Ministry of Energy & Mines
Energy & Minerals Division
Geological Survey Branch

ASSESSMENT REPORT
TITLE PAGE AND SUMMARY

TYPE OF REPORT (type of survey(s)) Geochemical Sampling

TOTAL COST **$15,240.22**

AUTHOR(S) R.Tim Henneberry, P.Geo.

SIGNATURE(S) "signed and sealed"

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

YEAR OF WORK 2007

STATEMENT OF WORK – CASH PAYMENT EVENT NUMBERS / DATE(S) 4208241

PROPERTY NAME Clapperton

CLAIM NAME(S) (on which work was done)
Shack 1-6

COMMODITIES SOUGHT Epithermal Precious Metals

MINERAL INVENTORY MINFILE NUMBERS, IF KNOWN

MINING DIVISION Kamloops NTS 092I/06 TRIM 092I025, 034 ,035

LATITUDE LONGITUDE (at centre of work)

NORTHING 5572700 EASTING 634900 UTM ZONE 10 MAP DATUM NAD 83

OWNER 1
Appleton Exploration Inc.

OWNER 2

MAILING ADDRESS
550 – 580 Hornby Street
Vancouver, B.C. V6C 3B6

OPERATORS (who paid for work)
Same

MAILING ADDRESS

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size, attitude)
The claims are largely underlain by Cretaceous Spences Bridge Group Pimainus Formation volcaniclastics. These rocks are being explored for epithermal precious metal mineralization. Four reconnaissance soil lines were completed over the southern section on the property. A 450 metre section of line two returned values from 2 ppb to 251 ppb Au. Further work is recommended.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS
28947

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (In Metric Units)	On Which Claims	Project Costs Apportioned
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo Interpretation			
GEOPHYSICAL (line kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Siesmic			
Other			
Airborne			
GEOCHEMICAL			
(number of samples analyzed for)			
Soil	162	Shack 1-6	
Silt			
Rock			
Other			
DRILLING			
(total metres, number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling / assaying			
Petrographic			
Mineralogical			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATION / PHYSICAL			
Line/grid (kilometres)			
Topographic / Photogrammatic (scale, area)			
Legal Surveys (scale, area)			
Road, local access (kilometres)			
Trench (metres)			
Underground dev. (metres)			
Other			
		TOTAL COST	**$15,240.22**

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GEOCHEMICAL REPORT

CLAPPERTON PROPERTY

Kamloops Mining Division
TRIM Sheets 092I025, 092I034, 092I035
UTM (NAD 83) ZONE 10 630800E 5574900N

FOR

APPLETON EXPLORATION INC.
550 – 580 Hornby Street
Vancouver, British Columbia V6C 3B6

By; R.Tim Henneberry, P.Geo.
June 1, 2008

SUMMARY

Appleton Exploration Inc.'s 100% owned Clapperton Property lies 35 road kilometres west of Merritt, British Columbia. The property consists of 15 claims totaling 6,520 hectares.

The Clapperton property lies within the Lower Cretaceous Spences Bridge, Group, an andesitic volcanic arc belt of rocks lying in south-central British Columbia. The belt stretches from the north of Princeton to the west of Cache Creek with additional outliers continuing further north to Gang Ranch. The Spences Bridge Gold Belt is emerging as a new epithermal exploration target

Appleton Exploration Inc. continued with exploration on its Clapperton property in 2007, completing 4 reconnaissance soil lines at 2 kilometre spacings over the southern section of the claim block. A 450 metre section of one of the lines returned anomalous gold-in-soil values from 2 ppb to 251 ppb Au.

Appleton's 2006 exploration program was successful in locating a weakly anomalous alteration shear zone along Highway #8. A small soil grid over the strike projection of the zone was successful in tracing the zone along strike with gold-in-soil anomalies.

The 2006 results, combined with the 2007 results warrant further exploration to adequately assess its potential to host epithermal precious metal deposits.

A two-phase, success contingent program of prospecting, reconnaissance soil sampling, and soil grid tightening, and ground geophysics, followed by excavator trenching and diamond drilling is recommended to continue with the exploration of the Clapperton property.

Phase I will consist of prospecting and further reconnaissance soil sampling of the south ½ of the property at a cost of $28,670. Phase I will also include the expansion and tightening of the existing soil grid between 78600N and 80000N and 25800E and 26500E at cost of $46,162.

A successful conclusion to Phase I will initiate Phase II. Phase II will consist of 200 hours of excavator trenching and 1500 metres of diamond drilling at an estimated cost of 400,000.

Phase I 2007 - south section evaluation	8 days	$ 28,670
Phase I 2007 - grid tightening	7 days	$ 46,162
Phase II 2007 - trenching / diamond drilling	55 days	$ 400,000
Total 2007 Budget		**$ 474,832**

The cost of the 2007 Clapperton Exploration program was $15,240.22.

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Cal Data Aster Analysis Report on the Appleton 4Block Claim Groups.

INTRODUCTION

The purpose of this report is to compile the data for the 2007 exploration program undertaken by Appleton Exploration Inc. on its 100% owned Clapperton property. This report will also qualify for assessment credit for the claims.

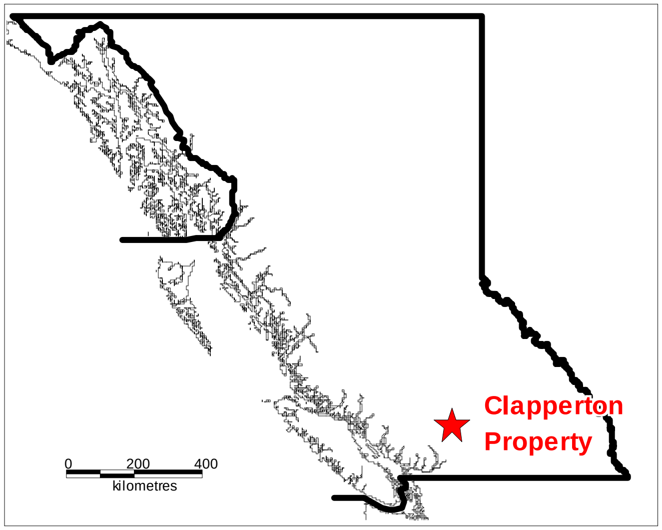
This report was commissioned by Mr. Fred Sveinson, a director of Appleton Exploration Inc.

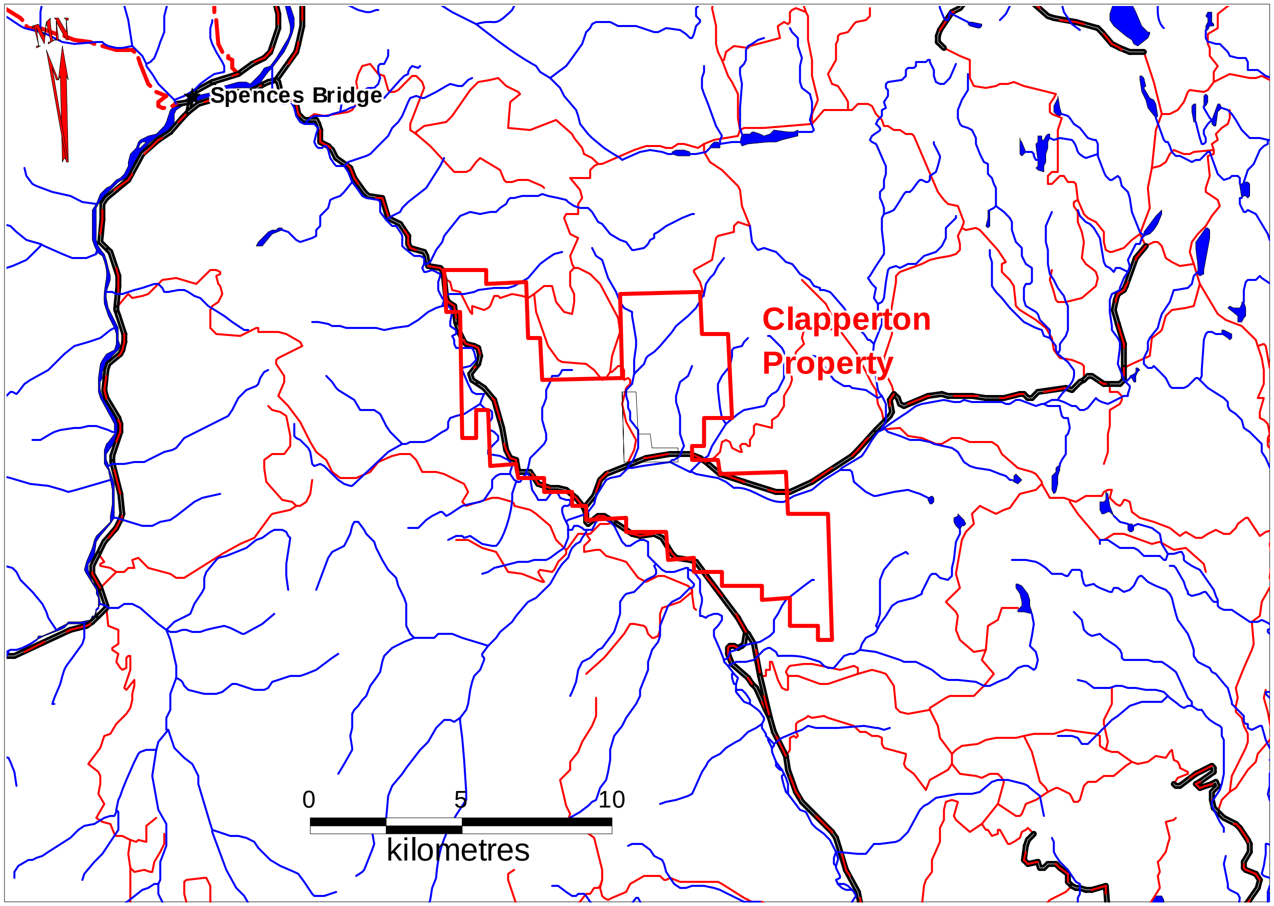
Appleton Exploration Inc. has now completed two small exploration programs on the Clapperton property over the last two years, totaling approximately $43,600.

The author directed but did not participate in the 2007 reconnaissance soil geochemistry survey.

RELIANCE ON OTHER EXPERTS

The author is not relying on a report or opinion of any experts. The ownership of the claims comprising the property and the ownership of the surrounding claims has been taken from the Mineral Titles Online database maintained by the British Columbia Ministry of Energy and Mines. The data on this site is assumed to be correct.





Projection NAD83 Zone 10

CLAPPERTON PROPERTY
LOCATION
Figure 1

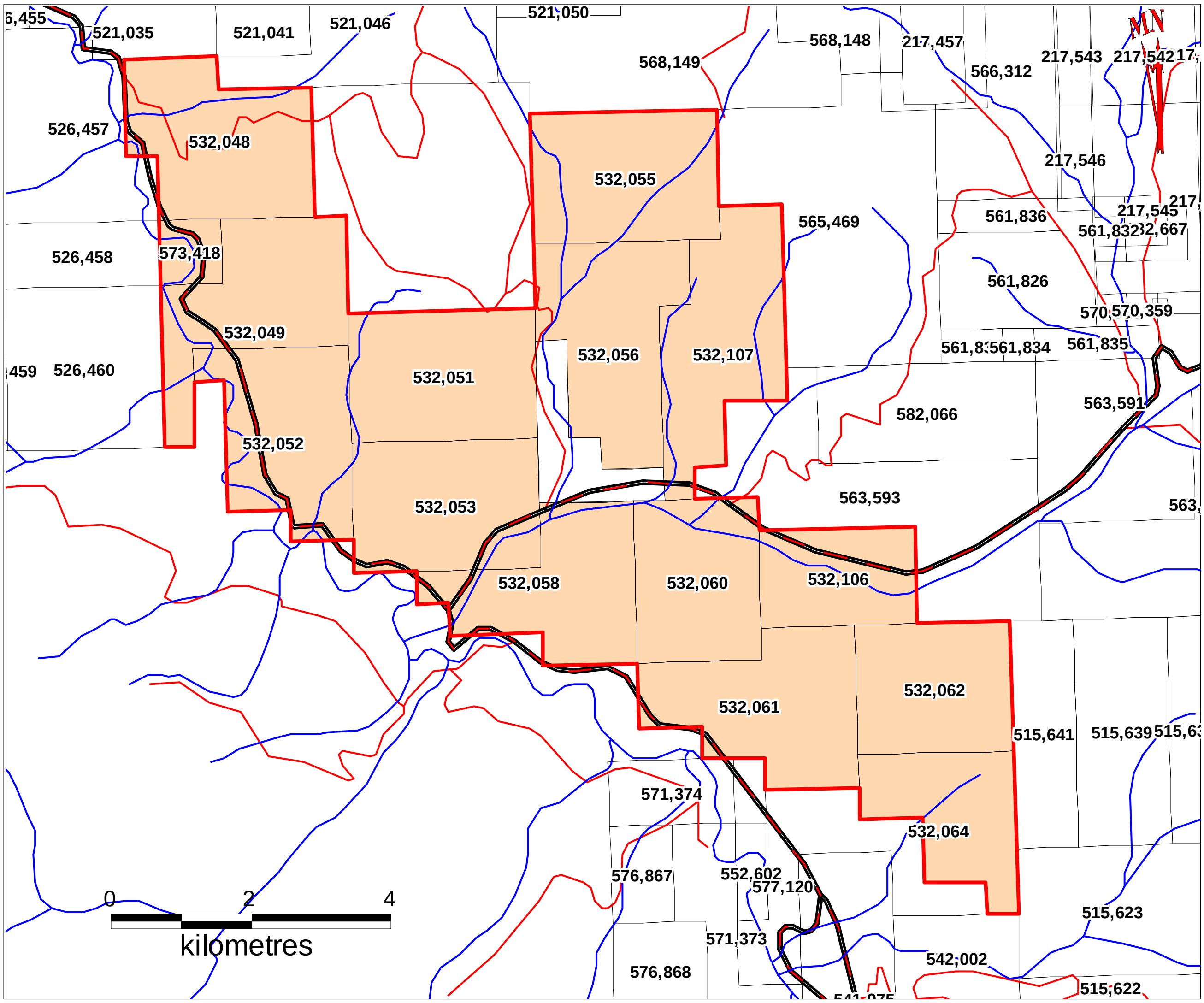
PROPERTY DESCRIPTION AND LOCATION

The Clapperton Property lies on TRIM claim sheets 092I025, 092I034 and 092I035 in the Kamloops Mining Division. The property consists of 15 tenures totaling 6,520.006 hectares. The claims are registered in the name of Appleton Exploration Inc. All claims are subject to a 1.5% N.S.R. in favor of 665777 B.C. Ltd., a private British Columbia Corporation.

Table 1. List of Tenures

Tenure Number	Claim Name	Owner	Map Number	Good To Date	Area
532048	Soldat 1	207126	092I	2008/OCT/30*	515.390
532049	Soldat 2	207126	092I	2008/OCT/30*	474.369
532051	Soldat 3	207126	092I	2008/OCT/30*	495.096
532052	Soldat 4	207126	092I	2008/OCT/30*	474.539
532053	Soldat 5	207126	092I	2008/OCT/30*	495.269
532055	Papsil 1	207126	092I	2008/OCT/30*	494.825
532056	Papsil 2	207126	092I	2008/OCT/30*	515.664
532107	Papsil 3	207126	092I	2008/OCT/30*	515.675
532058	Shack 1	207126	092I	2008/OCT/30*	454.094
532060	Shack 2	207126	092I	2008/OCT/30*	412.802
532061	Shack 3	207126	092I	2008/OCT/30*	516.177
532062	Shack 4	207126	092I	2008/OCT/30*	412.919
532064	Shack 5	207126	092I	2008/OCT/30*	351.100
532106	Shack 6	207126	092I	2008/OCT/30*	309.600
573418	Soldat 6	207126	092I	2009/JAN/10	82.487
Total Hectares					**6520.006**

* pending approval of 2007 assessment credits



Projection NAD83 Zone 10

CLAPPERTON PROPERTY

Claim Locations at 12-May-2008 (092I025, 092I034, 092I035)

Figure 2

ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The centre of the Clapperton Property is located 32 kilometres northwest of the town of Merritt. Provincial Highway #8 lies on the south and western boundary of the property. Secondary logging roads from Skuhun Creek Road provide access to some sections of the claims, while most of the property is only accessible by foot.

The Clapperton Property spans TRIM sheets: 092I025, 092I034 and 092I035. The geographic centre of the property is approximately 630800E 5574900N Zone 10 NAD 83. The topography is steep, ranging from 420 metres at the Nicola River to 1600 metres at the northeastern end of the property. The claims are generally covered with open stands of pine, with lesser spruce and fir. The underbrush is thin except within creek drainages. There are several cliffs on both the eastern slope of the Nicola River and the western slope of Skuhun Ceek.

The climate of this part of the province is typical of the southern interior of British Columbia. The summer field season is generally warm and dry and runs from mid- to late- April through to late-October. Winters are cold with significant snow accumulations. Temperatures can dip to minus 20 Celsius for extended periods.

The logistics of working in this part of the province are excellent. Gravel road access will allow the movement of supplies and equipment by road. Heavy equipment should be available locally in Merritt, as are supplies, fuel and lodging. Depending on the type of exploration program to be conducted, the field season generally runs from late-April to early-November.

At this stage of the exploration of the Clapperton property, the only permitting required would be for trenching and possibly diamond drilling. These permits are generally readily obtainable contingent on the posting of small ($5,000 to $10,000) reclamation bonds.

HISTORY

Prior to the acquisition of the claims of the Clapperton property by 665777 B.C. Ltd. in 2006, there is no record of any exploration being undertaken on the ground comprising the present Clapperton property. 665777 B.C. Ltd. subsequently sold the claims as part of a larger land package in the Spences Bridge Gold Belt to Appleton Exploration Inc.

Appleton completed a $28,000 work program on the property in 2006. This consisted of silt sampling, preliminary prospecting and rock sampling, road soil sampling and a follow-up soil grid. (Henneberry, 2007).

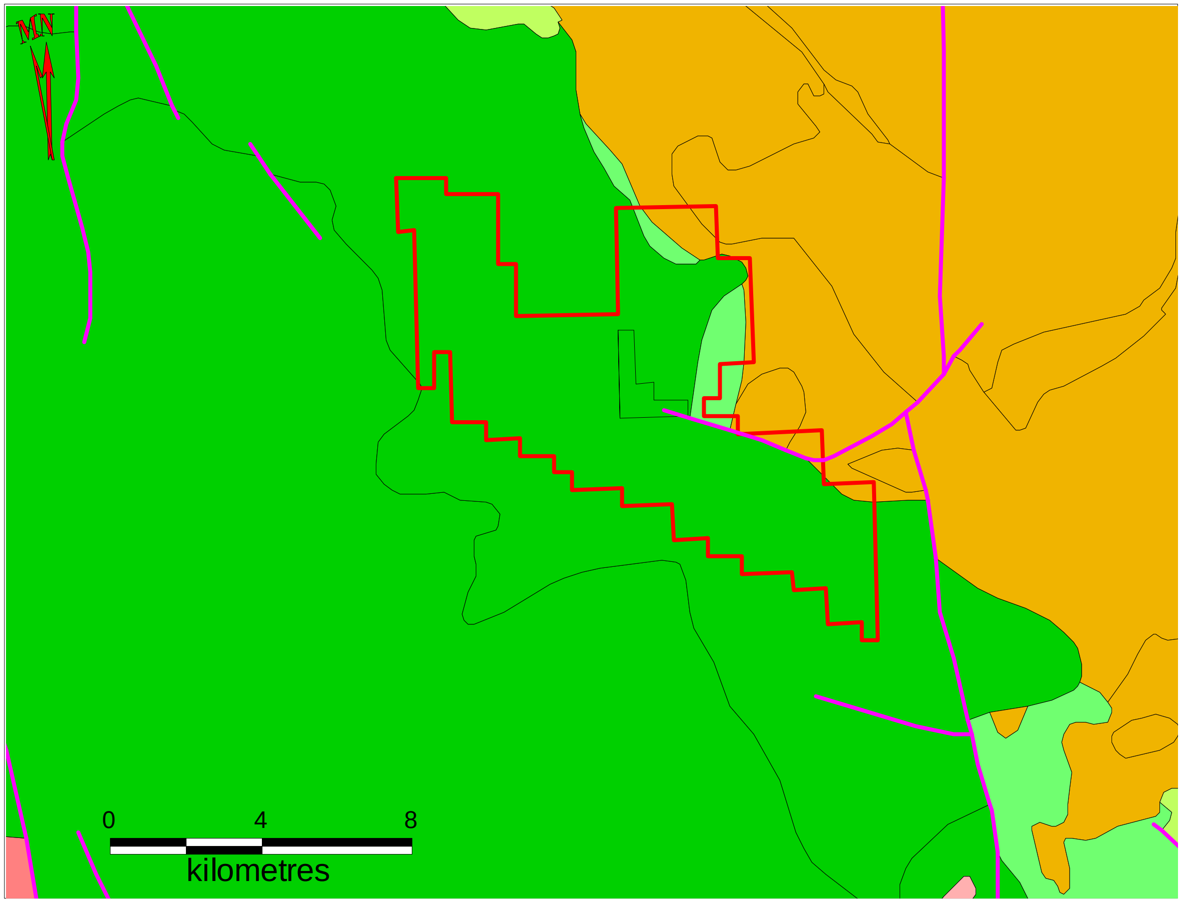
No anomalies were identified from the stream sediment sampling. Prospecting identified several altered and/or silicified horizons of unknown dimension that returned values from 10 to 20 ppb Au. Prospecting also identified a large alteration zone in a rock cut along Highway 5, containing several thin quartz carbonate veinlets. Two samples returned values of 45 ppb and 60 ppb Au.

A total of 238 road cut and cross country soils were taken throughout the claim block. The sampling showed a few spot highs in gold and also a concentration of anomalous gold values in the extreme northwestern portion of the property. Subsequently a one kilometre by one kilometre soil grid was established in the extreme northwestern portion of the property. A total of 211 soil samples were taken during the grid sampling. An 800 metre by 700 metre scatter of elevated gold-in-soil values from 10 ppb to 35 ppb Au were identified, vaguely highlighting the strike projection of the Highway 5 share zones.

LEGEND

EOCENE
Kamloops Group - undivided sediments
Kamloops Group - undivided volcanics
CRETACEOUS
Spences Bridge Group - volcanics
TRIASSIC - JURASSIC
Guichon Creek Batholith - granodiorite to monzonite
TRIASSIC
Nicola Group - w estern volcanic facies
PERMIAN to TRIASSIC
Mt. LYtton Complex - granodiorite, high grade metamorphics
PENNSYLVANIAN to TRIASSIC
Cache Creek Complex - serpentinites, ultramafics

Fault



Geology from MapPlace

Projection NAD83 Zone 10

CLAPPERTON PROPERTY
REGIONAL GEOLOGY
Figure 3

GEOLOGICAL SETTING
(Summarized from MINFILE 092ISW)

The Clapperton Property area lies within the Intermontane Belt of the central interior of British Columbia. The regional geology is taken from MapPlace and is shown in Figure 3. The southwestern part of the map area is underlain by Permian to upper Triassic Mount Lytton Complex diorites and amphibolites as well as an unnamed Permian to Jurassic diorite. The eastern part of the map area is underlain by upper Triassic Nicola Group western volcanic facies rocks intruded by the late Triassic to early Jurassic intrusions. The centre of the map area is underlain by the lower Cretaceous Spences Bridge Group, the focus of the precious metal exploration.

Volcanics and sediments of the Eocene Princeton and Kamloops groups occur as outliers within the Mount Lytton Complex and unconformably overlying the Spences Bridge Group. Quaternary sediments occur as thick drifts along the main rivers and some of the larger creeks. Related (?) Eocene feldspar porphyries locally intrude Nicola and Spences Bridge Group rocks.

The middle to upper Cretaceous Spences Bridge Group has recently been the identified as a significant target for epithermal precious metal mineralization. This group forms a northwest trending volcanic belt consisting of a thick sequence of gently folded volcanics with lesser sediments, dipping shallowly to the northeast. Rocks of the Spences Bridge Group are believed to have formed as a chain of stratovolcanoes associated with subsiding, fault-bounded basins (Thorkelson, l985).

Geology of the Spences Bridge Group

The Spences Bridge Group forms a northwest trending belt from 3 to 24 kilometres wide extending from north of Princeton through to east of Lillooett. (Duffel and McTaggart, 1952) A faulted extension of the belt occurs as a series of outliers in the Churn Creek / Empire Valley area west of 100 Mile House (Thorkelson, 2006). The group is estimated to be up to 3400 metres in thickness. (Thorkelson, 2006).

The Spences Bridge Group is thought to be the volcanic representation of the closure of the oceanic basin between Wrangellia to the west and the assemblage of intermontane terranes (the accreted part of ancestral North America) to the east. Spences Bridge rocks were deposited on two main basement types: west of the village of Spences Bridge, they overlie the mainly Paleozoic Cache Creek terrane; to the east, they overlie plutonic and volcanic rocks of the late Triassic Nicola Arc, part of the Quesnellia terrane. (Thorkelson 2006).

Shortly after eruption on the Spences Bridge Group began, tectonism led to the deposition of a near-basal conglomerate that contains clasts of Triassic granitoids and Nicola volcanic rocks. These rocks commonly show foliations and lower greenschist metamorphism which are not evident in the Spences Bridge Group, suggesting Spences Bridge rocks were deposited on the basement after deposition of the Nicola Group, deformation and metamorphism, and exhumation. (Thorkelson, 2006).

Projection NAD83 Zone 10

SPENCES BRIDGE GROUP LOCATION
Figure 4

The Spences Bridge Group consists of two formations: the Pimainus Formation and the overlying Spius Formation. The Pimainus Formation is highly variable, containing lava, tephra, fanglomerate, lahar, sandstone, and coal. Volcanic compositions range from basalt to rhyolite. It is most reasonably thought of as a stratovolcano assemblage. The overlying Spius Formation consists almost entirely of amygdaloidal andesitic lava, ranging from pahoehoe to aa types. In some places, the contact is conformable and hard to identify, while in others, lacustrine beds separate the two formations. (Thorkelson, 2006).

The Spences Bridge Group is preserved in the Nicoamen structural depression, a complex synclinorium crosscut by normal faults. It may have been forming at the same time as the Spences Bridge Group. Presently, the Spius Formation is largely confined to the centre of the structural depression but appears to be the relic of an extensive shield volcano with a few cinder cones. (Thorkelson, 2006).

Structurally, the Spences Bridge Group is generally gently folded, with dips from 10° to 40°. Individual flows and beds do not appear to be widespread. There appears to be some faulting within the group but the lack of marker horizons makes measurement of any displacement difficult. (Duffel and McTaggart, 1952).

Clapperton Property Geology

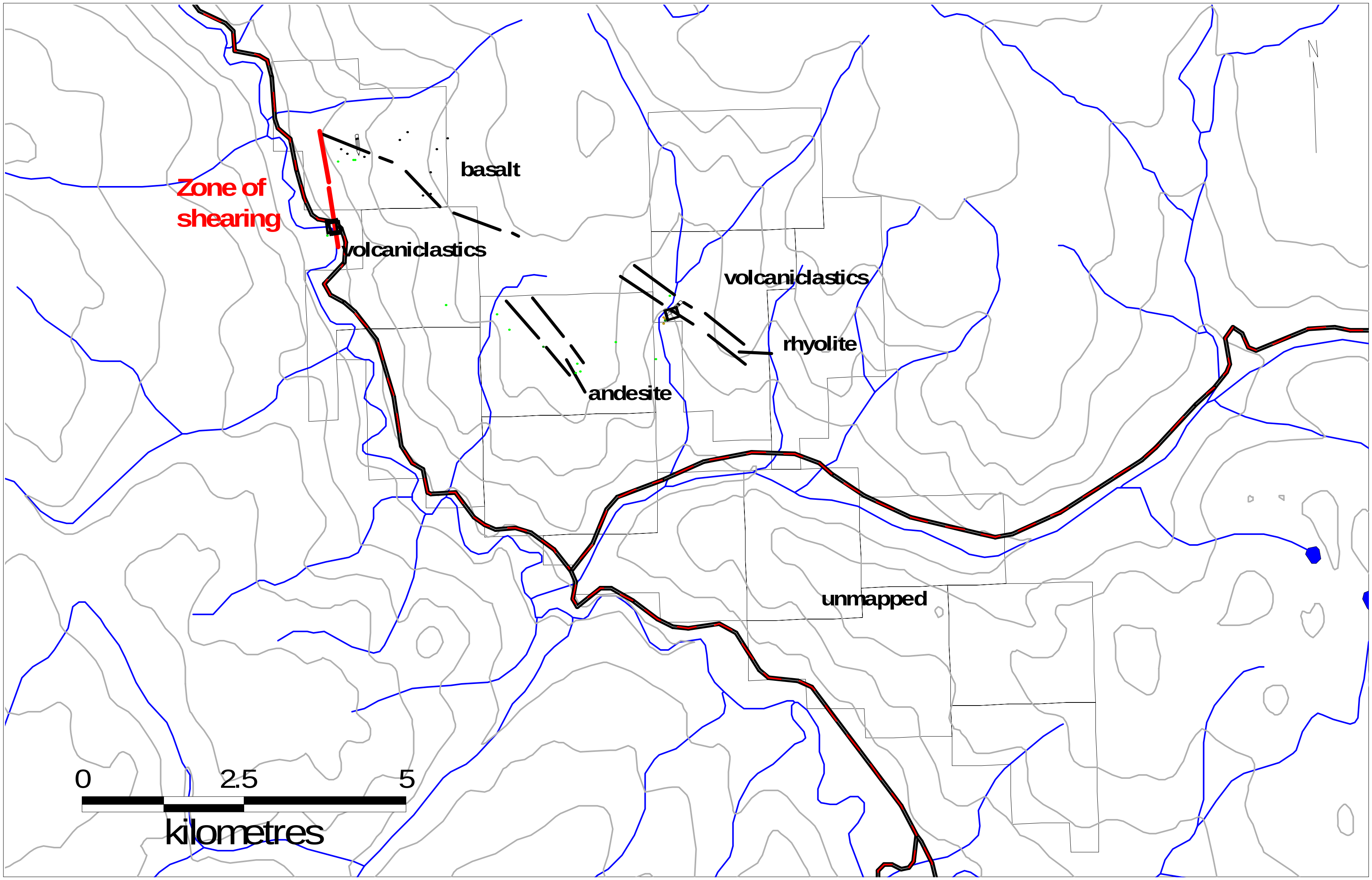
The Clapperton property has not been mapped in detail. Preliminary mapping was completed over the readily accessible areas of the claim block in 2006 (Henneberry, 2007). While property wide mapping has yet to be completed, mapping while prospecting has provided a general overview of the geology. No additional mapping was undertaken in 2007.

The Pimainus Formation of the Spences Bridge Group is the dominant rock type according to the MapPlace bedrock geology. Volcaniclastics with lesser andesitic and rhyolitic flows were mapped in the northern half of the property, along with a large basalt flow in the northwestern corner. The south half of the property has yet to prospected or mapped.

The basalt in the northwestern part of the claims is a black rock with sparse vesicules. The basalt displays a prismatic jointing pattern. The groundmass is aphanitic with 1%-2% plagioclase phenocrysts to 10 mm. Local quartz clots to 1 cm were noted throughout the unit. Alteration consists of hematite, clay and carbonate with lesser chlorite. Hematite and carbonate are pervasive throughout the basalt, while clays and chlorite are concentrated more in shears and fractures. Sulfides were not noted.

The volcaniclastics are the dominant rock type in the northern ½ of the property. These rocks range in composition from lapilli tuffs through to block and ash fall tuffs. The lapilli in the tuffs are predominantly plagioclase with lesser mafic minerals. The lapilli are 5-10 mm in size and range from intact crystals to crystal fragments. The ground mass is generally aphanitic. The block and ash fall tuffs are grey weathering and grey green to dark grey in hand specimen The fabric of the tuffs are matrix supported with coarse grained clasts and bombs of an andesitic composition, as well as white plagioclase lapilli. These rocks are altered with hematite and carbonate. The intensity of the alteration is generally weak to moderate. Shear zones containing carbonate stringers and pods are common. Hematite occurs as fracture coatings and as patches throughout the formation. Very little quartz was noted in the volcaniclastics.

An andesitic flow was noted in the central section of the mapped area. The rock is massive and poorly porphyritic. The few plagioclase phenocrysts are white and 5-10mm in size. The only alteration noted is weak manganese staining.



Projection NAD83 Zone 10

CLAPPERTON PROPERTY
PROPERTY GEOLOGY
Figure 5

A rhyolite flow was also noted in the east central section of the mapped area. The rock is generally aphanitic with a pale pink color. The flow is massive, displaying a blocky jointing pattern. Alteration consists of pervasive limonite, clay and carbonate with a weak intensity.

The mapping and prospecting was successful in locating a large zone of shearing and alteration on the extreme western end of the claim block adjacent to Highway 8. The zone appears to trend at 352^{o}. The zone is described in the mineralization section.

DEPOSIT TYPES

The Clapperton property is being explored for low sulphidation epithermal precious metals deposits. The following summary is condensed from British Columbia Ore Deposit Models (Panteleyev, 1996).

Low sulphidation epithermal deposits are typically hosted in volcanic island and continent-margin arcs and continental volcanic fields with extensional structures. These deposits can form in most types of volcanic rocks, though calcakaline andesitic compositions predominate. Low sulphidation deposits can be any age, though Tertiary deposits are the most abundant. Jurassic deposits are important in British Columbia (Toodoggone).

Ore zones are typically localized in structures, but may occur in permeable lithologies. Upward-flaring ore zones centred on structurally controlled hydrothermal conduits are typical. Large (> 1 m wide and hundreds of metres in strike length) to small veins and stockworks are common with lesser disseminations and replacements. Vein systems can be laterally extensive but ore shoots have relatively restricted vertical extent. High-grade ores are commonly found in dilational zones in faults at flexures, splays and in cymoid loops.

In some districts the epithermal mineralization is tied to a specific metallogenetic event, either structural, magmatic, or both. The veins are emplaced within a restricted stratigraphic interval generally within 1 km of the paleosurface. Mineralization near surface takes place in hotspring systems, or the deeper underlying hydrothermal conduits. Normal faults, margins of grabens, coarse clastic caldera moat-fill units, radial and ring dike fracture sets and both hydrothermal and tectonic breccias are all ore fluid channeling structures. Through-going, branching, bifurcating, anastamosing and intersecting fracture systems are commonly mineralized. Hanging wall fractures in mineralized structures are particularly favourable for high-grade ore.

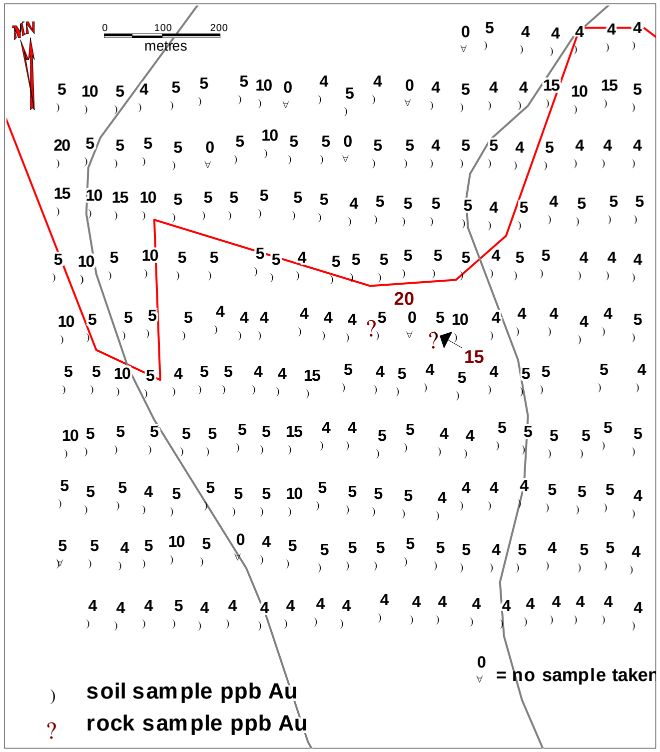
Veins are comprised of quartz, amethyst, chalcedony, quartz pseudomorphs after calcite, and calcite. They may contain lesser amounts of adularia, sericite, barite, fluorite, Ca- Mg-Mn-Fe carbonate minerals such as rhodochrosite, hematite and chlorite. Veins commonly exhibit open-space filling, symmetrical and other layering, crustification, comb structure, colloform banding and multiple brecciation.

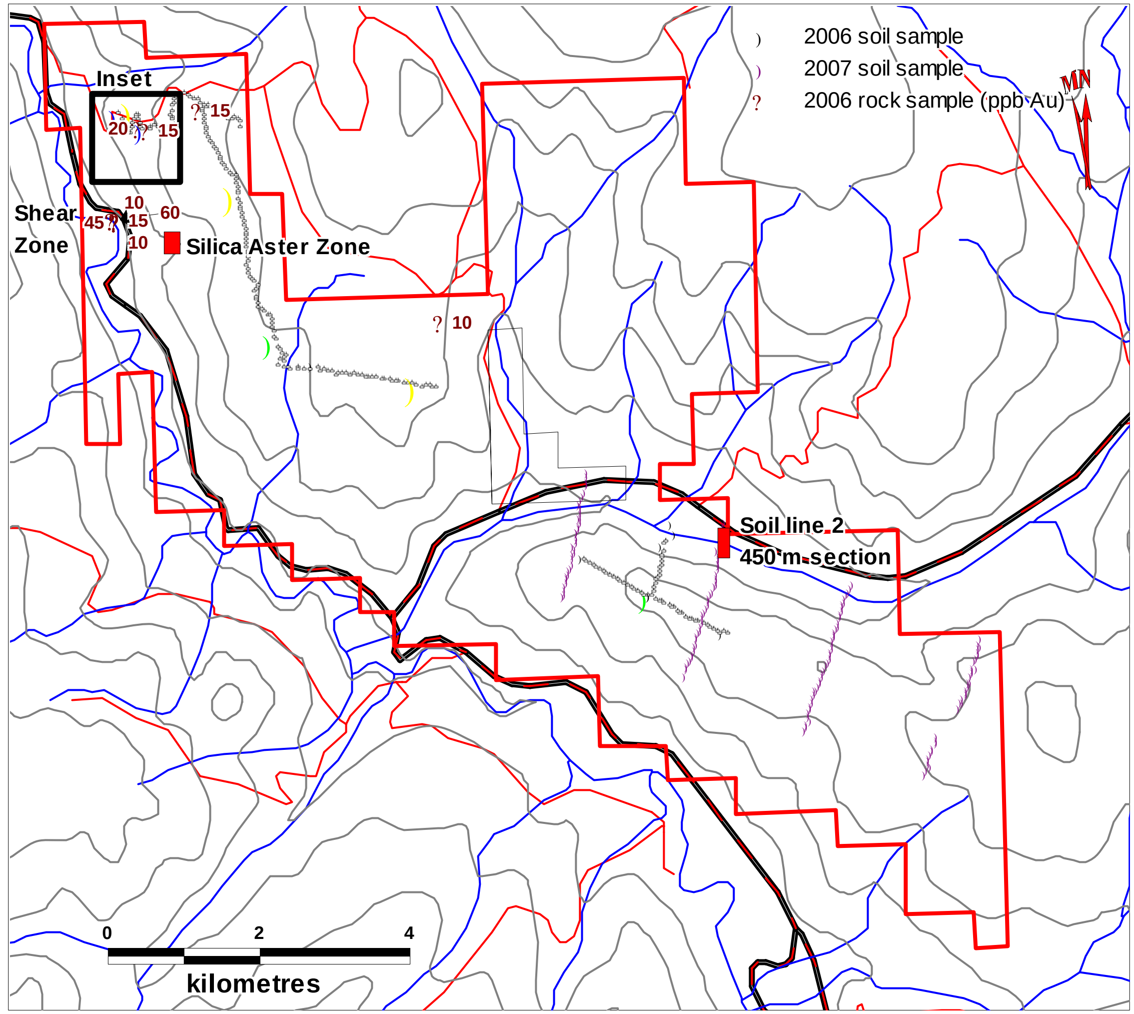
Mineralization within the veins consists of pyrite, electrum, gold, silver and argentite, with lesser chalcopyrite, sphalerite, galena, tetrahedrite, silver sulphosalt and/or selenide minerals. Deposits can be strongly zoned along strike and vertically. Deposits are commonly zoned vertically over 250 to 350 m from a base metal poor, Au-Ag-rich top to a relatively Ag-rich base metal zone and an underlying base metal rich zone grading at depth into a sparse base metal, pyritic zone. From surface to depth, metal zones contain: Au-Ag-As-Sb-Hg, Au-Ag-Pb-Zn-Cu, Ag- Pb-Zn.

Alteration is an important in low sulphidation epithermal deposits. Silicification is extensive in ores as multiple generations of quartz and chalcedony are commonly accompanied by adularia and calcite. Pervasive silicification in vein envelopes is flanked by sericite-illite-kaolinite assemblages. Intermediate argillic alteration [kaolinite-illite- montmorillonite (smectite)] formed adjacent to some veins; advanced argillic alteration (kaolinite-alunite) may form along the tops of mineralized zones. Propylitic alteration dominates at depth and peripherally.

Prospecting for mineralized siliceous and silica-carbonate float or vein material with diagnostic open-space textures is an effective exploration method. VLF can be effective in tracing structure, while radiometric surveys may outline strong potassic alteration of wallrocks Geochemical sampling is also an effective exploration method with elevated values in the ore metals: Au, Ag, Zn, Pb, Cu as well as elevated values for pathfinder elements: As, Sb, Ba, F, Mn and locally Te, Se and Hg. Finally, silver deposits generally have higher base metal contents than Au and Au-Ag deposits.

Other low sulphidation epithermal deposit examples include: Creede, Colorado USA; Toodoggone Camp, B.C.; Blackdome, B.C.; Premier, B.C.; Comstock Lode, Nevada USA and Pachuca, Mexico.





Clapperton Soils
Au ppb

25 to 100	(3)
20 to 25	(2)
15 to 20	(2)
all others	(231)

Projection NAD83 Zone 10

CLAPPERTON PROPERTY
MINERALIZATION
Figure 6

MINERALIZATION

The exploration target for the Clapperton Property is a low sulphidation epithermal precious metal deposit. Two small exploration programs have been completed on this property. These programs consisted of reconnaissance and grid soil sampling, silt sampling and prospecting – rock sampling.

The preliminary mapping and prospecting was successful in locating a north trending alteration shear zone (Henneberry, 2007). This alteration zone as exposed in a Highway #8 road cut is 30-40 metres wide. Individual carbonate ± quartz seams and veins range from 5-10 centimetres within the zone. The seams and veins occur in 50-100 centimetre wide zones of intense chlorite alteration and bleaching within the broad chlorite / carbonate alteration zone. The individual carbonate ± quartz seams trend from 336° to 352° and dip 40° to 80° degrees to the east. Limited sampling from individual carbonate chlorite shears in the zone returned from 15 ppb Au to 60 ppb Au.

During the initial 2006 prospecting and sampling, bedrock sampling (Figure 6) in the northern part of the property returned weakly anomalous values of 15 ppb Au to 20 ppb Au in silicified volcaniclastics with local pods of vuggy quartz. A road soil line through the same area also returned some anomalous values. A 1 kilometre by 1 kilometre soil grid was established over this area, resulting in defining an 800 metre by 700 metre scatter of elevated gold values from 10 ppb to 25 ppb Au. (Henneberry, 2007).

Four 2007 reconnaissance soil lines completed over the southern portion of the claim block were successful in locating one multi station anomaly of 450 metres where 5 of the 9 samples taken at 50 metre intervals returned values between 13 ppb Au and 251 ppb Au.

EXPLORATION

A small exploration program was completed on the Clapperton block in October 2007 to meet assessment requirements. The program consisted of 4 southsouthwest reconnaissance soil lines spaced at 2 kilometre intervals to cover a large section of the southern portion of the claim block. Steep topography and a short time frame did not allow the full completion of the lines.

The compass and chain soil lines were flagged and sampled at 50 metre intervals. The lines ranged in length from 1.7 to 2 kilometres. A total of 162 samples were taken.

Only the second of the four lines returned anomalous values (Figure 7). The northeast portion of line 2 from station 2-3 through to station 2-11 return ppb Au values of 47, 2, 2, 15, 2, 14, 2, 251, 13, respectively.

An Aster analysis of the Clapperton property was completed by Cal-Data in August 2007 (Kilby, 2007). The analysis was undertaken for Ferric Iron, Clay, Sericite and Siliceous Rocks. There are no responses for Ferric Iron, Clay or Sericite. There is a small area of siliceous rocks in the northwestern area of the property, shown on Figure 7.

DRILLING

There has not been any drilling completed on the Clapperton property.

SAMPLING METHOD AND APPROACH

The 2007 exploration program on the Clapperton property consisted of cross country soil geochemistry. The soil lines were established with a hip chain and run by compass. All lines were flagged and sampled at 50 metre intervals. At each sample location a 500 to 1000 gram sample of the soil from the "B" horizon was taken and placed in a soil bag marked with the current Global Positioning System (GPS) NAD 83 Zone 10 position. The depth of the sample was generally 10-15 centimetres from surface, taken with a mattock. The location was marked as a waypoint on either a Garmin 72 or Garmin E-Trek unit. The waypoint coordinates were also recorded in a field notebook at the corresponding sample location as back-up, as well as within the memory of the GPS unit. Details on soil color and proximal rock outcrop were also recorded in the field notes. The GPS data was downloaded daily into an excel spreadsheet. The corresponding sample number and the soil color and proximal outcrop were also entered.

The 2007 Appleton exploration program was designed and supervised by the author. The survey was completed under contract by 665777 B.C. Ltd. an exploration services company. All samples were shipped to Eco Tech Labs in Kamloops, BC.

SAMPLE PREPARATION, ANALYSIS AND SECURITY

All soil samples were taken and immediately placed in sealed sample bags. The sample location was written on the outside of the kraft soil bag for soil samples. Flagging was used to mark the sample locations. A fix of the position was obtained by a Garmin 72 or Garmin E-Trek Global Positioning System unit set to record NAD 83 coordinates for the soil samples.

665777 B.C. Ltd. personnel sorted all samples by number, then bagged and then delivered them promptly to Eco Tech Laboratory Ltd. in Kamloops, British Columbia.

Eco Tech's soil sample preparation procedure consists first of cataloguing and drying. Each sample is then prepared by sieving through an 80 mesh screen to obtain a minus 80 mesh fraction. Samples unable to produce adequate minus 80 mesh material are screened at a coarser fraction. These samples are flagged with the relevant mesh.

Samples for gold geochemical analysis are weighed to 30 grams and fused along with proper fluxing materials. The bead is digested in aqua regia and analyzed on an atomic absorption instrument. Over-range values for rocks are re-analyzed using gold assay methods.

For multi element ICP analysis, a 0.5 gram sample is digested with 3 ml of a 3:1:2 (HCl:HN03:H20) which contains beryllium acting as an internal standard for 90 minutes in a water bath at 95°C. The sample is then diluted to 10 ml with water. The sample is analyzed on a ICP-MS unit.

Results are collated by computer and are printed along with accompanying quality control data (repeats and standards). Results are e-mailed as well as printed on a laser printer and are faxed and/or mailed to the client.

Eco Tech inserted standard reference materials through the lab handling process and performed an appropriate percentage of repeats, allowing for quality control assessment. Results are entered and printed along with quality control data (repeats and standards). The data is faxed and/or mailed to the client.

DATA VERIFICATION

The quality control measures for the 2007 Clapperton soil sampling program consisted of Eco Tech Laboratories Ltd. initiated repeats and standards through the sample stream. Eco Tech runs two quality control measures. First, they insert standards in to the sample stream. Secondly, they complete a repeat analysis on every tenth sample.

Table 2. Performance of Eco-Tech Laboratories Repeat Analyses

Sample Number	ppb Au	repeat ppb Au	Sample Number	ppb Au	repeat ppb Au	Sample Number	ppb Au	repeat ppb Au
74301N-34299E	2	2	72719N-35745E	2	2	71291N-37070E	2	1
73832N-34230E	251	177	72340N-35643E	5	3	70948N-36966E	<1	<1
73472N-34200E	5	3	71953N-35474E	3	2	5573970-0632314	<1	3
73060N-34030E	3	2	71530N-35378E	1	2	5573337-0632185	4	2
72685N-33936E	5	2	72370N-37633E	1	1	5574501-0632408	1	4
72252N-33775E	4	5	72079N-37516E	5	3	5573306-0632174	3	3
73130N-35869E	1	1						

Eco-Tech completed repeat analyses on 19 of the 162 samples submitted for the program (Table 2). The table shows reasonable reproducibility from the samples, giving the author confidence in the Eco-tech analyses. The author therefore feels this was a sufficient quality control measure for the 2007 program.

ADJACENT PROPERTIES

This technical report is not relying on data from adjacent properties.

MINERAL PROCESSING AND METALLURGICAL TESTING

There has been no mineral processing or metallurgical testing undertaken on the Clapperton property.

MINERAL RESOURCES AND MINERAL RESERVE ESTIMATES

There are presently no mineral reserves or mineral resources on the Clapperton property.

OTHER RELEVANT DATA AND INFORMATION

There is no additional relevant data or information known that is not disclosed on the Clapperton property.

INTERPRETATION AND CONCLUSIONS

The purpose of the 2007 Clapperton exploration program was to complete sufficient assessment credits to maintain the Clapperton property in good standing. The program consisted of 4 parallel, 2 kilometre spaced reconnaissance soil lines to test the southern portion of the property. Due to time and budget constraints, none of the four lines were completed to their full length of 3 kilometres.

The Clapperton property lies in the Spences Bridge Gold Belt (SBGB), the scene of recent intense exploration activity directed at epithermal precious metals. This exploration has resulted in the discovery of several quartz vein and quartz float trains by Almaden Minerals Ltd., Consolidated Spire Ventures Ltd., Strongbow Exploration Inc. and Appleton Exploration Inc. Details on the SBGB projects of these individual companies can be found on the company websites. URL's for these websites can be found in the References section of this report.

The geological model of the epithermal systems in the SBGB continues to evolve. The exploration results from Strongbow (Dave Gale, pers. comm.) and Almaden (Ed Balon, pers. comm.) are suggesting potential precious metal bearing horizons within these epithermal systems may be as much as 300 metres below the present erosional level. They base this observation on the scarcity of near surface precious metal enriched epithermal quartz veins and the abundant extremely fine-grained detritus quartz (opaline veinlets, agates, clots, discontinuous blebs and pockets) found throughout the SBGB. This theory is further substantiated by Megaw (2006) in his summary description of low sulphidation epithermal precious metal systems where he documents similar fine-grained quartz detritus ± 300 metres above the precious metal bearing horizons in Mexico and the U.S. southwest.

The 2006 Clapperton exploration program (Henneberry, 2007) was successful in discovering a large alteration shear zone, returning preliminary grab values from 15 ppb to 60 ppb Au. A soil grid 700 metres to 1700 metres along strike to the north of the alteration shear zone appears to have been successful in highlighting the strike projection of this alteration shear zone. This grid need to be expanded to the south and west and tightened over the strike projection of the zone. The grid needs to be mapped and prospected in detail.

A 450 metre section on one of the four 2007 south property soil lines returned enhanced gold-in-soil geochemistry. This area needs to be followed up by prospecting and if necessary, a 100 metre by 50 metre soil grid.

The value of the combined 2006 and 2007 exploration programs is $43,642.22.

2006 program	$28,402
2007 program	$15,240.22
Total	**$43,642.22**

RECOMMENDATIONS

The 2006 and 2007 preliminary Clapperton exploration programs have met with initial success. 2006 prospecting located the alteration shear zone along Highway 8. 2006 soil geochemistry over the suspected strike projection of this zone was successful in tracing it along strike with gold-in-soil anomalies. 2007 reconnaissance soil sampling located a 450 metre section of interest on one of the four lines.

The results obtained to date from the exploration of the Clapperton property make the property worthy of further exploration to adequately assess its potential to host epithermal precious metal deposits.

A two-phase, success contingent program of prospecting, reconnaissance soil sampling, and soil grid tightening, and ground geophysics, followed by excavator trenching and diamond drilling is recommended to continue with the exploration of the Clapperton property.

Phase I will consist of prospecting and further reconnaissance soil sampling of the south ½ of the property at a cost of $28,670. Phase I will also include the expansion and tightening of the existing soil grid between 78600N and 80000N and 25800E and 26500E at cost of $46,162.

A successful conclusion to Phase I will initiate Phase II. Phase II will consist of 200 hours of excavator trenching and 1500 metres of diamond drilling at an estimated cost of 400,000.

Phase I 2007 - south section evaluation	8 days	$ 28,670
Phase I 2007 - grid tightening	7 days	$ 46,162
Phase II 2007 - trenching / diamond drilling	55 days	$ 400,000
Total 2007 Budget		**$ 474,832**

The cost of the 2007 Clapperton Exploration program was $15,240.22.

REFERENCES

Information on companies currently exploring Spences Bridge Gold Belt projects can be found at the following websites:

Almaden Minerals Ltd.	www.almadenminerals.com/projects.html
Appleton Exploration Inc.	www.appletonexploration.com
Consolidated Spire Ventures Ltd.	www.spireventures.com/pmt.php/index
Strongbow Exploration Inc.	www.strongbowexploration.com

Duffell, S. and McTaggart, K. C. (1952). Ashcroft Map-Area, British Columbia (BC); Geological Survey of Canada Memoir 262

Henneberry, R.T. (2007a). Geochemical Report on the Otter Project. British Columbia Ministry of Energy, Mines and Petroleum Resources Assessment Report 28947.

Jackaman, W. and Matysek, P.F. (1994). NTS 092I – Ashcroft / RGS 40. British Columbia Ministry of Energy and Mines Regional Geochemical Survey.

Kilby, W.E. (2007). Aster Analysis of the 4 Block Claim Groups for Appleton Exploration Inc.

Megaw, P. (2006). Exploration of Low Sulphidation Epithermal Vein Systems. In. Silver Deposits – Geology, Genesis and Exploration Methods. Vancouver Mining Exploration Group Short Course December 14, 2006.

www.em.gov.bc.ca/Mining/Geolsurv/Minfile/default.htm. The British Columbia Ministry of Energy and Mines Minfile website provided a geological summary on the 092ISW and the 092HNW map sheets.

www.em.gov.bc.ca/Mining/Geolsurv/MapPlace/default.htm. The British Columbia Ministry of Energy and Mines MapPlace website provided the regional geological map and legend.

Panteleyev, A. (1996). Epithermal Au-Ag: Low Sulphidation, in Selected British Columbia Mineral Deposit Profiles, Volume 2 - Metallic Deposits, Lefebure, D.V. and Hõy, T, Editors, British Columbia Ministry of Employment and Investment, Open File 1996-13, pages 41-44.

Rice, H. M. A. (1947). Geology and Mineral Deposits of the Princeton Map-Area, British Columbia. Geological Survey of Canada Memoir 243

Thorkelson, D. J. (1985). Geology of the Mid-Cretaceous Volcanic Units near Kingsvale, southwestern British Columbia. Geological Survey of Canada Paper 85-16, p. 333-339.

Thorkelson, D. J. (2006). Notes for Geological Field Trip – Spences Bridge – Merritt Area for Strongbow Exploration Inc. May 8-9, 2006.

CERTIFICATE OF QUALIFIED PERSON

I, R.Tim Henneberry, P.Geo. do hereby certify that:

I am the Qualified Person of:

Appleton Exploration Inc.
550 – 580 Hornby Street
Vancouver, British Columbia. V6C 3B6

I earned a Bachelor of Science Degree majoring in geology from Dalhousie University, graduating in May 1980.

I am registered with the Association of Professional Engineers and Geoscientists in the Province of British Columbia as a Professional Geoscientist.

I have practiced my profession continuously for 28 years since graduation.

I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101. My relevant experience for the purpose of this Technical Report is:

- 27 years of exploration experience for base and precious metals in the Canadian Cordillera
- Four years of exploration in the Spences Bridge Gold Belt for private 665777 B.C. Ltd.

I am responsible for the preparation of the technical report titled "Geochemical Report Clapperton Property" and dated June 1, 2008, relating to the Clapperton property. I designed and laid out the 2007 exploration program for the Clapperton project and visited the property on September 29, 2007, prior to the commencement of the 2007 program. Aside from the four soil lines described in this report, there have been no material changes to the Clapperton property, to the best of my knowledge.

I have not had prior involvement with the property that is the subject of the Technical Report.

As of June 1, 2008, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

I am a director and the president of Appleton Exploration Inc. I am also principal of 665777 B.C. Ltd. 665777 B.C. Ltd. presently holds 2,693,759 shares of Appleton Exploration Inc. Hence, I cannot be considered independent of the issuer after applying all of the tests in section 1.4 of NI 43-101.

I have read NI 43-101 and Form 43-101F, and the Technical Report has been prepared in compliance with that instrument and form.

I consent to the filing of the Technical Report with the British Columbia Ministry of Energy and Mines in support of assessment work requirements.

Dated this 1st day of June, 2008.

"signed and sealed"

____

R.Tim Henneberry, P.Geo

STATEMENT OF COSTS

CLAPPERTON STATEMENT OF COSTS 2007

Field Crew and Days								
Stobart	Steve Butrenchuk		Sep 29					
	Tim Henneberry		Sep 29					
665777 B.C. Ltd.								
Stobart	Rob Barinecutt		Oct 2, 3, 4, 6					
	Dean Foote		Oct 2, 3, 4					
	Gerry Sedman		Oct 2, 3, 4					
665777 Personnel		9.5	days	@	$400	/day		$3,800.00
665777 Vehicle - day rate		3	days	@	$40	/day		$120.00
665777 Vehicle - kms		900	km	@	$0.50	/km		$450.00
665777 Fuel			from invoice					$83.02
665777 Supplies			from invoice					$247.01
665777 Room and Board			from invoice					$805.14
Caldata Aster Analysis								$804.55
Steve Butrenchuk		0.5	days	@	$450	/day		$225.00
Vehicle			km	@	$0.75	/km		$0.00
Room and Board								
Tim Henneberry		0.5	days	@	$400	/day		$200.00
Vehicle - day rate			days	@	$40	/day		$0.00
Vehicle - kms			km	@	$0.50	/km		$0.00
Room and Board			from invoice					
Fuel			from invoice					
Travel			from invoice					
Supplies			from invoice					
Analysis								$4,105.50
	Certificate	**Samples**					**Invoice**	
Stobart	AK2007-1666	161					$4,105.50	
Documentation								
	Tim Henneberry	11	days	@	$400	/day		$4,400.00
	Steve Butrenchuk		days	@	$450	/day		$0.00
Assessment Credit Subtotal								**$15,240.22**

COST ESTIMATES

Phase I 2007 - south section evaluation 8 days

Lower Elevation Prospecting
Allow 8 lines of 3 km each = 24 line km
Less 8 km completedin 2007 = 16 line km
16 line km at 21 soil samples per line km = 336 samples
Allow 5 rock samples per line = 40 samples
Assume 1.25 km per man day = 12.8 mandays
Allow contingency of 1 day for weather

Project Manager	1	days	@	$	500	/day	$	500
Contract soil crew (2)	8	days	@	$	800	/day	$	6,400
Contract prospector	8	days	@	$	400	/day	$	3,200
Room & Board	25	days	@	$	100	/day	$	2,500
Vehicle + Fuel	9	days	@	$	150	/day	$	1,350
Analysis - rock	40	sample	@	$	35	/sample	$	1,400
Analysis - soil	33 6	sample	@	$	35	/sample	$	11,760
Analysis - QA/QC	16	sample	@	$	35	/sample	$	560
Travel							$	-
Sundries							$	1,000
Contingency								
Phase I 2007 - south section evaluation							**$**	**28,670**

COST ESTIMATES
(Continued)

Phase I 2007 - grid tightening 7 days

Grid Tightening and prospecting
25800E to 26500E - 29 samples per line
78600N to 79900N - 27 lines
29 lines at 29 samples per line = 841 samples
29 lines at 0.7 km per line = 20.3 line km
Assume 1.25 line km per man day = 17 man days
Allow contingency of 1 day for weather

Project Manager	1	days	@	$	500	/day	$	500
Contract soil crew (2)	7	days	@	$	800	/day	$	5,600
Contract prospector	7	days	@	$	400	/day	$	2,800
Contract geologist	7	days	@	$	500	/day	$	3,500
Room & Board	29	days	@	$	100	/day	$	2,900
Vehicle + Fuel	8	days	@	$	150	/day	$	1,200
Analysis - rock	50	sample	@	$	35	/sample	$	1,750
Analysis - soil	84 1	sample	@	$	32	/sample	$	26,912
Travel							$	-
Sundries							$	1,000
Contingency							$	-
Phase I 2007 - grid tightening total							**$**	**46,162**

COST ESTIMATES
(Continued)

Phase II 2007 - trenching / diamond drilling 55 days

Allow for 200 hours of excavator trenching = 25 days
Allow for 400 rock samples
Allow for 1500 metres of NQ wireline diamond drilling = 30 days
Allow for 1500 core samples

Project Manager	20	days	@	$	400	/day	$	8,000
Core Splitter	30	days	@	$	400	/day	$	12,000
Contract geologist	55	days	@	$	400	/day	$	22,000
Room & Board	105	days	@	$	100	/day	$	10,500
Vehicle + Fuel	75	days	@	$	150	/day	$	11,250
Trenching Mob / Demob							$	2,500
Excavator (all in)	200	hours	@	$	150	/hour	$	30,000
Drilling Mob / Demob							$	5,000
Drilling (all in)	1500	metres	@	$	125	/metre	$	187,500
Analysis - rock	400	sample	@	$	35	/sample	$	14,000
Analysis - core	1500	sample	@	$	35	/sample	$	52,500
Travel							$	-
Sundries							$	2,500
Contingency							$	42,250
Phase II 2007 - trenching / diamond drilling							**$**	**400,000**

17-Dec-07

ECO TECH LABORATORY LTD.
10041 Dallas Drive
KAMLOOPS, B.C.
V2C 6T4

ICP CERTIFICATE OF ANALYSIS AK 2007- 1666

Appleton Exploration Inc.
550-580 Hornby St.
Vancouver, B.C.
V2B 3B6

Phone: 250-573-5700
Fax : 250-573-4557

No. of samples received:161
Sample Type: Soil
Project: Clapperton
Submitted by: Robert Barinecutt

Values in ppm unless otherwise reported

Et #.	Tag #	Au ppb	Ag ppm	Al %	As ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppb	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Se ppm	Sr ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
1	74301N-34299E	2	0.1	1.02	29.7	86.5	0.06	0.39	0.30	7.6	22.5	34.7	2.32	5.4	10	0.16	7.0	0.33	437	0.71	0.022	22.1	173	2.81	0.02	0.12	6.1	1.2	28.0	0.18	3.3	0.088	0.04	0.3	92	<0.1	42.5
2	74252N-34294E	2	0.1	1.12	30.1	114.0	0.06	0.43	0.32	8.5	25.5	41.5	2.59	6.2	15	0.20	8.0	0.38	525	0.80	0.023	23.9	198	2.34	0.02	0.12	6.4	1.2	33.5	0.18	3.6	0.084	0.06	0.3	98	<0.1	51.7
3	74148N-34267E	2	0.1	1.12	29.8	136.5	0.06	0.46	0.31	7.9	25.0	37.7	2.43	5.9	15	0.17	8.0	0.36	503	0.88	0.022	23.2	179	2.93	0.02	0.12	6.1	1.2	35.0	0.16	3.6	0.080	0.06	0.4	94	<0.1	52.8
4	74081N-34266E	2	<0.1	1.06	28.6	155.5	0.06	0.41	0.31	7.7	21.5	37.3	2.10	5.6	10	0.17	6.5	0.37	602	0.86	0.023	21.5	186	2.58	0.02	0.10	5.6	1.1	32.5	0.14	2.9	0.084	0.04	0.3	82	<0.1	73.1
5	74040N-34248E	15	<0.1	0.95	30.2	179.5	0.04	0.39	0.32	7.1	24.0	31.6	2.43	5.5	10	0.22	5.0	0.32	717	0.86	0.018	21.4	358	1.67	0.02	0.08	5.1	1.1	28.0	0.16	2.9	0.070	0.04	0.3	94	<0.1	85.0
6	74183N-34272E	47	0.1	1.04	30.4	88.5	0.06	0.39	0.28	6.8	24.0	35.0	2.24	5.5	10	0.16	7.5	0.33	339	0.79	0.020	21.4	179	2.34	0.02	0.10	5.7	1.1	28.5	0.14	3.1	0.075	0.04	0.3	90	<0.1	36.9
7	74003N-34250E	2	<0.1	0.80	26.4	125.5	0.04	0.44	0.23	6.3	20.0	53.5	2.22	4.5	10	0.09	6.5	0.31	281	0.84	0.023	18.6	283	0.36	0.02	0.10	4.5	1.0	37.0	0.12	2.8	0.040	0.02	0.3	82	<0.1	26.5
8	73922N-34217E	14	0.1	1.07	28.0	313.5	0.08	0.49	0.45	7.1	23.0	27.7	2.65	5.2	15	0.11	4.0	0.26	756	0.93	0.020	20.9	723	2.30	0.02	0.08	4.9	1.0	52.5	0.16	2.9	0.035	0.04	0.2	92	<0.1	105.0
9	73893N-34250E	2	0.1	1.86	32.4	116.5	0.18	0.53	0.35	7.8	28.0	25.9	2.63	7.4	15	0.14	5.0	0.35	417	0.91	0.028	21.5	212	7.14	0.02	0.12	7.9	1.2	66.0	0.20	2.9	0.084	0.06	0.3	86	<0.1	77.7
10	73832N-34230E	251	2.4	2.18	32.8	119.0	0.16	0.63	0.34	11.0	33.0	45.6	3.23	8.3	15	0.11	6.5	0.48	695	0.97	0.029	25.8	185	8.41	0.02	0.14	9.4	1.2	77.0	0.24	3.3	0.082	0.06	0.3	96	<0.1	71.6
11	73805N-34239E	13	0.1	1.68	34.3	95.5	0.12	0.62	0.42	6.0	24.0	35.8	1.85	6.5	20	0.13	5.0	0.26	211	0.60	0.036	22.8	880	5.14	0.02	0.10	5.7	1.3	97.0	0.20	1.9	0.048	0.06	0.1	64	<0.1	69.5
12	73782N-34235E	5	0.2	2.07	30.3	152.0	0.18	1.17	0.55	10.0	27.0	53.8	2.83	7.8	35	0.30	6.0	0.41	493	0.91	0.035	24.0	1041	7.41	0.04	0.10	7.8	1.4	174.0	0.34	2.5	0.056	0.08	0.1	76	<0.1	74.0
13	73732N-34230E	3	0.1	1.94	28.3	93.0	0.14	1.05	0.42	7.6	19.5	44.4	2.35	7.0	15	0.25	4.5	0.37	282	0.62	0.036	21.5	583	6.03	0.02	0.08	6.9	1.3	188.0	0.28	1.6	0.041	0.06	<0.1	70	<0.1	43.9
14	73735N-34238E	3	0.1	2.87	32.0	170.5	0.18	0.96	0.57	14.8	28.5	131.3	3.66	9.5	30	0.18	5.0	0.55	717	0.82	0.043	24.5	312	11.21	0.02	0.12	8.9	1.3	296.5	0.52	2.3	0.071	0.08	0.2	104	<0.1	85.9
15	73679N-34240E	3	0.1	2.16	29.6	138.0	0.14	0.79	0.38	10.3	25.0	30.0	2.93	7.9	30	0.15	6.0	0.47	1188	0.82	0.027	21.9	252	4.33	0.02	0.12	8.3	1.1	107.5	0.22	2.1	0.069	0.06	0.2	82	<0.1	91.7
16	73602N-34216E	3	0.1	2.48	32.4	198.5	0.14	0.65	0.34	12.2	29.5	37.4	3.14	8.8	25	0.14	8.5	0.46	1324	0.83	0.028	24.8	197	5.30	0.02	0.12	8.5	1.3	81.5	0.24	2.9	0.080	0.06	0.3	86	<0.1	69.6
17	73555N-34204E	2	0.2	2.14	29.8	150.5	0.16	1.16	0.57	10.0	27.0	54.4	2.84	7.9	35	0.30	6.0	0.42	494	0.86	0.038	23.5	1051	7.85	0.04	0.12	7.8	1.4	174.0	0.34	2.2	0.055	0.08	0.1	76	<0.1	72.4
18	73515N-34214E	7	0.1	3.04	32.3	93.5	0.10	0.93	0.32	12.4	30.0	99.5	3.70	11.5	30	0.19	11.5	0.69	1018	1.16	0.025	22.4	277	5.79	0.02	0.14	11.5	1.3	103.0	0.24	2.7	0.044	0.04	0.2	96	<0.1	55.8
19	73472N-34200E	5	0.2	0.97	15.9	53.0	0.08	2.39	0.39	23.8	9.5	61.6	6.16	5.3	35	0.03	11.0	0.25	1057	2.46	0.017	21.0	502	9.16	0.02	0.30	29.7	1.2	99.5	0.22	2.3	0.001	0.02	0.2	154	<0.1	56.7
20	73431N-34183E	3	0.1	3.76	30.5	62.5	0.12	0.91	0.31	15.8	47.5	53.5	3.26	11.9	20	0.14	8.5	1.18	664	0.85	0.023	29.9	216	11.00	0.02	0.18	9.2	1.4	128.5	0.24	1.9	0.012	0.04	0.1	86	<0.1	66.2
21	73371N-34155E	4	0.1	2.34	21.1	48.5	0.22	1.54	0.45	20.1	34.0	37.0	4.28	9.1	20	0.10	8.0	0.86	908	0.59	0.041	37.5	311	16.26	0.02	0.30	17.0	1.1	142.0	0.20	1.7	0.011	0.04	0.1	104	<0.1	86.4
22	73349N-34118E	2	0.1	2.06	26.1	117.0	0.08	0.61	0.38	10.7	23.5	16.1	2.86	8.0	25	0.18	6.5	0.49	1083	1.34	0.025	17.0	225	3.31	0.04	0.16	7.5	1.0	98.0	0.20	1.7	0.074	0.06	0.3	80	<0.1	72.9
23	73281N-34111E	2	0.1	3.02	33.6	128.0	0.06	0.75	0.26	10.4	21.5	18.9	3.08	10.5	20	0.09	10.5	0.57	861	0.78	0.030	18.9	210	3.76	0.02	0.20	8.0	1.3	110.5	0.24	1.9	0.058	0.06	0.3	82	<0.1	61.0
24	73253N-34105E	9	0.1	2.75	31.0	127.0	0.12	0.70	0.26	13.2	29.5	17.7	3.66	9.8	15	0.09	7.0	0.74	672	0.72	0.027	23.7	167	4.31	0.02	0.18	8.3	1.1	111.0	0.24	2.1	0.090	0.04	0.3	100	<0.1	54.1
25	73205N-34090E	2	0.1	1.51	31.1	138.5	0.08	0.54	0.33	5.2	22.0	9.6	1.80	5.8	15	0.09	4.5	0.25	952	0.76	0.027	16.5	163	2.86	0.02	0.08	5.1	1.1	57.0	0.08	1.4	0.053	0.04	0.2	66	<0.1	72.3
26	73154N-34069E	1	0.1	1.15	26.8	178.0	0.06	0.63	0.40	4.6	17.5	9.0	1.43	4.7	35	0.09	3.5	0.19	1260	1.34	0.027	14.6	251	5.06	0.04	0.08	3.8	0.9	78.5	0.06	0.9	0.039	0.04	0.1	56	<0.1	100.0
27	73106N-34042E	2	0.1	1.36	28.1	78.5	0.08	0.43	0.20	6.3	27.0	11.3	2.18	5.6	15	0.12	5.0	0.31	308	0.76	0.028	17.0	139	3.94	0.02	0.12	6.0	0.9	44.5	0.08	1.5	0.084	0.04	0.3	80	<0.1	40.8
28	73060N-34030E	2	0.1	1.48	30.3	100.5	0.06	0.44	0.23	6.3	24.0	12.2	2.21	5.5	10	0.11	5.5	0.32	660	0.83	0.028	18.3	139	4.54	<0.02	0.10	6.2	0.9	47.5	0.08	1.4	0.086	0.04	0.2	84	<0.1	56.1
29	73015N-34018E	2	0.1	2.02	28.6	125.0	0.08	0.52	0.24	8.5	29.5	15.2	2.63	6.9	20	0.11	8.5	0.44	849	0.96	0.029	20.7	156	4.69	0.02	0.16	7.0	1.0	53.0	0.12	2.2	0.085	0.06	0.3	88	<0.1	54.2
30	72964N-34013E	3	0.1	1.87	29.1	100.5	0.08	0.50	0.27	8.8	40.5	19.5	2.83	6.8	15	0.15	9.0	0.46	634	0.98	0.030	28.1	150	4.39	0.02	0.20	8.0	1.1	47.0	0.14	2.6	0.081	0.06	0.2	86	<0.1	54.7

Et #.	Tag #	Au ppb	Ag ppm	Al %	As ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppb	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Se ppm	Sr ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
31	72924N-34002E	2	0.1	2.37	30.3	85.5	0.06	0.63	0.25	10.1	36.0	27.0	3.20	8.2	15	0.14	12.0	0.50	321	0.79	0.026	23.1	216	2.56	0.02	0.16	9.2	1.2	63.5	0.16	2.8	0.085	0.04	0.3	96	<0.1	41.3
32	72868N-33985E	3	0.1	4.17	39.6	78.0	0.06	0.97	0.26	10.3	39.0	29.1	2.96	13.9	25	0.15	9.5	0.65	375	0.60	0.030	27.7	186	4.51	0.02	0.16	7.3	1.8	138.5	0.32	2.4	0.083	0.04	0.4	100	<0.1	43.2
33	72823N-33966E	3	0.2	3.44	36.7	58.5	0.04	1.11	0.33	13.7	35.5	44.9	3.05	11.5	35	0.21	7.0	0.99	621	0.66	0.027	28.3	215	2.47	0.04	0.14	7.4	1.7	97.5	0.28	1.7	0.061	0.04	0.3	98	<0.1	52.9
34	72785N-33952E	2	0.1	2.87	31.0	54.5	<0.02	0.84	0.31	15.6	35.0	30.2	3.08	10.4	15	0.17	4.0	1.40	784	0.45	0.020	28.9	135	1.29	0.02	0.08	6.1	1.4	185.5	0.36	1.1	0.055	0.02	0.2	84	<0.1	64.2
35	72741N-33945E	2	0.1	2.20	31.2	77.5	0.06	0.77	0.34	10.7	31.5	33.4	3.21	8.6	20	0.29	9.5	0.68	699	0.95	0.024	24.9	207	4.27	0.04	0.14	8.0	1.5	73.0	0.24	2.1	0.088	0.04	0.3	82	<0.1	56.2
36	72685N-33936E	5	0.1	1.73	34.1	63.0	0.06	0.51	0.29	7.7	34.0	17.2	2.71	7.1	10	0.24	8.5	0.47	310	0.75	0.028	23.3	156	3.98	0.02	0.14	7.4	1.6	60.0	0.12	2.2	0.106	0.04	0.2	86	<0.1	45.1
37	72640N-33928E	3	0.1	1.29	33.9	53.5	0.06	0.48	0.27	6.8	28.5	15.4	2.23	5.8	10	0.11	8.0	0.31	313	0.74	0.027	19.9	129	1.94	0.02	0.12	7.4	1.5	56.0	0.26	1.8	0.106	0.02	0.3	90	<0.1	31.1
38	72601N-33919E	2	0.1	1.75	34.9	69.0	0.06	0.52	0.28	6.5	27.5	13.7	2.37	7.0	10	0.13	6.5	0.44	304	0.75	0.027	20.9	142	2.15	0.02	0.10	6.4	1.6	92.0	0.30	1.6	0.090	0.04	0.3	86	<0.1	47.0
39	72548N-33897E	3	0.1	1.60	34.2	86.5	0.06	0.52	0.32	9.1	30.0	22.0	2.65	6.8	15	0.19	10.5	0.50	839	0.98	0.028	22.5	151	2.86	0.04	0.14	7.6	1.6	63.5	0.24	2.1	0.090	0.04	0.3	92	<0.1	51.6
40	72506N-33886E	2	0.1	1.45	33.5	78.5	0.06	0.49	0.29	7.2	29.5	12.9	2.29	6.2	15	0.15	7.0	0.40	500	0.88	0.029	21.1	131	4.11	0.02	0.14	6.8	1.5	58.5	0.24	1.8	0.102	0.06	0.3	84	<0.1	60.4
41	72474N-33860E	5	0.1	1.36	33.7	71.5	0.06	0.44	0.27	6.7	29.5	14.3	2.25	5.8	10	0.14	9.0	0.35	400	0.82	0.029	20.9	122	2.23	0.02	0.14	7.0	1.5	51.5	0.22	1.9	0.104	0.04	0.3	90	<0.1	44.8
42	72429N-33844E	3	0.1	2.05	36.9	116.5	0.06	0.58	0.30	9.8	35.5	19.6	2.80	7.6	15	0.22	9.0	0.52	476	0.82	0.032	24.7	138	2.48	0.02	0.14	8.4	1.8	135.0	0.38	2.2	0.142	0.06	0.3	96	<0.1	44.9
43	72377N-33821E	5	0.1	2.25	36.6	81.5	0.08	0.64	0.30	9.3	29.0	19.7	3.13	8.6	20	0.26	10.0	0.63	606	0.79	0.028	22.6	173	3.98	0.02	0.14	7.4	1.8	94.0	0.30	1.9	0.099	0.06	0.3	82	<0.1	57.5
44	72353N-33803E	3	0.1	2.52	35.4	78.0	0.08	0.71	0.31	11.7	30.5	22.1	3.67	8.9	25	0.21	9.5	0.86	559	0.77	0.031	25.4	211	3.44	0.04	0.10	7.6	1.7	98.0	0.34	1.6	0.092	0.04	0.3	84	<0.1	55.9
45	72252N-33775E	4	0.1	2.68	35.1	113.0	0.06	0.71	0.31	13.6	29.5	24.3	3.71	9.4	20	0.19	8.5	1.14	805	0.71	0.027	24.3	192	3.47	0.02	0.14	8.4	1.6	327.5	0.57	1.9	0.129	0.04	0.3	96	<0.1	57.2
46	73468N-35994E	2	0.1	1.60	29.9	130.5	0.14	0.40	0.65	9.3	25.0	53.1	2.54	6.1	15	0.17	7.0	0.51	697	1.01	0.028	20.4	141	18.54	0.02	0.10	5.6	1.1	44.5	0.10	2.5	0.094	0.06	0.4	92	<0.1	108.5
47	73424N-35970E	2	0.1	1.82	31.3	200.5	0.06	0.58	0.27	8.5	24.5	31.2	2.77	6.6	10	0.22	6.0	0.48	799	0.63	0.026	20.1	150	2.33	0.02	0.08	6.0	1.1	44.0	0.08	2.4	0.095	0.06	0.2	100	<0.1	94.8
48	73373N-35942E	1	0.1	0.50	23.9	118.0	0.04	0.39	0.15	3.8	12.5	34.4	1.38	2.9	10	0.08	4.0	0.24	248	0.55	0.024	12.4	193	<0.01	0.02	0.06	2.9	0.8	33.0	<0.02	1.5	0.024	<0.02	0.2	62	<0.1	14.9
49	73340N-635925E	1	<0.1	0.62	21.9	150.0	0.04	0.51	0.19	4.9	15.0	52.7	1.86	3.2	10	0.05	5.5	0.28	311	0.98	0.025	13.4	255	0.40	0.02	0.08	3.2	0.8	48.0	<0.02	1.8	0.030	<0.02	0.6	70	<0.1	18.0
50	73280N-35905E	1	<0.1	0.65	20.3	160.5	0.04	0.50	0.18	5.0	15.0	54.0	1.84	3.2	<5	0.08	6.0	0.30	334	0.62	0.024	13.3	329	<0.01	0.02	0.08	3.2	0.7	45.5	<0.02	1.9	0.033	<0.02	0.4	70	<0.1	22.6
51	73228N-35893E	1	<0.1	0.46	19.3	108.0	0.02	0.44	0.14	4.2	16.0	53.4	2.50	2.8	20	0.03	4.5	0.21	262	0.86	0.027	11.5	222	<0.01	0.04	0.10	2.7	0.8	39.0	<0.02	1.6	0.021	<0.02	1.4	94	<0.1	12.7
52	73200N-35676E	1	<0.1	1.01	24.3	116.5	0.04	0.46	0.20	6.7	22.0	36.9	2.32	4.2	10	0.12	7.0	0.38	474	0.73	0.033	16.2	302	1.36	0.02	0.08	4.6	0.8	52.0	<0.02	2.1	0.049	<0.02	0.2	86	<0.1	34.4
53	73172N-35875E	1	<0.1	0.51	22.5	56.0	0.02	0.32	0.11	3.1	10.5	25.3	0.91	2.5	5	0.03	3.0	0.22	160	0.36	0.023	10.6	141	<0.01	<0.02	0.04	2.6	0.7	25.0	<0.02	0.9	0.024	<0.02	0.2	52	<0.1	11.5
54	73130N-35869E	1	0.1	0.62	26.3	97.0	0.04	0.31	0.16	4.2	18.0	24.0	1.82	3.1	5	0.07	4.5	0.21	312	0.43	0.025	13.4	203	0.66	<0.02	0.06	3.2	0.8	23.0	<0.02	1.6	0.032	<0.02	0.2	82	<0.1	20.7
55	73076N-35854E	1	<0.1	0.98	26.4	74.0	0.06	0.28	0.16	5.1	24.5	14.2	2.33	4.0	<5	0.10	4.0	0.24	253	0.51	0.026	14.1	105	0.37	<0.02	0.08	4.1	0.9	25.0	<0.02	1.9	0.066	0.02	0.2	90	<0.1	38.4
56	73033N-35847E	1	<0.1	1.28	29.6	97.5	0.06	0.33	0.19	5.8	26.0	18.9	2.40	4.9	5	0.15	5.5	0.28	342	0.65	0.028	16.3	159	1.30	0.02	0.08	4.7	1.0	26.0	0.02	2.1	0.073	0.04	0.2	88	<0.1	46.1
57	72963N-35828E	1	0.1	1.14	30.6	137.5	0.06	0.39	0.19	6.9	25.0	21.3	2.20	4.7	10	0.15	6.0	0.31	609	0.63	0.028	16.7	134	1.25	0.02	0.10	4.9	1.0	35.5	<0.02	2.2	0.072	0.04	0.3	84	<0.1	30.2
58	72905N-35817E	2	0.1	1.44	30.9	104.0	0.06	0.36	0.19	7.3	26.0	17.5	2.45	5.4	10	0.16	6.0	0.36	618	0.65	0.030	17.9	123	1.73	0.02	0.08	5.7	1.1	33.0	<0.02	2.5	0.083	0.04	0.3	86	<0.1	38.2
59	72877N-35798E	2	0.1	1.50	31.7	81.0	0.06	0.40	0.17	8.2	27.0	27.3	2.77	5.7	20	0.19	5.0	0.44	293	0.55	0.027	18.6	153	1.57	0.02	0.10	5.7	1.0	34.5	0.04	2.2	0.075	0.04	0.2	94	<0.1	26.1
60	72838N-35778E	2	0.1	2.07	32.2	97.5	0.06	0.51	0.18	10.8	30.5	69.5	3.30	7.2	15	0.15	9.0	0.55	334	0.58	0.030	21.3	202	1.98	0.02	0.14	7.2	1.1	52.0	0.06	4.3	0.068	0.04	0.4	108	<0.1	33.9
61	72806N-35763E	2	0.1	3.43	36.2	133.0	0.06	0.96	0.28	15.6	24.0	116.4	4.24	10.8	20	0.18	8.0	0.79	782	0.77	0.033	22.1	229	1.84	0.04	0.12	11.9	1.4	83.5	0.14	2.8	0.076	0.04	0.3	138	<0.1	50.6
62	72785N-635760E	2	0.1	2.40	36.4	132.5	0.10	0.50	0.33	7.4	26.5	17.0	2.47	7.3	25	0.18	8.0	0.36	795	0.95	0.034	19.7	189	4.43	0.04	0.10	5.5	1.3	50.5	0.06	2.2	0.068	0.06	0.3	80	<0.1	55.6
63	72719N-35745E	2	0.1	2.99	38.4	179.5	0.10	0.60	0.29	9.4	28.0	19.5	2.71	8.3	25	0.10	9.5	0.52	676	1.00	0.039	20.8	147	5.80	0.04	0.12	5.7	1.4	55.5	0.10	2.6	0.077	0.06	0.4	96	<0.1	47.4
64	72676N-35732E	2	0.1	2.75	38.4	117.0	0.06	0.74	0.22	8.2	26.5	21.4	2.47	7.8	35	0.10	6.5	0.49	458	0.76	0.034	19.2	170	4.03	0.04	0.14	5.3	1.3	85.5	0.14	2.1	0.073	0.04	0.4	90	<0.1	39.9
65	72578N-35719E	1	0.1	1.73	29.7	159.5	0.08	0.98	0.32	5.5	19.5	11.8	1.77	5.7	25	0.25	5.0	0.37	879	0.47	0.036	16.3	807	2.36	0.04	0.06	4.5	1.2	137.0	0.14	1.5	0.056	0.06	0.1	60	<0.1	69.5
66	72533N-35720E	2	0.1	2.60	38.6	117.5	0.08	0.82	0.31	9.3	26.0	12.0	2.46	7.9	45	0.05	5.5	0.62	1083	0.73	0.042	19.2	321	2.09	0.04	0.08	6.3	1.6	79.5	0.12	1.5	0.097	0.06	0.3	94	<0.1	58.0
67	72484N-35709E	2	0.1	3.39	37.0	137.5	0.06	0.74	0.24	13.2	37.0	14.1	3.62	10.1	15	0.06	6.5	0.86	876	0.65	0.036	19.3	128	2.48	0.02	0.10	9.7	1.3	73.5	0.14	2.1	0.161	0.04	0.3	124	<0.1	56.1
68	72626N-35745E	1	0.1	2.29	36.1	141.0	0.10	0.46	0.21	7.0	29.5	9.9	2.59	7.2	15	0.11	5.5	0.36	523	0.60	0.036	18.3	118	3.30	0.02	0.08	6.1	1.3	50.5	0.04	1.8	0.079	0.06	0.2	82	<0.1	73.5
69	72446N-35682E	2	0.1	2.88	36.9	130.0	0.08	0.64	0.24	12.2	40.5	16.3	3.64	9.0	20	0.10	8.0	0.78	785	0.77	0.035	20.9	166	2.91	0.02	0.12	9.7	1.4	68.5	0.14	2.4	0.144	0.04	0.3	120	<0.1	65.6
70	72401N-35668E	2	0.1	3.32	36.3	133.5	0.06	0.65	0.23	14.0	32.5	13.7	3.64	10.0	20	0.17	7.0	0.92	1038	0.79	0.031	19.7	194	2.03	0.02	0.12	10.6	1.4	66.0	0.16	2.5	0.163	0.04	0.4	124	<0.1	80.6
71	72340N-35643E	5	0.1	3.31	31.6	148.0	0.06	0.74	0.24	12.8	27.0	18.8	4.09	10.0	15	0.14	9.0	0.77	751	0.59	0.038	19.2	154	2.56	0.02	0.12	10.8	1.4	75.0	0.16	2.4	0.159	0.04	0.4	130	<0.1	86.9
72	72292N-35618E	3	0.1	2.72	32.9	107.5	0.06	0.63	0.24	10.8	22.5	20.8	3.78	10.1	10	0.27	7.5	0.62	947	0.52	0.032	16.5	165	3.23	0.02	0.10	9.4	1.3	58.0	0.06	2.2	0.124	0.06	0.2	116	<0.1	93.0
73	72247N-35603E	4	0.1	2.90	34.0	78.0	0.06	0.77	0.24	13.5	33.0	37.5	3.95	9.3	20	0.14	8.0	0.93	683	0.65	0.034	20.4	278	2.65	0.02	0.12	10.0	1.4	72.0	0.12	2.0	0.103	0.02	0.4	122	<0.1	46.9
74	72202N-35586E	3	0.1	3.02	32.1	84.5	0.04	0.69	0.22	13.7	38.5	19.9	4.08	10.1	10	0.27	8.0	1.22	705	0.44	0.033	19.7	109	1.98	0.02	0.12	10.8	1.3	72.0	0.12	2.0	0.170	0.04	0.2	118	<0.1	63.4
75	72170N-35570E	3	0.1	2.13	31.8	80.5	0.06	0.64	0.21	10.3	34.0	17.6	3.06	7.5	15	0.21	8.5	0.72	671	0.63	0.034	17.8	137	3.46	0.02	0.12	9.3	1.2	56.0	0.12	2.1	0.170	0.04	0.3	114	<0.1	42.3

Et #.	Tag #	Au ppb	Ag ppm	Al %	As ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppb	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Se ppm	Sr ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
76	72121N-35543E	2	0.1	2.17	31.4	107.0	0.04	0.61	0.26	10.5	30.0	19.2	3.14	7.4	15	0.28	8.5	0.73	929	0.53	0.034	17.2	153	2.11	0.02	0.08	8.7	1.3	62.5	0.10	1.9	0.088	0.04	0.2	96	<0.1	46.9
77	72076N-35533E	3	0.2	0.78	40.5	41.5	<0.02	>10	0.41	5.4	11.5	19.5	1.47	3.5	15	0.07	4.5	0.54	253	0.92	0.024	22.4	393	0.09	0.04	0.10	4.3	3.1	326.0	0.32	0.5	0.022	<0.02	0.3	38	<0.1	14.1
78	72053N-35512E	2	0.1	1.67	17.1	87.5	0.06	0.56	0.23	8.1	30.0	17.5	2.68	5.6	20	0.29	7.5	0.44	557	1.06	0.032	17.2	174	3.67	<0.02	0.12	7.6	1.4	54.5	0.04	1.8	0.100	0.04	0.2	78	<0.1	58.8
79	72010N-35500E	2	0.1	1.94	21.2	101.0	0.06	0.54	0.22	9.7	30.5	21.9	2.89	6.4	10	0.33	8.5	0.59	678	0.78	0.032	18.8	137	2.67	0.02	0.12	8.3	1.5	55.5	0.10	2.1	0.108	0.06	0.2	84	<0.1	51.9
80	71953N-35474E	3	0.1	2.18	24.5	113.5	0.08	0.56	0.21	10.2	35.5	24.9	3.16	6.8	10	0.30	9.5	0.61	839	0.62	0.039	23.4	142	3.53	0.02	0.12	8.3	1.2	70.5	0.08	2.5	0.080	0.04	0.2	86	<0.1	65.2
81	71913N 35840E	2	0.3	1.73	21.2	111.5	0.08	0.47	0.21	10.7	38.0	25.5	3.03	6.0	15	0.26	10.0	0.61	738	0.74	0.036	25.4	122	2.95	0.02	0.12	7.8	1.1	53.0	0.04	2.3	0.095	0.04	0.3	90	<0.1	49.2
82	71862N-35461E	2	0.1	1.83	22.2	134.5	0.06	0.73	0.47	12.6	22.0	25.4	3.03	5.7	30	0.32	9.0	0.65	989	1.42	0.028	19.0	227	3.94	0.04	0.20	8.0	1.2	98.5	0.14	1.9	0.051	0.06	0.3	80	<0.1	77.5
83	71832N-35445E	3	0.1	1.59	22.0	147.5	0.10	0.45	0.25	8.5	26.0	27.8	3.86	5.9	25	0.29	7.5	0.65	565	2.27	0.036	16.1	335	6.20	0.10	0.18	7.7	1.5	82.5	0.70	1.8	0.080	0.06	0.3	88	<0.1	56.4
84	71774N-35418E	2	0.1	2.43	26.4	195.5	0.10	0.56	0.32	10.5	34.5	21.5	3.40	7.4	10	0.32	10.5	0.53	938	0.76	0.034	21.7	230	4.73	0.04	0.14	7.9	1.3	58.5	0.18	2.8	0.099	0.08	0.2	88	<0.1	90.1
85	71723N-35429E	1	0.1	1.80	24.4	130.5	0.06	0.40	0.24	8.3	29.0	14.5	2.52	5.8	10	0.21	7.0	0.46	716	0.78	0.031	17.2	141	2.81	0.02	0.10	6.7	1.2	37.5	0.04	1.9	0.077	0.06	0.2	78	<0.1	61.7
86	71664N-35449E	1	<0.1	0.93	22.0	57.5	0.04	0.27	0.13	4.9	20.5	10.6	1.77	3.5	<5	0.09	3.5	0.26	228	0.43	0.027	12.7	77	0.73	<0.02	0.06	4.4	1.0	23.5	<0.02	1.3	0.037	0.02	0.2	70	<0.1	26.7
87	71622N-35394E	2	0.1	1.53	24.3	131.0	0.06	0.47	0.24	7.6	25.0	14.1	2.51	5.0	10	0.21	6.0	0.41	745	1.16	0.029	15.4	153	1.90	0.02	0.08	5.9	1.1	47.0	0.04	1.8	0.074	0.04	0.3	84	<0.1	49.8
88	71579N-35387E	4	0.1	1.70	24.7	118.0	0.06	0.43	0.21	9.3	29.5	24.6	2.83	5.7	10	0.18	8.0	0.47	526	0.74	0.032	17.8	151	2.26	0.02	0.12	6.8	1.1	43.0	0.02	2.4	0.091	0.04	0.3	94	<0.1	47.9
89	71530N-35378E	1	0.1	1.28	23.7	71.0	0.04	0.36	0.13	6.7	24.5	41.4	2.59	4.5	5	0.04	5.5	0.37	185	0.57	0.032	16.2	142	0.78	0.02	0.08	4.3	1.0	37.0	<0.02	2.4	0.049	<0.02	0.4	98	<0.1	18.3
90	72751N-37708E	2	0.1	1.71	24.8	108.0	0.06	0.44	0.20	9.6	32.0	28.7	2.98	5.7	5	0.28	8.0	0.50	577	0.76	0.033	20.0	172	2.63	0.02	0.14	6.9	1.1	43.5	0.02	2.5	0.080	0.04	0.3	94	<0.1	42.9
91	72686N-37680E	1	0.1	0.80	21.3	52.5	0.02	0.47	0.22	4.9	13.5	43.0	1.30	3.0	5	0.07	3.5	0.30	211	0.52	0.024	12.3	121	0.55	0.02	0.04	3.3	1.0	32.0	<0.02	1.1	0.029	<0.02	0.2	60	<0.1	13.8
92	72650N-37685E	1	0.1	1.55	25.0	75.0	0.06	0.34	0.13	7.2	26.5	27.4	2.80	5.0	10	0.07	4.0	0.41	142	0.59	0.033	17.5	159	1.50	0.02	0.08	4.5	1.1	38.0	0.02	1.8	0.069	0.02	0.3	106	<0.1	22.4
93	72609N-37672E	1	0.2	3.29	32.8	132.5	0.06	0.67	0.26	11.8	26.5	80.7	3.17	9.2	15	0.10	5.5	0.79	360	1.18	0.034	24.3	383	3.10	0.02	0.12	6.2	1.4	86.5	0.12	3.2	0.068	0.04	0.4	112	<0.1	49.5
94	72576N-37679E	4	0.1	2.41	29.1	170.5	0.08	0.45	0.21	8.7	30.5	25.4	2.85	6.9	15	0.12	4.0	0.49	250	0.78	0.035	24.1	193	3.13	0.02	0.10	5.2	1.3	56.0	0.08	2.5	0.083	0.04	0.3	94	<0.1	43.0
95	72535N-37661E	1	0.1	2.18	27.7	179.5	0.10	0.29	0.19	6.9	24.5	35.4	2.10	6.0	15	0.08	3.0	0.35	214	0.90	0.036	20.4	416	2.22	0.02	0.06	4.0	1.2	33.5	0.02	1.7	0.050	0.04	0.3	74	<0.1	61.8
96	72497N-37637E	1	0.1	2.33	29.7	118.5	0.10	0.31	0.16	7.9	27.0	29.2	2.35	6.4	10	0.07	3.0	0.43	276	1.03	0.032	20.0	354	2.42	0.02	0.08	4.6	1.2	42.0	0.04	1.9	0.056	0.04	0.3	84	<0.1	44.7
97	72457N-37630E	1	0.1	2.61	30.1	162.0	0.10	0.36	0.17	9.3	33.0	29.6	3.07	7.6	10	0.07	4.5	0.59	235	0.66	0.037	23.5	206	2.38	0.02	0.10	5.1	1.2	56.0	0.06	2.5	0.100	0.04	0.3	106	<0.1	49.8
98	72370N-37633E	1	0.1	2.18	30.0	153.5	0.08	0.39	0.17	9.1	30.0	38.9	2.59	6.1	10	0.08	5.0	0.61	301	0.72	0.028	23.9	511	1.96	0.02	0.10	5.0	1.2	47.5	0.04	2.7	0.057	0.04	0.4	90	<0.1	42.4
99	72349N-37601E	2	0.1	1.88	30.3	98.0	0.06	0.36	0.15	7.6	29.0	30.3	2.57	5.7	10	0.07	4.5	0.48	157	0.62	0.030	20.3	214	1.35	0.02	0.08	4.7	1.2	46.5	0.06	2.5	0.073	0.04	0.3	96	<0.1	30.0
100	72327N-37517E	2	0.1	1.49	30.1	66.0	0.06	0.45	0.17	9.0	28.5	38.4	2.69	5.3	10	0.07	6.0	0.46	214	0.85	0.032	17.9	108	1.44	0.02	0.12	5.4	1.2	56.5	0.04	2.8	0.126	0.02	0.4	112	<0.1	27.9
101	72297N-37582E	2	0.2	2.30	31.4	111.0	0.12	0.41	0.33	10.7	28.0	75.1	2.87	6.9	15	0.14	7.5	0.68	376	0.76	0.034	20.4	122	3.19	0.02	0.10	5.4	1.3	59.5	0.06	3.3	0.118	0.06	0.5	98	<0.1	62.9
102	72250N-37566E	10	0.1	1.52	29.5	96.0	0.08	0.42	0.36	8.5	32.5	31.0	2.87	5.1	10	0.07	7.0	0.33	211	0.61	0.035	17.2	105	5.82	0.02	0.12	5.7	1.1	64.0	0.08	2.9	0.116	0.02	0.4	112	<0.1	33.3
103	72184N-37562E	2	0.1	1.32	27.8	103.5	0.06	0.37	0.14	7.9	28.0	40.2	2.58	4.8	10	0.09	8.0	0.37	183	0.51	0.030	15.8	99	1.52	<0.02	0.10	5.3	1.0	42.5	<0.02	3.2	0.088	0.02	0.4	102	<0.1	25.9
104	72162N-37548E	3	0.1	2.29	28.5	180.0	0.08	0.55	0.21	11.9	31.5	137.5	3.33	7.2	15	0.15	9.0	0.80	425	0.78	0.035	23.5	217	3.50	0.02	0.16	7.4	1.2	57.0	0.04	4.6	0.063	0.04	0.5	110	<0.1	38.2
105	72110N-37532E	2	0.2	2.62	28.0	163.5	0.04	0.67	0.29	20.1	26.0	252.5	3.74	7.9	15	0.22	7.0	1.49	829	0.43	0.024	27.0	195	1.80	0.02	0.12	7.6	1.3	85.5	0.06	5.6	0.068	0.04	0.5	108	<0.1	75.0
106	72079N-37516E	5	0.3	2.16	11.1	108.6	0.09	0.84	0.19	16.7	24.5	251.4	3.41	7.6	15	0.16	6.5	1.08	552	0.35	0.032	18.0	377	13.66	0.02	0.15	5.6	0.3	84.5	0.04	4.4	0.087	0.04	0.4	92	<0.1	67.6
107	72040N-37506E	3	0.1	1.37	7.8	106.5	0.06	0.60	0.11	10.5	21.0	85.6	2.75	5.6	10	0.25	7.0	0.50	470	0.47	0.031	12.4	378	8.40	0.02	0.12	4.1	0.3	47.0	0.02	4.1	0.090	0.04	0.4	80	<0.1	49.4
108	72017N-37504E	2	0.1	1.85	10.5	130.5	0.06	0.64	0.06	13.2	25.0	88.7	3.17	7.1	15	0.14	9.0	0.62	367	0.40	0.033	14.3	369	10.18	0.02	0.16	5.7	0.3	48.5	0.04	5.3	0.103	0.04	0.7	96	<0.1	53.2
109	71956N-37460E	1	0.1	1.00	9.7	190.5	0.06	0.54	0.23	7.8	16.0	33.2	1.90	4.0	15	0.15	5.0	0.29	1078	0.76	0.031	9.6	311	9.55	0.04	0.08	3.0	0.4	41.0	0.02	3.2	0.074	0.04	0.4	56	<0.1	88.8
110	71903N-37438E	1	0.2	2.42	13.4	98.0	0.06	1.11	0.18	14.9	14.0	119.1	3.44	7.8	20	0.18	6.0	0.86	620	0.74	0.035	9.1	783	12.63	0.04	0.16	7.0	0.4	110.5	0.08	3.0	0.113	0.02	0.5	68	<0.1	72.3
111	71818N-37418E	1	<0.1	1.15	11.2	70.5	0.08	0.46	0.06	10.5	39.0	27.6	2.46	4.5	10	0.14	6.5	0.42	288	0.31	0.032	15.3	166	9.29	0.02	0.16	4.8	0.3	32.0	0.02	3.1	0.129	0.04	0.4	74	<0.1	33.7
112	71465N-37127E	1	0.1	1.84	12.5	99.0	0.04	0.79	0.05	8.8	19.5	45.8	3.00	5.8	10	0.10	7.5	0.44	377	0.37	0.050	7.8	264	9.05	0.02	0.18	7.5	0.4	73.0	0.04	2.4	0.135	<0.02	0.4	98	<0.1	35.7
113	71402N-37111E	1	0.1	3.19	16.5	88.5	0.04	1.39	0.07	13.3	15.0	16.6	3.12	10.6	10	0.17	6.5	1.04	523	0.21	0.053	6.6	185	10.68	0.04	0.06	11.0	0.5	86.5	0.04	2.1	0.135	<0.02	0.7	88	<0.1	58.8
114	71376N-37111E	2	0.1	2.33	14.5	127.5	0.06	0.93	0.10	11.2	21.0	18.7	3.29	7.9	15	0.22	8.0	0.68	471	0.40	0.049	8.0	248	11.51	0.04	0.10	10.9	0.4	69.0	0.04	2.2	0.181	0.04	0.5	96	<0.1	70.4
115	71291N-37070E	2	0.1	3.14	21.2	138.0	0.06	1.00	0.08	12.2	23.5	22.6	3.71	10.0	15	0.23	8.5	0.78	410	0.44	0.049	9.5	284	10.13	0.04	0.16	12.6	0.5	74.5	0.06	2.7	0.273	0.04	0.6	118	<0.1	56.7
116	71279N-37068E	1	0.1	1.75	14.5	98.5	0.06	0.57	0.06	7.9	18.5	19.5	2.82	5.7	10	0.19	5.0	0.42	335	0.51	0.042	7.7	274	10.45	0.02	0.16	6.3	0.3	46.5	0.04	1.7	0.167	0.04	0.3	92	<0.1	52.5
117	71227N-36045E	1	0.1	1.59	15.8	97.0	0.06	0.50	0.05	7.4	24.0	14.3	2.55	5.4	5	0.14	5.0	0.39	319	0.42	0.039	9.1	250	10.52	0.02	0.20	6.0	0.4	36.0	0.04	1.7	0.163	0.04	0.3	80	<0.1	50.9
118	70999N-36973E	1	<0.1	1.01	14.4	142.5	0.06	0.32	0.07	4.7	18.0	12.2	1.94	3.8	10	0.11	3.0	0.23	452	0.28	0.034	6.5	253	10.36	0.02	0.08	3.1	0.3	24.5	<0.02	1.4	0.116	0.04	0.2	64	<0.1	84.3
119	71912N-37450E	1	0.1	1.52	14.8	108.0	0.08	0.52	0.23	11.6	26.0	71.6	3.02	5.9	10	0.32	8.5	0.54	312	0.47	0.034	13.8	304	13.82	0.04	0.14	4.7	0.4	45.5	0.04	4.0	0.114	0.06	0.5	94	<0.1	45.8
120	71175N-37011E	1	0.1	1.54	17.6	101.5	0.06	0.54	0.07	7.4	24.0	14.8	2.74	5.2	10	0.13	5.0	0.39	413	0.44	0.038	8.7	202	9.53	0.02	0.24	6.8	0.4	37.0	0.04	1.8	0.213	0.04	0.4	90	<0.1	49.0

ECO TECH LABORATORY LTD. **ICP CERTIFICATE OF ANALYSIS AK 2007- 1666** **Appleton Exploration Inc.**

Au Ag Al As Ba Bi Ca Cd Co Cr Cu Fe Ga Hg K La Mg Mn Mo Na Ni P Pb S Sb Sc Se Sr Te Th Ti Tl U V W Zn

Et #.	Tag #	ppb	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppb	%	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
121	71132N-37005E	1	0.1	1.28	17.2	89.0	0.06	0.45	0.05	6.6	22.0	15.4	2.43	4.5	10	0.16	5.5	0.32	233	0.32	0.034	7.4	196	8.82	0.02	0.18	5.6	0.4	33.5	0.02	2.0	0.171	0.04	0.4	82	<0.1	36.9
122	71095N-36999E	1	0.1	1.36	17.0	111.0	0.06	0.39	0.07	7.1	22.0	13.9	2.36	4.7	10	0.10	4.0	0.33	311	0.39	0.036	7.9	232	8.16	0.02	0.12	4.8	0.4	29.0	0.02	1.7	0.144	0.04	0.3	78	<0.1	48.3
123	71068N-37026E	1	0.1	1.30	16.8	95.0	0.06	0.43	0.04	6.9	23.5	17.1	2.49	4.5	15	0.08	5.0	0.33	158	0.31	0.038	8.5	231	9.81	0.02	0.16	5.1	0.4	33.0	0.02	2.0	0.160	0.02	0.4	86	<0.1	31.6
124	70948N-36966E	<1	0.1	1.11	16.4	118.0	0.06	0.38	0.05	4.7	19.5	9.6	2.07	4.0	10	0.09	3.0	0.24	348	0.34	0.032	6.5	316	8.70	0.02	0.10	3.1	0.3	27.5	<0.02	1.3	0.114	0.04	0.2	64	<0.1	54.3
125	55573641-0632250	1	0.6	2.11	20.1	117.5	0.08	0.77	0.18	11.5	35.0	21.5	3.10	7.7	20	0.28	9.0	0.64	907	0.51	0.036	16.7	283	10.01	0.04	0.18	8.7	0.5	58.5	0.06	2.2	0.164	0.06	0.3	90	<0.1	117.0
126	5574644-0632425	1	<0.1	1.23	15.3	112.5	0.06	0.58	0.12	10.4	25.5	51.4	2.78	4.9	15	0.19	8.0	0.52	679	0.97	0.034	12.5	358	9.65	0.04	0.12	4.3	0.5	48.0	0.06	2.3	0.077	0.02	0.3	86	<0.1	70.2
127	5573736-0632292	1	0.1	1.51	19.0	109.5	0.10	0.46	0.16	8.3	27.0	13.9	2.27	6.2	15	0.24	8.5	0.48	820	0.59	0.034	12.1	184	10.85	0.02	0.14	4.8	0.4	110.0	0.08	1.8	0.123	0.06	0.3	64	<0.1	85.7
128	5574886-0632480	1	<0.1	1.81	18.2	96.5	0.10	0.71	0.10	15.4	39.0	69.3	3.36	6.8	15	0.23	9.0	1.01	708	1.18	0.034	19.7	422	12.13	0.04	0.16	6.1	0.5	55.5	0.08	2.3	0.073	0.04	0.3	90	<0.1	65.6
129	5573946-0632318	1	0.1	2.17	18.7	171.0	0.08	0.84	0.29	11.9	27.0	25.2	2.87	7.5	20	0.29	7.0	0.70	874	0.37	0.034	14.5	527	11.12	0.04	0.10	4.7	0.5	90.5	0.10	1.9	0.061	0.04	0.2	54	<0.1	73.0
130	5574085-0632347	2	0.1	1.93	24.2	169.5	0.60	0.95	0.24	14.3	30.0	39.5	3.95	7.3	25	0.19	25.0	0.57	1226	1.69	0.035	21.7	319	19.81	0.04	0.42	11.2	0.6	52.0	0.10	10.0	0.038	0.14	0.4	96	<0.1	105.9
131	5574394-0632398	1	0.1	1.34	14.9	170.5	0.08	0.53	0.08	9.1	20.0	74.0	2.52	5.0	15	0.16	8.0	0.42	613	0.43	0.036	11.5	267	8.31	0.04	0.12	4.1	0.4	48.0	0.04	4.2	0.052	0.08	0.3	70	<0.1	49.7
132	5573682-0632276	1	<0.1	1.52	16.4	115.0	0.08	0.51	0.15	8.3	27.5	14.1	2.33	5.6	15	0.28	7.0	0.47	926	0.54	0.033	13.8	182	8.45	0.02	0.14	6.1	0.4	43.0	0.04	3.1	0.126	0.10	0.2	68	<0.1	100.9
133	5573970-0632314	<1	0.1	1.75	19.8	182.5	0.08	0.83	0.32	10.2	22.5	17.9	2.34	5.9	35	0.12	6.5	0.52	1274	0.58	0.036	12.8	274	10.25	0.04	0.10	3.4	0.4	89.5	0.08	1.8	0.067	0.08	0.3	48	<0.1	77.8
134	5574521-0632388	1	0.1	1.42	13.4	172.5	0.10	0.79	0.14	10.5	21.5	68.7	2.69	5.3	15	0.32	8.0	0.55	577	1.02	0.032	12.8	305	11.24	0.04	0.10	4.2	0.5	62.0	0.10	2.7	0.063	0.06	0.3	70	<0.1	54.8
135	5574815-0632447	1	0.2	1.24	12.7	135.5	0.08	0.52	0.12	10.9	27.0	38.9	2.56	4.7	25	0.20	8.0	0.57	710	0.85	0.030	14.3	259	9.88	0.02	0.12	4.2	0.4	43.0	0.06	2.2	0.058	0.04	0.3	74	<0.1	81.1
136	5574347-0632390	1	0.2	1.89	19.4	149.5	0.08	1.03	0.36	9.9	18.5	39.2	2.05	5.7	50	0.11	9.0	0.45	1044	0.65	0.039	13.3	543	8.89	0.04	0.14	3.4	0.5	111.5	0.06	1.7	0.048	0.06	0.4	54	<0.1	61.9
137	5574582-0632414	<1	<0.1	1.33	14.5	141.0	0.08	0.56	0.12	9.7	21.5	54.1	2.63	5.0	10	0.26	8.0	0.50	664	0.81	0.032	12.0	375	9.49	0.04	0.10	4.0	0.4	48.0	0.10	2.5	0.067	0.04	0.2	74	<0.1	66.6
138	5574445-0632399	1	0.1	0.70	9.0	95.0	0.04	0.62	0.05	6.4	15.5	55.8	2.22	3.3	10	0.07	5.5	0.39	289	0.56	0.033	8.1	588	5.70	0.02	0.10	2.1	0.3	44.5	0.02	2.3	0.040	0.02	0.5	74	<0.1	26.7
139	5574163-0632355	<1	0.1	1.50	17.9	202.5	0.12	0.87	0.22	7.4	16.5	19.2	1.96	5.1	25	0.23	8.5	0.37	965	0.36	0.035	9.7	927	10.45	0.04	0.12	3.4	0.5	88.5	0.04	1.7	0.049	0.06	0.3	44	<0.1	79.8
140	5573864-0632305	<1	0.1	1.86	21.8	226.5	0.10	0.83	0.22	7.8	18.0	13.5	2.03	6.0	40	0.09	6.0	0.40	1795	0.58	0.039	10.8	283	9.47	0.04	0.12	3.7	0.6	61.0	0.06	1.4	0.077	0.08	0.2	54	<0.1	92.1
141	5573337-0632185	4	0.1	2.42	18.9	99.5	0.08	0.96	0.16	12.9	35.0	24.0	3.21	8.1	20	0.27	9.5	0.75	930	0.50	0.036	17.3	360	8.27	0.04	0.18	9.5	0.6	75.5	0.10	2.4	0.212	0.06	0.4	98	<0.1	82.7
142	5573489-0632210	4	0.1	2.99	20.8	59.5	0.06	1.05	0.14	19.8	47.0	31.5	4.49	11.5	15	0.36	9.0	1.64	1034	0.70	0.037	16.9	199	8.26	0.04	0.22	15.1	0.7	65.5	0.08	2.0	0.286	0.06	0.4	146	<0.1	93.4
143	5574230-0632374	2	0.1	2.64	20.1	197.5	0.10	0.91	0.22	14.8	32.0	40.1	3.37	8.6	25	0.18	10.0	0.80	1171	0.51	0.044	20.4	246	9.33	0.04	0.20	6.9	0.5	95.0	0.06	2.7	0.093	0.06	0.4	78	<0.1	77.0
144	5574143-0632355	2	0.1	1.72	15.0	235.0	0.14	1.52	0.42	12.4	19.5	58.1	2.40	6.0	50	0.18	13.0	0.61	1720	0.84	0.032	14.7	818	10.78	0.06	0.18	4.6	0.5	92.5	0.10	1.4	0.033	0.06	0.4	54	<0.1	109.4
145	5573541-0632211	2	0.1	1.87	14.5	73.0	0.06	0.92	0.15	11.4	23.5	18.3	2.98	7.5	15	0.27	7.5	0.72	722	0.42	0.031	10.3	207	8.44	0.04	0.16	8.7	0.5	88.0	0.04	1.5	0.165	0.06	0.3	98	<0.1	73.5
146	5573568-0632234	2	0.1	2.52	23.2	63.5	0.06	0.86	0.13	11.6	27.5	18.9	3.39	9.4	15	0.40	8.0	0.78	672	0.42	0.034	11.1	234	8.04	0.02	0.18	11.2	0.6	107.5	0.08	1.9	0.251	0.06	0.3	118	<0.1	81.9
147	5574334-0632415	1	0.1	1.52	5.7	155.5	0.08	2.06	0.53	9.2	17.0	51.2	2.14	4.9	40	0.18	8.5	0.48	1242	0.44	0.037	12.3	2117	9.78	0.04	0.12	3.6	0.5	250.0	0.08	1.2	0.050	0.06	0.2	44	<0.1	85.7
148	5573398-0632196	1	0.1	2.10	14.8	105.0	0.06	0.85	0.17	12.3	31.5	18.9	2.98	7.4	20	0.29	6.5	0.77	1018	0.43	0.033	15.2	431	7.56	0.04	0.14	8.3	0.5	77.0	0.08	1.4	0.191	0.06	0.3	90	<0.1	111.6
149	5573593-0632237	1	0.1	2.85	23.7	56.5	0.06	1.06	0.17	13.6	26.0	24.1	3.91	10.7	20	0.39	8.0	0.95	881	0.49	0.035	9.2	254	9.35	0.04	0.24	12.3	0.6	91.5	0.08	1.8	0.200	0.06	0.3	128	<0.1	90.6
150	5574501-0632408	1	0.2	1.50	2.3	171.5	0.10	2.28	0.13	10.3	25.5	98.3	2.61	5.8	15	0.19	9.5	0.68	356	0.53	0.035	12.5	427	9.15	0.04	0.14	4.4	0.6	81.0	0.08	2.2	0.076	0.04	0.7	60	<0.1	49.2
151	5574210-0632373	1	0.1	1.83	13.8	206.5	0.10	0.83	0.27	8.9	20.5	24.2	2.22	6.0	30	0.15	7.5	0.39	1461	0.60	0.039	13.9	318	7.73	0.04	0.14	4.9	0.5	78.5	0.04	2.0	0.076	0.06	0.3	48	<0.1	73.5
152	5574682-0632456	1	0.1	1.61	12.2	113.0	0.10	0.59	0.09	11.0	24.0	84.3	2.98	5.9	10	0.26	9.5	0.60	575	1.03	0.035	13.3	267	8.09	0.04	0.14	5.3	0.5	56.5	0.12	2.8	0.074	0.04	0.4	82	<0.1	52.4
153	5574947-0632499	1	0.1	2.04	13.3	142.0	0.12	0.83	0.20	18.0	43.5	76.1	3.86	7.5	20	0.32	11.0	1.16	955	1.45	0.034	23.7	554	13.86	0.04	0.18	7.0	0.6	59.5	0.10	2.7	0.064	0.04	0.3	94	<0.1	89.3
154	5574066-0632345	1	0.1	2.24	21.8	254.5	0.30	0.93	0.24	12.9	28.0	37.9	3.52	8.0	25	0.24	23.5	0.50	1777	2.21	0.039	20.1	339	16.67	0.04	0.32	8.3	0.6	79.0	0.12	2.8	0.066	0.08	0.5	80	<0.1	113.3
155	5574787-0632476	1	<0.1	1.34	15.6	111.5	0.10	0.51	0.09	10.3	28.5	46.2	3.00	5.2	10	0.32	8.0	0.58	543	0.78	0.034	13.5	364	8.98	0.04	0.14	4.4	0.5	46.0	0.08	2.2	0.087	0.04	0.3	96	<0.1	58.1
156	5574016-0632341	1	0.1	1.91	19.2	172.5	0.12	0.92	0.18	8.9	22.5	20.9	2.26	6.2	35	0.12	6.0	0.50	1006	0.65	0.041	14.6	428	9.05	0.04	0.14	3.4	0.5	103.0	0.10	1.5	0.079	0.04	0.3	52	<0.1	82.4
157	5574299-0632396	1	0.1	2.57	21.0	142.5	0.08	0.82	0.13	9.8	28.5	33.7	2.94	8.2	25	0.23	7.5	0.62	453	0.42	0.040	14.4	592	10.71	0.04	0.14	6.1	0.5	82.0	0.06	2.3	0.071	0.06	0.3	64	<0.1	59.5
158	5573820-0632294	1	0.1	2.63	19.0	177.5	0.08	0.93	0.20	14.4	30.0	33.2	3.12	8.8	25	0.22	8.5	1.01	1195	0.41	0.034	16.8	367	9.24	0.04	0.16	7.7	0.5	64.0	0.06	1.8	0.112	0.06	0.3	82	<0.1	102.7
159	5573306-0632174	3	0.2	2.68	18.9	72.5	0.08	1.10	0.15	14.0	29.5	36.5	3.54	9.4	25	0.32	10.5	0.86	997	0.43	0.035	14.2	283	11.79	0.04	0.24	9.2	0.6	79.0	0.08	2.3	0.162	0.06	0.5	100	<0.1	81.8
160	5573899-0632315	1	0.1	2.54	20.9	200.5	0.10	0.96	0.22	14.2	22.5	29.2	2.90	8.5	30	0.19	10.0	0.66	1530	0.46	0.036	12.7	414	9.45	0.04	0.14	5.4	0.5	86.0	0.12	2.2	0.043	0.06	0.4	70	<0.1	80.3
161	5573438-0632206	1	0.1	3.08	18.6	71.0	0.06	1.04	0.17	17.5	32.0	30.2	4.30	11.9	15	0.37	9.5	1.44	1126	0.61	0.031	13.8	270	9.17	0.02	0.18	10.8	0.6	69.5	0.06	1.8	0.116	0.04	0.3	118	<0.1	113.6

QC DATA:

Repeat:

1	74301N-34299E	2	0.1	1.09	29.5	89.0	0.06	0.39	0.28	8.1	24.5	36.6	2.37	5.6	10	0.18	7.0	0.37	454	0.70	0.023	21.7	169	3.09	0.02	0.10	5.9	1.1	30.0	0.10	3.1	0.087	0.04	0.3	94	<0.1	45.4
10	73832N-34230E	177	0.4	2.18	30.8	124.0	0.16	0.63	0.32	11.2	31.5	45.1	3.32	8.4	15	0.12	7.0	0.49	712	0.94	0.032	22.6	181	10.38	0.02	0.14	9.1	1.1	76.5	0.22	3.1	0.080	0.06	0.3	98	<0.1	71.8

Et #.	Tag #	Au ppb	Ag ppm	Al %	As ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppb	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Se ppm	Sr ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
19	73472N-34200E	3	0.2	1.03	16.2	54.5	0.10	2.46	0.38	25.3	10.5	63.4	6.31	5.4	35	0.03	11.5	0.27	1124	2.58	0.019	20.8	520	9.35	0.02	0.32	30.9	1.1	104.0	0.24	2.1	0.002	<0.02	0.2	158	<0.1	58.8

28	73060N-34030E	2	0.1	1.54	32.2	104.0	0.06	0.45	0.26	6.6	27.5	13.1	2.23	5.9	10	0.11	5.5	0.33	671	0.85	0.029	20.3	141	3.93	0.02	0.12	6.5	1.4	49.5	0.10	1.6	0.089	0.04	0.2	86	<0.1	56.3
36	72685N-33936E	2	0.1	1.69	33.2	60.5	0.06	0.49	0.26	7.1	32.0	16.0	2.63	6.9	10	0.23	7.5	0.45	298	0.66	0.027	20.1	148	3.39	0.02	0.14	6.8	1.2	58.0	0.10	1.9	0.110	0.04	0.2	86	<0.1	44.1
45	72252N-33775E	5	0.1	2.60	33.3	109.5	0.06	0.68	0.28	12.9	28.0	23.0	3.62	8.9	15	0.18	8.0	1.10	788	0.66	0.028	22.4	187	3.64	0.02	0.14	7.6	1.1	319.5	0.55	2.1	0.133	0.04	0.3	94	<0.1	55.6
54	73130N-35869E	1	<0.1	0.60	28.7	94.5	0.04	0.30	0.15	4.1	19.0	22.4	1.89	3.0	<5	0.06	4.5	0.20	300	0.41	0.024	13.7	203	0.34	0.02	0.08	3.2	0.9	21.5	<0.02	1.8	0.032	<0.02	0.2	84	<0.1	19.6
63	72719N-35745E	2	0.1	3.30	38.4	184.5	0.10	0.62	0.31	10.5	28.5	21.1	2.79	9.0	25	0.12	10.5	0.53	696	1.09	0.042	22.6	150	6.10	0.04	0.12	6.2	1.5	58.5	0.12	2.5	0.079	0.06	0.4	100	<0.1	49.4
71	72340N-35643E	3	0.1	3.28	29.3	143.0	0.06	0.73	0.24	12.4	24.5	18.3	3.96	9.4	15	0.15	8.5	0.74	732	0.57	0.039	17.9	152	1.75	0.02	0.12	10.9	1.5	73.5	0.12	2.1	0.166	0.04	0.4	128	<0.1	84.8
80	71953N-35474E	2	0.1	2.12	26.3	108.5	0.06	0.55	0.21	9.8	36.5	23.9	3.08	6.7	10	0.30	9.5	0.59	810	0.60	0.040	22.3	138	3.24	0.02	0.12	8.1	1.2	69.0	0.10	2.6	0.082	0.04	0.2	88	<0.1	63.8
89	71530N-35378E	2	0.1	1.22	25.4	69.5	0.04	0.35	0.13	6.4	25.5	40.0	2.50	4.3	5	0.04	5.5	0.35	179	0.56	0.031	16.5	144	0.65	0.02	0.08	4.4	1.1	35.5	<0.02	2.4	0.046	<0.02	0.3	102	<0.1	17.2
98	72370N-37633E	1	0.1	2.10	29.7	149.5	0.08	0.37	0.16	8.8	29.0	37.7	2.55	6.0	10	0.08	5.0	0.60	299	0.68	0.028	23.0	495	1.72	0.02	0.10	4.7	1.2	45.0	0.02	2.7	0.057	0.04	0.4	92	<0.1	39.9
106	72079N-37516E	3	0.3	2.22	12.5	111.0	0.08	0.87	0.20	17.5	26.0	256.7	3.48	7.9	15	0.17	7.0	1.13	567	0.38	0.032	18.6	370	11.78	0.04	0.12	5.7	0.5	86.0	0.08	4.1	0.086	0.04	0.5	96	<0.1	69.5
115	71291N-37070E	1	0.1	3.05	20.6	135.5	0.06	0.96	0.07	11.6	22.5	20.9	3.66	9.5	15	0.22	8.0	0.76	393	0.40	0.047	9.0	274	11.12	0.04	0.12	11.8	0.5	71.5	0.08	2.4	0.269	0.04	0.5	112	<0.1	54.0
124	70948N-36966E	<1	<0.1	1.17	19.8	117.0	0.06	0.38	0.04	4.8	20.0	9.7	2.12	4.2	10	0.09	3.0	0.25	353	0.36	0.035	6.6	325	8.29	0.02	0.10	3.3	0.5	28.5	0.02	2.0	0.113	0.06	0.3	68	<0.1	54.6
133	5573970-0632314	3	0.1	1.80	19.4	188.5	0.08	0.82	0.31	10.5	23.0	17.9	2.41	6.2	35	0.12	6.5	0.54	1293	0.57	0.038	12.9	280	9.43	0.04	0.10	3.4	0.5	90.5	0.08	1.4	0.069	0.06	0.3	52	<0.1	81.2
141	5573337-0632185	2	0.1	2.34	19.0	99.5	0.08	0.93	0.16	12.8	34.5	24.0	3.19	8.0	20	0.27	9.5	0.74	914	0.48	0.035	17.4	345	8.11	0.02	0.18	9.2	0.5	75.5	0.10	2.1	0.203	0.06	0.4	98	<0.1	83.8
150	5574501-0632408	4	0.2	1.46	1.8	168.5	0.08	2.20	0.11	9.5	23.5	96.2	2.55	5.3	15	0.18	8.5	0.66	344	0.48	0.034	11.6	411	8.37	0.04	0.12	4.0	0.6	794.5	0.08	2.1	0.076	0.04	0.6	58	<0.1	47.7
159	5573306-0632174	3	0.2	2.75	22.8	75.5	0.08	1.11	0.17	14.4	30.5	37.9	3.62	9.8	25	0.33	10.5	0.87	1039	0.44	0.037	14.7	292	11.84	0.04	0.24	9.3	0.7	83.0	0.08	2.2	0.159	0.06	0.5	102	<0.1	84.1

Standard:

Till-3			1.5	1.08	83.2	41.0	0.30	0.55	0.10	10.1	64.0	20.64	2.08	4.9	130	0.08	15.0	0.58	328	0.68	0.026	32.2	399.0	19.88	0.04	0.56	3.5	0.6	11.5	<0.02	2.8	0.059	0.08	1.3	34	<0.1	36.9
Till-3			1.6	1.03	86.3	40.5	0.29	0.61	0.09	10.1	64.6	21.20	2.12	4.9	113	0.08	15.4	0.63	327	0.66	0.050	32.4	452.2	17.20	0.02	0.65	3.6	0.8	18.9	0.11	2.8	0.051	0.07	1.2	37	<0.1	41.2
Till-3			1.5	1.10	84.4	38.4	0.30	0.62	0.09	10.1	63.8	20.31	2.08	4.7	108	0.08	15.1	0.62	323	0.67	0.055	32.4	451.1	16.57	0.02	0.65	3.5	0.8	17.6	0.10	2.8	0.048	0.07	1.2	36	<0.1	42.3
Till-3			1.4	1.11	85.1	39.0	0.30	0.59	0.09	10.2	64.6	20.33	2.10	4.8	109	0.08	15.4	0.63	325	0.65	0.050	32.8	454.7	15.60	0.02	0.64	3.5	0.8	17.5	0.09	2.8	0.048	0.07	1.2	37	<0.1	40.4
Till-3			1.5	1.09	84.7	39.8	0.29	0.59	0.10	10.0	64.4	21.63	2.09	4.8	110	0.08	15.4	0.62	325	0.65	0.051	32.0	457.9	16.01	0.02	0.69	3.5	0.8	17.9	0.07	2.8	0.051	0.07	1.1	37	<0.1	40.5
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25 to 99 (1)
5 to 24 (13)
-1 to 4 (139)
all others (7)
Appleton Exploration Inc.
APPLETON EXPLORATION INC.
Clapperton Property
2007 Soil Geochemistry
Date:20/5/2008
Author: RTH
Office:
Drawing: Figure 7
Scale: 1:10000
Projection: UTM Zone 10 (NAD 83)
0 125 250 500
metres

ASTER ANALYSIS
Of the
4Block Claim Groups
For
Appleton Exploration Inc.

Prepared for:

Appleton Exploration Inc.
Vancouver, Canada

Prepared by:
Ward E. Kilby
Cal Data Ltd.
August 31, 2007

Table of Contents

INTRODUCTION

Summary

Cal Data Ltd. was contracted by Appleton Resources to acquire and analyze ASTER Multispectral imagery covering what is referred to here as the 4Block Claim Groups in southern British Columbia. The land holdings to be investigated are owned by Appleton Exploration Inc. and are comprised of 4 separate groups of contiguous claims. Five ASTER images were required to provide coverage for these mineral holdings. Two of the images were available for free download from the BC Geological Survey’s MapPlace and three were purchased from the USGS.

Image analysis included converting the images from radiance to relative reflectance values through a process of atmospheric corrections. The images were orthorectified to the UTM zone 10, WGS 84 projection.

Masks were constructed to delete all non-outcrop pixels from analysis calculations. The masks removed pixels underlain by vegetation, water and clouds.

A variety of multispectral analysis procedures were applied to the images in an attempt to identify alteration and/or lithological zones that would be of assistance in field investigations.

The four claim blocks are referred to in this report as #1 through #4 starting in the north and progressing to the south. Image analysis and products are based on individual images rather than the whole area due to the differences in collection dates and early processing of each image.

Unfortunately, the four claim groups suffer from very poor exposure at the scale required for good ASTER analysis (30 metre outcrops). Analysis of the groups consisted of RX-Anomaly analysis which identifies spectral anomalies and provides a very good starting point for subsequent analysis. Four mineral index images were constructed for each group. These indices are referred to as Ferric Iron, Clay, Sericite etc., and Siliceous Rocks. Additional analyses that are often performed include Crosta Analysis and Library spectra matching but these techniques were not used for these areas due to the limited outcrop and the limited additional information they could provide.

While the claim groups themselves contained limited outcrop, portions of the analyzed images provided excellent examples of the analysis techniques utilized in the study. Very good results were obtained from the images examined, but not within the claim areas. This confirmed that the techniques worked, but that the exposure within the claim areas were insufficient to provide significant patterns or obvious spectral targets.

The products of the analysis are provided in GeoTIFF format so they can be easily integrated into any common GIS and some of the products are incorporated into a Google

Earth file for easy viewing.

Area and Image

The 4Block Claims include four blocks with a total of 106 individual claim units totaling 48,186.6 ha. (Figure 1). (Figure 2a-d).

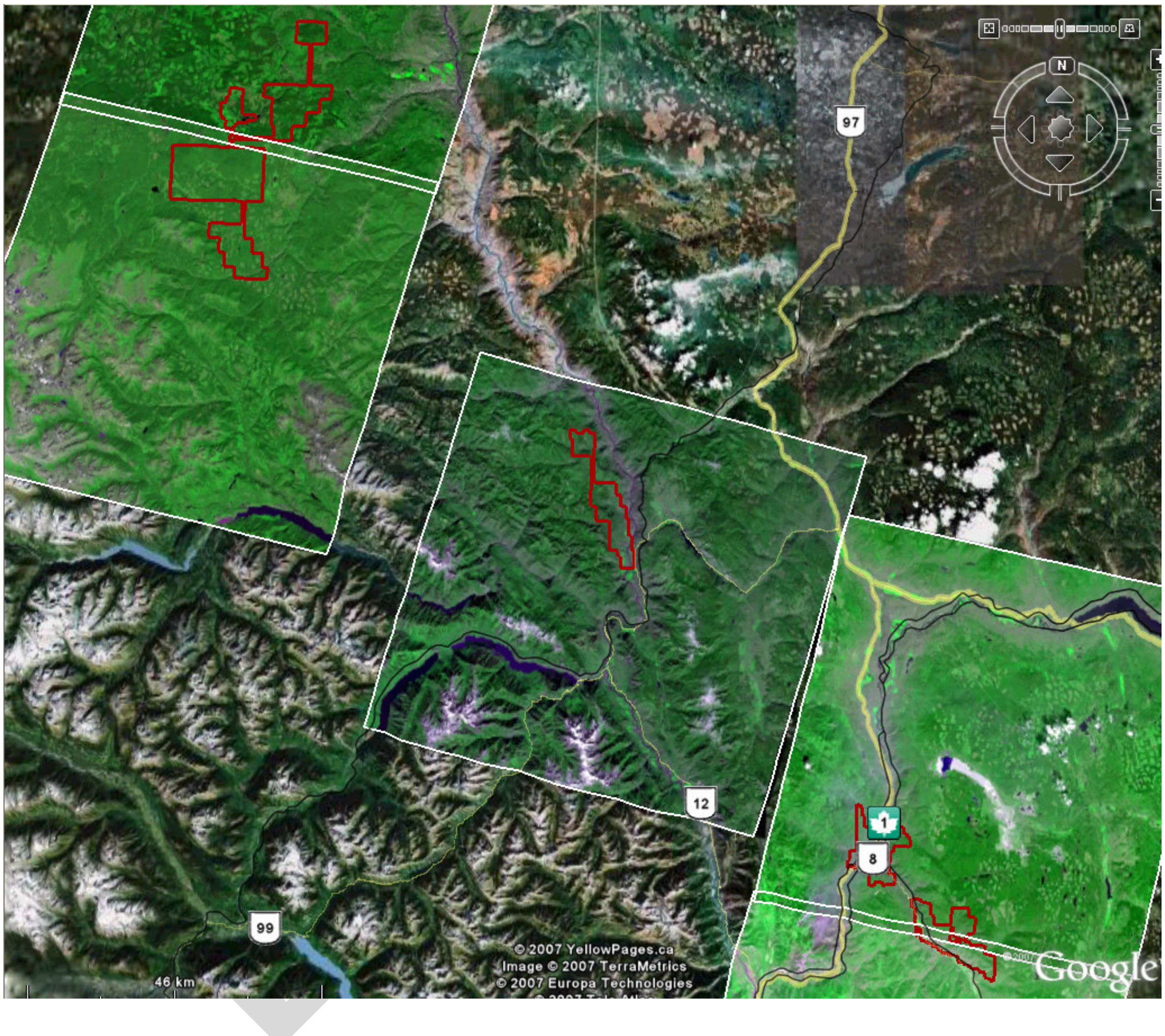

Figure 1. Google Earth view of the claim block (red) and five ASTER image outlines (white).

Tenure Number	Type	Claim Name	Good Until	Area (ha)
533486	Mineral	GASPARD 1	20080503	503.021
533487	Mineral	GASPARD 2	20080503	483.093
533488	Mineral	GASPARD 3	20080503	503.452
533489	Mineral	GASPARD 4	20080503	503.442
533490	Mineral	STOBIE 1	20080503	503.002
533491	Mineral	STOBIE 2	20080503	503.01
533492	Mineral	STOBIE 3	20080503	502.914
533493	Mineral	STOBIE 4	20080503	503.26
533494	Mineral	STOBIE 5	20080503	503.487
533498	Mineral	LITTLE 1	20080503	503.715
533499	Mineral	LITTLE 2	20080503	503.561
533500	Mineral	LITTLE 3	20080503	503.37
533501	Mineral	LITTLE 4	20080503	503.21
533502	Mineral	LITTLE 5	20080503	503.114
533504	Mineral	LITTLE 6	20080503	301.871
533505	Mineral	LITTLE 7	20080503	502.874
533506	Mineral	LITTLE 8	20080503	502.887
533519	Mineral	WEST 1	20080503	485.814
533520	Mineral	WEST 2	20080503	485.52
533521	Mineral	WEST 3	20080503	505.569
533522	Mineral	WEST 4	20080503	505.552
533523	Mineral	WEST 5	20080503	404.664
533524	Mineral	WEST 6	20080503	505.408
533525	Mineral	WEST 7	20080503	505.425
533526	Mineral	WEST 8	20080503	202.175
533527	Mineral	WEST 9	20080503	505.237
533528	Mineral	WEST 10	20080503	505.284
533529	Mineral	WEST 11	20080503	303.162
533530	Mineral	HUNGRY 1	20080503	504.57
533531	Mineral	HUNGRY 2	20080503	504.344
533532	Mineral	HUNGRY 3	20080503	504.116
533533	Mineral	HUNGRY 4	20080503	403.13
533534	Mineral	HUNGRY 5	20080503	483.77
533535	Mineral	HUNGRY 6	20080503	483.944
533536	Mineral	HUNGRY 7	20080503	484.119
533537	Mineral	HUNGRY 8	20080503	484.293
533538	Mineral	HUNGRY 9	20080503	363.335
533539	Mineral	WALES 1	20080503	484.423
533540	Mineral	WALES 2	20080503	484.249
533541	Mineral	WALES 3	20080503	484.074
533542	Mineral	WALES 4	20080503	483.9
533543	Mineral	WALES 5	20080503	362.81
533544	Mineral	WALES 6	20080503	483.951
533545	Mineral	WALES 7	20080503	484.131
533546	Mineral	WALES 8	20080503	484.312
533547	Mineral	WALES 9	20080503	484.491
533548	Mineral	WALES 10	20080503	363.487
533549	Mineral	STOBART 1	20080503	484.653
533551	Mineral	STOBART 2	20080503	484.473
533552	Mineral	STOBART 3	20080503	484.292
533553	Mineral	STOBART 4	20080503	484.111
533554	Mineral	STOBART 5	20080503	362.969
533555	Mineral	STOBART 6	20080503	504.104
533556	Mineral	STOBART 7	20080503	504.317
533557	Mineral	STOBART 8	20080503	504.538
533558	Mineral	STOBART 9	20080503	403.789
533559	Mineral	ALEX 1	20080503	481.772
533560	Mineral	ALEX 2	20080503	481.936
533561	Mineral	ALEX 3	20080503	401.612
533562	Mineral	ALEX 4	20080503	401.475
535745	Mineral	ALEX 5	20080503	301.467
535747	Mineral	JOIN 2	20080503	443.378
535748	Mineral	JOIN 3	20080503	161.626

Total Area: 28953.054 ha

Figure 2a. MTO table with details of Block #1.

Tenure Number	Type	Claim Name	Good Until	Area (ha)
533507	Mineral	MCKAY 1	20080503	488.834
533508	Mineral	MCKAY 2	20080503	488.837
533510	Mineral	MCKAY 3	20080503	488.822
533511	Mineral	MCKAY 4	20080503	162.966
533512	Mineral	MCKAY 5	20080503	509.501
533513	Mineral	MCKAY 6	20080503	489.074
533514	Mineral	SLOK 1	20080503	489.291
533515	Mineral	SLOK 2	20080503	366.967
533516	Mineral	SLOK 3	20080503	509.926
533517	Mineral	SLOK 4	20080503	509.99
533518	Mineral	SLOK 5	20080503	448.987
533563	Mineral	LEON 1	20080503	447.207
533564	Mineral	LEON 2	20080503	488.09
533565	Mineral	LEON 3	20080503	488.077
535749	Mineral	JOIN 4	20080503	183.17

Total Area: 6559.739 ha

Figure 2b. MTO table with details of Block #2.

Tenure Number	Type	Claim Name	Good Until	Area (ha)
532031	Mineral	PEMY 1	20080413	514.37
532032	Mineral	PEMY 2	20080413	493.78
532034	Mineral	PEMY 3	20080413	370.135
532036	Mineral	PEMY 4	20080413	514.331
532037	Mineral	PEMY 5	20080413	514.372
532038	Mineral	PEMY 6	20080413	390.757
532039	Mineral	SPENCE 1	20080413	493.982
532040	Mineral	SPENCE 2	20080413	514.723
532041	Mineral	SPENCE 3	20080413	514.558
532042	Mineral	SPENCE 4	20080413	452.916
532043	Mineral	SPENCE 5	20080413	494.167
532044	Mineral	SPENCE 6	20080413	453.155
532045	Mineral	SPENCE 7	20080413	432.579

Total Area: 6153.825 ha

Figure 2c. MTO table with details of Block #3.

Tenure Number	Type	Claim Name	Good Until	Area (ha)
532048	Mineral	SOLDAT 1	20080413	515.39
532049	Mineral	SOLDAT 2	20080413	474.369
532051	Mineral	SOLDAT 3	20080413	495.096
532052	Mineral	SOLDAT 4	20080413	474.539
532053	Mineral	SOLDAT 5	20080413	495.269
532055	Mineral	PAPSIL 1	20080413	494.825
532056	Mineral	PAPSIL 2	20080413	515.664
532058	Mineral	SHACK 1	20080413	454.094
532060	Mineral	SHACK 2	20080413	412.802
532061	Mineral	SHACK 3	20080413	516.177
532062	Mineral	SHACK 4	20080413	412.919
532064	Mineral	SHACK 5	20080413	351.1
532106	Mineral	SHACK 6	20080413	309.598
532107	Mineral	PAPSIL 3	20080413	515.672
548939	Mineral	CLAPPER	20080109	82.487

Total Area: 6520.001 ha

Figure 2d. MTO table with details of Block #4.

The image metadata for the five images used in the analysis are contained in Figure 3. The image names used in this report are the last 4 or 5 digits of the ASTER gradicule name. The images were obtained with a level L1B processing, which is 'at sensor radiance'. The claim boundaries and the outline of the ASTER images are shown on a Google Earth display in Figure 1. The original ASTER image data is contained in Appendix 1.

Dataset Attribute	Attribute Value
Level 1A Scene ID	SC:AST_L1A.003:2030358711
Acquisition Date	2005/08/06
WRS-2 Path	046
WRS-2 Row	025
Upper Left Corner	50°54'54"N, 121°23'48"W
Upper Right Corner	50°47'34"N, 120°31'58"W
Lower Left Corner	50°22'02"N, 121°37'18"W
Lower Right Corner	50°14'47"N, 120°46'02"W
Scene Center	50°34'49"N, 121°04'46"W
Scene Cloud Cover	0%
SWIR Mode	ON
TIR Mode	ON
VNIR1 Mode	ON
VNIR2 Mode	ON
Day or Night	Day
Orbital Direction	Descending
Sun Elevation	53.840395
Sun Azimuth	155.426316
Acquisition Time	19:11:35.1840000
VNIR Pointing Angle	-2.8700000
TIR Pointing Angle	-2.8530000
SWIR Pointing Angle	-2.8350000

Dataset Attribute	Attribute Value
Level 1A Scene ID	SC:AST_L1A.003:2030358718
Acquisition Date	2005/08/06
WRS-2 Path	046
WRS-2 Row	025
Upper Left Corner	50°23'26"N, 121°36'43"W
Upper Right Corner	50°16'10"N, 120°45'26"W
Lower Left Corner	49°50'33"N, 121°49'58"W
Lower Right Corner	49°43'22"N, 120°59'15"W
Scene Center	50°03'23"N, 121°17'51"W
Scene Cloud Cover	0%
SWIR Mode	ON
TIR Mode	ON
VNIR1 Mode	ON
VNIR2 Mode	ON
Day or Night	Day
Orbital Direction	Descending
Sun Elevation	54.306156
Sun Azimuth	154.828048
Acquisition Time	19:11:44.2400000
VNIR Pointing Angle	-2.8700000
TIR Pointing Angle	-2.8530000
SWIR Pointing Angle	-2.8350000

Dataset Attribute	Attribute Value
Level 1A Scene ID	SC:AST_L1A.003:2036618655
Acquisition Date	2006/09/01
WRS-2 Path	048
WRS-2 Row	024
Upper Left Corner	52°01'46"N, 122°59'21"W
Upper Right Corner	51°54'25"N, 122°05'43"W
Lower Left Corner	51°28'53"N, 123°13'00"W
Lower Right Corner	51°21'37"N, 122°19'58"W
Scene Center	51°41'40"N, 122°39'30"W
Scene Cloud Cover	0%
SWIR Mode	ON
TIR Mode	ON
VNIR1 Mode	ON
VNIR2 Mode	ON
Day or Night	Day
Orbital Direction	Descending
Sun Elevation	44.906906
Sun Azimuth	161.088786
Acquisition Time	19:17:46.4470000
VNIR Pointing Angle	-5.7320000
TIR Pointing Angle	-5.7000000
SWIR Pointing Angle	-5.7290000

Dataset Attribute	Attribute Value
Level 1A Scene ID	SC:AST_L1A.003:2036618659
Acquisition Date	2006/09/01
WRS-2 Path	048
WRS-2 Row	024
Upper Left Corner	51°30'17"N, 123°12'25"W
Upper Right Corner	51°23'01"N, 122°19'22"W
Lower Left Corner	50°57'24"N, 123°25'49"W
Lower Right Corner	50°50'13"N, 122°33'22"W
Scene Center	51°10'14"N, 122°52'44"W
Scene Cloud Cover	0%
SWIR Mode	ON
TIR Mode	ON
VNIR1 Mode	ON
VNIR2 Mode	ON
Day or Night	Day
Orbital Direction	Descending
Sun Elevation	45.491503
Sun Azimuth	160.614241
Acquisition Time	19:17:55.2870000
VNIR Pointing Angle	-5.7320000
TIR Pointing Angle	-5.7000000
SWIR Pointing Angle	-5.7290000

Dataset Attribute	Attribute Value
Level 1A Scene ID	SC:AST_L1A.003:2037241480
Acquisition Date	2006/09/24
WRS-2 Path	047
WRS-2 Row	025
Upper Left Corner	51°08'13"N, 122°13'02"W
Upper Right Corner	50°59'42"N, 121°20'04"W
Lower Left Corner	50°35'34"N, 122°28'06"W
Lower Right Corner	50°27'10"N, 121°35'42"W
Scene Center	50°47'40"N, 121°54'13"W
Scene Cloud Cover	1%
SWIR Mode	ON
TIR Mode	ON
VNIR1 Mode	ON
VNIR2 Mode	ON
Day or Night	Day
Orbital Direction	Descending
Sun Elevation	37.776640
Sun Azimuth	168.603294
Acquisition Time	19:23:53.9510000
VNIR Pointing Angle	8.5879999
TIR Pointing Angle	8.5670000
SWIR Pointing Angle	8.5030000

Figure 3. Metadata for the five ASTER images 22861, 22859, 2610, 2638 and 22749 2394 (book style).

IMAGE ANALYSIS

Pre-analysis Processing (preprocessing)

Raw ASTER images require a number of preprocessing steps to transform the raw data values into relatively standard values. In the case of this study these standard values are relative reflectance. The relative reflectance spectrum of a mineral has the same shape as a true reflectance spectrum but the values may not be true. In most cases it is the shape of the spectra and the relative band values that are used in any analysis. The image pixels are also spatially adjusted to conform to the UTM map projection. Orthorectification is employed to compensate for the effects of topography in this spatial adjustment.

Step 1- Cross Talk correction: due to a design flaw in the ASTER SWIR instrument there is some leakage of light between bands. This problem can be largely corrected by running a corrective routine on the raw data (CTIO.exe).

Step 2- Orthorectification, gain and offset: The raw ASTER data is shipped in a format where the pixel values are simple DN (digital numbers). To convert these values to ‘at sensor radiance’ specific gains and offsets must be applied. The ASTERdtm program makes these corrections at the same time that it orthorectifies the VNIR, SWIR and TIR image bands. As part of the orthorectification process a DEM is generated from the ASTER data to provide the basis of the orthorectification. The result of this step is orthorectified ‘at sensor radiance’ data.

Step 3- Atmospheric correction was performed using specialized software called ACORN5 that compensates for the effects of atmospheric gases on the amount of light energy that penetrates and is reflected by the atmosphere. The original ASTER data is in the form of ‘at sensor radiance’ that is a measure of the amount of light the satellite sensor receives from all sources. A significant amount of the light that the sensor sees is reflected from the atmosphere and never reached the ground surface. This light obviously provides no information about the ground features and should be removed. The atmosphere also absorbs or otherwise scatters some of the light reflected from the ground surface. This missing light at the sensor is calculated by knowing the incident light value and general atmospheric conditions. Water vapour has the largest effect on the ability of light to penetrate the atmosphere. The relative reflectance values obtained from this process provide a spectra shape similar to what would be obtained with a field spectrometer or in a laboratory setting. This processing is essential so that the various band measurements at a given pixel have standard relative values. Otherwise, the standard ratios and band formula used to identify minerals or mineral groups would be of little value. Figure 4 contains a view of the input panel for these calculations and records the values utilized for the five images. The elevations used were the average elevation of good rock exposure in the claim blocks.

Step 4- All 14 VNIR, SWIR and TIR bands were used during this study. These bands are collected by three different sensors on the space platform. The VNIR bands are 15 metres wide (1-3), the SWIR are 30 metres wide (4-9) and the TIR are 90 metres wide (10-14). A single file, stack, is constructed to bring these three data sets together. During this process the SWIR and TIR bands are sub sampled and converted to 15 metre pixels. It is this ‘stack’ that is used in subsequent analysis where VNIR, SWIR and TIR bands are involved.

The atmospherically corrected and orthorectified image files are available in ENVI *.BIL format in Appendix 2. Also included in Appendix 2 is the digital elevation model that was produced as a product of the orthorectification process.

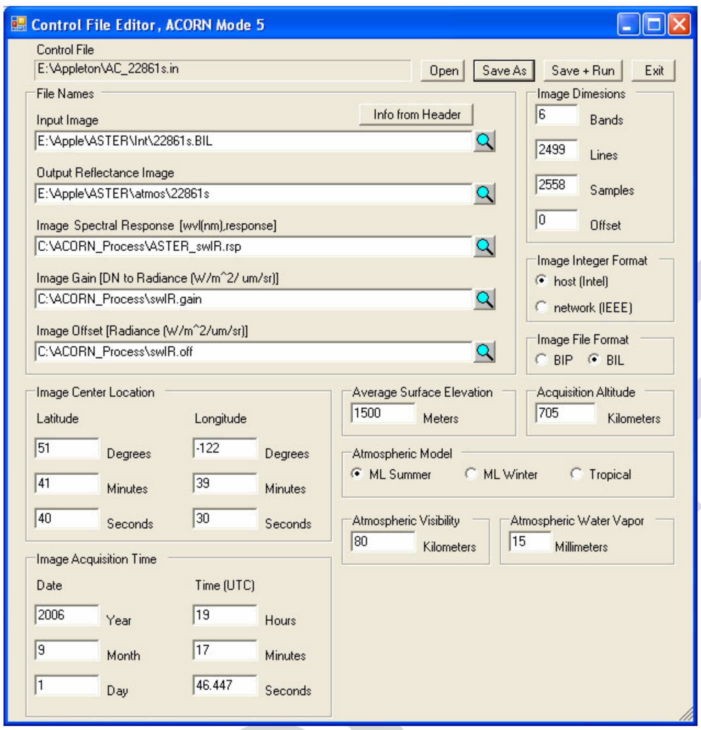

Figure 4a. Input panel for the ACORN5 atmospheric correction process for the SWIR bands of image 22861.

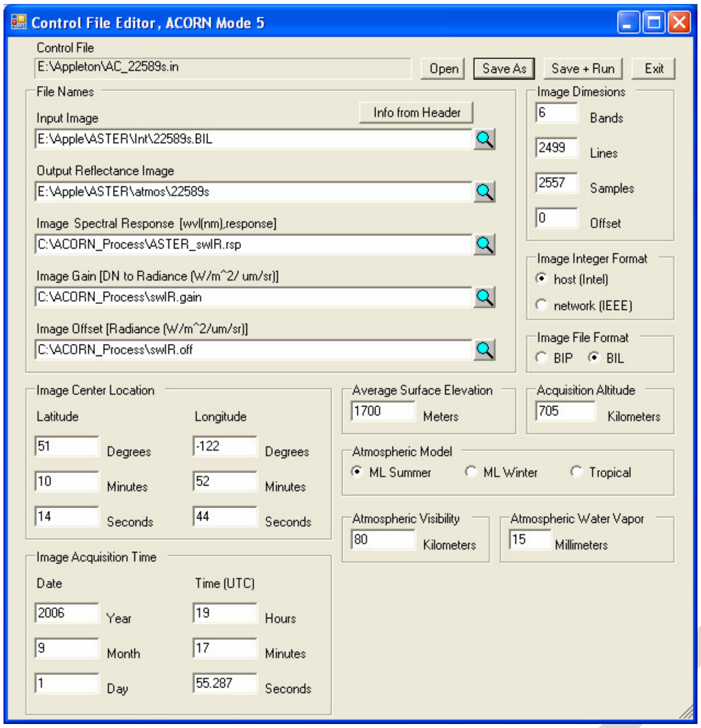

Figure 4b. Input panel for the ACORN5 atmospheric correction process for the SWIR bands of image 22859.

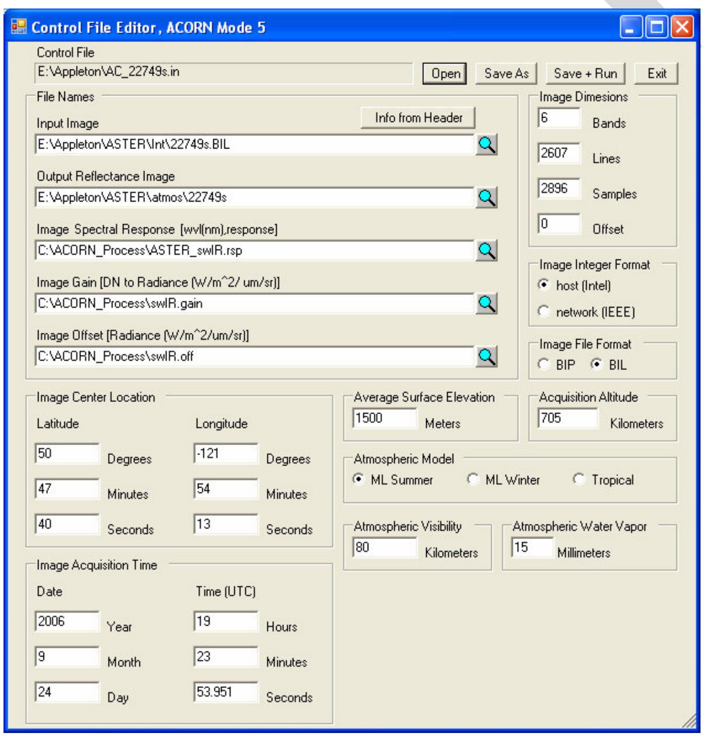

Figure 4c. Input panel for the ACORN5 atmospheric correction process for the SWIR bands of image 22749.

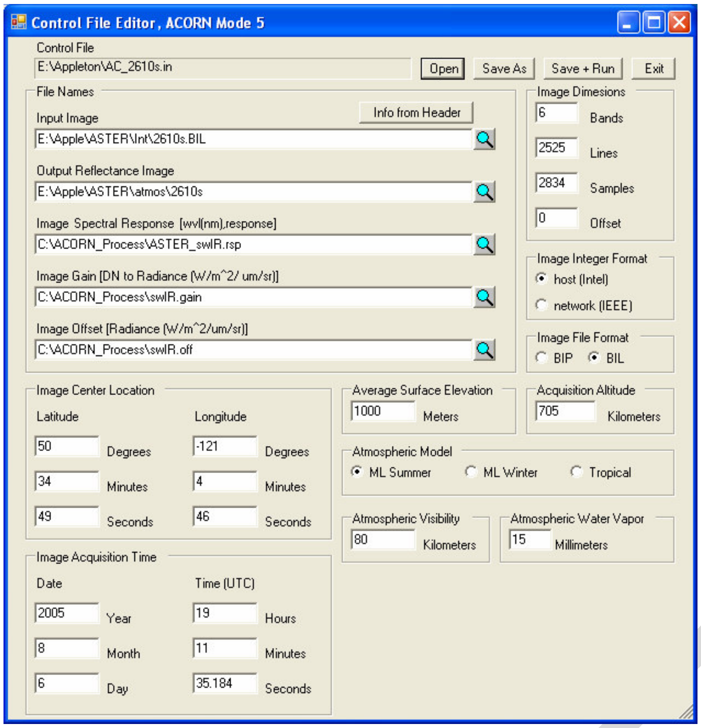

Figure 4d. Input panel for the ACORN5 atmospheric correction process for the SWIR bands of image 2610.

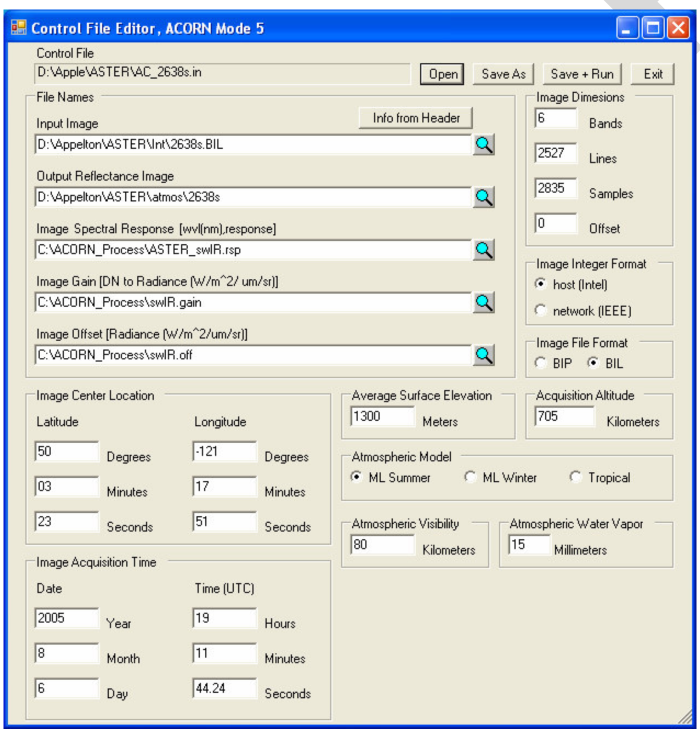

Figure 4e. Input panel for the ACORN5 atmospheric correction process for the SWIR bands of image 2638.

Analysis

Natural Colour Image- The product generated from the corrected ASTER data is a near-natural colour image. ASTER does not sample the blue range of the electromagnetic spectrum so the resulting image is only an approximation to what one would see if viewing the natural scene. In this study the three VNIR bands were used to generate this view. Band 2 was used to represent RED, band 3 for GREEN and band 1 for BLUE. This band combination was then stretched and enhanced to create images that distinguished between rocks and vegetation as well as possible. The images have 15 metre pixels and are available in Appendix 3 as GeoTiffs (####NatCol.TIF).

Masking- Most images contain a wide variety of surface material such as rocks, water, vegetation, snow, ice and clouds. Any material that is not a rock exposure only serves to confuse and dilute any analysis of the spectral characteristics of the rocks. For this reason masking is commonly performed to blank out all the pixels that do not represent rock exposures. In this analysis VNIR and SWIR bands are used. The SWIR pixels are 30 metres and the VNIR pixels are 15 metres. The mask was produced using 15 metre VNIR bands to retain as much detail as possible. Green vegetation is identified with the NDVI transform that maps the chlorophyll content of a pixel. By picking the proper threshold value all the green vegetation can be removed from further consideration. Near the edges of the image there often is a difference in the coverage between sensors and bands. To avoid any spurious results caused by some missing measurements a mask that removes the edges of the image was constructed. A snow-water mask was created to remove these features from the image. VNIR band 3 is used to identify these features. Values below a selected threshold can define water and severe shadows while values above a selected threshold identify snow and clouds. Clouds are often difficult to identify spectrally near their edges where they are translucent. Often it is only possible to spot thin wisps of clouds by the shadows they cast. The dense portions of clouds have been removed by the masking process, but the wisps around the edges remain and care must be exercised when interpreting areas near clouds so only valid pixels are examined.

These masks are combined into a single mask file that displays only the pixels that are underlain by rock exposure. Any analysis that is based on more than a pixel by pixel calculation has this mask applied to remove the influence of non-rock materials. This mask can be useful as an outcrop locator as it shows the distribution of rocks or bare ground. This image is available in Appendix 3 as ‘SuperMask.tif’. Figures 5a – 5c display the distribution of masked pixels relative to the 4 claim blocks.

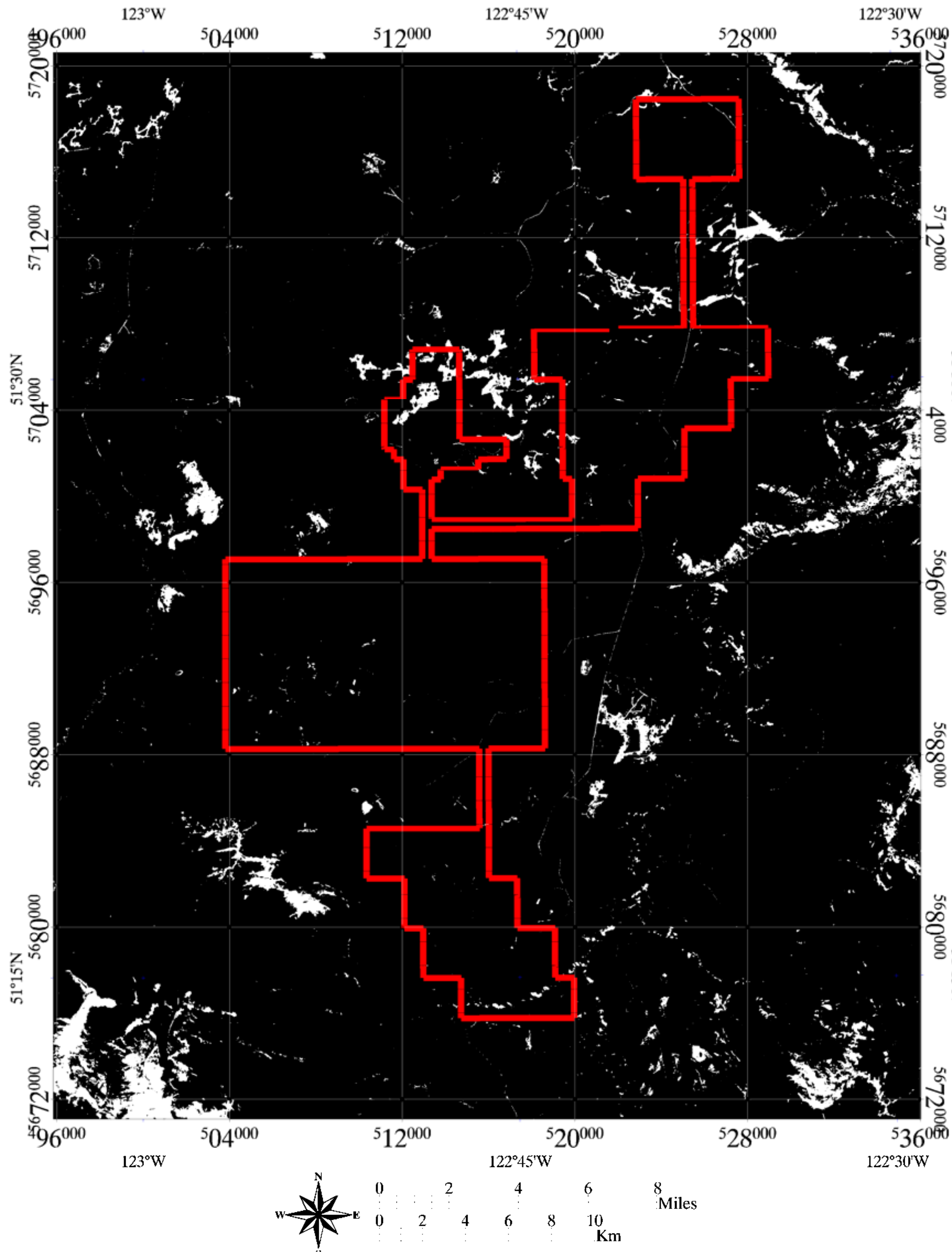

Figure 5a. Block #1 tenure area (red) showing the distribution of non-green vegetated areas in white.

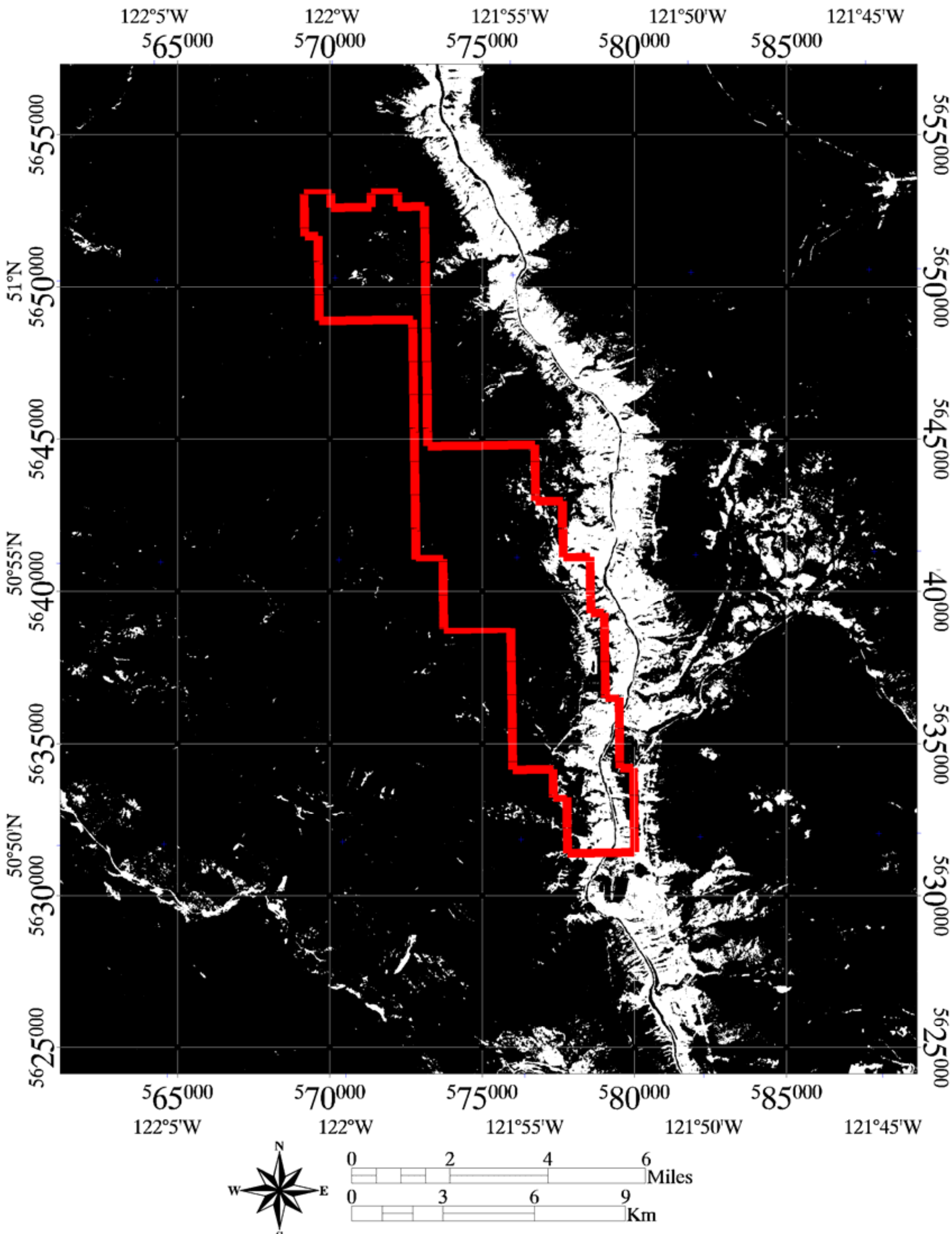

Figure 5b. Block #2 tenure area (red) showing the distribution of non-green vegetated areas in white.

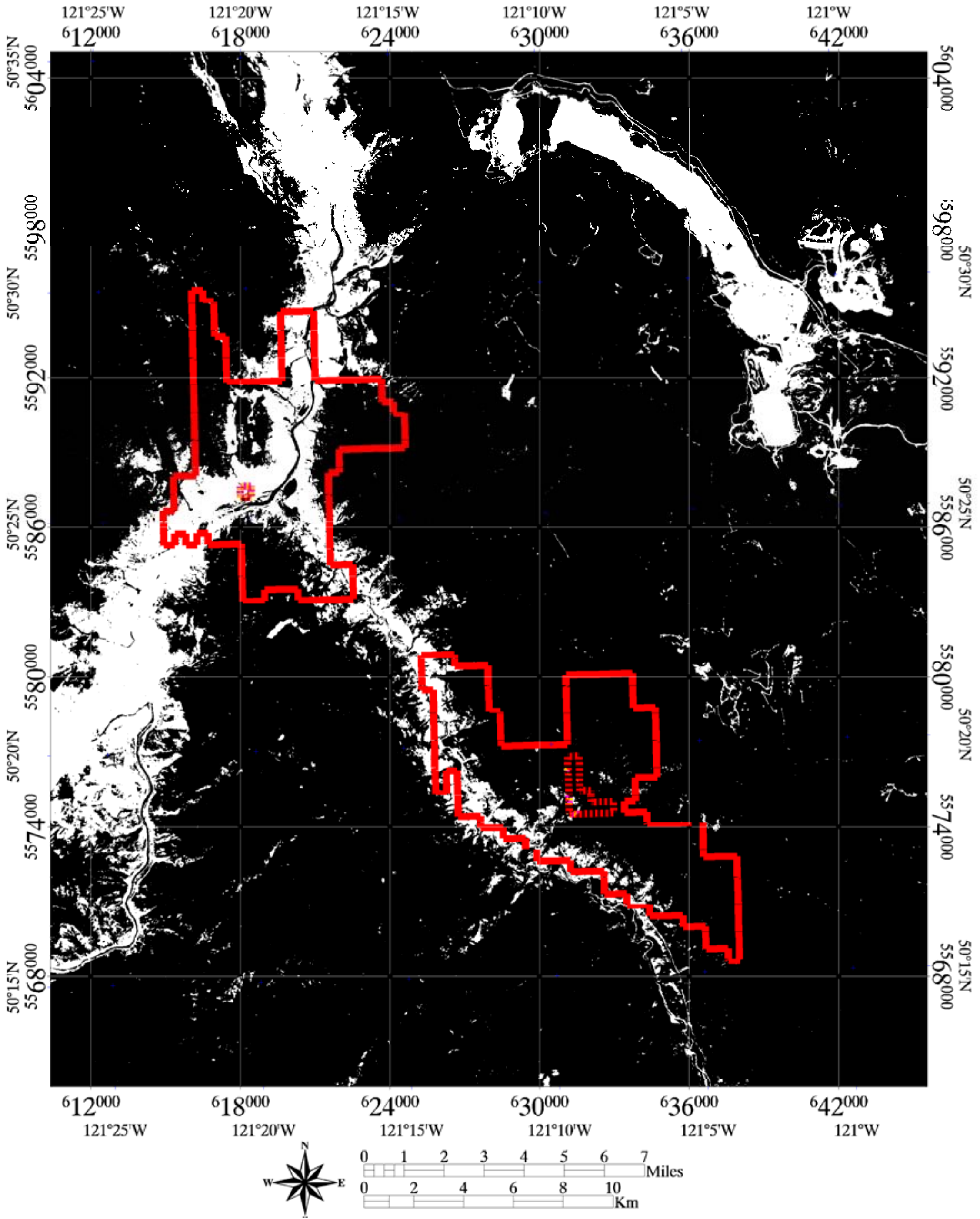

Figure 5c. Block #3 and #4 tenure area (red) showing the distribution of non-green vegetated areas in white.

RX Anomaly Detection- A relatively new tool in ENVI is the RX Anomaly Detection tool (Reed-Xiaoli Detector (RXD)). This algorithm extracts targets that are spectrally distinct from the image background. For RXD to be effective, the anomalous targets must be sufficiently small, relative to the background. Results from RXD analysis are unambiguous and have proven very effective in detecting subtle spectral features. The RXD analysis was run on the 9 VNIR and SWIR bands in the stack with the SuperMask applied on the full image. The resulting spectral anomalies rapidly identify features of potential interest. These features may be mineral related, but could just as easily be things like buildings, small ponds or small outcrops within a vegetated area. The anomaly image can be examined while referring to the natural colour image to identify spectral anomalies that are related to geology. These anomalous areas can then be examined in more detail. The image maps displaying the RX-Anomalies are in greyscale with the brightest pixels representing the strongest anomalies. These image maps are provided in Appendix 3 as GeoTiffs and are included in the Google Earth KMZ file. Image 2610 contains some spectacular RX anomalies related to the altered zone in the Highland Valley pit and an active forest fire. This image also contains a number of small playas with evaporitic minerals around their edges.

There are no good RX-Anomalies in **Block#1** although there are some very good geology related anomalies in the mountainous areas to the southeast of the claim block in image 22859.

Block#2 is also mostly covered with vegetation but there are a few weak spectral anomalies along the river valley. However these appear to be exposures of river terraces rather than outcrops.

Block#3 appears to contain no good RX-Anomalies although image 2610 as discussed above has some very spectacular anomalies related to forest fires and mines. Some valley side exposures may provide some interesting spectral information when examined with other tools but are relatively subdued when compared to some of the other strong anomalies in the scene.

Block#4 does not appear to have any geology related RX-Anomalies but there is at least one very strong spectral anomaly that is related to human activity.

No figures of these images are included in this text due to the difficulty of viewing these images at the available scale but they can be easily interactively examined by using the KMZ file contained in Appendix 3.

Mineral Indices- ASTER band ratios and band combinations have been used by past workers in a variety of metallogenic provinces to map the distribution of potential alteration minerals in the search for economic minerals. A suite of these band combinations (22) were run on these images. Each combination was evaluated to determine if it provided a pattern that related to geology that could be useful in the exploration process. The spectra of the highest ranked pixels were examined and compared with laboratory spectra to test if the specific mineral index was in fact identifying the desired mineral. Three groups of mineral indices were run: 1) Iron related, 2) Clays and 3) Silica related. In each group all the images were examined and the most relevant images were retained. These ratios and band combinations have been developed for a wide range of environments and only some may be relevant to this specific area and conditions. The images return different absolute values for the same indices over the same feature due to their different collection dates, the prevailing environmental conditions, masking results and the condition of the sensors. For these reasons the images should be examined separately and the ranges of values should be considered relative only to the image being examined. However, the two sets of two images that were collected at the same time (consecutive images) should have very similar results. Caution must also be exercised in dealing with any index that employs SWIR bands due to a scratch on a filter in the instrument. This scratch results in anomalous values in a NE-SW direction a bit to the west of the centre of the image. A satisfactory correction has not been applied to the images used in this report.

Page sized illustrations of these mineral index images are presented in this text but due to the limitations of this scale many of the smaller features will not be apparent. The complete ASTER images illustrating each of these indices are contained in Appendix 3 as GeoTiffs and are included in the Google Earth KMZ file. A three part classification has been used for all these images where BLUE represents pixels with an index value between the population mean and 1 standard deviation above the mean. Green represents index values between one and 2 standard deviations above the mean and Red represents all pixels with index values greater than 2 standard deviations above the mean index value.

Six indices were run to examine iron related features. These indices utilized bands from the VNIR and SWIR range. The limited outcrop within the claim blocks in many of the images made interpretation very difficult. However, in well exposed areas of some images, very good geologically related index patterns were observed.

In **Block#1** where images 22861 and 22859 were used the Ferric Iron (Band2/Band1) index provided the best results (Figure 6a). In the claim area the index did not provide any good information but rather identified wood trash in cut blocks. However, in image 22859 very prominent iron stained zones were identified to the southwest of the claims in areas of better exposure due to topographic relief (best seen in KMZ file).

In **Block#2** image 22749 provides complete coverage for the claim block. In this area the Ferric Iron Index primarily maps the dry grass of the river valley (Figure 6b). A single pixel anomaly occurs at 576826E & 5635559N and a much larger anomalous area occurs at 571757E & 5651624N. The first occurrence is in a natural exposure and the second is related to a logged area; the index may be identifying dead plant matter rather than iron bearing minerals.

In **Block#3** image 2610 provides complete coverage for this claim block. There are no anomalous Ferric Iron Index values in the claim block but there are several zones of elevated values that coincide with exposed valley wall material (Figure 6c).

In **Block#4** images 2610 and 2638 provide coverage for the claims. There are only a very few anomalous Ferric Iron Index pixels in this claim block and they are closely related to the stream bed (Figure 6c).

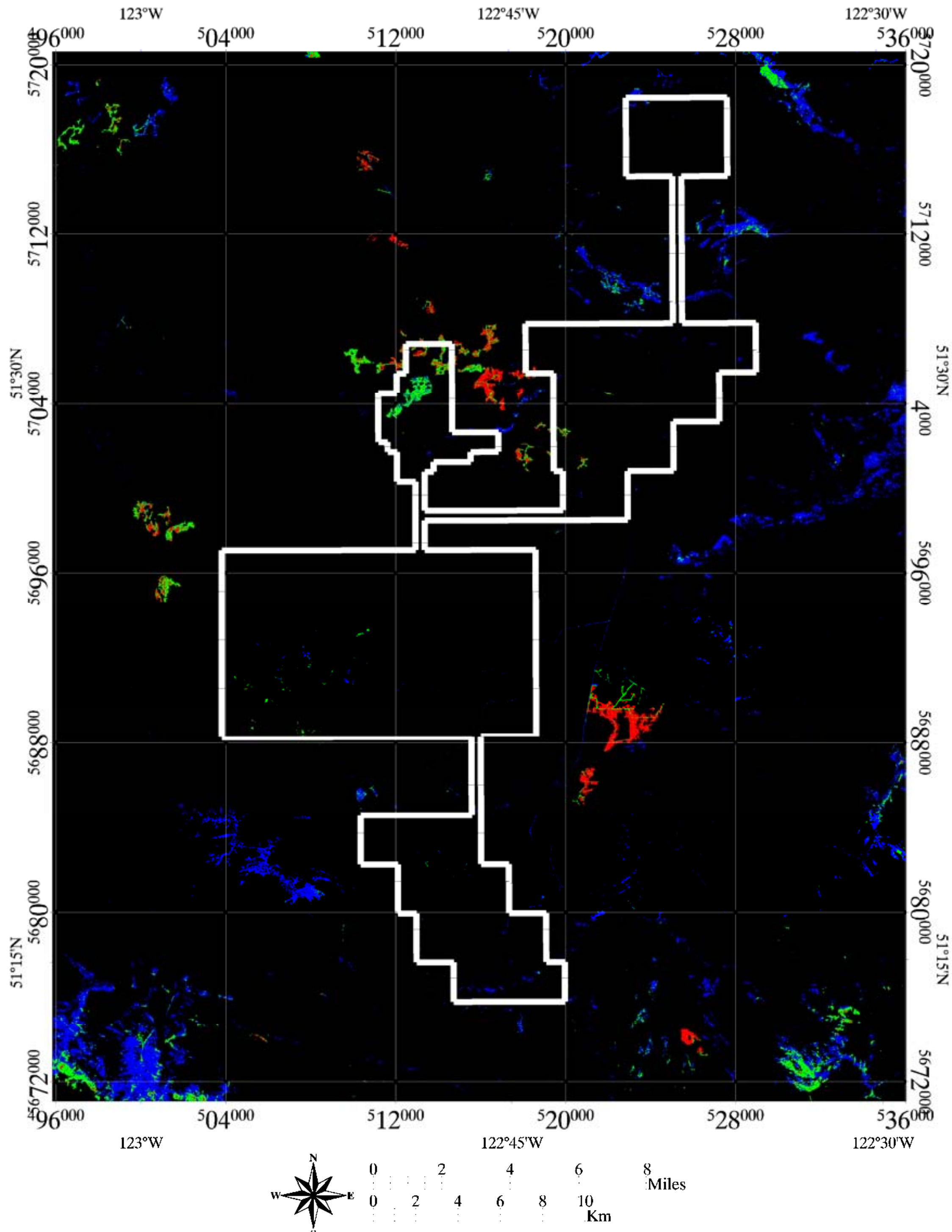

Figure 6a. Block #1 claims with the Ferric Iron mineral index displayed. Likelihood of the target mineral being present increases from blue to green to red.

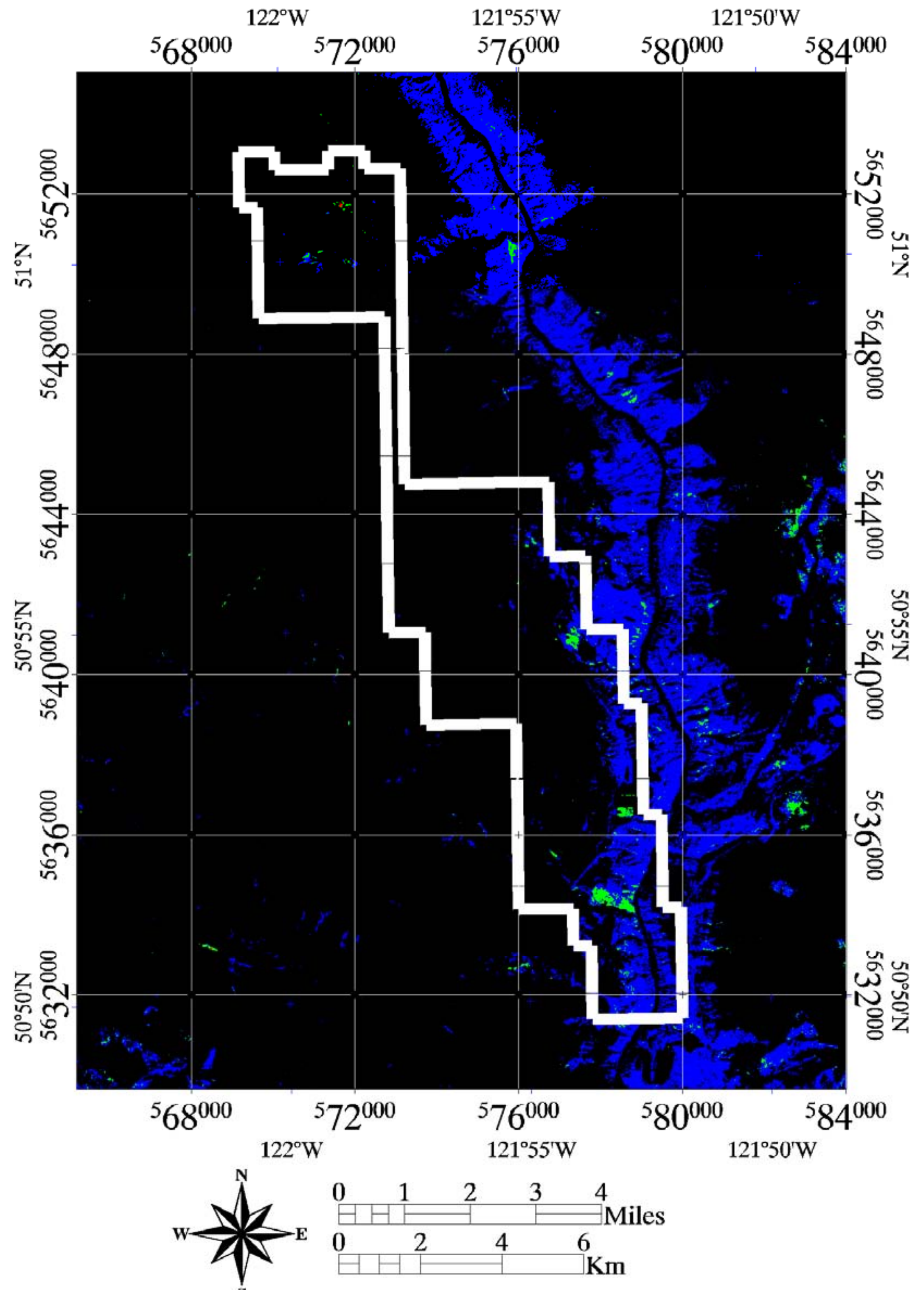

Figure 6b. Ferric Iron Mineral Index image for Block #2.

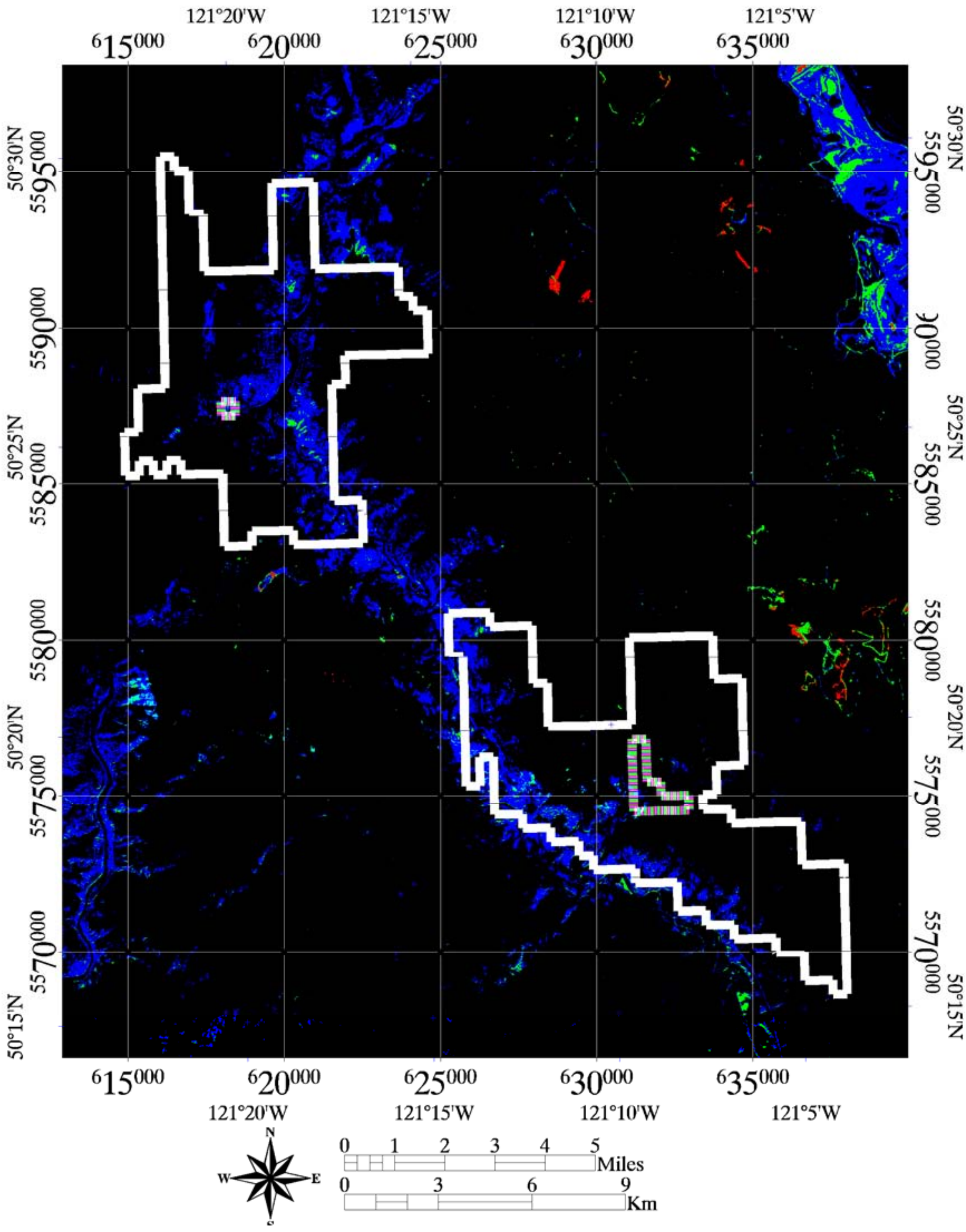

Figure 6c. Ferric Iron Mineral Index map for Block#3 (top) and Block#4.

Seven indices were run to examine clay related features. The clay ratios and band combinations use bands from the SWIR portion of the ASTER bands. Several of the clay indices provided patterns related to exposed geology in the areas of good relief outside the claim blocks. Two indices were mapped. These were the indices referred to as '**Sericite**/Muscovite/Illite/Smectite' ((band5+band7)/band6) and '**Clay**' ((band5*band7)/band6$^{2)}$. Only the Sericite mineral maps are displayed in this text, however, both the Clay and Sericite indices images are available in Appendix 3.

In **Block#1** this index does not identify any anomalous pixels in the claim area. There is an area of apparent anomalous values near 511732E & 5703513N (Figure 7a) but this is related to the scratch on the SWIR filter and does not represent a true value. In image 22859 to the southwest of the southern portion of Block#1 this index identifies significant areas that are anomalous. These areas are also obvious in the natural colour image.

In **Block#2** this index identifies anomalous pixels along the river bands but nowhere else.

In **Block#3** anomalous index values are associated with cliffs and slumps along the river valleys (for example at 620274E & 5587000N). There is also a problem with smoke from a forest fire burning in the southwest portion of this image. The valley cliffs are likely exposing glacial deposits, but there are two small anomalies which are likely caused by bedrock at 619674E & 5590165N and 621834E & 5587615N (Figure 7c).

In **Block#4** virtually all the anomalous Sericite Mineral Index values are closely related to river beds. The index may be picking up clays in the stream bed or it may be an effect of moisture related to the stream. There is one larger area that appears to be a freshly ploughed field at 630642E & 5572139N (Figure 7c). It is likely that this anomaly is not related to any mineralization but its relationship to other indicators should be checked. It may be a freshly watered field.

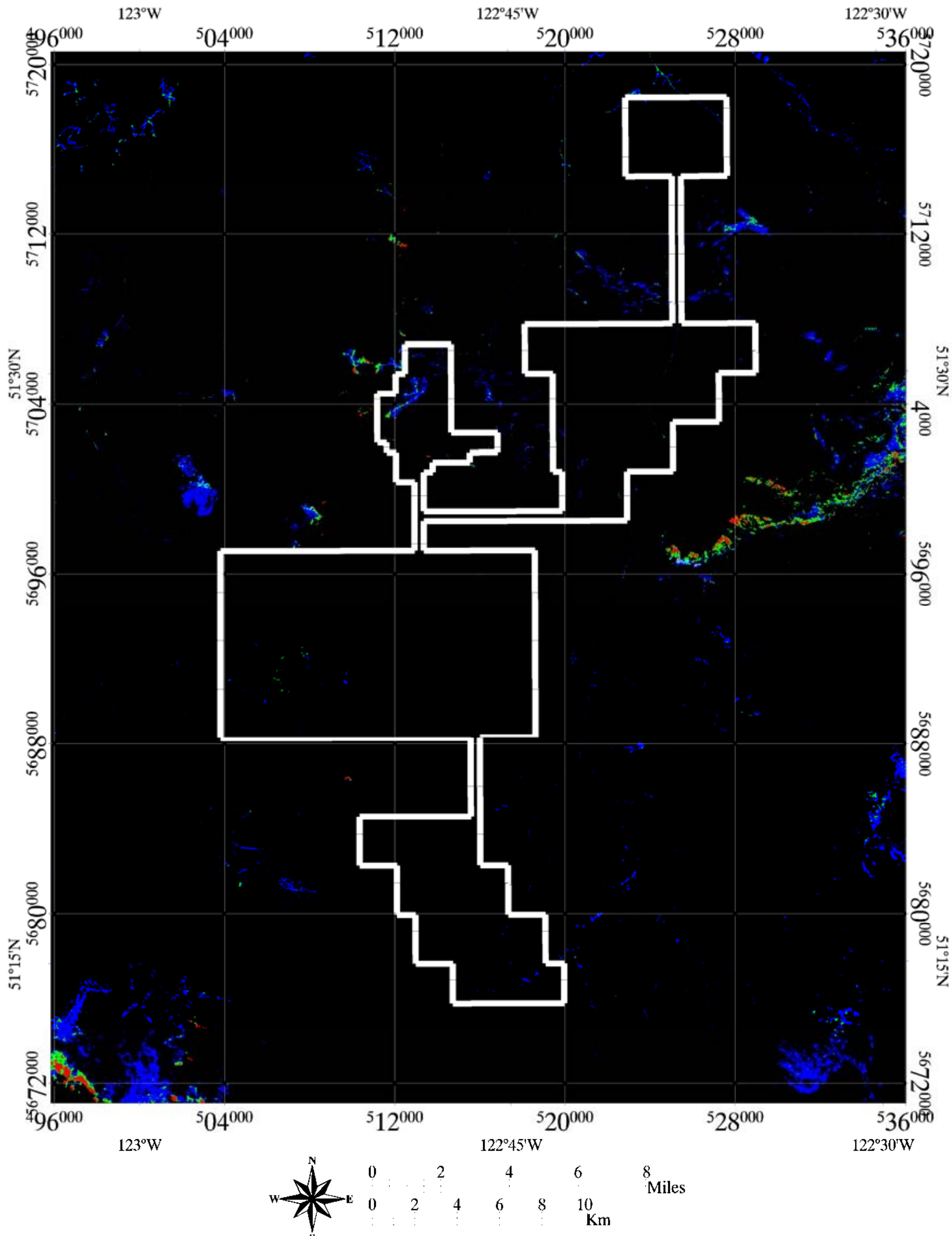

Figure 7a. Sericite Mineral Index for Block#1.

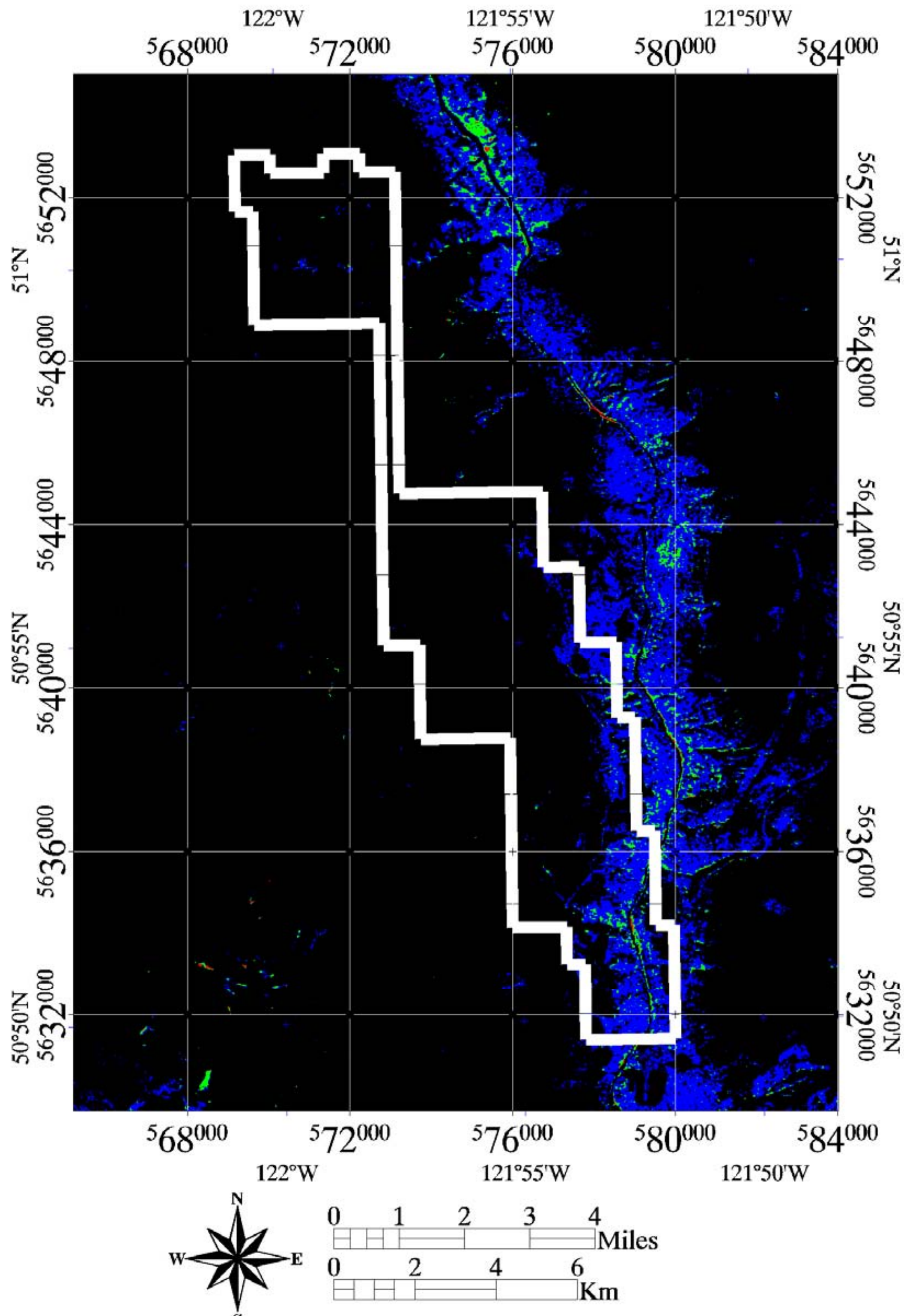

Figure 7b. Sericite Mineral Index map for Block#2.

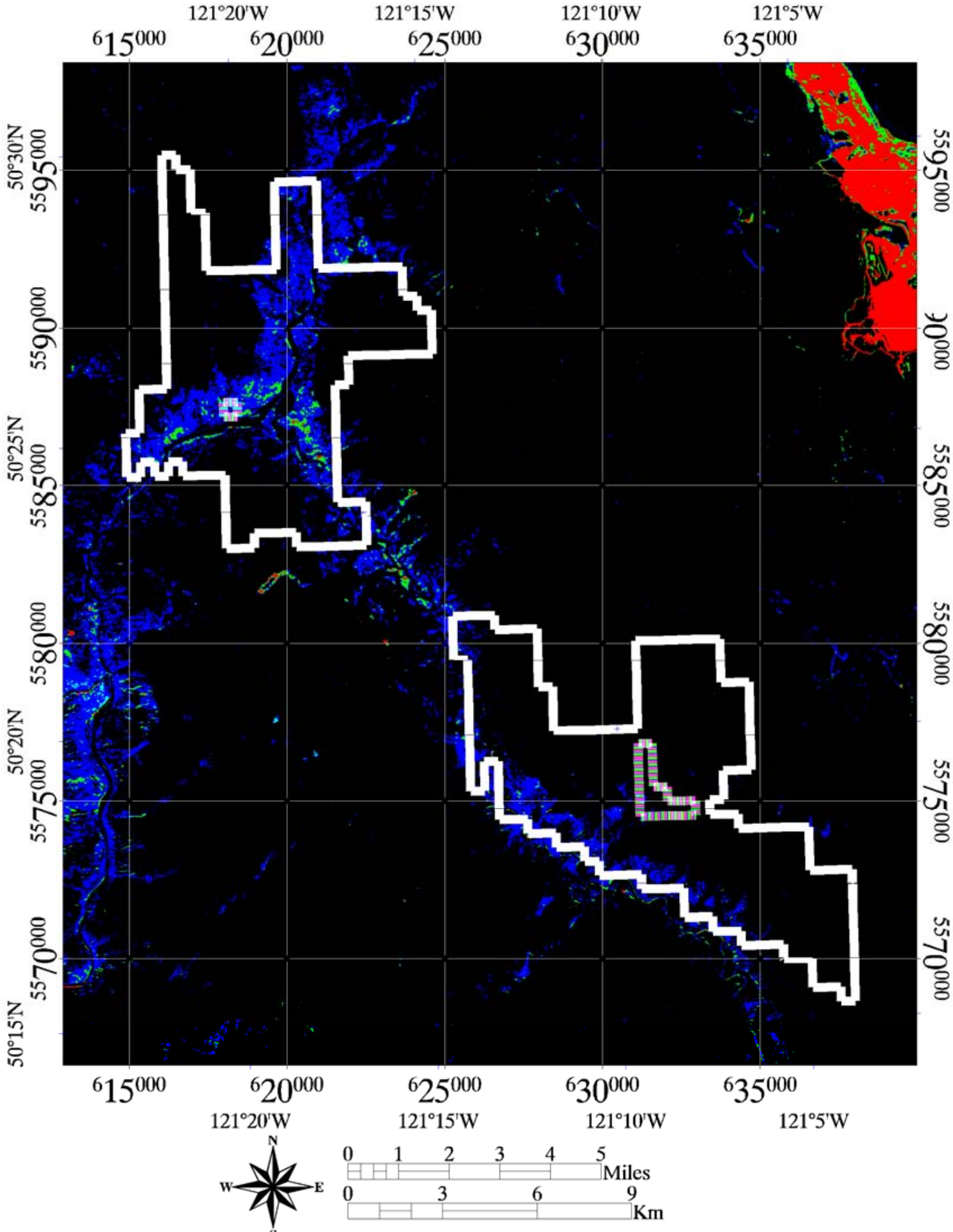

Figure 7c. Sericite Mineral Index map for Block#3 (top) and Block#4.

The silica related indices provided very little useful information in the claim areas due most likely to the small size and number of ground exposures and the large TIR pixel size of 90 metres. Some potential anomalous areas are identified outside the claim areas and some interesting regional patterns related to geology are apparent in some of the images.

In **Block#1** the ASTER image 22859 appears to differentiate the Coast Range rocks very well on a regional scale, although this occurs outside the claim area. In image 22861 there is an area of elevated values around 513187E & 5705058N (Figure 8a). These elevated values are likely due to a slightly more siliceous rock unit rather than a particular spot site anomaly as the trend is quite large.

In **Block#2** there are no anomalous Siliceous Rock Index pixels within the claim group. There are some interesting occurrences outside the claim group (Figure 8b).

In **Block#3** there are a number of anomalous Siliceous Rock areas in the claim block but they all appear to be related to river deposits, likely gravel beaches and bars. There is one interesting area at 622224E & 55867955N (Figure 8c), just to the east of the claim group, that may be traced onto the claims.

In **Block#4** there is a small area containing several small anomalous Siliceous Rock Index areas around 626979E & 5577985N. These areas are underlain by bedrock and may represent an area of elevated SiO_2 values (Figure 8c).

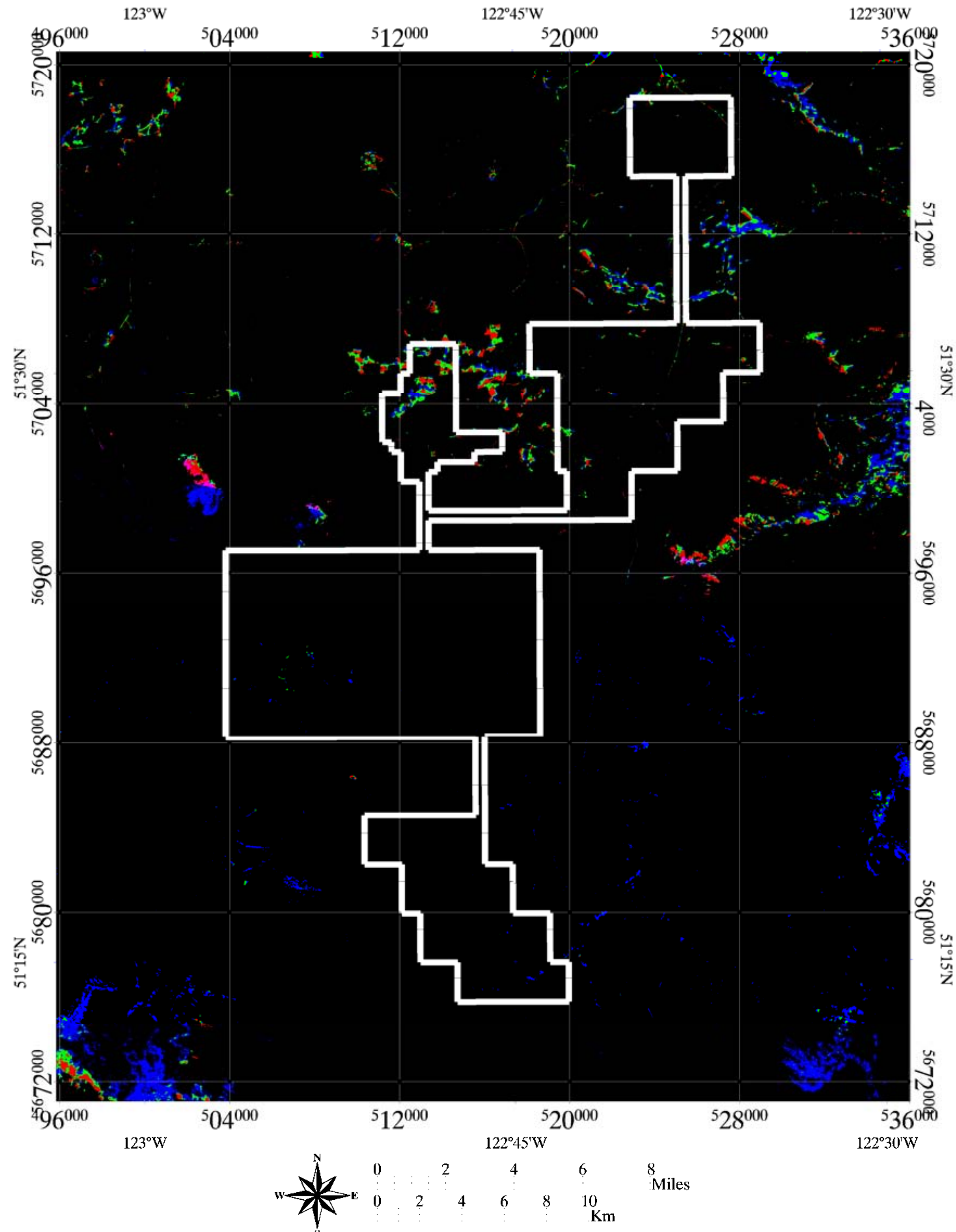

Figure 8a. Siliceous Rock Mineral Index for Block#1.

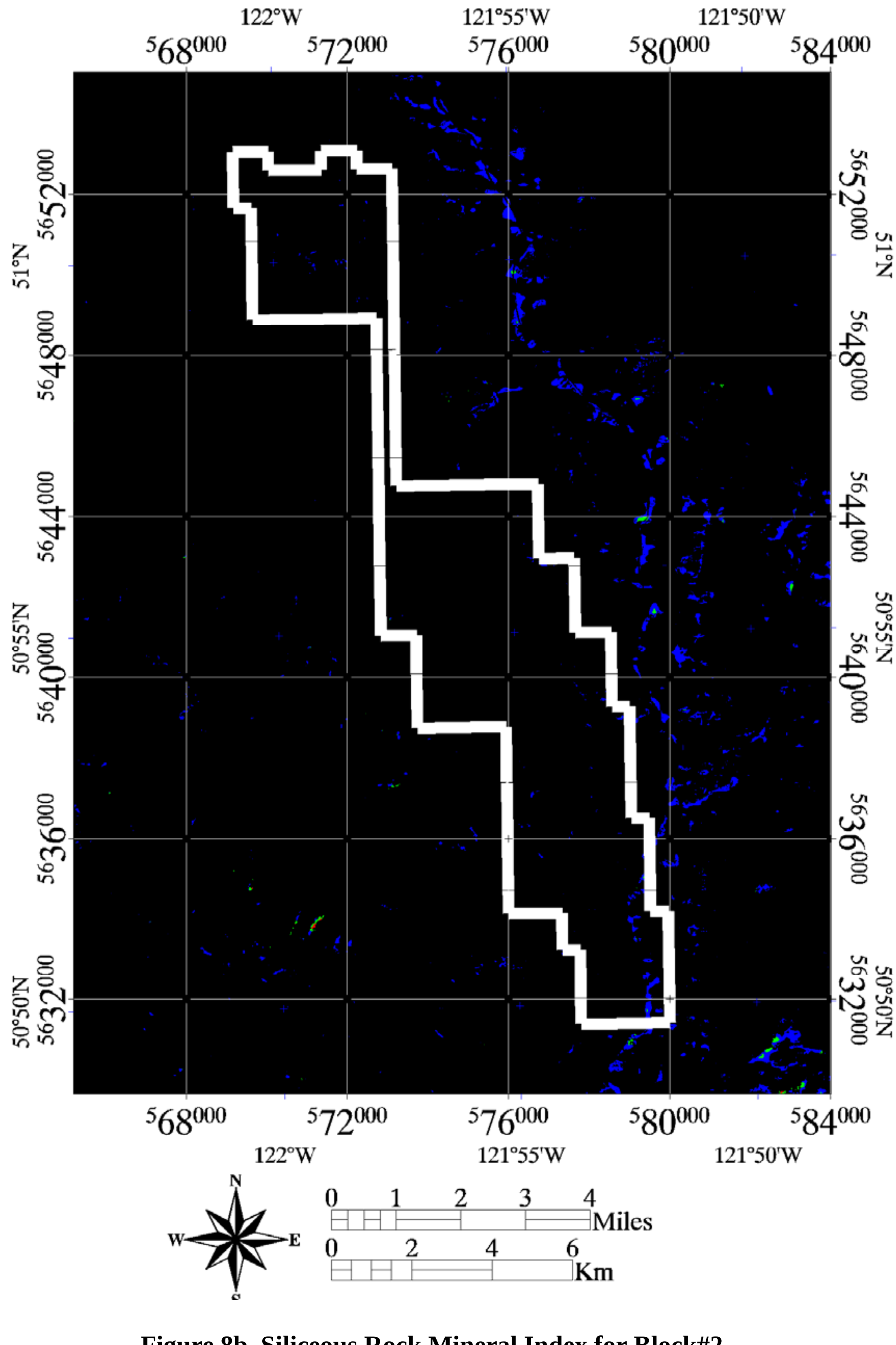

Figure 8b. Siliceous Rock Mineral Index for Block#2.

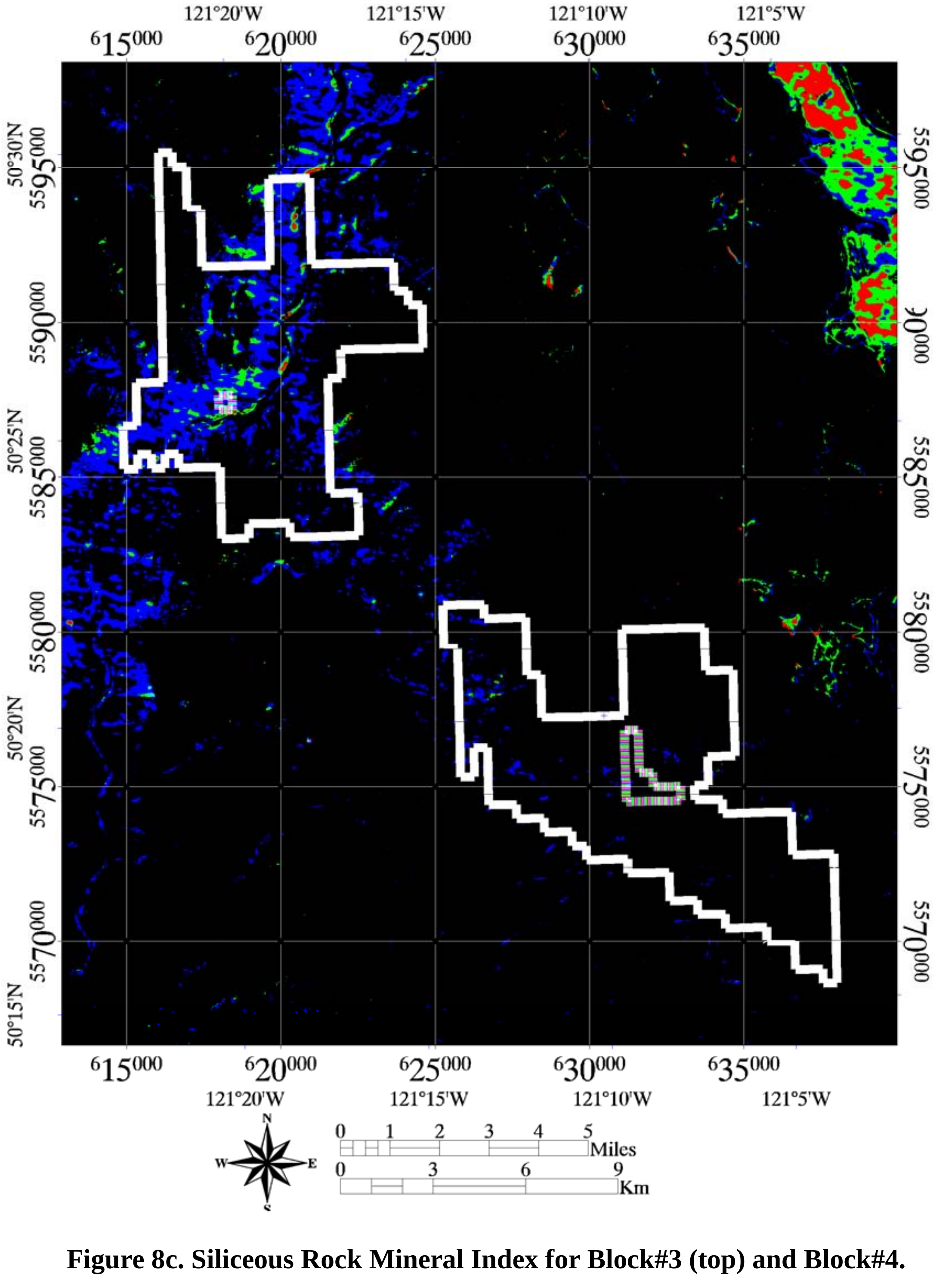

Figure 8c. Siliceous Rock Mineral Index for Block#3 (top) and Block#4.

CONCLUSIONS and RECOMENDATIONS

Identification of significant spectral anomalies that could be related to geological processes was greatly hampered by the very limited extent of visible outcrop available for examination. In addition there is some smoke issues related to a forest fire that was burning in the area at the time the images were collected. Most of the outcrop in the two images was along streams, valley walls, roads and logging cut blocks. Standard analysis techniques were applied to the image data after it was spatially and spectrally corrected. A number of sites were identified that warrant investigation. Several of the images show excellent examples of typical alteration minerals that were identified by this study. The presence of good results from the analysis within the images, but not within the claim areas, verified that the techniques were successful. However, any exposures within the claim areas were not of sufficient size to work well with the ASTER pixel resolution.

The identified anomalous areas should be investigated. In general the claim areas did not have good enough exposure to provide a definitive evaluation of the presence of any alteration minerals within the claim groups.

APPENDIX 1: Original ASTER image (on DVD)

APPENDIX 2: Corrected ASTER files and DEM (on DVD)

APPENDIX 3: Image Products including KMZ (on DVD)