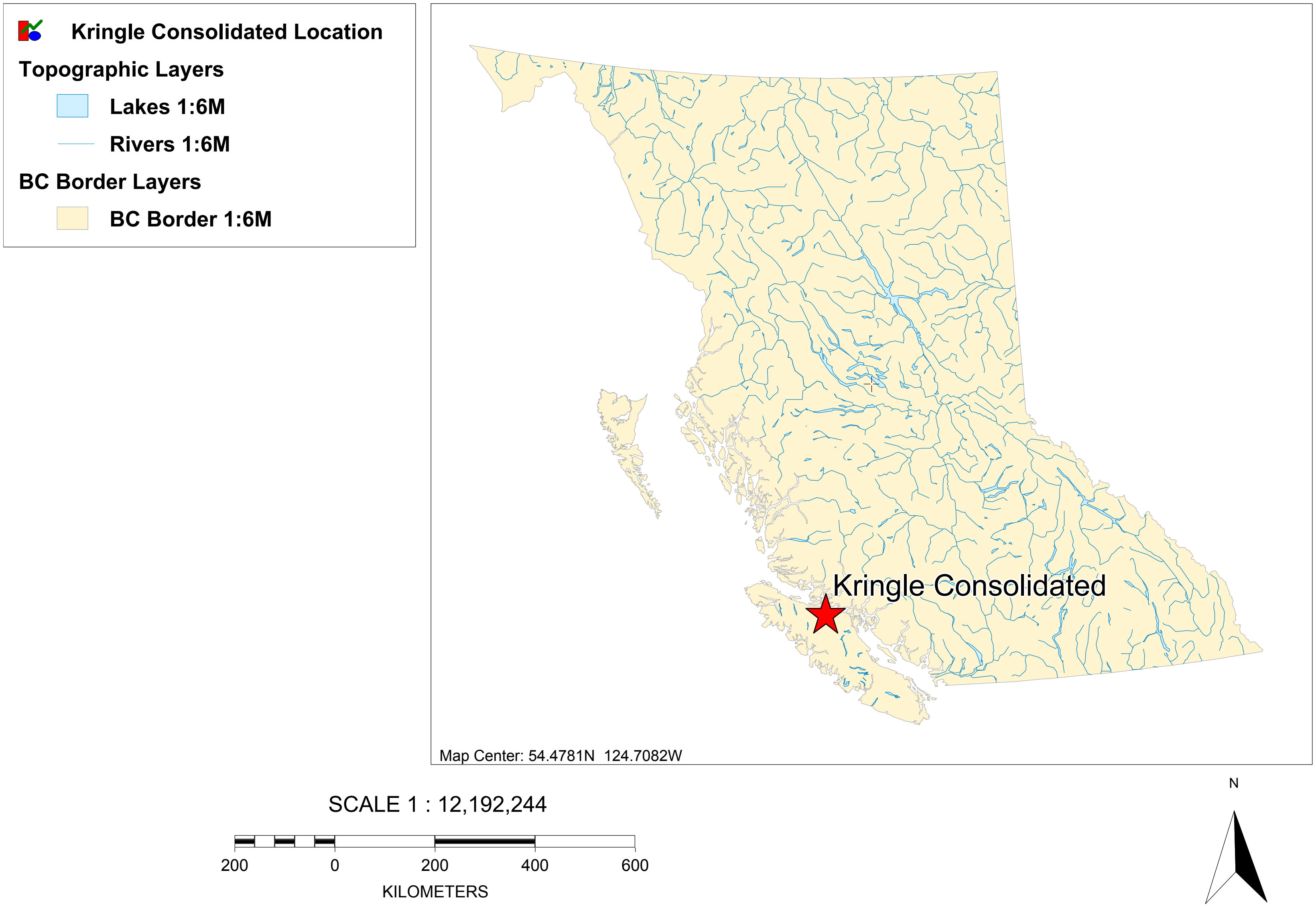
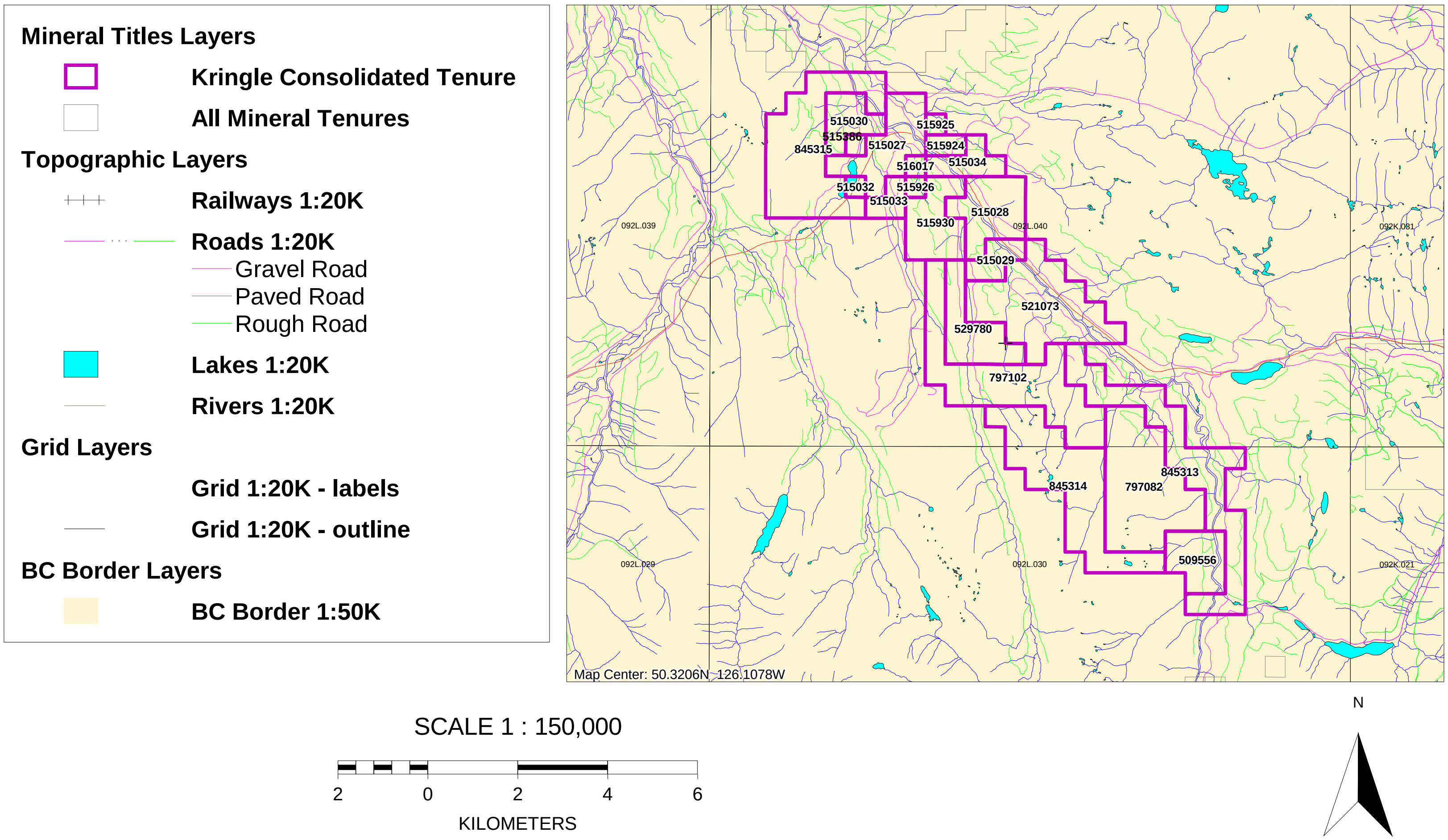


Figure 2: Claim boundaries for Kringle-Consolidated Claim Group



Summary of work done

Field work August 6,7,9 and 10, 2012. Contractor and self, mapped and collected samples for analyses and petrographic work. In situ measurements of magnetic susceptibilities were also collected at 61 sites. About 50 km of roads were surveyed, providing coverage of about 5 square km of new information.

Lithology and geochemical samples: Samples were taken to document mineral locations Samples were collected, usually in pairs. One destined to ACME Laboratories, the other retained as a witness sample. Not all witness samples have been kept. Thirty two witness samples were selected for petrologic analysis and thin sections prepared. The sections and cutoffs for these have been retained.

No special security precautions were taken. Samples were bagged, selected for analysis, labeled with ACME identification numbers, and packaged in cardboard boxes and sent by Bus to ACME Labs in Vancouver where they entered the laboratory's security stream.

Assay sheet number	Type	Number of samples	Acme Methods used
VAN12005449.1	Geo4 (FA for Au, Pd and Pt)	33	FA fusion Au, Pd, Pt,
VAN12005449.1	Geo4 (1D for 35 elements)	33	Ar digestion ICP-ES analyses

R200-250 Crush split, and pulverize 250 gm rock to 200 mesh

Geo4 Fire Assay Au, Pt, Pd by ICP-ES (30 gms weight) and 1:1:1 Aqua Regia digestion, ICP-ES analyses

Rock descriptions and annotated assay values are shown as Appendix 1, and the original Assay sheets along with QA/QC data are in Appendix 4. Appendix 2 gives results of the magnetic susceptibility determinations and Figure 6 shows the location of the median value. Figures 4 show the location of lithochemical samples, and fig 5 show the joint distribution of Cu and Au in lithogeochemical samples.

ACME QA/QC protocols have been relied upon, and but local samples have been checked by returning to re-sample general areas, and getting similar assay results.

Geographical locations are determined largely by GPS but are checked against logging road traces as shown on government maps and Google Earth.

Petrography

From the witness samples to the above assay samples and several selected localities, 28 thin sections were prepared by Vancouver Petrographics and were studied by a Wild Binocular Stereoscope and by a Nikon Labophot-pol petrographic microscope. Descriptions are presented in Appendix 3. Locations of the thin sections are shown on figure 7.

Density (Specific Gravity)

Measurements were made by comparing weight in air with volume of rock. A piece of quartz was used as a standard. Only thirteen sample densities were determined. The results are included with thin section sample descriptions in Appendix 3.

Detailed Data and Interpretation

Purpose

The purpose of the work to demonstrate the possibility of a large hydrothermal system underlying the claims. To this end, mineralized locations in areas not yet visited or new roads are explored are sought and their context evaluated to test this hypothesis.

General Surficial Geology

This section is largely copied from AR33012

The Kringle-Consolidated Claim group straddles the north-north west flowing Adam River south of its confluence with Eve River. The river largely follows the outcrop trend of the Quatsino Limestone in this area and runs in a typical U shaped valley, between tall hills trending roughly the same north-northwesterly direction. Local areas of till have been noted in lower areas where road construction has laid it bare and as a thin veneer in higher locations where it overlies bedrock. At least three different terraces along the shores of the river indicate that the river has had a complex geomorphic history. The river is currently incising its course through thick, earlier river and till deposits. Bedrock occurs sporadically in the river bottom.

Kim Creek is a large tributary that runs northerly, mainly along a faulted zone, before it turns northeast and joins the Adam. Other adjacent creeks seem to occupy north or northwest trending zones probably also the locus of high strain zones. The creeks are largely incised in their own deposits or into soft bedrock. Small tributary creeks are locally very steep and incised sharply into the hillsides, and are thought to occupy fault traces and other zones of weakness eroded after the glaciers left. Linzer area, for example, is bounded by such steep and deeply incised creeks. During the last Ice age, the Adam River and the larger creeks were probably occupied by alpine glaciers that flowed northward through most of their history so that most debris tracing would proceed up ice, ie southward..

The hills are variably covered with colluvium which overlie thin till deposits. For example, tills are locally about 1 m thick at elevations of 700 m. Only where logging roads expose subcrops, or in outcrops on cliff faces and/or steep sided valleys is bedrock visible. Road metal quarries used by logging companies are mainly located in strained and fractured rock, providing most of the road building material in region.

Where the old forest cover is still present, deep organic debris shield sub/outcrop from the surface. Bush can be thick. Logged areas contain abundant slash and locally subcrops are exposed through logging activities.

Geochemical surveys of surficial materials are limited by the soil cover being thin and young on hill sides, and transported by rivers, to form terraces where plentiful. An orientation survey reported herein suggests that sampling the variably distributed till may provide more meaningful answers.

The logging roads are built using road metal from mineralized rocks derived from the road metal quarries. Streams are seasonal and locally steep, and much of the area clear-cut, making retrieval of meaningful samples difficult, in fact moss samples are preferred by regional studies. Preliminary survey suggests that stream sediments from small tertiary or smaller may, if obtainable, yield useful results.

Regional Geology

The Triassic Vancouver Group is the common host rocks to deformation zones, intrusive Jurassic batholiths and consequent faulting. The current tectonic position of the area suggests that much dextral? transverse movement has occurred, as Vancouver Island has adjusted to its position along the leading edge of the continent. In the near region, basalts of the Karmutsen Formation (uTrVK), limestones of the Quatsino Formation (uTrVQ) and slivers of the Parson Bay Formation (uTrVP) are locally deformed, metamorphosed, metasomatised and/or mineralized in the contact region of the Adam River Batholith (See Figure 3).*(MPB or Mississipian or Permian Buttle Lake Limestone and muTrVD or the middle Triassic Daonella beds, in the SW of Fig 3 and the lJBHse or lower Jurassic Bonanza Group (Harbledown) sediments in the eastern edge of the map are not part of the geology considered herein.)*

The units of the Vancouver Group are generally as described by Massey (1994, 2005) but many lithological details are taken from Carlisle (1972). Greene has published details of the petrology of the basalts (Greene et al, 2005, 2006, 2008) and Nixon has published maps and descriptions of these units to the west (Nixon et al, 2007). Lincoln (1986), Cho et al (1986), and Kuniyoshi and Liou (1976 a,b) have published on the geology of the Karmutsen to the east of the area. The Vancouver Group (Karmutsen, Quatsino, and Parsons Bay Formations) underlies much of the area covered by the claims.

The *Karmutsen Formation (uTrVK)* (or "subgroup" of Carlisle, 1972) is a low potash tholeiite basalt mass of remarkably consistent structure and thickness that constitutes the lower third of the Vancouver Group in this area. The formation is split into three. A lower sequence 2500 to 3000 m of the formation consists of closely packed pillow lava. At the top of the pillows, magnesian pillow basalts are seen (Keogh Picrites, Greene, 2007, and on Kunnum Creek, see AR30696). The next 600 to 1000 m consist of pillow breccia and aquagene tuff, typically with unsorted beds ½ to 2 m thick in the lower half. The upper 3000 m is composed of meter to decimeter thick, both amygdaloidal and massive, basalt flows.

These thick massive flows have modern analogues. Modern Inflated pahoehoe flows are known to be thick, with a tripartite textural division with a thin lower amygdaloidal section, a thick massive non amygdaloidal central section and an upper very amygdaloidal section (Self 2003). This type of flow may well be represented by local flows that are zoned with amygdular tops and massive cores. Some flows locally show bent vertical vesicles near base of flows. Others show interior zones rich in flattened amygdular layers. Very little interflow material has been located, indicating a lack of deep weathering between the eruption of the flows.

In the upper third of the massive unit, thin, intercalated sporadic and commonly incomplete sequences of 3 to 20 m thick consisting of discontinuous bioclastic, micritic, cherty or tuffaceous limestone which are locally overlain by closely packed pillows, which are in turn overlain by pillow breccia, and then thick massive flows. The presence of shallow marine units and local pillow development indicates that although most of the pahoehoe flows were extruded sub-aerially, shortly after cooling they were submerged below marine wave base. These fluids would aid in the development of very low grade regional metamorphism of the unit.

The structure of the unit is marked by gently folded and locally severely faulted areas. The folding is part of a regional shallowly north plunging antiform. The distribution of units also suggest east trending folds of small amplitudes. Well developed linear valleys trend north and north westerly directions as well as in easterly directions and separate large panels of gently dipping lavas. Slickenlines indicate that the preserved (latest?) directions of slip are largely dextral? and transverse. Scarce early slickenlines indicate vertical movement, but even where present have been almost erased by later movement. The apparent offsets are in part normal (east side down) and in part reverse (north west side up). The region from the south end of the claims to the ocean shore in the north some 27 km. away is underlain by shallow dipping Karmutsen and without structural repetition the shallow dipping sequence of basalt should be at least 9 km thick . The stratigraphic estimate elsewhere is about 6 km. Structural repetition is the most likely cause for this disjoint result.

The Karmutsen basalts have been affected by very low grade regional metamorphism. Albitized feldspars, amygdules and veins of pumpellyite, prehnite, epidote, calcite, and chlorite are widely noted. Local areas of zeolite are found in basalts. This alteration or regional metamorphism would have started as new lava piled on top and gained in import as the pile of lava was buried, and so would be of upper Triassic-lower Jurassic age. Adjacent to contacts with (mid Jurassic) Island intrusives, higher grade green schist and amphibolite bearing assemblages would be imposed on already metamorphosed rocks. Hydrothermal systems would have utilized existing faults and weakness to affect the Karmutsen basalt host rock.

Considerable regional variation of the magnetic field is shown on the aeromagnetic map, including a several km wide strip with positive anomalies adjacent to the pluton. Other local positive anomalies, within the area underlain by the Karmutsen, indicate that magnetite concentrations of the volcanic rocks are not uniform and/or that the area is underlain by highly magnetic bodies. It would appear that the northwest trending aeromagnetic anomaly crosses the regional north north east dip of the basalts and is therefore not a variation of primary magnetism in original flow layers.

The *Quatsino Formation (uTrVQ)* is a thin ribbon traversing the country in a north-northwest direction, to the northeast of the Karmutsen Formation. Regionally, it is seen to stratigraphically overlie the Karmutsen, and is known to vary in thickness from as much as 500 m to the west, near Alice Lake, to a thinner 150 m or so further east. In the Adam River area it is a distinct, easily recognizable unit, but the thickness is in doubt, because, where best exposed, it is in a ductilely deformed contact with the granodiorite. The Adam River follows part of its outcrop pattern.

The formation consists of grey limestone beds. Where undeformed it is coarsely bioclastic, light grey, indistinctly bedded and non fissile (Carlisle, 1972). Where deformed near plutons it becomes a light grey, finely recrystallized limestone locally carrying tremolite. In fresher rocks. fossils indicate that the Quatsino Formation is upper Triassic in age (mainly Karnian, perhaps partly lower Norian) (Muller et al, 1974, Nixon, 2007).

The expected negative aeromagnetic signature (a consequence of a diamagnetic response of limestone) is poorly defined on large scale geophysical maps shown on MapPlace. More detailed aeromagnetic surveys are necessary to delineate the outcrop pattern in detail on the Quatsino further to the northwest. It is likely that some of the silty reaction skarns intercalated with black limestone noted on the property, north of the 250 km marker, represent some thin relict lenses of Parsons Bay Formation. Neither Quatsino nor Parsons Bay formations were encountered in this year's work.

Jurassic Intrusives (EMJIgd)

Jurassic granodiorite to diorite underlies the area to the east-northeast of the Adam River. It has been called the Adam River Batholith (Carson, 1973, Muller, et al, 1974). It is about 4 km wide and trends northwesterly in excess of 10 km.

It consists mainly of mesozonal granodiorite. Rocks studied are mainly medium to fine grained biotite hornblende granodiorite and quartz diorite with a locally elevated content of mafic minerals including magnetite. In thin section, pyroxene cores to amphibole grains are noted. Local veining of darker phases by lighter more feldspathic phases are common. At contacts the volcanic rock inclusions are transformed into dioritic inclusions and limestones become skarn and marble rafts.

The intrusive contact is vertical and crosscuts units, cross cutting the highly deformed Parsons Bay Formation in the vicinity of Keta and Tlowils Lakes and intruding the underlying metamorphosed Quatsino further to the northwest. The Karmutsen Formation across the Adam River to the west, has north-north-east dips and is cut obliquely by the granodiorite. An apophyses of granodiorite crosses the Adam River (and the Quatsino limestone), and is emplaced in the Karmutsen near Keta Lake. It is likely that the Batholith was intruded along a **pre-existing** north westerly directed steep fault between the Karmutsen Formation to the west and the younger Quatsino limestone and Parsons Bay to the east.

Contacts are known to be hornfelsed for short distances, with local skarnification near, and in, limestone beds. Locally, as near 250 km marker on Highway 19, ore skarns are well exposed, as they are a km to the north. Orientations are steep and complex at or near the contact. There is much evidence that the Karmutsen flow layers is in fault contact with the overlying Quatsino Limestone rather than in a simple stratigraphic relationship.

K-Ar dates of 160 Ma. on hornblende and 155 Ma. on biotite from a quartz diorite of this batholith (Carson ibid) confirm the mid Jurassic age and suggest it to be intruded contemporaneously with the deposition of the andesitic volcanic Bonanza Group (which is well displayed to the west, near Bonanza and Nimpkish Lake) and of about the same age as the plutonism responsible for the Island Copper deposit to the west..

The high concentrations of magnetite in these I-type intrusions are reflected in the regional positive aeromagnetic anomalies over these plutons.

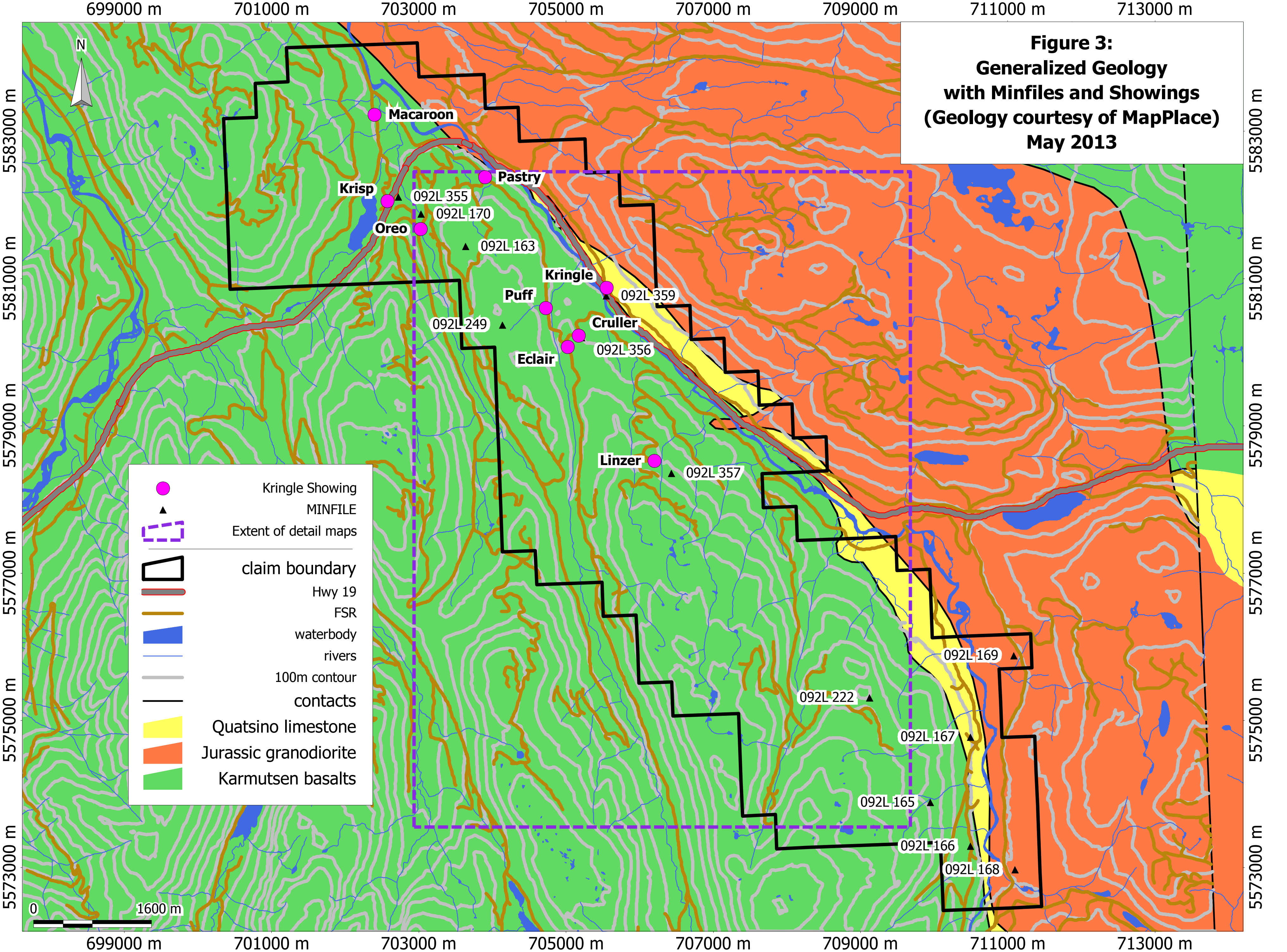


Figure 3:
Generalized Geology
with Minfiles and Showings
(Geology courtesy of MapPlace)
May 2013
699000 m
701000 m
703000 m
705000 m
707000 m
709000 m
711000 m
713000 m
5583000 m
5581000 m
5579000 m
5577000 m
5575000 m
5573000 m
N
Macaroon
Pastry
Krisp
092L 355
092L 170
Oreo
092L 163
Kringle
092L 359
Puff
092L 249
Cruller
092L 356
Eclair
Linzer
092L 357
092L 169
092L 222
092L 167
092L 165
092L 166
092L 168
Kringle Showing
MINFILE
Extent of detail maps
claim boundary
Hwy 19
FSR
waterbody
rivers
100m contour
contacts
Quatsino limestone
Jurassic granodiorite
Karmutsen basalts
0
1600 m

Dykes

Based on preliminary field evidence, supported in part by prior observations made by Carlisle (1972) in adjacent areas, there appears to be at least three sets of granitoid dykes in the area. The dykes observed so far are in the magnetic aureole in the host rock adjacent to the intrusive contact of the main pluton. From oldest to youngest the dyke units are:

1/ Thin Quartz eye + Feldspar Porphyry dykes “folded into tight folds” predate the main intrusive body (example at Kringle Showing).

2/ Deformed, and argillically altered and mineralized porphyries (locally brecciated) sub-parallel to intrusive contact of batholith (examples at Cruller and Puff showings).

3/ Later “fresh” feldspar and hornblende porphyries with planar or irregular contacts mainly normal to the intrusive body (an example among many, can be seen at 250 km highway marker).

Regional structures

This section is an update of previous summaries by this author.

The area of interest lies within the shallow east north east dipping homocline of Triassic rocks and the Adam River Batholith, called by Muller et al. (1974), the White River Block. It is bounded to the west by a major fault, the north northwest trending Eve River Fault. To the north the Johnson Strait Fault terminates the block, the eastern and southern borders are faults outside the claim area in adjacent map sheets. The faults in the claimed area are sub parallel to the border faults, or are second or third order subsidiaries of it. It is thought that these faults contain a large normal component but a dextral transverse component is often mentioned in reports and shown in outcrop as sub horizontal slickenlines. North trending excised valleys probably follow secondary fault structures. One such structure might run along Kim Creek.

Dip directions of the massive basalt flows within each fault panel differ somewhat suggesting some jostling of fault blocks. The majority of dips of flow tops and intercalated bedding recorded by the author are more northerly than easterly and shallow dipping (10 to 30 degree). The area is more structurally complex than implied by a simple homocline, since the regional structure predicts that the youngest rocks should be to the north. Instead, the Parsons Bay Formation (the youngest in this sequence) in this area, is found near Keta Lake and near Tlowils Lake, or far southeast of where it would be expected in a simpler structural milieu. Considerable repetition by faulting is strongly implied and has been locally verified.

A fault with minimal apparent offset along the Adam River postdates the pluton, probably with strike slip motion; but the fault system itself is probably long lived, since it seems that it also predates the pluton as well, with an apparent sense of west side up. West of the pluton, the younging in the Karmutsen is to the east northeast. On the east side of the Adam River pluton the younging is locally to the south, implying an east west trending syncline.

As noted above, the intrusive rocks were probably emplaced along prior northwesterly trending faults in the vicinity of the current course of the Adam River. These are faults parallel to the length of the Cordillera, and hence are called orogen parallel faults. It is highly likely that these faults have stayed active during later transverse faulting episodes. This type of faulting plays a large role in localizing some large mineral deposit in other places in the world, notably Chile.

Northerly striking fault zones strike into the Adam River Fault, these are considered secondary faults: Kim Creek appears to follow such a trace, as does the Rooney Creek drainage to the east. These steeply dipping faults are locally noted in quarries, The best exposed example is in the Oreo Showing. They show tens of metre wide damage zones and rock is variously deformed within these zones.

Cross faulting (steep E-W striking) is locally abundant, with various indications of offsets. Some of these faults are located in quarries and near showings such as in the Oreo, Puff, Eclair, Kringle, and Cruller quarries

Regional Geophysics

This section is lan update of previous summaries made by this author

The magnetic character of the Adam River Batholith is expressed on regional aeromagnetic maps. Of some interest is a magnetic domain of similar magnitude, located over Karmutsen Basalts as shown in Figure 6. The contact, between the magnetic batholithic rocks and the thin, non-magnetic limestone, is defined on the low resolution aeromagnetic map. A positive magnetic anomaly with a sharp magnetic boundary located several km to the west overlies basalts. This boundary is not parallel with strikes and dips determined for the basalts, but cross cuts across them instead, to roughly parallel the contact of the Adam River pluton. Cu-Ag vein showings and prospects are located within this anomalously magnetic region.

Detailed geology

Locations of outcrops

Sub-crops are located mainly along logging spur roads. A wide network is being systematically examined. In spite of visits over nearly a decade, not all roads have been visited. Old alder covered roads await discovery and ongoing logging is providing new subcrops for examination.

Locations visited and collected are shown on Figures 4. New roads were visited and sampled to test their mineral content. Old road metal quarries used by logging companies to build their roads are favoured sites for investigation. The quarries are located in easily broken rock situations such as shear zones. Many of the showings on the property are located in these quarries.

Disseminated copper in basalt

Previously, disseminated copper has been reported from basalts (cf Linzer and Eclair showings) Basalts in the Linzer area near M133, show zones adjacent to an amygdale layers which weather a brown colour more “purplish” than common rust (limonite). These zones and adjacent rocks vary in thickness, a maximum is not known but locally at least a meter thick.

A more systematic investigation into the possibility that other basalts contain disseminated sulphides has resulted in the finding that copper assay values near fracture zones and amygdaloidal zones tend to be elevated.

The manner of extrusion of Karmutsen basalts in the claims is thought to be in a manner described as “inflated pa hoe hoe flows” (cf Self 2003). In this model vesicular layers are expected in a single flow, at the top, in several horizons in the top third or so, a very amygdale rich layer about a third of the way down, and then no amygdales in the bottom 2/3 of the flow, save at the very bottom.

It would appear that the vesicular rich layers are the main holder of the disseminated copper mineralization. Thus an exploration guide to find higher volumes of copper would be to identify the thinnest flows, avoiding the barren cores of thicker flows, see below.

Faulting and veining

Karmutsen basalt units generally dip north to northeasterly with shallow to moderate dips. The basalts are variously veined and fractured.

The basalt sequence is terminated to the east by a fault zone, across which deformed Quatsino and Parson Bay Formations hosts the Adam pluton. Dykes and apophyses of the Adam Pluton cross the fault to intrude the basalts. This northwest trending fault is thought to be a first order fault, and is thought to have a pre-intrusive history, and to have provided a pathway fro the intrusion of the Adam Pluton. It is considered an orogen parallel fault, in the sense that Sillitoe used the term (Sillitoe, 200X) in his review of IOCG deposits in Chile. It is a long fault feature, with a complex history parallel to the tectonic grain in the region.

Associated with this fault are many second order faults, which have northerly trends, Kim Creek, and upper Rooney creek and other northerly directed streams fill valleys carved from the fault damaged basalts. It is these NS faults which have provided the bulk of the road metal to the logging road building effort.

Later easterly trending faults are also considered part of the fault response to the regional earlier fault set. Some host dykes, other mineralized showings and some are found at the intersection of the NS and EW faults.

Veining in this area occurs largely in spaces created by irregularities in shear surfaces, Many lenticular veins and internal lenticular structures of veins combined with abundant sub horizontal slickenlines suggest that vertical persistence is more likely than horizontal persistence.

Detailed Geochemical sampling

Lithogeochemistry

Rocks, including host basalts, intrusive dykes and veins have been analysed for aqua regia soluble metals. The results are presented in Appendix 1 and locations of samples are shown on Figures 4. Results of copper and gold are show on Figure 5.

Aqua regia dissolves most sulphides and are therefor a reliable means of estimating copper tenor of a rock.

The top six Copper assay values are reported in table below:

ID	*Copper ppm*	*Showing*	*Type*
1415710	*10000 plus*	*Linzer area*	*Mineralized altered basalt and veins*
1415711	*10000 plus*	*Linzer area*	*Mineralized altered basalt and veins*
1415705	*8210*	*Linzer area*	*Mineralized altered basalt and veins*
1415754	*7872*	*Adam West area*	*Mineralized altered basalt and veins*
1415732	*6565*	*Adam West Area*	*Mineralized altered basalt and veins*
1415719	*4942*	*new*	*Mineralized altered basalt and veins*

Petrophysics

Magnetic susceptibility was measured at 61 sites. This type of data will be helpful to any airborne magnetic survey by providing ground truth to the surveys. General results are that Karmutsen Basalts show high and variable susceptibility readings. Veins and altered portion of rock show low values, so the measurement is also a tool for monitoring variations in magnetite content.

The location of the 61 sites are shown on figure 6, displaying the median value derived at that site. It is presented against the backdrop of an early magnetic survey from the 1960.

Petrology

Notes on Method and Mineralogy

The mineralogy is determined by optical means from a thin section. Many new variants of minerals require accurate compositional parameters to classify them, these are not available to me. Hence certain general groupings of related minerals have been used. These groupings, such as chlorite, actinolite, epidote, will serve to differentiate the minerals and containing thin section until modern techniques can be brought to bear, should that prove advantageous.

The description of 28 thin sections are described in appendix 3 and a map showing their location is provided in Figure 7

A high dispersion, highly pleochroic (blue to yellow) moderately birefringent mineral with moderate relief and inclined extinctionwith a habit of bundled sheaves, small inclusions in feldspars and as granules in altered mesostasis has been identified as **pumpellyite**

Copper minerals recognized in polished thin section include the more abundant bornite and chalcopyrite as well as chalcocite and secondary "covellite". Malachite is locally noteworthy, but many well endowed basalts show no malachite alteration on their exposed surfaces. Bornite and chalcopyrite are present in the same grain, but in varying proportions. Near Linzer bornite predominates

Basalts

The area to the west of the Adam River is mainly underlain by the upper part of the *Karmutsen Formation (uTrVK)* stratigraphy, comprising mainly thick massive flows with local intercalations of amygdaloidal basalt and pods of autoclastic breccias, pillowed and massive flows with thin intercalations of volcaniclastic and limy sandstones, all cut by thin dolerite/gabbro sills. Several textural types of basalt have been noted in area. Most common are feldspar-phyric fine grained basalts. Local variants include those with abundant microlites and altered glass in the ground mass(intersertal texture). Others are somewhat coarser of grain. And include small granules of pyroxene, these are intergranular. All varieties are locally amygdaloidal, varying from showing small occasional spherical amygdales filled with low temperature minerals to specimens with large irregular and locally joined amygdales. Coarser versions may represent later sills or possibly the centers of thick, slowly cooled basalt flows.

Self has proposed a model for basalts such as the Karmutsen basalts.t "...*A three part internal structure of basalt flows in "inflated" pahoehoe flows (Self 2003). A flow top and upper crust with vesicles/amygdales, a central massive core and a thin basal amygdular base with local pipe vesicles. The table below shows the division. The importance of the distribution of vesicle rich regions Is stressed; In the upper part of one of these flows there may be several horizons of vesicles, crudely defining a plane of flow for the flow, and just at the top of the massive layer there is a "vesicle sheet". Vesicle sheets are readily distinguished from the horizontal vesicular zones. The latter have a thicknesses of 10's of cm to many meters thick and show a gradation in vesicle size gradation in vesicle sizes increasing downward and then back to finer grained vesicles. Vesicle sheets on the other hand are typically 1 – 5 cm thick, have knife sharp boundaries, and show vesicles the same size.*

This description of modern flows compares well with the structures seen in Karmutsen basalts. The Karmutsen basalts are locally seen in stacked, massive, many metre thick units. It is thought that the thick massive flows are the cores of "inflated" pahoehoe flows. Thin basal vesicle bearing units with local pipe vesicles have been noted, as have upper sections of vesicle rich zones Locally, lava tops have been recognized.

In thin section the least altered specimens consist of porphyritic basalt composed of feldspar phenocrysts in a matrix of plagioclase and augite (intergranular) or plagioclase and mesostasis (intersertal) texture. In almost all specimens examined microscopically, the plagioclase is albite, even when the augite is completely unaltered. Most contain a moderate amount of epidote, chlorite and leucoxene/clay and variable amounts of calcite. Chlorite is the most common mineral in the amygdales, but calcite, epidote pumpellyite and quartz were also noted. In detail, the rocks are composed of different amount of altered glomeroporphyritic feldspar set in a matrix of feldspar microlites either with intersertal glass or intergranular pyroxene, Ore (magnetite) forms 5-10% of the rock mass. Some rocks are very amygdaloidal, with shapes ranging from small ovoid to cm long bulbous tubes; in some rocks the amygdales may reach 30 or 40%, in others there are no amygdales.

The model related above helps classify the petrographic samples collected, many of which are altered examples of the above schema: the samples being amygdaloidal, rather than vesicular. Samples from possible flow tops include autobreccia basalts with few phenocrysts and minor microlites, from vesicle rich regions in upper crust, samples of amygdaloidal porphyritic basalts, from vesicle poor regions in upper crust, samples of porphyritic basalts and from the massive cores, even grained rocks called diabase.

The author completely agrees with Self in "[The complex] … processes, and chemical changes in erupted lave during long lived eruption can make their mapping out lobes, flows, and/or flow fields very difficult...". (Ibid p 95).

This season special consideration was paid to subdivision of basalts and the attendant alteration.

Mainly Jurassic Dykes

This year a feldspar porphyry with small augite and altered hornblende phenocrysts was located and added to the inventory. It shows porphyritic to seriate textures, with larger heavily altered feldspar phenocrysts and two types of mafics, one a pyroxene in small; granules and another, larger phenocryst largely chlorite with a trace of local amphibole. The matrix is recrystallized. It is thought that the chloritized material was a hornblende at time of extrusion.

Notes on alteration

Naming basalts in this report has focused on eruptive textures and while recognizing that some of the Karmutsen basalts are part of the rock clan called spilites, nevertheless has chosen to use the protolith texture terms. ..."

The rocks of the claim group are variously altered. The geological history outlined earlier indicated that a long period of regional metamorphism prevailed after deposition in the Carnian until plutonic activity in mid Jurassic time started up in this general area. During this time interval, the area was affected by block faulting and some regional faults cut through the area. The regional metamorphic grade was subgreenschist. Cho and Liou, 1987) estimated that temperatures near 250 degrees centigrade and pressures of 1.4 kb were typical. Upon initiation of mid Jurassic plutonism regions near the pluton underwent a change in conditions; the rocks were heated up, the low grade minerals were dewatered, and unstable minerals rearranged themselves. The net result was that a magnetic halo formed around the Adam Pluton and within that halo minerals common to the greenschist facies formed. Hydrothermal cooling cells helped disperse the heat from the pluton. This resulted in waters from the pluton mixing with waters liberated from the subgreenschist hydrous minerals by the intrusion heat, and moving through the basaltic pile and redistributing many elements. This double metamorphism has been previously demonstrated in the Karmutsen basalt to the east of Adam Pluton. (Starkey and Frost, 1990).

The practical consequence is that many textures are composite of this mixed history. In particular, basalts with permeability, that, at subgreenschist grade, contained laumontite, prehnite and/or pumpellyite now show typical propylitic assemblages of chlorite-epidote-quartz+/- calcite within the magnetic anomaly zone.

“.. Low grade metamorphic metabasite mineral assemblages typically contain the ubiquitous phases albite+quartz+epidote+chlorite+H2O along with two or more of pumpellyite, prehnite and actinolite. In addition the fluid phase is considered to be essentially pure H2O given the low carbonate content of the rock. When CO2 is high the non diagnostic assemblage calcite-quartz-chlorite develops” (Cho and Liou (1987))..(Bevins and Robinson, nd, Digel and Ghent, 1994). Hence many published studies give contradictory conclusions about the significance of mineral assemblages. Apparently the Mg/Mg+Fe in the rock and reflected in the same ratio in chlorite also helps determine which phases appear. “...It would seem that rather than trying to specifically assign sub greenschist subfacies that the rocks be grouped together because the disappearance and appearance of critical phases can clearly be seen to be influenced by not only changes in intensive parameters but also by whole rock compositions...(ibid)”.

These remarks apply to the bulk of the basaltic rocks that presumably were affected by the cooling convection of percolating waters from initial formation waters and from dehydrating minerals, set up by the cooling pluton.

Evidence for magmatic fluid involvement within this magnetic anomaly zone is provided by the “Pink veins”, which consist of hematite stained albite, white potash feldspar, quartz, pale epidote gangue mixtures. These veins have been previously analyzed by whole rock methods and have been shown to be enriched in potash and barium, both probably derived from a magmatic source. The veins may carry copper sulphides, mainly bornite, and the vein selvages are often chloritic and may also be mineralized with sulphides.

Density

Ten specimens have had their specific gravity determined. The data is listed on the thin section sheets.

Basalt glass has a lower density than that of current the Karmutsen basalt. This increase in mass (without loss of textural cohesion) reflects the transformation from glass to metamorphic minerals, and, along with the vesicle fillings (ie amygdales), is first hand evidence that material has been added to the rocks.

Interpretation

Deposit Types

Island copper (Minfile 092L158) produced about 400 Mt of ore 0.41% Cu and 0.017% Mo with credits of Au, Ag and Re, from 1971 to 1996 (Aspinall, 1995). It is considered by most to be an example of a porphyry copper. The initial hydrothermal event there has been shown to be a sulphur poor iron rich quasipervasive magnetite alteration along with many magnetite veinlets featured in a 500 to 700 meter wide magnetite zone (Arancibia and Clark,1996). On northern Vancouver Island several skarn deposits were exploited for their magnetite and base metals in the 60's and 70's. The eastern Adam River pluton and adjacent limestone, for example, hosted the Iron Mike skarn deposit mined in the late '60's (092K 043).

The Kringle-Consolidated claim group is a grass roots project with many local showings. The location and extent of a postulated hydrothermal system adjacent to the Adam River pluton is still being explored. There is a possibility that all new showings and already located Minfile showings and prospects in the claim area constitute various aspects of a single, very large mineralizing system developed near the contact of the Adam River Pluton, and mainly in Karmutsen basalts. In this case, this region may become a very prospective mining area. A number of different mineral deposit models may be appropriate to describe mineralization in the region. It is possible that several types of mineralizing mechanisms have been telescoped. Notably, there is little argillic alteration exposed.

Currently four types of metallogenic deposit models are concurrently being considered. The four working hypotheses are:

Model 1 Quartz saturated Alkalic Porphyry type (Chamberlain, 2011, Richards, 2011)

Model 2 (Chilean/Mesozoic) IOCG type (Sillitoe, 2003)

Model 3 Redbed copper type. Schau (1965), Carson et al (1972), Muller et al (1974,) Lincoln (1986)

Model 4 Not known, or recognized, type

The first three models share the common occurrence of copper minerals in basic rocks altered to what is loosely called propylite. Also common to the three models:they are in a positive magnetic anomaly. Sericite alteration and quartz stock works are rare and the three show less of a sulphur anomaly than a common copper porphyry would manifest (cf Dilles, 2011).

The first named model requires a nearby heat source such as the adjacent mid-Jurassic Adam River batholith, and is currently the most favored.

Mineralization in Area

The region is noted for copper bearing veins . Muller et al. (1974) and assigns the showings in the vicinity of the claims to his category C: “veins in basalts”.

The claim area includes minfile numbers 092L163, 170, 249, 222, 165, 166, 167, 168, 169 355, 356, 357, and 359, . Adam west prospect (092L222) is described as a several metre thick concordant layers as chalcopyrite and bornite bearing basalt beneath a thin limestone layer. Boyes Creek prospect (092L165) is a anastomosing fault zone with bornite and chalcopyrite in epidote gangue.

Examples from some of the showings located by the author, are noted below. For complete details the original AR should be consulted as there is much more information, assays, and descriptions in these reports. The location of these newer showings are given on Figure 3. From north to south the mineralogy is as indicated: Some of these showings have recently acquired Minfile Status as shown below.

1/ Macaroon, (AR27463) a shear zone with chalcopyrite associated with small grandite and epidote gangue

2/ Krisp, (AR27736) a shear zone with chalcopyrite in zeolite and quartz gangue. (Minfile 092L355)

3/ Oreo, (AR27463) ,updated this report) cross veins in a complex fault zone with microcrystalline quartz gangue, also a gold bearing actinolite-pyrite +/- magnetite vein

4/ Pastry (AR27463), copper mineralized joints and thin calcite quartz veins in basalt

5a/ Kringle (AR26930), a skarn carries magnetite, pyrrhotite, chalcopyrite, local molybdenite, and pyrite, in garnet and pyroxene skarn, with local wollastonite.

5b/ Kringle (AR26930), an early heavily altered felsic dyke with chalcopyrite.(Minfile 092L359)

6/ Puff (AR27070), a brecciated albitized dyke cutting a skarn and cut by a shear zone all containing chalcopyrite as main ore mineral . (Minfile 092L356)

7/ Cruller quarry (AR31856), chalcopyrite in contact related veins and pods adjacent to a dacite porphyry dyke (Minfile 092L356)

8/ Eclair quarry, (this report) which straddles KC main, is shows basalt with disseminated copper meter wide chalcopyrite +/- bornite and pink alkalic vein material cut by later? quartz veins.

9/ Linzer area, (AR31856, updated this report) a lower occurrence of disseminated bornite is in basalts as well as several high grade veins carrying bornite in alkalic feldspar and epidote gangue. (Minfile 092L357)

The claim group is primarily a copper play with minor silver credits. Although gold is not a primary focus of this investigation a few locations do show local enrichment of gold. The best sample is located in a vein in Oreo showing where values up to 6582 ppb have been retrieved.

Interpretation and Conclusions

Interpretations

The analyzed samples have been collected to show the presence of mineralization and are not to be considered as representing grade because they are mainly point source values and give no information on volumes.

The abundance of showings and various mineralization styles within the bounding magnetic anomaly are thought to indicate various aspects of a large hydrothermal system at work in this region associated with the intrusion of the Adam River pluton during mid Jurassic time.

Source of Mineralization: In the general region, Island Copper was associated with middle Jurassic plutonism. In particular, the Adam Pluton, is an iron rich middle Jurassic granodiorite pluton, known to be mineralized. Alkalic fluids (pink veins) are thought to be derived from the Adam Pluton. Many andesite and dacite dykes traverse claims showing influx of heated and magmatic material. This season a another hornblende, pyroxene and feldspar porphyry was located (it carried 31 ppm Cu.).

Pathway of fluids: On the big picture, mineralized fluids followed along faults and breccias in basalts, and in the detail; along vesicle sheets in inflated pahoehoe flows , along breccias or at limey contacts.

Trapping agent: Several kilometres of ferrous silicates in basalts have provided reductants., and local limey units have provided traps for acid fluids and released CO_2..

Actual Traps occur in porous and permeable venues in basalt, or adjacent to thin limey units, or breccias, of either intrusive origin or tectonically created.

The big question is: what is the volume of mineralized material and is it sufficiently connected to allow for exploitation?

On a somewhat different matter. The showings straddle the Adam River, one of the prolific fish rivers (salmon) in northern Vancouver Island. In my judgment, there will never be permits issued to exploit any large scale open pit mineral resource that may exist in this area. New means of extracting valuable elements are urgently needed. I urge research facilities to focus on this problem.

Conclusions

The geology of the claim group has been verified from previous sources and new field work. It reveals that a sequence of the Vancouver group comprising the Triassic Karmutsen Formation, consisting largely of feldspar-phyric basalt but with intraformational limestone lenses intercalated near the top; the overlying Quatsino limestone; and siliciclastic and limy sediments of the largely upper Triassic Parsons Bay formation that was deformed and faulted along orogen parallel transverse faults, along which, felsic dykes and later mid Jurassic plutons were emplaced. The presence of early deformation, mainly of the brittle type, allowed circulation of fluids supplied and energized by the pluton yielding local alteration and mineralized volumes. The alteration is largely propylitic, but zones of pink alkalic feldspar-epidote-quartz-chlorite are locally dispersed and contain the areas of copper mineralization.

Within the Kringle-Consolidated Claims prospects and showings lie along a three km wide magnetic anomaly developed along the edge of Adam River pluton. Sulphide accumulations studied over the years, include common chalcopyrite veins, molybdenite bearing garnet veins, copper rich skarns, Pyrite and chalcopyrite are found in mineralized shear zones. Sheared, feldspar porphyry bearing, sulphide cemented breccias within the Karmutsen Formation and bornite enrichment of flow parallel zones and in veins in basalt is known.

Later geologic history is known to be complex and includes post intrusion (transverse?) faulting and low temperature veining but is not yet understood in detail in this area.

The Kringle-Consolidated claims are considered to be a high-risk, high yield exploration play. Exploration thus far has provided many high assay values from selected grab samples from many different locations over an area of 2744.56 ha (5862 acres). It is concluded that this is an *exploration play with merit.*

Environmental risks will need mitigation should any large scale open pit mining resource be located there.

Recommendations for future work

It is recommended that the copper mineralization be better characterized, by providing some dimensions and grade estimates to the local high grade grab sample locations.

A company financed exploration program should include a detailed airborne survey covering all claims locating magnetic and electromagnetic anomalies to provide geophysical dimensions to known showings and to locate further showings and extensions. An extensive magnetic susceptibility and density database already collected in several assessment reports would help in interpreting the results and provide local control data.

Formal company work would include appropriate geological mapping, geochemical and geophysical ground work on selected grids derived from airborne data and also focus on formal re-sampling of anomalous locations. Drill targets could follow assimilation of new data.

More showings should be tested for their alteration suites and sulphide contents Follow up work should also include prospector based work such as silt sampling of all creeks (above or away from roads with suspect road metal), chip sampling at localities returning high assay values from grab samples, and basal till and soil sampling along subsoil “extensions” of mineralized trends

A ground magnetic survey is clearly indicated to define the extent of magnetic phases of the ore skarn, local breccias and magnetite veins showing positive anomalies as well as to locate shears and veins showing negative anomalies,. To locate conductive portions (sulphide concentrations) of mineralized zones one of several types of electromagnetic survey can be contemplated; the size of the exploration commitment would seem to dictate the method. Large EM surveys positioned after the airborne can enlarge the prospective sites, both in size and number. Hand held geophysical methods which penetrate only to shallow depths such as BeepMat, self-potential or magnetometer surveys can be conducted adjacent to known showings to locate magnetic and conductive subcrop locations along strike of previously located showings. Handheld Scintillometers can help show the distribution of potash in “pink” veins, dykes and country rocks. Alteration can be analyzed by SWIR methods and distribution patterns can be outlined.

A suitable exploration project can be crafted to suit the amount invested.

Environmental concerns will probably limit any exploitation of the mineralization in the near future, until new, less wasteful methods are found to extract ore.

The area would be an ideal learning laboratory for prospectors; mineralization is easy to find, and the terrain is not prohibitively rough, but challenging enough to give a taste to students of what mining exploration is like.

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Author's qualifications

I, Mikkel Schau

have been a rock hound, prospector and geologist for over 56 years. My mineral exploration experience has been with Shell, Texas Gulf Sulfur, Kennco, Geophoto, Cogema and several small public and private mining juniors. I have worked 10 years in southern BC and spent 23 years with the GSC as a field officer focused on mapping in northeastern Arctic Canada. For the last 17 years I have prospected and mapped in Nunavut, Nunavik, Yukon, Quebec, Ontario and BC.

reside at 3919 Woodhaven Terrace, Victoria, BC, V8N 1S7.

am formally educated as a geologist, I graduated with an honours B.Sc. in 1964 and Ph.D. in Geology in 1969, both, from UBC.

am a P.Geo. (25977) in BC . I am currently a BC Free Miner, # 142134.

have 100% interest in the claims in question.

have worked on various parts of this property since 2000.

am the author of the report entitled *Assessment Report including More Petrography, Lithochemistry, and Geochemistry on The Kringle-Consolidated Claim Group (Tenures 509556, 515027, 515028. 515029, 515030, 515032, 515033, 515034, 515386, 515924, 515925, 515926, 515930, 516017, 521073, 529780, 797082, 797102, 845313, 845314, 845315), About 250 km north of Nanaimo straddling Highway 19, Nanaimo Mining District,*

Signed

Mikkel Schau, P. Geo.
(APEGBC-25977)

Itemized Cost Statement

(does not include HST

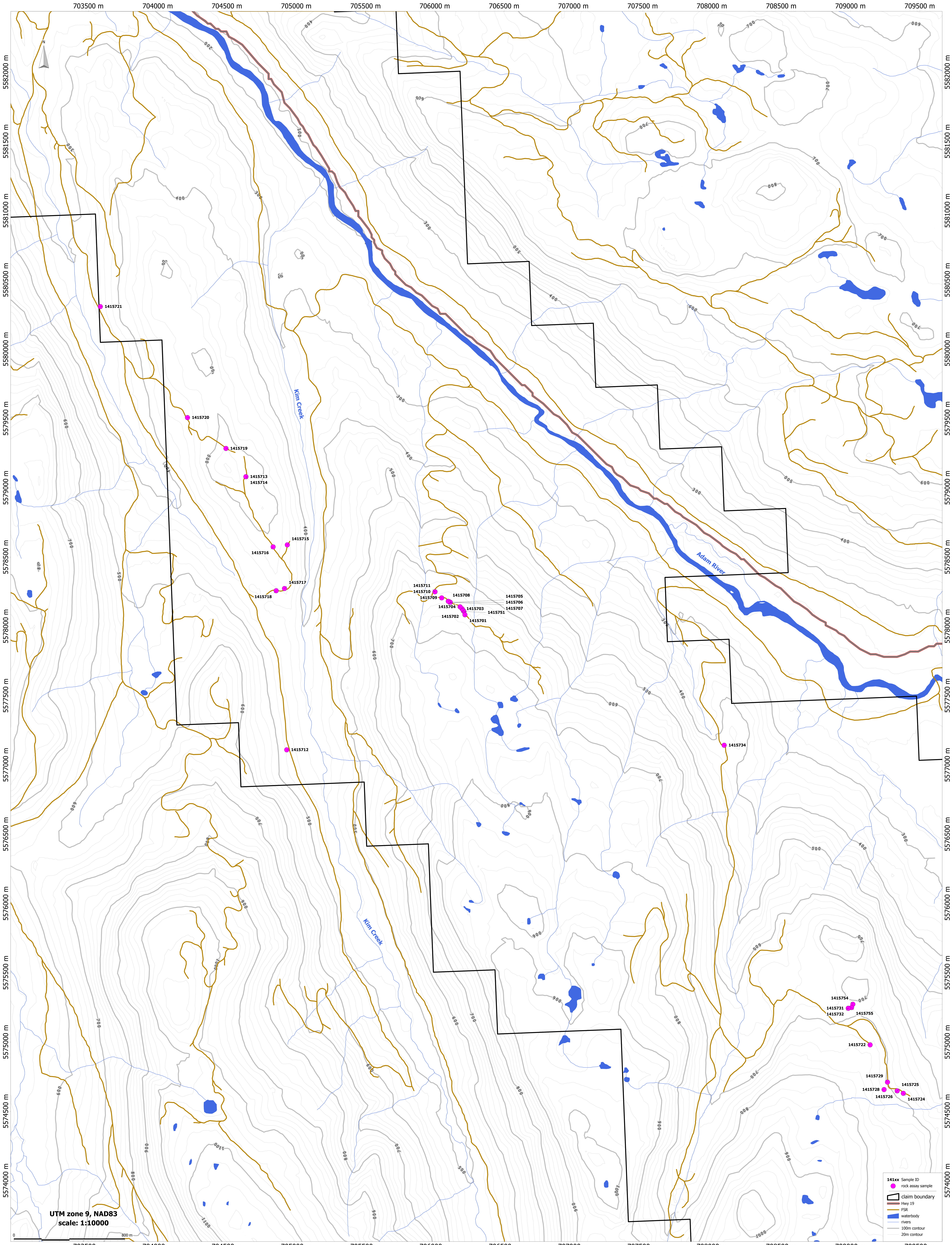
Field work Aug 6, 7 9, 10, 2012	
Mikkel Schau (650/4 days)	2600.00
Invoice 12082201 (Contractor for field work, transportation, safety equipment)	1941.42
Room and Board (at Mt H'Kusum (room, meals (74.00/.person/day)	592.00
Analytical Services	
ACME Labs	
VANI153688	966.40
Vancouver Petrographics	850.00
Thin section descriptions 28TS/150/description)	4200.00
Petrophysics/Geometallurgy	
Magnetic susceptibilities $7/ site 61 sites	427.00
Density ($7/specimen 10 samples)	70.00
Freight to send rocks to services	50.00
Preparation	
General Research (on area 1 day/500.00)	500.00
Report writing 4 days/600	2400.00
GIS preparation Map Making (Contract) (ABT GiS) 100/map	1000.00
total	**15596.82**

Appendix 1: Rock Specimens with selected assay values

SampleID	Analyte		NAD83 East	NAD83 North	Elev meters	Au ppb	Cu ppm	Ag ppm
1415701	Alkalic feldspar-quartz vein (Pink Vein)		706217	5578084	659	<2	90	<0.3
1415702	Intersertal basalt with few microphenocrysts and 20% amygdales	altered (epidosite)	706205	5578116	660	<2	22	<0.3
1415703	Intersertal basalt with few microphenocrysts and 20% amygdales		706197	5578130	665	<2	606	0.4
1415704	Intersertal basalt with few microphenocrysts and 5% amygdales		706182	5578141	658	<2	35	<0.3
1415705	Intersertal basalt with few microphenocrysts and few amygdales	Mineralized/ altered	706110	5578173	658	<2	8210	1.2
1415706	Intersertal basalt with few microphenocrysts and 10% amygdales		706110	5578173	658	18	116	<0.3
1415707	faulted basalt.		706111	5578174	690	<2	253	<0.3
1415708	Amygdaloidal portion of flow/pink vein		706097	5578181	655	5	1265	0.6
1415709	Intergranular basalt with few microphenocrysts and 15% amygdales		706049	5578207	653	<2	261	<0.3
1415710	Intersertal basalt with few microphenocrysts and few amygdales	Mineralized/ altered	706001	5578248	637	436	>10000	10.4
1415711	Intersertal basalt with few microphenocrysts and few amygdales	Mineralized/ altered	706001	5578248	637	378	>10000	2.4
1415712	Intersertal basalt with few microphenocrysts and few amygdales		704931	5577109	497	4	309	0.3
1415713	Intersertal basalt with few microphenocrysts and 15 % amygdales		704635	5579080	501	<2	119	<0.3

SampleID	Analyte		NAD83 East	NAD83 North	Elev meters	Au ppb	Cu ppm	Ag ppm
1415714	Composite vein with calcic minerals		704635	5579080	501	4	15	<0.3
1415715	Intergranular basalt with few microphenocrysts and 5% amygdales		704936	5578582	464	<2	152	<0.3
1415716	Intergranular basalt with few microphenocrysts and 5% amygdales		704833	5578574	481	<2	142	<0.3
1415717	Intersertal basalt with few microphenocrysts and 10 % amygdales		704915	5578273	450	<2	30	<0.3
1415718	White vein with alkalic feldspars and quartz		704852	5578261	444	<2	78	<0.3
1415719	Intersertal basalt with microphenocrysts and 5% amygdales	Mineralized/ altered	704494	5579280	509	226	4942	0.9
1415720	DACITE (feldspar porphyry)		704211	5579507	451	<2	31	<0.3
1415721	Intergranular basalt with few microphenocrysts and 5% amygdales		703586	5580308	355	<2	61	<0.3
1415722	Intergranular basalt with few microphenocrysts and 5% amygdales		709142	5574980	754	<2	198	<0.3
1415724	massive basalt		709279	5574653	703	16	1517	0.3
1415725	Intersertal basalt with few microphenocrysts and 10% amygdales		709337	5574652	694	<2	386	0.3
1415726	Pink vein cutting basalt		709337	5574652	694	<2	298	<0.3
1415728	malachite stained basalt		709242	5574657	707	4	974	0.3
1415729	Zeolite altered basalt?		709267	5574711	702	49	169	0.3
1415731	Complex basalt and veins		708891	5575247	696	LNR	LNR	LNR
1415732	Pilotaxitic and Intersertal to intergranular basalt with microphenocrysts and 5% amygdales	Mineralized/ altered	708891	5575247	696	22	6565	1.1
1415734	Limestone with sulphide laminae		708088	5577142	419	11	248	0.3

SampleID	Analyte		NAD83 East	NAD83 North	Elev meters	Au ppb	Cu ppm	Ag ppm
1415751	Composite calcite rich vein cutting basaltic fault rock		706210	5578108	659	<2	932	0.8
1415754	Intersertal basalt with microphenocrysts and 5% amygdales	Mineralized/ altered	709017	5575273	707	110	7872	3.2
1415755	Intersertal to intergranular basalt with microphenocrysts and 20% amygdales	Mineralized/ altered	709008	5575249	688	30	1848	0.4



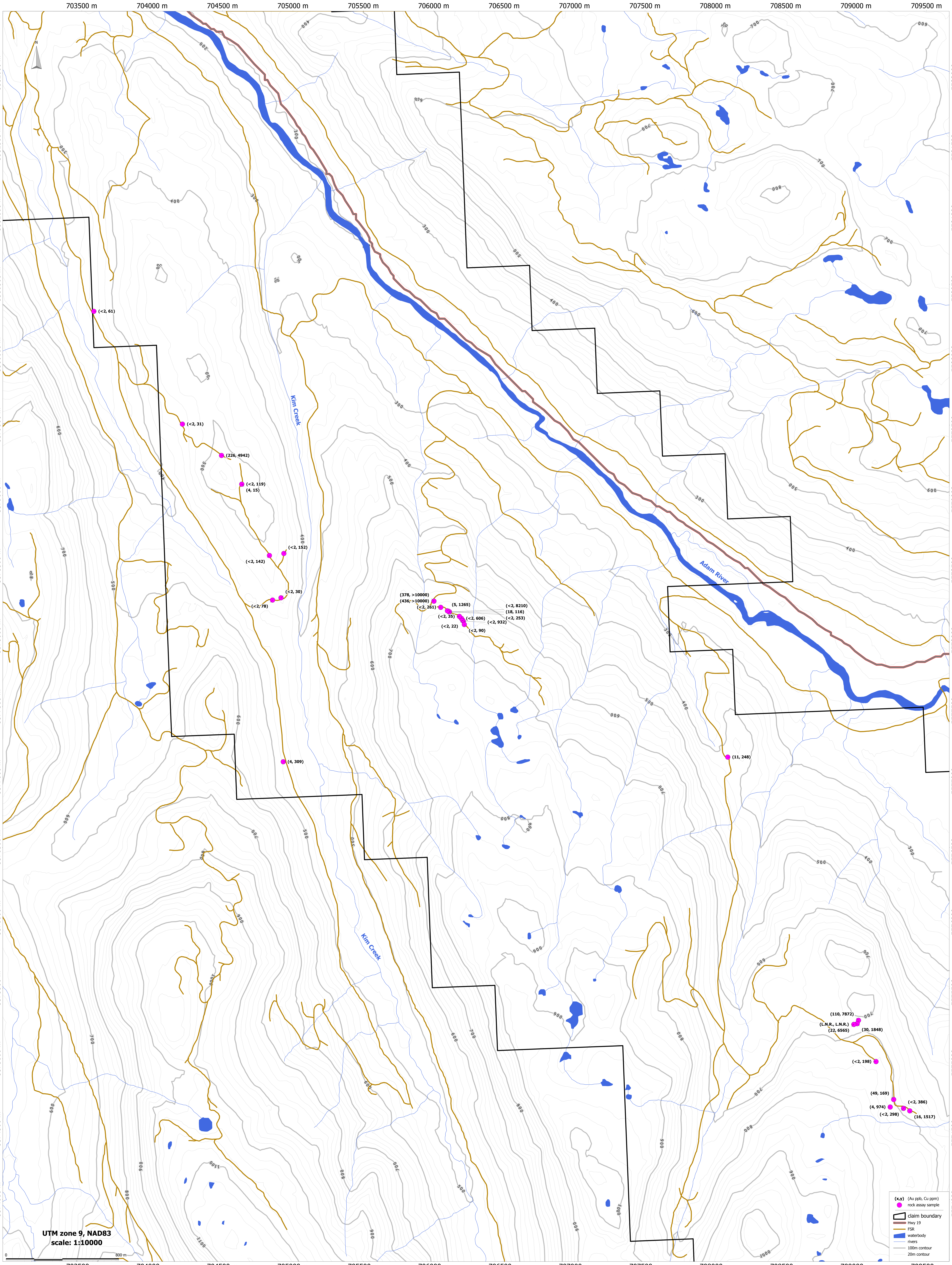
Projection/Datum: UTM 9(N) NAD83
scale: 1:10000

0 800 m

KRINGLE CONSOLIDATED

May 2013

Figure 4: Location of Rock Assay Samples

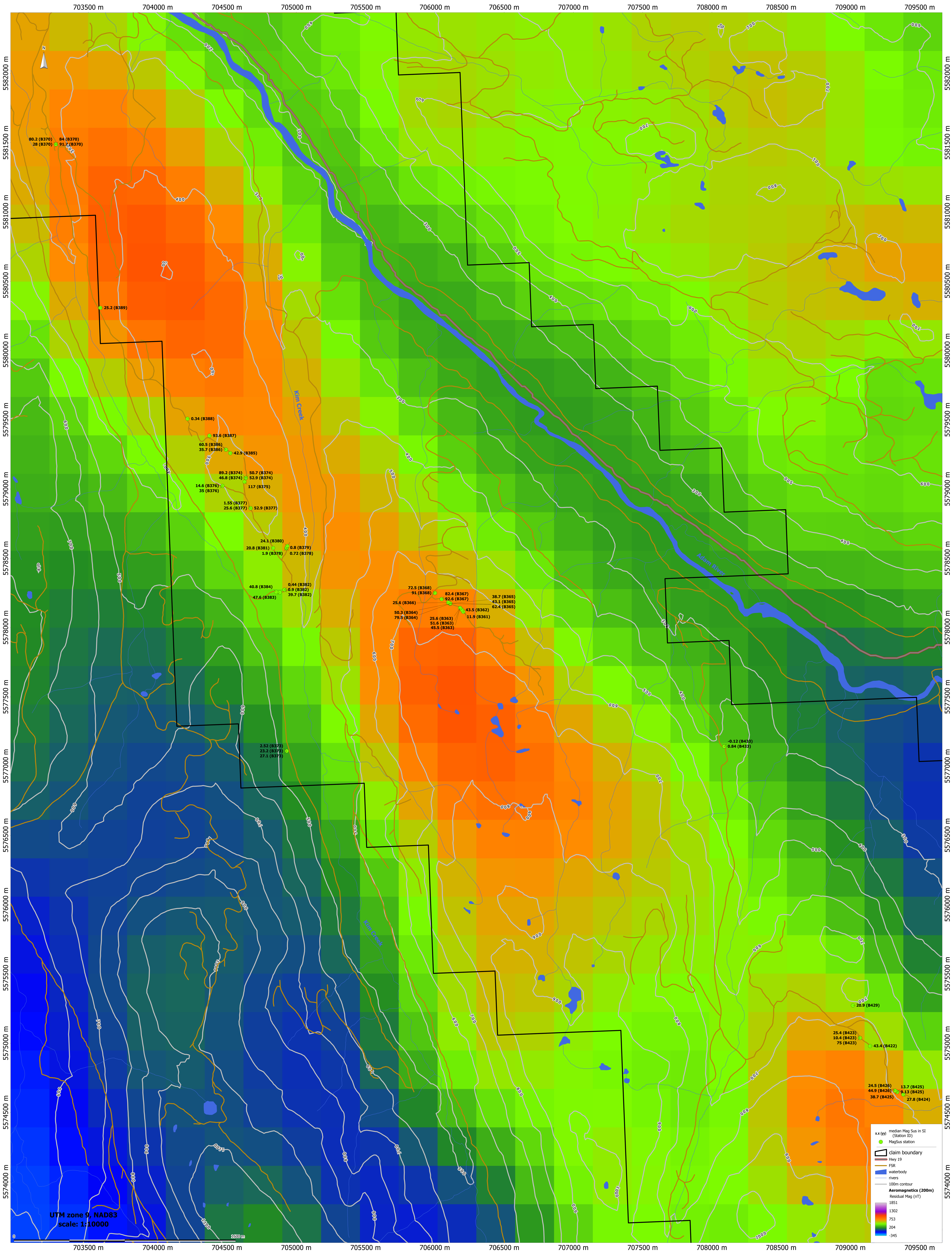


Projection/Datum: UTM 9(N) NAD83 scale: 1:10000 0 800 m	**KRINGLE CONSOLIDATED** **May 2013**	**Figure 5:** **Gold and Copper in Rock Assay Samples**

Appendix 2 Magnetic Susceptibility measurements (Median)

WPT	NAD83E	NAD83N	Elev meters	Rock	Note	MS Median	MS1	MS2	MS3	MS4	MS5
B361	706205	5578114	659.9	weird, black blebs		11.9	17.8	11.9	6.38		
B362	706197	5578127	664.8		sample w chalcopyrite	43.5	43.5	49.2	37.7		
B363	706182	5578141	658.4	1415704	10cm W of vein sample	45.5	47.1	45.5	45.2		
B363	706182	5578141	658.4	1415704	10cm E of vein sample	51.6	47.7	52.2	51.6		
B363	706182	5578141	658.4	1415704	on vein (sample)	25.6	19.9	26.8	25.6		
B364	706110	5578173	657.8	1415705	malachite	79.5	89.8	63.3	79.5		
B364	706110	5578173	657.8	1415706	host	50.3	80.6	50.3	52.1	43.1	45.7
B365	706111	5578174	656.2	1415707	N of vein	62.4	45.4	62.4	69		
B365	706111	5578174	656.2	1415707	S of vein	38.7	38.7	45.4	37.5		
B365	706111	5578174	656.2	1415707	on vein (sample)	43.1	33.3	61	43.1	38.1	59.2
B366	706097	5578181	655	1415708		25.6	26.7	22.8	25.6		
B367	706049	5578206	652.6	1415709	on malachite surface	82.4	80.3	91.3	82.4		
B367	706049	5578206	652.6	1415709	away from malachite surface	92.6	92.6	75.5	92.6		
B368	706001	5578250	636.7	1415710	malachite/bornite on surface	72.5	72.5	78.4	71.2		
B368	706001	5578250	636.7	1415711	near bornite vein	91	101	90.9	91		
B370	703265	5581488	294.7	basalt	basalt	84	39.4	72.4	89.4	119	84
B370	703265	5581488	294.7	basalt	host	91.7	91.7	92	90.1		
B370	703265	5581488	294.7	vein		80.2	80.2	78.9	86.2		
B370	703265	5581488	294.7	vein		28	8.26	28	38		
B373	704931	5577109	497.4	basalt	quarry	23.2	29.5	23.2	19		
B373	704931	5577109	497.4	basalt	sample site 5712, small sulphides	2.52	2.52	2.25	2.93		
B373	704931	5577109	497.4	basalt		27.1	23.7	27.1	31.2		
B374	704636	5579080	501.1	basalt	host, some pink	50.7	49.5	50.7	64.9		
B374	704636	5579080	501.1	some pyrite		46.8	46.8	56.6	38.7		
B374	704636	5579080	501.1	pink	on pink	89.2	89	91.1	89.2		
B374	704636	5579080	501.1	basalt	host basalt	52.9	71.4	48.7	52.9		
B375	704627	5579052	504.7	basalt	calcite vesicules weathered out; small amt of pyrite	117	107	117	93.4	130	132
B376	704467	5579023	490.7	gabbro	porphyritic basalt	35	39.7	35	29.4		
B376	704467	5579023	490.7	vein	small vn, calcite?	14.6	18.3	14.6	12.3		
B377	704670	5578862	498.7	basalt	host, S of fault	25.6	25.4	25.6	28.5		
B377	704670	5578862	498.7	fault	on small fault	1.55	2.86	1.55	1.46		
B377	704670	5578862	498.7	basalt	host, N of fault	52.9	74.3	52.9	39.9	90	31.9
B378	704928	5578571	462.7	basalt	some pink vesicules, Not on pink	0.72	27	0.48	0.67	0.83	0.72
B378	704928	5578571	462.7	basalt	on pink	1.9	24.1	0.8	1.9	0.43	13.5
B379	704930	5578577	463	punky	punky w zeolite	0.8	0.68	0.8	1.04		
B380	704935	5578588	463.9	basalt	reddish, right (N) of small veins	24.1	24.1	21.7	26.8		
B381	704833	5578574	481.3	basalt	purple colour; sample 5716	20.8	24.1	20.8	17.6		
B382	704915	5578273	449.6	basalt	sample site 5717; brownish	0.44	0.51	0.32	0.44		
B382	704915	5578273	449.6	basalt	grey coloured	39.7	39.7	43.5	39.5		
B382	704915	5578273	449.6	basalt	boulder similar to sample	0.9	0.9	49.4	29.9	0.36	0.51
B383	704881	5578254	450.2	basalt	basalt	47.6	30.3	63.3	47.6		
B384	704855	5578257	443.5	basalt	purplish sample 5718; 1m W of small vein	40.8	40.8	36.1	45.4		
B385	704524	5579259	504.1	basalt	near end of spur	42.9	40.6	42.9	46		

WPT	NAD83E	NAD83N	Elev meters	Rock	Note	MS Median	MS1	MS2	MS3	MS4	MS5
B386	704492	5579284	509.3	basalt	o/c w pink vesicules; on host	60.5	60.5	58	69.8		
B386	704492	5579284	509.3	pink	o/c w pink vesicules; on vesicules	35.7	38.6	28.8	35.7		
B387	704373	5579385	485.2	basalt	basalt; some pink & zeolite nearby but reading on basalt	93.6	78.9	93.6	103		
B388	704215	5579507	450.5	dike	dacite dike in place; sample 5720	0.34	0.34	0.41	0.31		
B389	703586	5580308	354.8	basalt	quarry, at center of quarry; not near sample site	25.2	27.4	25.2	36.7	23.5	1.63
B422	709141	5574980	753.8	basalt	o/c on spur; massive basalt	43.4	41.7	43.4	45.4		
B423	709069	5575038	734.6	basalt	0.5 m L of vein; o/c on spur; small pink vein	25.4	25.4	15.7	40.8		
B423	709069	5575038	734.6	pink	on small pink vein	10.4	10.4	13.8	10.1		
B423	709069	5575038	734.6	basalt	2m R of pink vein; o/c on spur	75	76.3	44.5	75		
B424	709381	5574630	711.1	basalt	o/c 40m from end of spur; sample 5724	27.8	27.8	24.1	32.4		
B425	709337	5574648	694.3	basalt	above pink vein	38.7	12.5	40.2	38.7		
B425	709337	5574648	694.3	basalt	below pink vein	13.7	13.7	12.8	20.4		
B425	709337	5574648	694.3	pink	on pink vein	9.13	12.7	9.13	3.62		
B426	709322	5574657	698	basalt	20cm below pink vein; sample 5727	24.5	38.8	23	10.5	24.5	31.5
B426	709322	5574657	698	basalt	20cm above pink vein; sample 5727	44.9	62.8	44.9	21.6	45.1	39.2
B429	709017	5575273	707.4	basalt	host basalt in place below blast site	20.9	30.8	18.5	20.9		
B433	708088	5577142	419.1	limestone	lst; at lst basalt contact	-0.12	-0.11	-0.14	-0.12		
B433	708088	5577142	419.1	basalt	basalt at lst basalt contact; sample 5734, silicified rock at contact	0.84	0.65	0.84	1.23		



Projection/Datum: UTM 9(N) NAD83 scale: 1:10000	**KRINGLE CONSOLIDATED** **May 2013**	**Figure 6:** **Location & median values of magnetic susceptibility measurements**

Appendix 3: Thin Section Descriptions

Petrology

Classification

This classification of petrographic samples is dictated by copper content and host lithology

Veins and associated selvage

Ore Grade (4000 or more ppm Cu)

Veins (less than 4000 ppm Cu)

Basalt

Ore grade basalt (4000 or more ppm Cu)

Mineralized basalt (500-3999 ppm Cu)

anomalous basalt (250-499 ppm Cu)

normal basalt (75 -249 ppm Cu)

depleted basalt (below 75 ppm Cu)

Dacite

CATEGORY Ore Grade Vein **TS number dc-27** **Sample Number 1415754**

Zone 9 **UTME 709017** **UTMN** 5575273

Field sample notes Rip-up from newly built road, veins are vertical, with pink cores and well developed selvage in basalt. Rocks are from explosion pits in exposed veins

Hand Specimen Description:

Specimen is from a mineralized vein and the adjacent selvage. The selvage is brown and mineralized, grading into geen and normal grey colour.

host Magnetic(3) , vein and rusty part not;, no fizz , density 3.01

Thin Section Descriptions

This sample shows a gradation of colour from the edge of a complex pink vein through a brown zone, followed by a green zone, grading into normal altered basalt which is microporphyritic and amygdaloidal.

Host basalt 5% microphenocryst of altered agglutinated plagioclase up to 3 mm in size. The feldspar shows well developed twinning. The grains are mainly albite stained by a brown clay and local dusting of leucoxene. Very thin veins of opagues cut randomly through the phenocrysts. . Rare large prisms of epidote and chlorite replacing an unknown precursor. It could be an unusual replacement of feldspar.

40% intergrown plagioclase microlites to 0.3 mm form a frame work. These feldspars also show albite twinning and are mainly albite stained by a brown clay and local dusting of leucoxene

30% opaque ore consisting of mainly of magnetite and limonite replacing early “magnetite-ilmenite component of basalt as well as a smaller amount of chalcopyrite also replacing the earlier ore.

20% groundmass consisting of mainly chlorite with subsidiary epidote, pumpellyite, calcite leucoxene and brown clay.

5% amygdules largely small (.5 mm) but containing different fills. Epidote veins with cores of chlorite and chlorite fills with cores of epidote

Vein; only very edge is shown in thin section, said to be “pink vein”.

Selvage the selvage is in two parts, a proximal zone which is markedly brown, the other a green zone which grades into normal basalt,

Brown zone is largely recrystallized with hints of a previous basaltic texture. The neomorph minerals are mainly epidote with local pumpellyite and opaque grains (some are chalcopyrite), and leucoxene. Rust outlines some aggregates of new epidote. It is this ubiquitous presence of rust that gives the brown colour. Local malachite is present in rust.

Green zone is largely recrystallized with relic textures of basalt. The neomorph minerals are mainly epidote with local pumpellyite and opaque grains (some are chalcopyrite), and leucoxene. The groundmass is largely chlorite, several varieries are present (varying Fe/Mg ratios) Opaques are between feldspar network. The chlorite is the reason for the green colour.

This rock assayed .0.7% copper and 110 ppb Au and 3.2 ppm Ag.0.6% copper

The mineral assemblages noted above are characteristic of propylite. The change in texture and the susceptibility of the finer grained glassy material to alteration and mineralization is noteworthy.

CATEGORY Ore Grade Vein **TS number dc-25** **Sample Number 1415732**

Zone 9 **UTME 708984** **UTMN** 5575244

Field sample notes Veined epidote and calcite veins with brown selvage and scattered chalcopyrite in hosting basalt

Hand Specimen Description:

Vein and selvage with bornite blebs in green grey altered basalt

Magnetic,(2) fizzes

Thin Section Descriptions

This sample shows a gradation of colour fron the edge of a complex white calcite vein through a pale greeny grey selvage into brownish host basalt which is microporphyritic and amygdaloidal. Of particular interest is the change in basaltic texture from a fine grained intersertal to a much finer grained intersertal texture with much smaller microlites arranged in semi pilotaxitic mode, and showing more amygdales.

Host basalt

5% microphenocryst of altered agglutinated plagioclase up to 3 mm in size. The feldspar shows well developed twinning. The grains are mainly albite stained by a brown clay and local dusting of leucoxene.

40% intergrown plagioclase microlites to 0.3 mm form a frame work. These feldspars also show albite twinning and are mainly albite stained by a brown clay and local dusting of leucoxene.

30% opaque ore consisting of mainly of magnetite and limonite replacing early "magnetite-ilmenite component of basalt as well as a smaller amount of chalcopyrite also replacing the earlier ore. The hematite/limonite replaces opaque grains as well as coats and outlines the feldspar microlites. This effect decreases away from the vein.

20% groundmass consisting of epidote, pumpellyite, chlorite, calcite leucoxene and brown clay.

5% amygdules largely small (.5 mm) but containing many different fills. Calcite rich amygdales are found as are epidote pumpellyite rich ones with quartz or chlrite.

Vein

Mainly quartz and alcite.. There is a planarity to veinlets which anastomose to form the part of the vein seen in thin section. Between these strands are found slivers of sulphide bearing fragments composed of epidote chlorite and calcite. Many ulphides are bornite few are chalcopyrite, and several are now hematite/rust and remain only at edges of dissolved leach pits. Local malachite are found in adjacent calcite.

Selvage

The edge of the vein is marked by a layer (3 mm) of epidote and pumpellyite charged with opaque minerals (mainly copper sulphides including bornite and less chalcopyrte. The selvage shows many thin stringers of epidote cutting host basalt, and an increased presence opaques or hematite/limonite replacing most of the groundmass. Local veining is locally complex, with generations of epidote and quartz veins. This rock assayed 0.6% copper

The mineral assemblages noted above are characteristic of propylite. The change in texture and the susceptibility of the finer grained glassy material to alteration m and mineralization is noteworthy.

CATEGORY Ore Grade Vein **TS number dc-30** **Sample Number 1415719**

Zone 9 **UTME 704494** **UTMN** 5579280

Field sample notes pink vein with epidote alteration in basalt host with small amygdales filled with epidote and pink minerals, local malachite and scattered blebs of bornite

Hand Specimen Description:

Sample shows an edge of a complex calcite vein and the selvage developed in host basalt, which shows an intersertal tfabric and is microporphyritic and amygdaloidal

Magnetic (4), fizzes

Thin Section Descriptions

This sample shows a gradation of colour fron the edge of a complex white calcite vein through a pale greeny grey selvage into brownish host basalt which shows an intersertal tfabric and is microporphyritic and amygdaloidal

Host basalt

5% microphenocryst of altered agglutinated plagioclase up to 3 mm in size. The feldspar shows well developed twinning. The grains are mainly albite stained by a brown clay and local dusting of leucoxene.

40% intergrown plagioclase microlites to 0.3 mm form a frame work. These feldspars also show albite twinning and are mainly albite stained by a brown clay and local dusting of leucoxene.

30% opaque ore consisting of mainly of magnetite and limonite replacing early "agnetite-ilmenite component of basalt as well as a smaller amount of chalcopyrite also replacing the earlier ore. The limonite coats and outlines the feldspar microlites. This effect decreases away from the vein.

20% groundmass consisting of epidote, chlorite, calcite leucoxene and brown clay.

5% amygdules largely small (.5 mm) but containing many different fills. Calcite, epidote and chlorite and combinatios are found in distinct amygdales.

Vein

Mainly calcite. There is a planarity to veinlets which anastomose to form the part of the vein seen in thin section. Between these strands are found slivers of sulphide bearing fragments composed of epidote chlorite and calcite. Some sulphides are bornite others are chalcopyrite, and several are now rust and remain only at edges of dissolved leach pits. Local malachite are found in adjacent calcite.

Selvage

The edge of the vein is marked by a thin layer (.3 mm) of inclusion charged cherty quartz. The selvage shows many thin stringers of calcite cutting host basalt, and an increased presence opaques replacing most of the groundmass. Some of these are seen to be chalcopyrite. Local veining is locally complex, for instance a thin calcite vein cuts at a large angle a small vein paprale calcite vein, and these are in turn cut by a hairline thich quartz veiinlet

This rock assayed 0.4% copper and Au 226 ppb, Ag 0.9 ppm

The mineral assemblages noted above are characteristic of propylite.

CATEGORY Vein **TS number dc-08** **Sample Number 1415701**

Zone 9 **UTME 7062107** **UTMN** 5578084

Field sample notes

Hand Specimen Description:

pink vein, about 2/3 pink minerals (alkalic feldspars), rest transparent to translucent

small pits (possibly from leached calcite?)

Non-magnetic, fizzes , ,

Thin Section Descriptions

This thin section is an example of the " pink vein" . The section consists mainly of fine to medium grained subhedral to anhedral pink feldspars and transparent silicates, spotted by a trace amounts accessory minerals..

65% Feldspars,around 1-2 mm largely albite dotted with very small grains (1/100 mm)of clay stained by hematite or rust. Some less stained feldspars are potash feldspar. The feldspars are anhedral and make large masses. The pink colour is apperently due to the brown stain thought to be due to exceedingly fine grains of limonite and hematite

25% quartz in 1 mm grains, intergrown with feldspars as well as small euhedra found as inclusions within the feldspars

1% amounts of very small (0.1) well developed epidote euhedra found mainly in quartz.

9% small patches (1 mm) of intergrown of epidote and pumpellyite and local chlorite. Scarce opagues are associated with these patches. Local scarce calcite grains are part of background to these clusters.

Trace amounts of zircon and titanite also seen.

These veins have a granitoid composition and represent material added to the hydrothermal system developed in the Karmutsen basalt.

CATEGORY Vein **TS number dc-20** **Sample Number 1415718**

Zone 9 **UTME 704852** **UTMN** 5578261

Field sample notes Fault zone 6 m wide, cuts brown basalt host also cut by a lighter grey thin dyke; fault zone has calcite veins

Hand Specimen Description:

Piece of a vein with small angular fragments of host

Non-magnetic, fizzes

Thin Section Descriptions

This sample is an example of a white vein with a piece of recrystallized skarn in a skarn like basalt host..

Grains of alkalic feldspars and quartz constitute the great majority of the minerals. The feldspars about 2 mm across, are sparingly twinned, and thin graphic quartz inclusions are seen in feldspars. It is thought the more heavily brown stained grains are albite because the few twins are seen here and from previous observations on distribution of staining on other similar veins. The less stained are potash feldspar, only in a few cases is microcline like twins seen. Quartz is present . Local patches of chlorite are sparse.

Inclusions composed of very fine grained anhedral grains of epidote opague grains, chlorite and brown clay intergrown to make a contract with the clarger grained feldspars. These fine grained fragments are probably from a selvage. Veins of chlorite cut the fine grained material.

The vein material has a granitoid composition and would be an example of this type of material being added to the rock mass.

CATEGORY Vein **TS number** dc-05 **Sample Number 1415727**

Zone 9 **UTME 709327** **UTMN** 5574657

Field sample notes Veins in basalt, local malachite stains near vertical veins in basalt. An amygdular layer is seen to dip 260/20 which is opposite to dip as usually expected.

Hand Specimen Description:

Sample is a basalt with a small cm wide white vein.

host is magnetic, vein is not ,fizzes , ,

Thin Section Descriptions

Host rock

This dark grey sample is an example of an altered basalt showing plagioclase microlites interlocked and enclosing altered glass to form and intersertal texture . It is amygdaloidal and contain microphenocrysts.

5% Plagioclase microphenocrysts are altered to brown clay and albite with local patches of clear chlorite

35% Plagioclase laths (.5 mm) are intergrown to form a grid altered to brown clay dust in albite

45% groundmass which is altered to relatively dark and brown clay and quartz and clear chlorite and local quartz. In part there are local patches of chlorite with epidote rims.

10% Original ilmenite-magnetite intergrowths become leucoxene and local magnetite or hematite which is found between plagioclase microlites. Near the vein leucoxene has developed.

5% Amygdales with amoeboid shapes to 1 mm across which contain mainly chlorite and minor quartz, or epidote.

Main vein itself is irregular in shape and is about 1 cm wide. It consists of mm sized alkalic feldspars, many grains which show albite twinning and quartz (pink vein). It is cut by thin deformed calcite veins and chlorite-prehnite veins which are cut by later quartz veins

Selvage is defined by an irregular layer of quartz pumpellyite and saussurite along the vein edge. This gradually grades into the altered basaltic host textures away from the vein.

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding propylite. A propylite is a chlorite, epidote quartz calcite rock

CATEGORY Vein **TS number** dc-06 **Sample Number 1415730**

Zone 9 **UTME 708984** **UTMN** 5575244

Field sample notes

Mineralized veins several cm across are set in an altered basalt host. This is from a new road near Adam West minfile

Hand Specimen Description:

veins with epidote and chalcopyrite bornite and calcite,

Irregular vein with well developed selvage in basalt

Magnetic (2), fizzes , ,

Thin Section Descriptions

This dark grey sample is an example of an altered basalt showing plagioclase microlites interlocked and enclosing altered glass to form and intersertal texture . It is amygdaloidal and contain microphenocrysts.

5% Small clusters of plagioclase form microphenocrysts up to 2 mm across. They too show alteration to albite and pumpellyite/prehnite. The zoned portions are preserved by differential replacement, although complete crystal is all albite.They are cut by small interior malachite veins.

45% Plagioclase laths (.5 mm) are intergrown to form a grid altered to brown clay dust in albite

35% groundmass which is altered to relatively dark and brown clay and quartz and clear chlorite and local quartz.

10% Original ilmenite-magnetite intergrowths become leucoxene and local magnetite or hematite which is found between plagioclase microlites. Local grains have maintained their original intergrown nature. Small grains of bornite apparently replace some other pre-existing oxide grains.

5% Amygdales with amoeboid shapes to 1 mm across which contain quartz, epidote or chlorite.

Veins in basalt include .3 mm rust-hematite altered chalcopyrite veins cutting through a chlorite amygdale

Main vein itself is irregular in shape and is about 2 cm wide. It consists of finely crystalline (decussate) chlorite intergrown with finely crystalline quartz and many small opaque grains which are largely bornite. Some of these grains are surrounded by limonite, other have covellite alteration on their outer surfaces and along cracks. A large several cm sized lump of bornite is included in the vein mass and is accompanied by several leach pits.

Selvage is defined by an irregular 1/2 mm layer of bornite (with usual covellite alteration along surfaces) set in coarser chlorite and epidote grains and locally developed pumpellyite. This gradually grades into the altered basaltic host textures away from the vein.

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding propylite. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center. No Assay is available for this rock.

Copper mineralization is concentrated at the edge of vein selvages, amygdales, shears and as replacement of previous magnetite/ilmenite grains. Whether ore grade, mineralized or anomalous, the sites are similar, the tenor is governed by the intensity of the influx of mineralizing fluid.

CATEGORY Vein **TS number dc-26** **Sample Number 1415751a**

Zone 9 **UTME 706210** **UTMN** 5578108

Field sample notes

These samples comes from the general area of the high grade Linzer vein and is part of the study to better understand the occurrence of this showing. The occurrence is a white vein which is at an angle to the high grade vein. 2 samples were acquired, they show the same features and their description has been combined.

Hand Specimen Description:

Composite white vein cutting dark basaltic host . Vein has discrete layers with complex and varying amounts of intergrown epidote, chlorite, quartz, and calcite and brown clay and leucoxene.

Magnetic(1), general fizz,

Thin Section Descriptions

Vein is divided into four layers, A chlorite and calcite rich layer a porcellainous section, another calcite quartz and chlorite layer and yet another porcellainous layer,

The porcellainous layers show a texture which suggests that these layers were once mylonitic equivalents of basalt. What is seen now are small spherules of brownish mostly opague leucoxene with a core of original “magnetite crystal from a basalt”. This is set in a brown clay and and a background of quartz, chlorite, calcite and locally prehnite?.chalcopyrite. Local remnants are recognized as rounded fragments of for instance a rolled chlorite amygdale ot a subhedral epidote after a feldspar.

The chlorite rich layers are associated with opaque minerals set in chlorite and quartz with clear calcite with deformed cleavage traces in adjacent layer. These layers have apparently been deformed as well. Some of the material with the chlorite is sulphide, probably very fine grained (chalcopyrite).

The vein is interpreted as a re-organized and recrystallized “mylonitic” zone in a basalt. The newer minerals have also been deformed suggesting that the fault had a long life.

Vein contains 932 ppm copper and is mineralized, apparently late in the life of the fault. This activity is part of the hydrothermal event that affected area.

CATEGORY Vein **TS number dc-29** **Sample Number 1415751b**

Zone 9 **UTME 706210** **UTMN** 5578108

Field sample notes

These samples comes from the general area of the high grade Linzer vein and is part of the study to better understand the occurrence of this showing. The occurrence is a white vein which is at an angle to the high grade vein. 2 samples were acquired, they show the same features and their description has been combined.

Hand Specimen Description:

Composite white vein cutting dark basaltic host . Vein has discrete layers with complex and varying amounts of intergrown epidote, chlorite, quartz, and calcite and brown clay and leucoxene.

Magnetic(1), general fizz,

Thin Section Descriptions

Vein is divided into four layers, A chlorite and calcite rich layer a porcellainous section, another calcite quartz and chlorite layer and yet another porcellainous layer,

The porcellainous layers show a texture which suggests that these layers were once mylonitic equivalents of basalt. What is seen now are small spherules of brownish mostly opague leucoxene with a core of original “magnetite crystal from a basalt”. This is set in a brown clay and and a background of quartz, chlorite, calcite and locally prehnite?.chalcopyrite. Local remnants are recognized as rounded fragments of for instance a rolled chlorite amygdale ot a subhedral epidote after a feldspar.

The chlorite rich layers are associated with opaque minerals set in chlorite and quartz with clear calcite with deformed cleavage traces in adjacent layer. These layers have apparently been deformed as well. Some of the material with the chlorite is sulphide, probably very fine grained (chalcopyrite).

The vein is interpreted as a re-organized and recrystallized “mylonitic” zone in a basalt. The newer minerals have also been deformed suggesting that the fault had a long life.

Vein contains 932 ppm copper and is mineralized, apparently late in the life of the fault. This activity is part of the hydrothermal event that affected area.

CATEGORY vein **TS number dc-16** **Sample Number 1415714**

Zone 9 **UTME 704635** **UTMN** 5578080

Field sample notes Flat lying vein of pink material with much epidote, local malachite stain in hyaloclastite or other type of breccia

Hand Specimen Description:

Pink and green vein material. Open pit leached in pink area.

Non-magnetic, fizzes in open pits , ,

Thin Section Descriptions

Specimen is from the vein itself and it consists of two mineral assemblages.

The green part consists of large (cm+ sized) pumpellyite sheaves, and books of very pale chlorite booklets set in a matrix of quartz and brown clay stained alkalic feldspar. Minute quartz euhedra traverse more mafic minerals. Of interest, is the development of 1/2 mm sized epidote grains at the end of some pumpellyite splays.

The larger pink part consists of intergrown 1-3 mm sized brown clay stained alkalic feldspar and same sized subhedral quartz grains

Small calcite veinlets

The calc alkalic alkalic vein material shows that open fill of the vein occurred and that there was little disruption afterwards. The vein fill is considered part of the hydrothermal vein event that affected area.

CATEGORY Ore grade basalt **TS number** dc-11 **Sample Number 1415705**

Zone 9 **UTME 706110** **UTMN** 5578173

Field sample notes aphanitic basalt with chlorite amygdales locally sheared with calcite in shear, local malachite staining on host and shear+

Hand Specimen Description:

Malachite stained aphanitic basalt with chlorite amygdales locally sheared with calcite in shear, local malachite Local large irregularly shaped amygdales are rimmed by bornite.

Magnetic (4), generally fizzes, density 2.69

Thin Section Descriptions

This sample is typical of aphanitic basalt showing plagioclase microlites interlocked and enclosing[glass to form and intersertal texture.. It is amygdaloidal.

5 % larger microlites show alteration to brown clay, saussurite and albite

45 % Plagioclase laths (1 mm and much less mm)are altered to brown clay, albite and chlorite

7 % relic pyroxene grains (.5 mm) are altered almost completely to clear chlorite

10 % Original ilmenite-magnetite intergrowths become leucoxene and magnetite or hematite or limonite. Some grains are replaced by bornite.

30 % groundmass is now very fine grained intergrown brown clay, leucoxene, chlorite, opaque dust, calcite

3 %, 3 large Amygdales up to 1 cm and are filled with calcite, local selvages are rich epidote and chlorite and locally bornite.

Calcite veinlets cut rock.

s

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks called propylite. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center. This rock contains 0.8% copper and is a product of mineralizing fluids.

Copper mineralization is concentrated at the edge of vein selvages, amygdales, shears and as replacement of previous magnetite/ilmenite grains. Whether ore grade, mineralized or anomalous, the sites are similar, the tenor is governed by the intensity of the influx of mineralizing fluid.

CATEGORY Ore grade basalt **TS number dc-02 Sample Number 1415710**

Zone 9 **UTME 706001** **UTMN** 5578248

Field sample notes Sample from general vicinity of high grade vein in Linzer region and consists of basalt taken from a fault surface showing scattered bornite in basalt and malachite

Hand Specimen Description:

Rusty stained altered mineralized basalt with bornite in chlorite amygdales.

Magnetic (3), fizzes , , density 2.75

Thin section Description

This dark grey sample is typical of altered basalt showing plagioclase microlites interlocked and enclosing altered glass to form an intersertal texture . It is amygdaloidal and contain microphenocrysts.

5% Small clusters of plagioclase form microphenocrysts up to 5 mm across. They show alteration to brown clay dusted albite and chlorite. Twinning is preserved.

40% Plagioclase laths (.5 mm) are intergrown to form a grid altered to brown clay dust in albite.

35% groundmass which is altered to relatively brown clay and chlorite and local quartz.

15% Original ilmenite-magnetite intergrowths become leucoxene and local magnetite or hematite. . Small grains of bornite replace some other pre-existing oxide grains.

5% Amygdales with amoeboid shapes ranging in size from 4 to 9 mm contain quartz ansd pumpellyite, quartz and epidote, chlorite and prehnite, rare grains of bornite occur in amygdales, others surround the amygdale..

Veins include .epidote veinlets and bornite stringers.

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding propylite. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center. This rock with more than a percent copper (and 436 ppb Au as well as 10.4 ppm ppm Ag) comes from a mineralized zone bordering a fault.,

Copper mineralization is concentrated at the edge of vein selvages, amygdales, shears and as replacement of previous magnetite/ilmenite grains. Whether ore grade, mineralized or anomalous, the sites are similar, the tenor is governed by the intensity of the influx of mineralizing fluid.

CATEGORY Ore grade basalt **TS number dc-03 Sample Number 1415711**

Zone 9 **UTME 706001** **UTMN** 5578248

Field sample notes

New quarry with shows massive basaltic beds dip 284/14 and cut by local Fault zone (200/80) with dark grey selvage and chlorite amygdales in adjacent basalt, bornite blebs noted see 1415712 for description of host rock

Hand Specimen Description:

Malachite stained dark grey amygdular basalt rock with copper sulphide blebs.

Magnetic(1), fizzes , ,

Thin Section Descriptions

This darkgrey sample is typical of altered basalt showing plagioclase microlites interlocked and enclosing altered glass to form and intersertal texture . It is amygdaloidal and contain microphenocrysts.

5% Small clusters of plagioclase form microphenocrysts up to 2 mm across. They too show alteration to albite and pumpellyite/prehnite. The zoned portions are preseved by differential replacement, although complete crystal is all albite.They are cut by small interior malachite veins.

45% Plagioclase laths (.5 mm) are intergrown to form a grid altered to brown clay dust in albiteas is the glassy parts of the slide, and the matrix has been altered to chlorite, epidote and or pumpellyite, leucoxene, and occasionally calcite

35% groundmass which is altered to relatively clear chlorite and local quartz.

10% Original ilmenite-magnetite intergrowths become leucoxene and local magnetite or hematite. Local grains maintain their original intergrown nature. Small grains of bornite apparently replace some other pre-existing oxide grains.

5% Amygdales with amoeboid shapes ranging in size from 4 to 9 mm contain chlorite and copper sulphides.

Veins include .3 mm rust-hematite altered chalcopyrite veins, as well as .2 mm thick malachite -quartz veins traversing rock. The stringers are closely spaced and roughly parallel.

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding propylite. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center. This rock with more than a percent copper (and 378 ppb Au as well as 2.4 ppm Ag) comes from a mineralized zone bordering a fault.,

Copper mineralization is concentrated at the edge of vein selvages, amygdales, shears and as replacement of previous magnetite/ilmenite grains. Whether ore grade, mineralized or anomalous, the sites are similar, the tenor is governed by the intensity of the influx of mineralizing fluid.

CATEGORY mineralized basalt **TS number dc-28** **Sample Number 1415755**

Zone 9 **UTME 709008** **UTMN** 5575249

Field sample notes pink vein with malachite stain in brownish massive basalt

sample is of host basalt

Hand Specimen Description:

Specimen of fine grained basalt with small dark green spots with few amygdales.

Magnetic(1) fizzes , ,

Thin Section Descriptions

This dark grey basalt is an example of an altered rock showing altered plagioclase microlites interlocked and enclosing altered glass to form an intersertal texture with small grains of pyroxene to locally form an intergranular texture. It is amygdaloidal and contains microphenocrysts.

15% Small clusters of plagioclase form microphenocrysts up to 2 mm across.. They too show alteration to albite and pumpellyite/prehnite.

40%Plagioclase laths (mm)are altered as is the glassy parts of the slide, and the matrix has been altered to chlorite, epidote and or pumpellyite, leucoxene, and occasionally calcite

5 % Some small (1mm) pyroxene grains within the interlocking feldspars.

3% Other mafics are now chlorite-quartz replacement of prisms locally

6% Original ilmenite-magnetite intergrowths become leucoxene and small flakes of hematite and merges into the groundmass

11% groundmass is mainly brown clay and chlorite-quartz-albite-opaque dust

20%Amygdales are amoeboid and large (up to 1 cm) and filled with quartz containing minor splays of epidote, and locally, of pumpellyite.

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts, spilites and/or propylite. A spilite is an old rock name for a albite pyroxene rock. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center. Low grade metabasalt is commonly given to an alteration of regional extent.

Copper mineralization is concentrated at the edge of vein selvages, amygdales, shears and as replacement of previous magnetite/ilmenite grains. Whether ore grade, mineralized or anomalous, the sites are similar, the tenor is governed by the intensity of the influx of mineralizing fluid.

CATEGORY anomalous basalt **TS number dc-14** **Sample Number 1415712**

Zone 9 **UTME 704931** **UTMN** 5577109

Field sample notes

From a new quarry, containing hyaloclastite

Hand Specimen Description:

sparsely amygdular and microporphyritic basalt

slightly Magnetic, fizzes, density 2.97

Thin Section Descriptions

This greenish grey sample is an example of altered basalt showing relic plagioclase microlites interlocked in heavily altered black groundmass. It is amygdaloidal and contains microphenocrysts.

5% Small clusters of plagioclase form microphenocrysts up to 2 mm across.. They are altered to albite with a dusty brown dusting of brown clay and set with pumpellyite and with local grains of calcite

30%Plagioclase laths (.2 mm)are altered to albite, chlorite with small opaque dusts.

45% B;lack and opaque groundmassSome small (1mm) pyroxene grains persist, others become chlorite and very finegrained magnetite grains.

5% Original ilmenite-magnetite intergrowths become leucoxene and magnetite or hematite or limonite

15% Amygdales are amoeboid and larger (to 3 mm) types contain calcite or mixtures of calcite and quartz very small crystallites of pumpellyite or chlorite and a second (up to 1 mm) type is filled with chlorite and local epidote.

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called propylite. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center. In this case, opaque minerals have been formed in or added to rock by means of hydrothermal fluids.

Copper mineralization is concentrated at the edge of vein selvages, amygdales, shears and as replacement of previous magnetite/ilmenite grains. Whether ore grade, mineralized or anomalous, the sites are similar, the tenor is governed by the intensity of the influx of mineralizing fluid.

CATEGORY anomalous basalt **TS number dc-04** **Sample Number 1415725**

Zone 9 **UTME 709337** **UTMN** 5574652

Field sample notes

Veined (290/70) host basalt with purpley brown colour in

Hand Specimen Description:

Specimen collected to study host, selvage and vein in a small system near a larger vein system

Non-magnetic, fizzes , ,

Thin Section Descriptions

The thin section is divided into three sections;host, vein and bounding selvages

Host: This greyish green sample is typical of altered basalt showing altered plagioclase microlites interlocked and enclosing altered glass to form and intersertal texture . It is amygdaloidal and contains microphenocrysts.

50% Plagioclase laths (sub mm) are altered to epidote, pumpellyite and albite. Larger crystal are rare but similarly altered.

35% mesostasis is now altered to brown clay and chlorite set with small crystals of epidote and pumpellyite. Some of the chlorite has become stained a golden brown. Local flakes of colourless well cleaved mineral with very low birefringence thought to be an illite-chlorite intergrowth.

10% Original ilmenite-magnetite intergrowths become dusty leucoxene and hematite or limonite and sit in groundmass between plagioclase crystals.

5 % Amygdales are small (sub mm) and contain quartz or epidote and chlorite-illite minerals

Vein: Coarsely crystalline with mm sized quartz, and alkalic feldspars clouded by dusty illite and large sheaves and grains of highly pleochroic pumpellyite. Opaques (chalcopyrite) are scattered through the vein, but especially near the edges of the vein.

Selvage The edges of the vein against the basalt are characterized by very finegrained intergrown chlorite, quartz and local pumpellyite as well as grains of epidote and colourless chlorite-illite grains. Rusty areas and opague (in many cases chalcopyrite dots the edge.
s

The alteration minerals mentioned above indicate that the rock has been exposed to complex low temperature aqueous fluids yielding rocks propylite. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center.

Copper mineralization is concentrated at the edge of vein selvages, amygdales, shears and as replacement of previous magnetite/ilmenite grains. Whether ore grade, mineralized or anomalous, the sites are similar, the tenor is governed by the intensity of the influx of mineralizing fluid.

This rock has been influenced by a local low temperature hydrothermal event.

CATEGORY anomalous basalt **TS number** dc-01 **Sample Number 1415703**

Zone 9 **UTME 706197** **UTMN** 5578130

Field sample notes

Sample of epidote and pink (alkalic feldspar quartz) veined and altered basalt with specks of chalcopyrite taken ne4ar the high grade vein in Linzer to establish country rock.

Hand Specimen Description:

Veined altered microporphyritic basalt with small chalcopyrite specks in rare chlorite amugdales

Magnetic,(4), fizzes , ,

Thin Section Descriptions

This greenish grey sample is an example of altered basalt showing plagioclase microlites interlocked and enclosing small grains of pyroxene to form an intergranular texture. It is heterogeneous in texture and is amygdaloidal and contains microphenocrysts.

5% Small clusters of plagioclase form microphenocrysts up to 3 mm across. These are dusted with very fine grained clay and are altered to albite with small chlorite areas dotted with opaques and filling glass inclusions in feldspar crystal. Agglutinated feldspars show albite twinning.

40% Plagioclase laths (mm) .5 mm and interlocking are pervasively altered to albite and chlorite and rare small pumpellyite grains, some are stained by brownish clay and limonite.

15% Many small (0.2mm) pyroxene grains persist, others become chlorite and very finegrained magnetite grains.

10% Original ilmenite-magnetite intergrowths become leucoxene and magnetite and merge with mesostasis to form a new groundmass Some of the grains are now chalcopyrite.

20% groundmass is now chlorite and small granules epidote

10% Amygdales are amoeboid in form and one is 1 cm long, but most are mm sized. Larger one s chlorite and centers of calcite. Smaller ones contain chlorite and epidote euhedra. Locally small amygdales contain small grains of chalcopyrite

Thin Veins of quartz, a thin irregular chlorite bearing veinlet crosses section, with no obvious selvage. and as well as possible infiltrations of epidote along undistinct lines.

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts, and/or propylite. . A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center.

Copper mineralization is concentrated at the edge of vein selvages, amygdales, shears and as replacement of previous magnetite/ilmenite grains. Whether ore grade, mineralized or anomalous, the sites are similar, the tenor is governed by the intensity of the influx of mineralizing fluid.

Copper content of this rock is higher than most normal basalts

CATEGORY normal basalt **TS number** dc-12 **Sample Number 1415706**

Zone 9 **UTME 706110** **UTMN** 5578173

Field sample notes dark brownish grey aphanitic basalt with 3 mm chlorite and epidote amygdales

(note 1415705, 706, and 707 are very near each other)

Hand Specimen Description:

dark brownish grey aphanitic basalt with 3 mm chlorite and epidote amygdales

Magnetic (2), fizzes, , , density 2.69

Thin Section Descriptions

This dark to black sample is typical of basalt with and intersertal texture. A few large amygdales and sparse plagioclase microphenocryst are set in a very fine grained matric.

5 % are seen as small clusters of plagioclase forming microphenocrysts up to 3 mm across.. Albite twinning is seen. They now consist mainly of albite with small blebs along the cleavages composed mainly of of pumpellyite, chlorite and brown stained clay.

40% Plagioclase laths or microlites (0.1 mm) are intergrown in a crude open network, in part outlined by opague minerals. These small crystals are seen to consist mainly af non-twinned albite and dustings of brownish clay.

45% constitute the matrix, made up of patches of chlorite and very finegrained magnetite grains. possibly after mafic components, and dark opague minerals, chlorite, brown clay, pumpellyite and leucoxene.

10% Original ilmenite-magnetite intergrowths have become leucoxene and magnetite

A few larger amygdales form about 10% and are filled with low temperature minerals, mainly chlorite, of several distinct compositions (Fe/Mg ratio vary) and calcite with small amounts of exceedingly small prisms of clinozoisite and very scarce titanite crystals.

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts, and/or propylite. Low grade metabasalt is commonly given to an alteration of regional extent.. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center.

Copper content of this rock is very similar to most normal basalts

CATEGORY **normal** basalt **TS number** dc-15 **Sample Number 1415713**

Zone 9 **UTME 704636** **UTMN** 5579080

Field sample notes epidote and pyrite alteration in basalt along a layer 350/20. Could be a flow feature in a pahoe hoe flow

Hand Specimen Description:

pyrite and epidote bearing basalt.

Magnetic (3), local fizzes

Thin Section Descriptions

This dark greenish greyish sample is typical of basalt with an intersertal texture. Many irregularly shaped amygdales and plenty of plagioclase microphenocryst are set in a very fine grained matrix.

10 % are seen as clusters of plagioclase forming microphenocrysts up to 4 mm across.. Albite twinning is seen. They now consist mainly of albite with small blebs along the cleavages composed mainly of of pumpellyite, chlorite and brown stained clay.

35 % Plagioclase laths or microlites (0.1 mm) are intergrown in a crude open network, in part outlined by opaque minerals. The interstices contain a very fine grained dark matrix in which even smaller microlites are seen to have developed. The microlites are seen to consist mainly of non-twinned albite and dustings of brownish clay.

30% constitute the matrix, made up of patches of chlorite and very finegrained magnetite grains. possibly after mafic components, and dark opaque minerals, chlorite, brown clay, pumpellyite and leucoxene. Possibly after a glassy matrix.

10% Original ilmenite-magnetite intergrowths have largely become leucoxene and magnetite Afew specks of pyrite were noted

15% amygdales with complex shapes such as sickle moons, amoeboid outlines and up to 1 cm long are filled with low temperature minerals, mainly chlorite, of several distinct compositions (Fe/Mg ratio vary), quartz, local calcite and granular epidote. Some amygdales are surrounded by 1/2 mm wide concentration of black dust,

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts, and/or propylite. Low grade metabasalt is commonly given to an alteration of regional extent.. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center.

CATEGORY normal basalt **TS number dc-17** **Sample Number 1415715**

Zone 9 **UTME 704935** **UTMN** 5578585

Field sample notes

black massive microporphyritic basalt

Hand Specimen Description:

Fine grained to aphanitic black rock with brown spots

Magnetic (2), fizzes ,

Thin Section Descriptions

This dark brown to purple sample is typical of basalt with and intergranular texture. A few amygdales and microphenocrysts of pyroxene, an altered mafic mineral and feldpar clusters are set in a finer grained partially altered mix of intergrown plagioclase lathes, small pyroxene grains and opaque minerals

10% % are seen as small clusters of plagioclase forming microphenocrysts up to 3 mm across.. Albite twinning is seen. Some are intergrown with a mafic mineral, now mainly chlorite. They now consist mainly of albite with cores of saussurite and chlorite, and brown stained clay.

7% small clinopyroxene crystal varying from .5 mm to 2 mm, as well as smaller grains in matrix

3% Mafic mineral now largely replaced by chlorite, locally intergrown with clea albite and quartz.

30% Plagioclase laths or microlites (0.1 mm) are intergrown in a crude open network, in part outlined by opague minerals. These small crystals are seen to consist mainly af non-twinned albite and dustings of brownish clay.

10% Original ilmenite-magnetite intergrowths about .3mm across are part of intergranular fabric.have become leucoxene and magnetite

35% constitute the matrix, made up of patches of chlorite and very finegrained magnetite grains. As well as small pyroxene grains surrounded by brown clay,and chlorite, and dark opague minerals. Local patches of small epidote porphyroblasts are also found.

A few 1 mm sized amygdales form about 5% and are filled with low temperature minerals, mainly chlorite, of several distinct compositions (Fe/Mg ratio vary) and calcite .

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts, spilite and/or propylite. Low grade metabasalt is commonly given to an alteration of regional extent. Spilite is once common name given to albite pyroxene basalts. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center.

Copper content of this rock is very similar to most normal basalts

CATEGORY normal basalt **TS number dc-18** **Sample Number 1415716**

Zone 9 **UTME 704833** **UTMN** 5578574

Field sample notes

This outcrop is very dark and has possible aspect of a clastic rock. The sample is different from other rocks seen. Check.

Hand Specimen Description:

pink amygdales in purplish black massive aphanitic basalt with very small poorly displayed microphenocrysts. Breaks with subconchoidal fracture

Magnetic (2), No fizz, density 2.85

Thin Section Descriptions

The thin section is about 2/3 aphanite and 1/3 microphenocrystic.

This dark brown to purple sample is typical of basalt with an intergranular texture. A few amygdales and microphenocrysts of pyroxene, an altered mafic mineral and feldpar clusters are set in a finer grained partially altered mix of intergrown plagioclase lathes, small pyroxene grains and opaque minerals

10% are seen as small clusters of plagioclase forming microphenocrysts up to 2 mm across.The feldspars are fresh.. Normal zoning from An40 to An0. Albite and other complex twin forms have been noted. Some clusters are intergrown with a mafic mineral, now mainly chlorite.

10% small clinopyroxene crystal mainly about .5 mm as well as smaller grains in matrix

5% Mafic mineral now largely replaced by chlorite, locally intergrown with clear albite and quartz.

40% Plagioclase laths or microlites (0.1 mm) are intergrown in a crude open network, in part outlined by opague minerals. Many of these small crystals also show normal zoning and appear quite fresh

10% Original ilmenite-magnetite intergrowths about .3mm across are part of intergranular fabric.

25% constitute the matrix, made up of patches of chlorite locally with black opague mineral along cleavage planes (probably very finegrained magnetite grains). As well as small pyroxene grains surrounded by brown clay,and chlorite, and dark opague minerals. Irregular patches of chlorite locally distributed as backgound.

Trace of very small high refringence, high birefringence mineral (Zircon?) in a cluster

Trace of Titanite in other clusters.

Larger phenocrysts are more common in the lower third of the thin section. Local layering/heterogeneity.

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts, spilite and/or propylite. Low grade metabasalt is commonly given to an alteration of regional extent. Spilite is once common name given to albite pyroxene basalts. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center.

Copper content of this rock is very similar to most normal basalts

CATEGORY normal basalt **TS number** dc-23 **Sample Number 1415722**

Zone 9 **UTME 709142** **UTMN** 5574980

Field sample notes

The rock is a dark rock possibly a diabase. Check

Hand Specimen Description:

black to green fine grained basalt core or sill with very small chlorite amygdales, shows weathering rind.

Magnetic(4), local fizz, density 2.86

Thin Section Descriptions

The thin section shows a few large amygdales

This dark brown to purple sample is an example of a fine grained basalt with an intergranular texture. A few amygdales and microphenocrysts of pyroxene, an altered mafic mineral and feldspar clusters are set in a finer grained partially altered mix of intergrown plagioclase lathes, small pyroxene grains and opaque minerals in a sea of chlorite.

10% are seen as small clusters of plagioclase forming microphenocrysts up to 3 mm across. The feldspars are are altered to albite and locally saussurite.. Some clusters are intergrown with a mafic mineral, now mainly chlorite. These microlites are larger than previously described.

10% Mafic mineral now largely replaced by chlorite, locally intergrown with clear albite and quartz. Some of these grains may be uralite.

10% small clinopyroxene crystal mainly about .5 mm as well as smaller grains in matrix

35% Plagioclase laths or microlites (0.1 mm) are intergrown in a crude open network, in part outlined by opague minerals. Many of these small crystals also show normal zoning and appear quite fresh

5 % Original ilmenite-magnetite intergrowths about .3mm across are part of intergranular fabric. Some grains are skeletal remains of the “ore”.

20% constitute the matrix, made up of continuous patches of patches of chlorite locally with black opague mineral along cleavage planes (probably very finegrained magnetite grains). As well as small pyroxene grains surrounded by brown clay,and chlorite, and dark opague minerals. Irregular patches of chlorite locally distributed as backgound. Small areas near “ore” is seen to be leucoxene.

10% Amygdales are of two types; larger ones up to 1 cm with epidote chlorite albite with rust stain and local quartz with scarce opague inclusion (sulphide?) and smaller (0.5mm) , not so obvious irregular shaped ones filled with chlorite and local epidote and locally by prehnite(?). Chlorite forms the edge of amygdales and quartz and alkalic feldspars fill in centers to generate local atoll structures,

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts, spilite and/or propylite. Low grade metabasalt is commonly given to an alteration of regional extent. Spilite is once common name given to albite pyroxene basalts. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center.

Copper content of this rock is very similar to most normal basalts

CATEGORY normal basalt **TS number** dc-13 **Sample Number 1415709**

Zone 9 **UTME 706049** **UTMN** 5578207

Field sample notes Fault rock in amygdular and microporphyritic basalt with quartz epidote veins, locally some pink minerals, local malachite stain. A 5 cm thick planar structure is followed by vein iat 270/15. Could be coagulated amygdales.

Hand Specimen Description:

Grey aphanite with local amygdales that display atoll structure

Magnetic (2), scarce fizz around edges of amygdales, density 2.75

Thin Section Descriptions

This dark grey brown basalt is fine grained and shows plagioclase microlites interlocked and enclosing small grains of pyroxene to form an intergranular texture. It is amygdaloidal and contain many microphenocrysts.

20 % Small clusters of plagioclase form microphenocrysts up to 4 mm across.are altered but still retain traces of albite and other complex twinning combinations. Albite and quartz replace grains and small patches of chlorite, epidote leucoxene, and rarely calcite

35 % Plagioclase laths (1 mm) are interlocked and locally show albite but are generally enveloped in brown clay

5% Some small (1mm) pyroxene grains persist, others become chlorite and very finegrained magnetite grains.

5% Original ilmenite-magnetite intergrowths become leucoxene and magnetite dust or limonite

20% matrix of brownish clay amterial filling in spaces and outlining grains.

15% Amygdales form two types, one filled with clinozoisite/epidote the other largely wit quatz. And chlorite

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts, spilites and/or propylite. A spilite is an old rock name for a albite pyroxene rock. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center. Low grade metabasalt is commonly given to an alteration of regional extent.

Copper content of this rock is very similar to most normal basalts

CATEGORY depleted basalt **TS number dc-09** **Sample Number 1415702**

Zone 9 **UTME 706205** **UTMN** 5578116

Field sample notes

Epidote vein in crumbly chloritic basalt

Hand Specimen Description:

Epidosite with dark spots

Non-magnetic, fizzes from joints and microveins, density 3.18

Thin Section Descriptions

This green sample is an example of altered basalt showing relic altered microlites interlocked and enclosing altered glass to form a relic intersertal texture . It is amygdaloidal and contain altered microphenocrysts.

3% Small clusters of plagioclase form microphenocrysts up to 2 mm mm across.. They too show alteration to epidote and minor albite and pumpellyite

32% Plagioclase laths (.1 mm)are altered to intergrown masses of chlorite, epidote and or pumpellyite, leucoxene, and occasionally calcite along with the matrix.

20% Original ilmenite-magnetite intergrowths become scattered leucoxene and limonite dust and small grains.

25% matrix is mainly altered glassy material and possibly pyroxene granules now recrystallized and forming intergrown epidote, brown clay, leucoxene, and chlorite dotted with small crystals of pumpellyite.

20% Amygdales to 1 mm across and filled with chlorite and calcite. Some show two types of chlorite, an outer rim of dull green and an inner core of brighter green decussate chlorite (Change in Fe/Mg ratio). Other chlorite amygdales show a center of brown oxides in the core . Minor quartz is seen in a few amygdales

Weathered surface shows Liesegang rings (of iron alteration) on a weathered surface.

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts or propylite. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center. Low grade metabasalt is commonly given to an alteration of regional extent. Epidosites are well known in the partition of mineral assemblages in low grade basalts (cf Smith 1960).

The copper content (22 ppm) of this sample is only a fraction of what is normal and should be called copper depleted basalt.

CATEGORY depleted basalt **TS number dc-10 Sample Number 1415704**

Zone 9 UTME 706182 UTMN 5578141

Field sample notes

massive microporphyritic basalt

Hand Specimen Description:

massive microporphyritic basalt cut by thin white vein

Magnetic (2), veins fizz,, density 2.67

Thin Section Descriptions

This dark grey to black sample is an example of altered basalt showing altered plagioclase microlites interlocked and enclosing altered mesostasis to form an intersertal texture. It is amygdaloidal and contains microphenocrysts. It is vaguely layered, possibly due to enrichment of epidote in vein parallel enrichment.

10% Small clusters of plagioclase form microphenocrysts up to 2 mm across.. They too show alteration to albite and epidote, quartz and rarely pumpellyite.
20 Plagioclase laths (0.1 mm) maintain their shape but are altered to albite, chlorite, epidote and or pumpellyite, leucoxene, and occasionally calcite
10% Some small (1mm) pyroxene grains may persist, but many are now epidote, others have become chlorite and very finegrained magnetite grains.
20% Original ilmenite-magnetite intergrowths become leucoxene and magnetite. Many original crystal outlines now show a powdery edge, in particular when included in chlorite.
35% matrix is now largely clear chlorite dotted with opaque dust, trace of quartz There are several types of chlorite in the section. Some calcite is found in small crystals eithin the matrix
5% Amygdales form 2 mm filled with chlorite

A 5 mm wide vein of calcite with large well developed crystals cut across the thin section. Within this vein are small well developed euhedra of quartz. The selvage is epidote and opaque rich, at vein interface and then becomes very chlrite rich a few mm in.

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts, spilites and/or propylite. A spilite is an old rock name for a albite pyroxene rock. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center. Low grade metabasalt is commonly given to an alteration of regional extent.

The copper content of this sample is only a fraction of what is normal and should be called copper depleted basalt

CATEGORY depleted basalt **TS number dc-19 Sample Number 1415717**

Zone 9 UTME 704916 UTMN 5578271

Field sample notes

pink vein with epidote alteration in host amygdalar basalt, Impression in field was that this is a portion of brownish-purplish scoriaceous basalt. Rocks similar to this have previously been shown to carry zeolite.

Hand Specimen Description:

Sample is of host rock which is an aphanitic basalt with local accumulation of amygdales and microphenocrysts

non Magnetic, fizzes , , density 2.64

Thin Section Descriptions

This greyish brownish sample is an example of basalt showing plagioclase microlites interlocked and enclosing glass to form and intersertal texture. It is amygdaloidal and contain microphenocrysts. The section show a part more amygdaloidal than the more aphanitic

20 % Small clusters of agglutinated plagioclase form microphenocrysts up to 2 mm across.. They are now altered chlorite patches, a fine dusting of brown clay in twinned albite.

20% very tiny (.003 mm) microlites mainly of albite and locally calcite set in black matrix

40% matrix of which about half or more is made of small black dots obscuring most of the other minerals of the matrix which include chlorite and other obscured minerals. Since the rock is not sulphide bearing or magnetic, it assumed that the dark grains are hematite or limonite.

10% Original ilmenite-magnetite intergrowths become leucoxene and hematite or limonite

10% Amygdales are of two types; both have have unusual amoeboid shapes but one type (1mm) is filled with calcite and the other (0.5) largely filled with chlorite and minor amounts of quartz,and calcite. Some amygdales have had their fill leached out of them.

Very thin irregularly shaped veins or stringers of epidote cut across sample

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts, and/or propylite. . A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center. Low grade metabasalt is commonly given to an alteration of regional extent.

The copper content (30 ppm) of this sample is only a fraction of what is normal and should be called copper depleted altered basalt

CATEGORY depleted basalt **TS number dc-22 Sample Number 1415721**

Zone 9 **UTME 703586** **UTMN** 5580308

Field sample notes

from a new quarry, massive basalt with local pink amygdules, fresh feldspar (flashing cleavage faces) Local malachite staining

Hand Specimen Description:

Amygduloidal basalt with amygdales with dark rim around them

Magnetic (2), no fizz

Thin Section Descriptions

This dark sample is an example of basalt showing altered plagioclase microlites interlocked and enclosing small grains of pyroxene to form an intergranular texture. It is amygdaloidal and contain microphenocrysts.

15% Small clusters of agglutinated plagioclase form microphenocrysts up to 5 mm across.. They are largely of albite but show chlorite replacing areas within plagioclase that were glassy mesostasis.

35%-Stubby Plagioclase laths (7mm)are intergrown and are now altered to brownish saussurite

35% Small (1mm) pyroxene grains persist, others become brown clay, chlorite and very finegrained magnetite grains.

10% Original ilmenite-magnetite intergrowths become leucoxene and magnetite or hematite or limonite. Some grains of pyrite were noted

5% Amygdales up to 2 mm fare filled with chlorite and tiny grains of epidote

The alteration minerals mentioned above indicate that the rock has been exposed to low temperature aqueous fluids yielding rocks variably called low grade metabasalts, spilites and/or propylite. A spilite is an old rock name for a albite pyroxene rock. A propylite is a chlorite, epidote quartz calcite rock formed in the outer parts of a hydrothermal center. Low grade metabasalt is commonly given to an alteration of regional extent. The presence of trace amounts pyrite is noted

The copper content of this sample (61 ppm) is only a fraction of what is normal and should be called copper depleted basalt. The malachite staining had travelled from its source to be trapped here as very thin surface coatings.

CATEGORY DACITE **TS number dc-21** **Sample Number 1415720**

Zone 9 **UTME 704211** **UTMN** 5579507

Field sample notes

Samples of a Dacite dyke, with dark inclusions, porphyritic to seriate feldspars, black dots and prisms , local malachite stain

Hand Specimen Description:

Porphyry dyke with feldspar phenocryst about and mafic phenocrysts, some of which are prismatic set in a finegrained matrix

Non-magnetic, fizzes , , density 2.80 Stained and shows potash feldspar in the groundmass, the larger feldspar phenocrysts are unstained.

Thin Section Descriptions

An altered feldpar porphyry with relic plagioclase phenocrysts and small grains of altered pyroxene and somewhat larger grains of altered hornblende, along with opaque ore set in a complex mixture of quartzofeldspaticmaterials and chlorite patches.

20% Altered feldspars are up to 5 mm across and consist of brown semi opaque clay with small grains of epidote and opaqu dust. It is likely that all this is set in albite, but it is not well displayed.

10% Grains of pyroxene, 0.5 mm to 1 mm across some less altered than others, but locally showing 90 degree cleavage and also show brown clay alteration-mineralization

10% Altered hornblendes are now more or less chlorite, but local relic patches (with scarce 60 degree cleavage) show the hornblende to have had a brown colour.

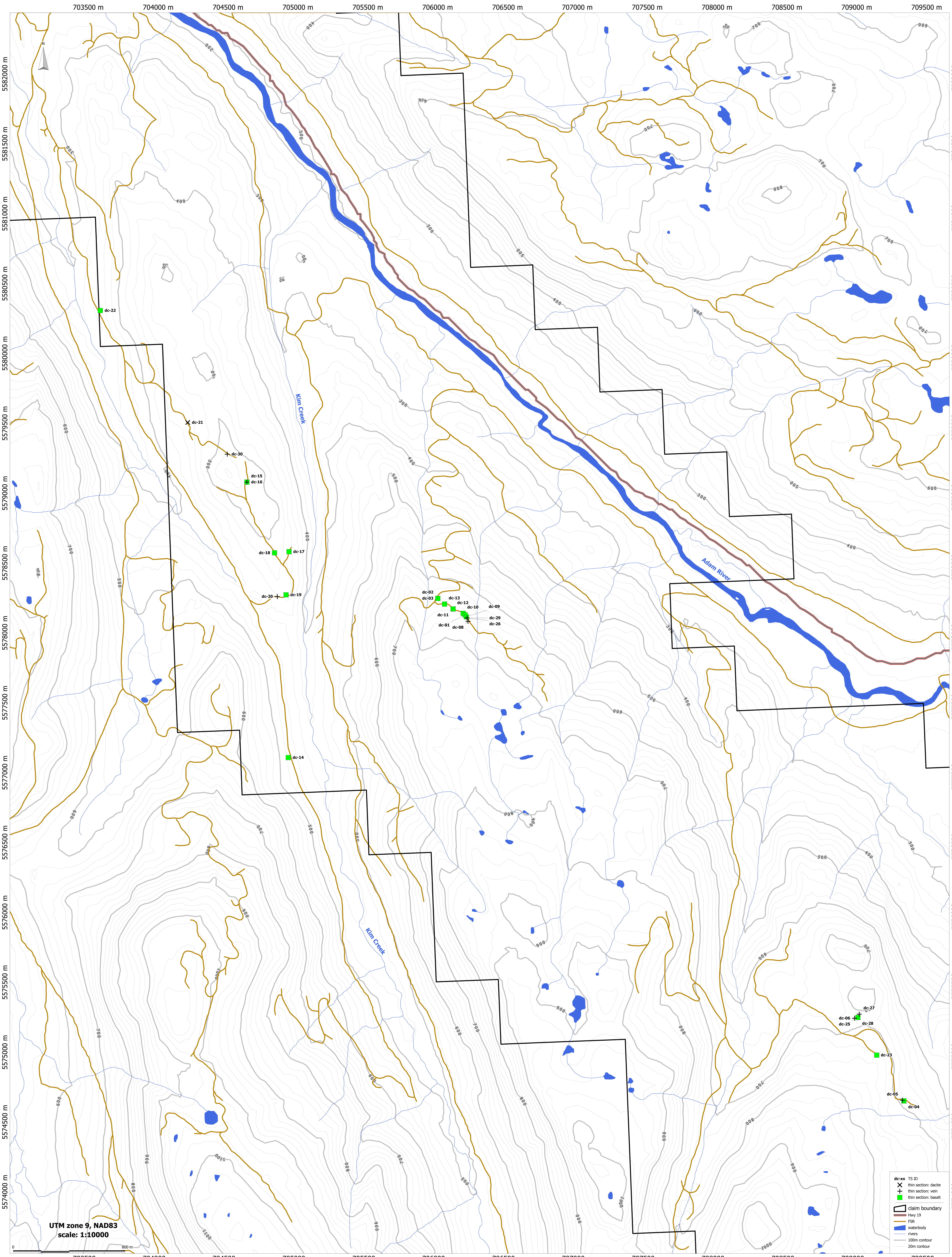
5% opaque and black “ore”., some of which are small specks of pyrite

55 % matrix Complex intergrown quartzofeldspathic ground mass with about 1/3 of are as patches of chlorite.

The rock is has a surface stained by malachite.

The porphyry has been affected by alteration similar in intensity to the general country side. It may be appropriate to call this a propylitized feldspar porphyry (dacite?). This type of porphyry is generally considered to be a favourable exploration guide.

This hornblende bearing feldspar porphyry is important.



Projection/Datum: UTM 9(N) NAD83 scale: 1:10000 0 800 m	**KRINGLE CONSOLIDATED** **May 2013**	**Figure 7:** **Location & Lithology** **of Thin Sections**

Appendix 4: Assay Sheets

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PHONE (604) 253-3158

Client: **Schau, Mikkel**
3919 Woodhaven Terrace
Victoria BC V8N 1S7 Canada

Submitted By:	Mikkel Schau
Receiving Lab:	Canada-Vancouver
Received:	November 16, 2012
Report Date:	November 30, 2012
Page:	1 of 3

CERTIFICATE OF ANALYSIS   VAN12005449.1

CLIENT JOB INFORMATION

Project:	KRINGLE
Shipment ID:	
P.O. Number	
Number of Samples:	33

SAMPLE DISPOSAL

STOR-PLP	Store After 90 days Invoice for Storage
DISP-RJT	Dispose of Reject After 90 days

Acme 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

Method Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
R200-250	32	Crush, split and pulverize 250 g rock to 200 mesh			VAN
GEO4	32	FA fusion Au Pt Pd; 1:1:1 AR digestion ICP-ES analysis	30	Completed	VAN

ADDITIONAL COMMENTS

Invoice To: Schau, Mikkel
3919 Woodhaven Terrace
Victoria BC V8N 1S7
Canada

CC:

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1020 Cordova St. East Vancouver BC V6A 4A3 Canada
PHONE (604) 253-3158

Client: **Schau, Mikkel**
3919 Woodhaven Terrace
Victoria BC V8N 1S7 Canada

Project: KRINGLE
Report Date: November 30, 2012

CERTIFICATE OF ANALYSIS VAN12005449.1

Method		WGHT	3B	3B	3B	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D
Analyte		Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi
Unit		kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
MDL		0.01	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	2	1	0.5	3	3
G1	Prep Blank	<0.01	<2	<3	<2	<1	1	3	48	<0.3	3	4	571	2.09	<2	<2	4	66	<0.5	<3	<3
G1	Prep Blank	<0.01	<2	<3	<2	<1	1	<3	52	<0.3	4	4	599	2.10	<2	<2	5	63	<0.5	<3	<3
1415701	Rock	0.87	<2	<3	3	<1	90	<3	17	<0.3	24	14	248	2.12	<2	<2	<2	79	5.6	<3	<3
1415702	Rock	0.99	<2	<3	3	<1	22	<3	57	<0.3	54	29	508	3.68	<2	<2	<2	47	0.6	<3	<3
1415703	Rock	1.03	<2	<3	5	<1	606	<3	50	0.4	51	30	355	4.82	<2	<2	<2	21	0.9	<3	<3
1415704	Rock	0.54	<2	<3	8	<1	35	5	88	<0.3	69	43	996	6.95	<2	<2	<2	46	1.2	<3	<3
1415705	Rock	0.52	<2	<3	16	<1	8210	7	83	1.2	53	26	1298	5.92	<2	<2	<2	52	1.3	<3	<3
1415706	Rock	0.83	18	<3	7	<1	116	8	94	<0.3	55	42	1669	8.83	5	<2	<2	47	1.2	<3	<3
1415707	Rock	0.65	<2	<3	<2	<1	253	7	59	<0.3	34	23	1708	5.77	6	<2	<2	106	1.3	<3	4
1415709	Rock	1.15	<2	<3	10	<1	261	4	54	<0.3	50	32	551	6.19	<2	<2	<2	22	<0.5	<3	<3
1415710	Rock	0.32	436	<3	11	4	>10000	5	122	10.4	65	45	690	7.40	<2	4	<2	11	49.8	<3	<3
1415711	Rock	0.50	378	<3	19	<1	>10000	15	120	2.4	69	49	1093	9.03	<2	<2	<2	20	3.2	<3	<3
1415712	Rock	0.46	4	<3	3	<1	309	<3	32	0.3	48	30	408	5.96	4	<2	<2	13	0.9	<3	<3
1415713	Rock	0.32	<2	<3	4	<1	119	<3	94	<0.3	58	58	486	8.42	<2	<2	<2	15	<0.5	<3	<3
1415714	Rock	0.57	4	<3	<2	<1	15	<3	15	<0.3	11	4	197	1.40	<2	<2	<2	88	<0.5	<3	<3
1415715	Rock	0.77	<2	<3	3	<1	152	<3	49	<0.3	51	28	378	4.24	<2	<2	<2	68	<0.5	<3	<3
1415716	Rock	0.27	<2	<3	3	<1	142	<3	40	<0.3	45	24	267	3.57	<2	<2	<2	89	<0.5	<3	<3
1415717	Rock	0.79	<2	<3	<2	<1	30	3	51	<0.3	58	22	313	4.23	<2	<2	<2	12	<0.5	<3	<3
1415718	Rock	0.78	<2	<3	<2	<1	78	<3	45	<0.3	53	26	329	4.37	<2	<2	<2	630	0.5	<3	3
1415720	Rock	0.61	<2	<3	<2	<1	31	<3	58	<0.3	5	14	573	3.07	<2	<2	<2	32	<0.5	<3	<3
1415721	Rock	0.90	<2	<3	7	<1	61	<3	82	<0.3	40	33	835	6.65	<2	<2	<2	24	<0.5	<3	<3
1415722	Rock	1.49	<2	<3	8	<1	198	<3	63	<0.3	48	29	694	5.19	<2	<2	<2	52	<0.5	<3	<3
1415724	Rock	0.80	16	<3	7	<1	1517	4	88	0.3	48	28	603	5.25	<2	<2	<2	16	<0.5	<3	<3
1415725	Rock	0.65	<2	<3	6	<1	386	<3	54	0.3	58	32	467	5.73	<2	<2	<2	16	<0.5	<3	<3
1415726	Rock	0.91	<2	<3	<2	<1	298	<3	59	<0.3	68	35	410	5.75	<2	<2	<2	15	<0.5	<3	<3
1415729	Rock	0.59	49	<3	203	<1	169	<3	110	0.3	50	34	843	6.92	10	<2	<2	52	0.6	<3	<3
1415731	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
1415732	Rock	2.29	22	<3	16	<1	6565	<3	62	1.1	53	35	465	4.37	<2	<2	<2	43	1.3	<3	<3
1415734	Rock	1.95	11	<3	<2	3	248	33	287	0.3	447	148	437	6.88	244	<2	<2	403	6.6	<3	<3
1415751	Rock	0.66	<2	<3	<2	<1	932	<3	24	0.8	26	17	474	2.49	<2	<2	<2	39	1.2	<3	<3

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Client: **Schau, Mikkel**
3919 Woodhaven Terrace
Victoria BC V8N 1S7 Canada

Project: KRINGLE
Report Date: November 30, 2012

CERTIFICATE OF ANALYSIS VAN12005449.1

	Method	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D			1D
	Analyte	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Ga	S	Sc
	Unit	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	%	ppm
	MDL	1	0.01	0.001	1	1	0.01	1	0.01	20	0.01	0.01	0.01	2	5	0.05	5
G1	Prep Blank	37	0.47	0.077	9	7	0.58	245	0.13	<20	1.03	0.09	0.52	<2	5	<0.05	<5
G1	Prep Blank	39	0.46	0.083	9	7	0.63	254	0.13	<20	1.04	0.09	0.53	<2	7	<0.05	<5
1415701	Rock	102	1.56	0.032	1	34	0.45	4	0.49	<20	1.24	<0.01	0.01	<2	8	<0.05	8
1415702	Rock	108	1.41	0.062	4	43	1.85	2	0.49	<20	2.26	0.02	<0.01	<2	11	<0.05	<5
1415703	Rock	125	0.84	0.066	4	25	1.54	2	0.37	<20	1.75	0.06	<0.01	<2	11	<0.05	<5
1415704	Rock	226	3.57	0.064	5	114	3.39	11	0.29	<20	3.18	0.04	0.06	<2	17	<0.05	17
1415705	Rock	190	6.87	0.055	3	75	1.66	44	0.25	<20	2.38	0.03	0.12	<2	17	0.21	19
1415706	Rock	206	5.70	0.047	4	74	2.66	28	0.18	<20	3.64	0.02	0.12	<2	16	<0.05	19
1415707	Rock	146	9.93	0.036	3	57	1.48	8	0.18	<20	1.88	0.05	0.04	<2	10	<0.05	12
1415709	Rock	145	0.68	0.065	4	20	2.20	11	0.35	<20	2.11	0.06	0.05	<2	10	<0.05	<5
1415710	Rock	170	0.75	0.053	3	55	2.60	1	0.46	<20	2.25	0.06	<0.01	<2	9	1.46	10
1415711	Rock	303	0.67	0.085	5	98	4.19	7	0.41	<20	4.03	0.01	0.04	<2	16	0.19	26
1415712	Rock	202	7.89	0.051	4	22	0.91	1	0.39	<20	5.83	<0.01	<0.01	<2	20	0.08	16
1415713	Rock	150	1.01	0.072	3	25	1.86	1	0.76	<20	1.80	0.05	<0.01	<2	6	2.80	7
1415714	Rock	65	1.18	0.010	1	7	0.28	3	0.20	<20	1.08	0.03	0.04	<2	6	<0.05	<5
1415715	Rock	118	1.67	0.048	3	22	1.86	8	0.20	<20	3.30	0.32	0.04	<2	10	<0.05	<5
1415716	Rock	94	2.41	0.046	3	12	1.36	10	0.15	<20	4.25	0.53	0.03	<2	9	<0.05	<5
1415717	Rock	118	1.15	0.061	3	108	1.80	1	0.31	<20	1.39	0.05	0.01	<2	7	<0.05	5
1415718	Rock	143	1.82	0.062	4	40	1.50	43	0.21	<20	3.59	0.32	0.08	<2	13	<0.05	<5
1415720	Rock	66	0.58	0.054	4	5	1.28	24	0.14	<20	1.75	0.06	0.06	<2	7	<0.05	<5
1415721	Rock	175	0.88	0.072	5	11	2.15	3	0.31	<20	2.19	0.08	0.03	<2	14	<0.05	<5
1415722	Rock	161	1.44	0.073	5	14	1.60	5	0.30	<20	3.28	0.29	0.02	<2	13	<0.05	<5
1415724	Rock	146	0.94	0.070	5	9	1.46	3	0.40	<20	1.93	0.07	0.02	<2	<5	<0.05	<5
1415725	Rock	116	1.04	0.064	3	16	1.88	<1	0.40	<20	2.29	0.07	0.01	<2	6	<0.05	<5
1415726	Rock	103	0.97	0.065	3	66	1.91	<1	0.37	<20	2.23	0.06	<0.01	<2	<5	<0.05	<5
1415729	Rock	275	3.56	0.047	3	38	2.31	2	0.53	<20	5.59	0.02	0.03	<2	14	<0.05	19
1415731	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
1415732	Rock	110	1.31	0.076	4	23	1.38	<1	0.59	<20	1.74	0.02	<0.01	<2	7	0.27	<5
1415734	Rock	41	7.25	0.073	<1	48	0.05	9	<0.01	<20	>10	0.39	0.06	<2	21	3.63	7
1415751	Rock	81	9.57	0.027	1	30	0.84	6	0.20	<20	2.11	0.03	0.02	<2	13	0.06	<5

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CERTIFICATE OF ANALYSIS VAN12005449.1

	Method	WGHT	3B	3B	3B	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D
	Analyte	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi
	Unit	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	MDL	0.01	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	2	1	0.5	3	3
1415754	Rock	0.69	110	<3	27	<1	7872	<3	51	3.2	37	23	323	4.18	<2	<2	<2	44	0.6	<3	<3
1415755	Rock	0.84	30	<3	24	<1	1848	<3	26	0.4	30	18	321	3.46	<2	<2	<2	43	<0.5	<3	<3
1415708	Rock	0.92	5	<3	4	<1	1265	<3	34	0.6	38	20	437	3.17	<2	<2	<2	43	<0.5	<3	<3
1415719	Rock	0.30	226	<3	4	<1	4942	<3	23	0.9	34	15	244	2.72	<2	<2	<2	54	0.6	<3	<3
1415728	Rock	1.05	4	<3	11	<1	974	<3	137	0.3	51	32	976	5.75	<2	<2	<2	15	<0.5	<3	<3

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Client: **Schau, Mikkel**
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Victoria BC V8N 1S7 Canada

Project: KRINGLE
Report Date: November 30, 2012

CERTIFICATE OF ANALYSIS VAN12005449.1

	Method	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D			1D
	Analyte	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Ga	S	Sc
	Unit	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	%	ppm
	MDL	1	0.01	0.001	1	1	0.01	1	0.01	20	0.01	0.01	0.01	2	5	0.05	5
1415754	Rock	108	0.96	0.051	3	13	1.06	2	0.37	<20	1.52	0.06	0.01	<2	<5	0.16	<5
1415755	Rock	93	1.05	0.046	2	10	0.89	2	0.41	<20	1.30	0.03	<0.01	<2	<5	<0.05	<5
1415708	Rock	92	1.89	0.053	2	48	1.08	2	0.30	<20	1.47	<0.01	<0.01	<2	6	<0.05	<5
1415719	Rock	131	6.16	0.061	4	57	0.69	<1	0.55	<20	0.90	0.04	0.01	<2	<5	0.22	13
1415728	Rock	135	1.35	0.076	5	14	1.69	1	0.37	<20	2.18	0.07	0.01	<2	8	<0.05	<5

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QUALITY CONTROL REPORT VAN12005449.1

	Method	WGHT	3B	3B	3B	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D
	Analyte	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi
	Unit	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	MDL	0.01	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	2	1	0.5	3	3
Pulp Duplicates																					
1415705	Rock	0.52	<2	<3	16	<1	8210	7	83	1.2	53	26	1298	5.92	<2	<2	<2	52	1.3	<3	<3
REP 1415705	QC		<2	<3	16																
1415713	Rock	0.32	<2	<3	4	<1	119	<3	94	<0.3	58	58	486	8.42	<2	<2	<2	15	<0.5	<3	<3
REP 1415713	QC					<1	118	3	94	<0.3	57	58	479	8.26	<2	<2	<2	15	<0.5	<3	<3
Core Reject Duplicates																					
1415721	Rock	0.90	<2	<3	7	<1	61	<3	82	<0.3	40	33	835	6.65	<2	<2	<2	24	<0.5	<3	<3
DUP 1415721	QC	<0.01	<2	<3	6	<1	66	4	83	<0.3	40	34	845	6.74	<2	<2	<2	23	<0.5	<3	<3
Reference Materials																					
STD CDN-PGMS-19	Standard		213	92	495																
STD DS9	Standard					13	103	116	321	1.8	42	7	574	2.39	25	<2	6	70	2.4	7	8
STD OREAS45EA	Standard					2	678	23	32	0.6	381	56	394	22.23	8	<2	9	4	1.6	<3	<3
STD PD1	Standard		577	481	594																
STD PD1 Expected			542	456	563																
STD CDN-PGMS-19			230	108	476																
STD OREAS45EA Expected						1.78	709	14.3	30.6	0.311	357	52	400	22.65	11.4	0.053	10.7	4.05			
STD DS9 Expected						12.84	108	126	317	1.83	40.3	7.6	575	2.33	25.5	0.118	6.38	69.6	2.4	4.94	6.32
BLK	Blank		<2	<3	<2																
BLK	Blank		<2	<3	<2																
BLK	Blank					<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<2	<1	<0.5	<3	<3
Prep Wash																					
G1	Prep Blank	<0.01	<2	<3	<2	<1	1	3	48	<0.3	3	4	571	2.09	<2	<2	4	66	<0.5	<3	<3
G1	Prep Blank	<0.01	<2	<3	<2	<1	1	<3	52	<0.3	4	4	599	2.10	<2	<2	5	63	<0.5	<3	<3

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QUALITY CONTROL REPORT VAN12005449.1

	Method	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D			1D
	Analyte	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Ga	S	Sc
	Unit	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	%	ppm
	MDL	1	0.01	0.001	1	1	0.01	1	0.01	20	0.01	0.01	0.01	2	5	0.05	5
Pulp Duplicates																	
1415705	Rock	190	6.87	0.055	3	75	1.66	44	0.25	<20	2.38	0.03	0.12	<2	17	0.21	19
REP 1415705	QC																
1415713	Rock	150	1.01	0.072	3	25	1.86	1	0.76	<20	1.80	0.05	<0.01	<2	6	2.80	7
REP 1415713	QC	149	1.00	0.072	3	26	1.82	2	0.75	<20	1.76	0.05	<0.01	<2	6	2.73	7
Core Reject Duplicates																	
1415721	Rock	175	0.88	0.072	5	11	2.15	3	0.31	<20	2.19	0.08	0.03	<2	14	<0.05	<5
DUP 1415721	QC	176	0.88	0.072	5	10	2.17	3	0.30	<20	2.21	0.08	0.03	<2	11	<0.05	<5
Reference Materials																	
STD CDN-PGMS-19	Standard																
STD DS9	Standard	42	0.71	0.088	12	122	0.62	331	0.11	<20	0.93	0.08	0.40	3	<5	0.17	<5
STD OREAS45EA	Standard	298	0.02	0.027	7	870	0.09	155	0.09	<20	3.08	0.02	0.05	<2	19	<0.05	82
STD PD1	Standard																
STD PD1 Expected																	
STD CDN-PGMS-19																	
STD OREAS45EA Expected		295	0.032	0.029	8.19	849	0.095	148	0.106		3.32	0.027	0.053		11.7	0.044	78
STD DS9 Expected		40	0.7201	0.0819	13.3	121	0.6165	330	0.1108		0.9577	0.0853	0.395	2.89	4.59	0.1615	2.5
BLK	Blank																
BLK	Blank																
BLK	Blank	<1	<0.01	<0.001	<1	<1	<0.01	<1	<0.01	<20	<0.01	<0.01	<0.01	<2	<5	<0.05	<5
Prep Wash																	
G1	Prep Blank	37	0.47	0.077	9	7	0.58	245	0.13	<20	1.03	0.09	0.52	<2	5	<0.05	<5
G1	Prep Blank	39	0.46	0.083	9	7	0.63	254	0.13	<20	1.04	0.09	0.53	<2	7	<0.05	<5