010

GEOLOGICAL SURVEY REPORT

SAVANT- EVANS LAKE PROPERTY

CUMBERLAND RESOURCES LIMITED

Evans Lake Claim Map

Patricia Mining District, Ontario

August 1985
Blair Kite,
Geologist

010C

EVANS LAKE GEOLOGY

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Appendix #1 Swastika Labs

Geology Map (scale 1:5,000)

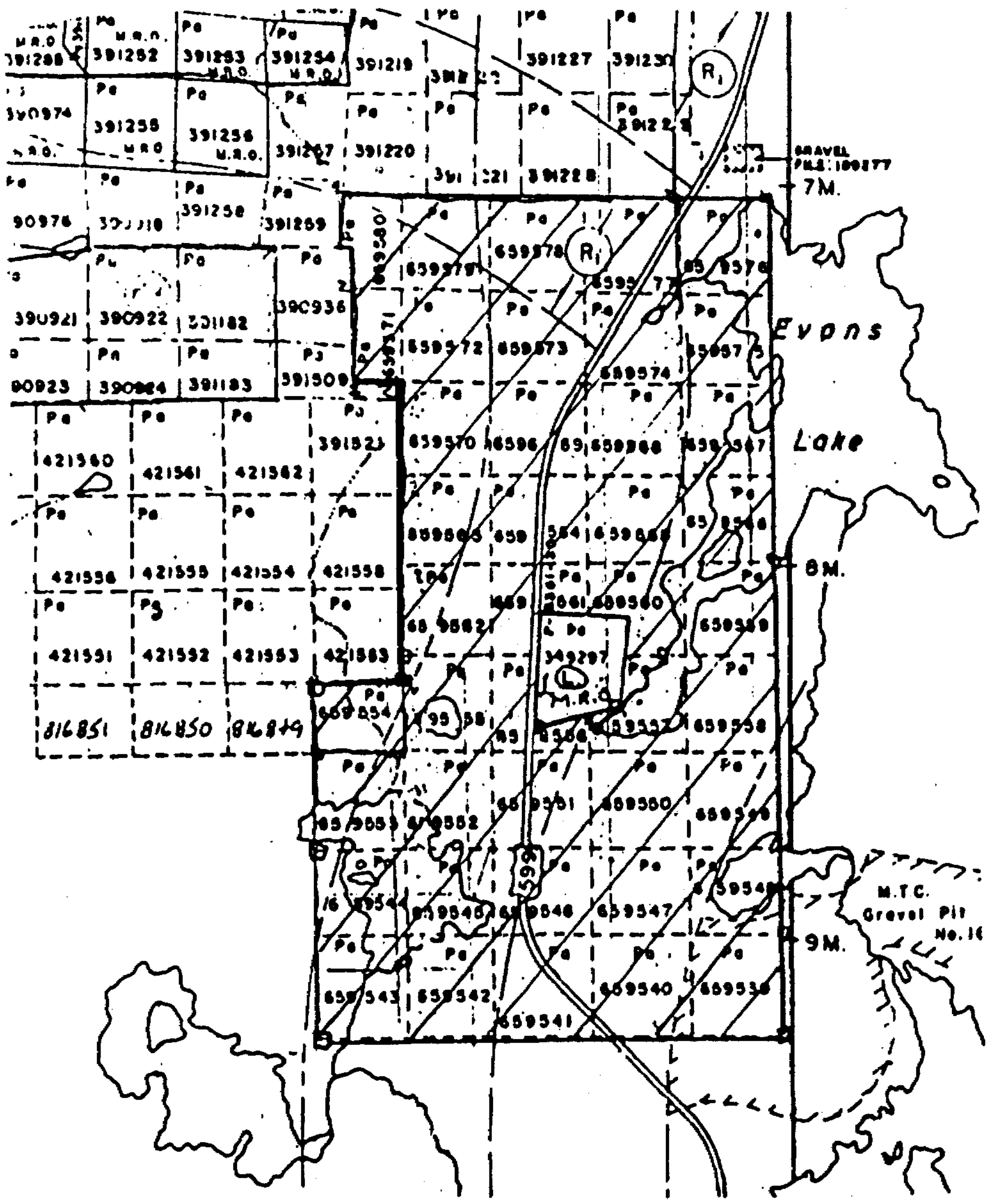
INTRODUCTION

During the months of June and July, 1985, Cumberland Resources Limited of Thunder Bay, Ontario operated a 2-man geological mapping and lithogeochemical sampling crew on its 42 claim group in the Evans Lake Area of Ontario. The claims are recorded in the name of Cumberland Resources Limited and owned through a legal joint venture agreement by Cumberland Resources Limited of Thunder Bay, Ontario, 50%; Vestor Explorations Limited, Richmond, British Columbia, 25%; and Redfern Resources Limited, Richmond, British Columbia, 25%. By agreement, Cumberland is the project manager.

This report is prepared to fulfil the requirements for both assessment and the Ontario Mineral Exploration Program grant application.

The field crew consisted of two graduate geologists. Mr B. Kite was the party chief and authored this report. Mr. Greg Charlton served as assistant geologist. The project was supervised by William McCrindle P. Eng., geologist.

The data contained in this report was derived from detailed field mapping on 100 meter spaced lines, from O.G.S. reports and the O.G.S. assessment files in Sioux Lookout.



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From the Evans Lake claim map #M-1774

CUMBERLAND RESOURCES LIMITED

SAVANT- EVANS LAKE PROPERTY

map title	scale
Claim Map	1: 31,000
	date August 1985
	B.Kite
	map no. A

Evans Lake Geology

PROPERTY DESCRIPTION

The Evans Lake property consists of 42 contiguous unpatented mining claims held on extension granted by the Commissioner of Mines, Ontario, until November 21, 1985. All claims were recorded in March of 1983. The claims are outlined on the Evans Lake claim map M-1774. (see map A)

The claim numbers are as follows:

PA 659539 to PA 659580 inclusive

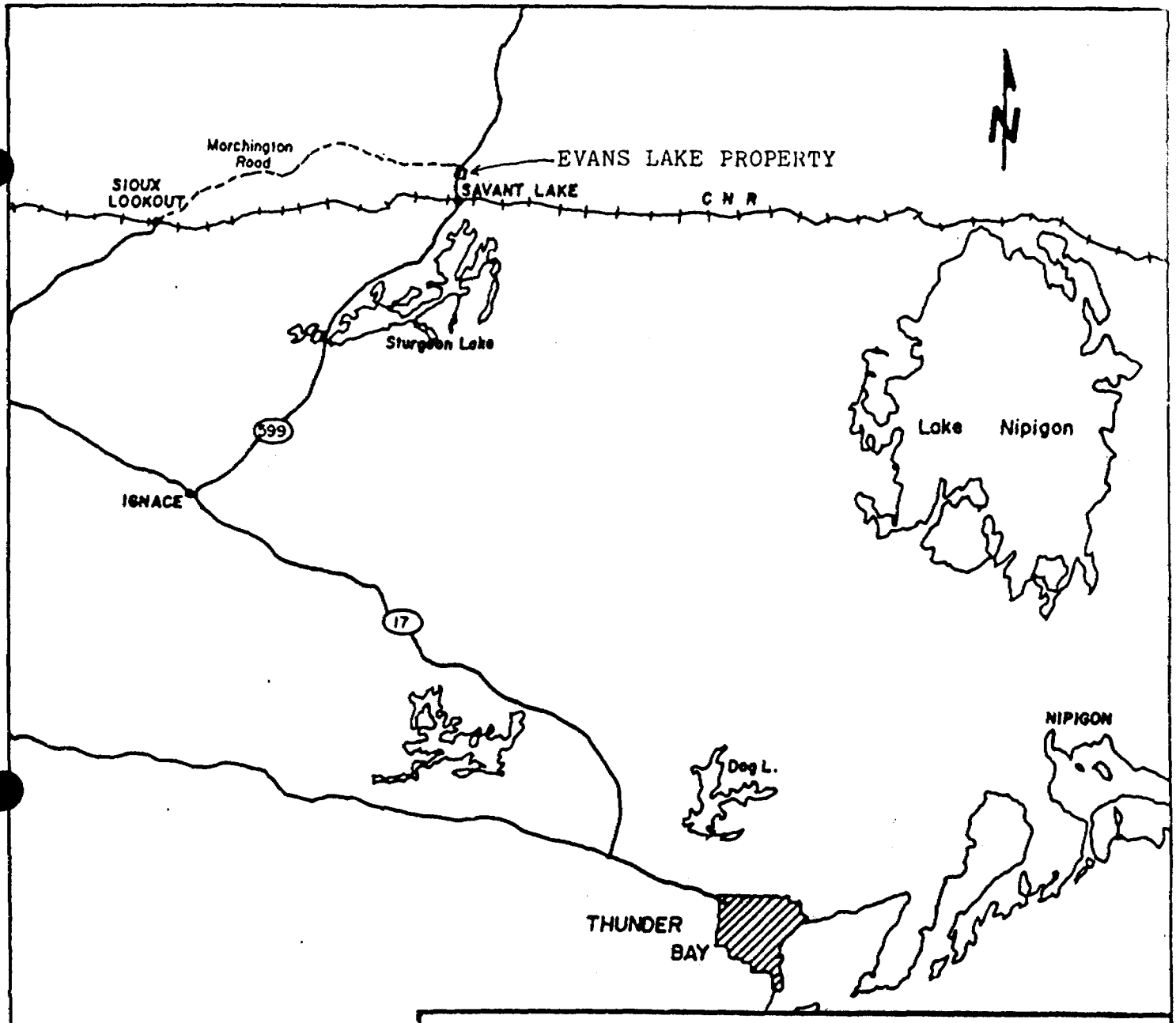
LOCATION AND ACCESS

This property straddles Highway 599 approximately 6 kms north of the Savant Lake townsite and immediately south of the Marchington Road intersection. (see map B). Evans Lake occupies the northeastern boundary of the claim group.

PHYSIOGRAPHY AND VEGETATION

The claims are located in the Canadian Shield Physiographic Belt of Canada. Relief is low and outcrop exposures are generally sparse. Rockcuts along Highway 599 provide the best exposures. Glacial overburden tends to be thin. Numerous small spruce and cedar swamps prevail. Much of the area has been cut over. The most prominent vegetation types are alder, spruce, balsam, birch and poplar.

Water is readily available from Evans Lake and any of a number of smaller unnamed lakes and ponds.



Scale

1,600,000

CUMBERLAND RESOURCES LIMITED

SAVANT LAKE PROPERTIES

map title

PROPERTY LOCATION MAP

scale 1: 1,600,000

date August 1985

B.Kite

map no. B

HISTORY AND PREVIOUS WORK

The general area has been explored for precious, ferrous and non-ferrous metal bearing deposits since the turn of the century. Subsequent to the discoveries of viable massive sulphide base-metal deposits at Sturgeon Lake (75 kms south) during 1969 and 1970, the Savant Lake volcanic belt has been extensively investigated for similar occurrences. Airborne and ground geophysical surveys were followed with testing of anomalies by isolated diamond drill holes. No economic base metals were discovered. The Hadley Occurrence, a massive sulphide "lens" or stringer was uncovered during the construction of Highway 599 in 1969. UMEX Corporation drilled two holes to test this Hadley showing. UMEX,also drilled a 299' hole on what is now claim PA 659550 to test a geophysical anomaly. D.D.H. Sa-3 intersected 32 feet of pyrite and pyrrhotite stringers between 117' and 149' to apparently justify the anomaly. On present day claim numbered PA 659569 hole # Sa-59 was drilled to a depth of 407'. Fine pyrite stringers were intersected from 285' to 325'.

At the very northern end of Evans Lake, Geophysical Engineering Corp. drilled a series of holes to test a strong airborne geophysical conductor. 4.5 feet of pyrrhotite stringers were intersected.

Approximately two miles west of this property along Marchington Road UMEX Corporation is reported to have outlined a massive sulphide orebody of 250,000 tons of 10% combined copper-zinc.

From 1901 to 1941, 331,069 tons of ore were milled at St. Anthony mine. The grade averaged 0.19 oz./ ton gold. The mineralization was found in quartz veins associated with a later granodiorite pluton.

In May of 1984, Cumberland Resources Limited contracted Dighem Corporation of Toronto to conduct an airborne geophysical survey over the Evans Lake property. This report was submitted for assessment credits.

In February 1985, Cumberland cut 3.6 kms of base line at an azimuth of 332 across the property. Approximately 60 kms of grid lines were blazed and stations marked at 50 meter intervals.

GENERAL GEOLOGY

The Evans Lake Claim Group is underlain by rocks of Archean age. The north west corner of the claim group is included on OGS map 2424 Houghton-Hough Lakes Area and is described by Bond (1980) in OGS Report #195: "Geology of the Houghton-Hough Lakes area (Savant Lake area). The entire claim group lies within OGS Map 2431 amd is discussed by Trowell in the OGS report #200 "Geology of the Beckington Lake area", 1980.

The rocks in the Evans Lake claim group belong to the Hand Lake Volcanic Sequence described by Bond (1980). This sequence is a complex series of interlayed mafic, felsic and intermediate metavolcanic units with minor intercalated metasedimentary units. It is typical of the advanced stage of an "upper volcanic cycle".

Three major units are observed within the claim group. These units strike approximately southeast and dip steeply from the northeast to vertical. The continuous character of these three units and the consistent orientation of foliation and bedding observed in the field suggest that the claim group occupies the southeast limb of the major anticline as described by Bond (1980).

Proceeding from the northeast corner of the claim group and moving down the stratigraphy, the first unit consists of felsic and felsic to intermediate pyroclastics, tuff, lapilli tuff, breccia and debris flows. Intercalated metasedimentary and reworked tuff are present. Metavolcanics appear to grade into metasediments in the northern part of the claim group. Locally, rhyolite flows, banded and massive were observed. Composition of this unit varies from rhyolite to rhyodacite to dacite.

The second unit in the sequence consists of porphyritic flows and crystal tuff of intermediate composition. Locally, intermediate lapilli tuff and debris flow were observed. Field observations show the composition of this unit is andesite.

The third unit consists of felsic and felsic to intermediate pyroclastics; tuff, lapilli tuff and debris flow. Local rhyolite flows, intercalated metadisediments, intermediate porphyry flows and crystal tuff are present. Composition of this unit varies from rhyolite to rhyodacite. Mineralization is more prominent in this unit. It hosts the Hadley Occurrence and several pyrite-pyrrhotite silicified zones. Local massive sulphide alteration is also present.

TABLE OF FORMATIONS

ARCHEAN

5 Felsic to Intermediate Porphyritic Intrusives

- 5a Feldspar Porphyry
- 5b Quartz Feldspar Porphyry
- 5c Quartz Porphyry
- 5d Felsite

Intrusive contact

4 Metasediments

- 4a Arkosic metasedimentary rocks
- 4b Tuffaceous metasedimentary rocks
- 4c Greywacke

Metavolcanics

3 Felsic Metavolcanics

- 3a Fine grained massive flows
- 3b Flow banded flows
- 3c Tuff
- 3d Lapilli tuff
- 3e Crystal tuff; crystal lapilli tuff
- 3f Tuff breccia
- 3g Debris flow

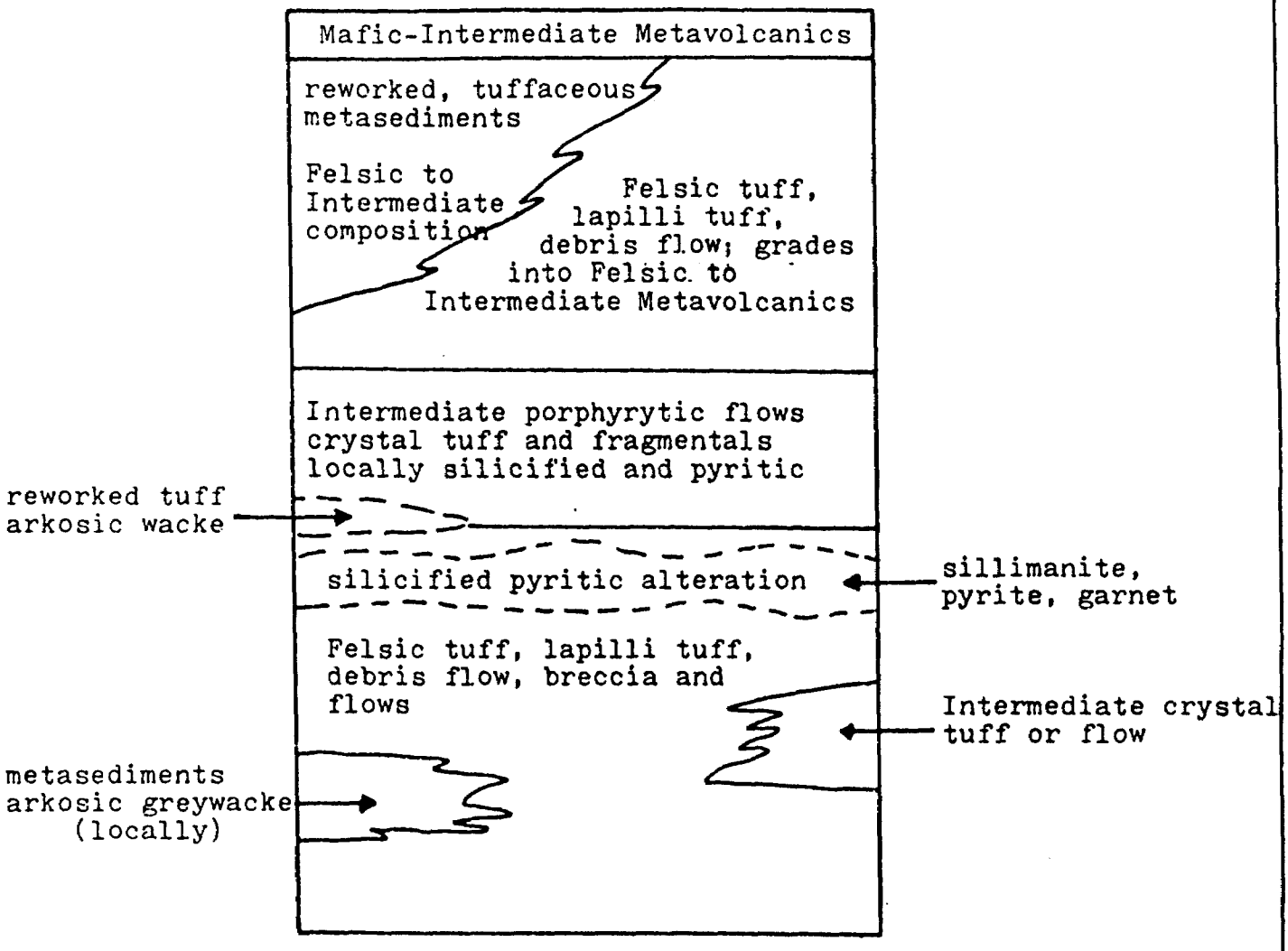
2 Felsic-Intermediate Metavolcanics

- 2a Crystal tuff
- 2b Porphyritic flows
- 2c Tuff

1 Intermediate Metavolcanics

- 1a Crystal tuff
- 1b Porphyritic flows
- 1c Lapilli tuff; debris flow

Figure #1: EVANS LAKE PROPERTY - Generalized Stratigraphic Section



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CUMBERLAND RESOURCES LIMITED

EVANS LAKE PROPERTY

map title	scale
GENERALIZED STRATIGRAPHIC SECTION	Sketch
	date: September, 1985
	B.Kite
	map no.: Figure #1

FELSIC METAVOLCANICS

The felsic metavolcanic units of the Evans Lake claim group are the most extensive and lithologically diverse units underlying the claim group. Field observations classify this rock type into rhyolite and rhyodacite compositions, with a color index of M=5. Massive and flow banded rhyolite flows, tuff, lapilli tuff, tuff breccia, debris flow, crystal tuff and crystal lapilli tuff rock types have been identified. Pyroclastic fragments and debris flow rocks make up the major component of the felsic metavolcanics.

Bedding is not common; individual pyroclastic beds have gradational contacts. Lateral changes in fragment size and fragment proportion are common.

The felsic metavolcanics form two separate sequences, one on each side of the intermediate metavolcanic unit. Fragment size in the south-central area of the claim group is the most coarse. Fragment size roughly decreases to the north indicating a more proximal environment in the central area. Lenses of metasediments and intermediate metavolcanics are present.

Rhyolitic flows constitute a minor component of the felsic metavolcanics. Typically, the massive flows are very fine grained to aphanetic with up to five percent quartz eyes and feldspar crystals up to two millimeters in size. They are very siliceous, light pink on fresh surfaces and white on weathered surfaces. Local flow-banded flows are distinguished by siliceous, contorted bands up to one and a half centimeters wide.

Tuff, lapilli tuff and tuff beccia were classified according to fragment size. Tuff contains fragments less than four millimeters; lapilli tuff fragments range from four to sixty-four millimeters, and tuff breccia fragments are greater than sixty-four millimeters.

Tuff is characterized by fragments from two to four millimeters in size which generally constitute up to 5% of the rock. Quartz eyes are present up to 2% of the rock. Local lapilli size fragments occur and tuff beds commonly grade into lapilli tuff. Occasional outcrops of finely bedded or banded ash are distinguished by one centimeter siliceous bands and an absence of fragments.

Lapilli tuff is white to light grey on weathered surface, white on fresh surface and siliceous. Fragments are white to grey, very siliceous and vary from subround to subangular. Deformation is responsible for the frequent elongated shapes observed. On average, fragments make up 12% of the rock. Local beds can contain as much as 35% fragments or as little as 3% fragments. Fragments are moderately to well sorted and are supported by a crystalline, very fine grained, siliceous matrix. The matrix is locally foliated. Foliation refracts around the fragments. Local quartz eyes and feldspar phenocrysts occur up to 5%. Fragment size is generally from 2 to 4 cm but individual beds commonly contain well sorted fragments less than 1 cm in size. Fragments 6 cm and up to 15 cm are also present locally.

Tuff breccia contains 25 to 30% siliceous fragments in a fine grained felsic matrix. Sorting is poor and fragments are angular to subangular.

Debris flow material is often associated with tuff breccia. Debris flow is characterized by heterolithic, subangular to angular fragments, poor to very poor sorting and matrix support. The matrix is fine grained and siliceous with occasional quartz eyes and commonly contains feldspar crystals. Fragment size varies from less than 1 cm to 30 cm. Several fragment types occur: siliceous white fragments, intermediate composition lithic fragments, and dark almost mafic fragments. Fragments make up 7 to 15% of the rock.

Crystal tuff contains two to three millimeter feldspar crystals in a crystalline matrix. Feldspar crystals are subhedral. The matrix is homogenous with a weak foliation. Crystal tuff commonly forms the matrix for fragmental rocks designated as crystal lapilli tuff. This rock type contains siliceous fragments similar in size, distribution and composition to those found in the lapilli tuff rock type.

FELSIC TO INTERMEDIATE METAVOLCANICS

The felsic to intermediate metavolcanics of the Evans Lake claim group consist of crystal tuff, tuff and porphyritic flows of dacitic composition. This unit underlies approximately 10% of the claim group and occurs predominately in the northern third of the property and in small intercalated lenses within the felsic metavolcanic sequence.

In the northern area of the claim group the felsic to intermediate metavolcanics appear to have a gradational relationship with the felsic metavolcanics. This gradational relationship of the metavolcanics could indicate a more proximal environment to the central and southern portions of the property. (distal to the north) At least a portion of this unit appears sedimentary in character. Reworked felsic to intermediate metavolcanics can be observed at and near the junction of Highway 599 and the Marchington road.

Along Evans Lake the felsic to intermediate rocks make contact with a more mafic north-south trending unit. This unit is distinguished from the felsic metavolcanics by a greater proportion of mica and amphiboles. An airborne geophysical anomaly appears to be located at this contact.(Dighem iii 1984 survey for Cumberland Resources Limited)

Crystal tuff is characterized by two to four millimeter feldspar phenocrysts in a fine grained crystalline matrix. The crystals are subhedral but show good crystal faces. The matrix is homogenous and often massive. On weathered surface, the rock is light grey to white and on fresh surface it is light grey. Colour index is M=7 to 10.

Intermediate to felsic tuff is characterized by lithic fragments, compositionally equivalent to the matrix, in a homogenous to massive, fine grained, crystalline matrix. Fragments are diffuse and difficult to recognize. Occasionally the fragments weather out, leaving outcrops with a pitted texture. Fragments are generally less than or equal to one centimeter in size. Quartz eyes appear locally but never compose more than two percent of the rock.

Porphyritic flows are compositionally and texturally similar to the crystal tuff. They may be at least partly subvolcanic intrusive in origin. This rock is distinguished by a fine grained crystalline feldspar porphyritic texture. Feldspar crystals are generally less than two millimeters in size. Quartz eyes are rare.

INTEPMEDIATE METAVOLCANICS

The intermediate metavolcanics of the Evans Lake area consist of crystal tuffs, porphyritic flows, tuff, and lapilli tuff. This unit forms a steeply dipping north-south to south-southeast trending band which occupies the centre of the property. On average, the intermediate metavolcanic band is 225 meters wide, but varies in thickness from 50 meters south of Evans Lake to 500 meters northwest of Evans Lake. Approximately one third to one quarter of the Evans Lake claim group is underlain by intermediate metavolcanics.

Local intercalated felsic metavolcanics have been observed within the intermediate metavolcanic band. Small lenses of intermediate metavolcanic rock have been observed within the felsic metavolcanic sequences. These lenses are one hundred to two hundred meters long, steeply dipping and ten to fifty meters thick.

The intermediate crystal tuff is dark grey on weathered surface and light grey on fresh surface. Field observation places this rock type in andesite to dacite composition. It is characterized by ten to twenty percent feldspar crystals and crystal fragments two to four millimeters in size. The crystals are subhedral to rounded and broken. It has a color index of M=15 to 20. The matrix is fine grained (crystals less than .5mm) homogenous and locally foliated. Occasional fragments help to distinguish this rock from the porphyritic flow. Locally this rock contains up to two percent fragments, which can be intermediate, mafic or felsic in composition. Diffuse bedding is locally observable.

The intermediate porphyritic flows are more andesitic in composition and contain 2 to 5mm feldspar and amphibole crystals. These mafic phenocrysts and lack of fragments are the defining feature of this rock. The amphibole phenocrysts indicate a more mafic magma, which is more likely to produce lava flows than pyroclastic activity.

Bond (1980) describes porphyrytic flow outcrops where the feldspar phenocrysts show a primary alignment, related to lava flow, and the amphibole crystals are aligned parallel to regional foliation. These features were not readily recognized. This rock has a color index of M=15 to 20.

The intermediate tuff, lapilli tuff and debris flow are compositionally and texturally similar to the intermediate crystal tuff. It is distinguished by the presence of numerous fragments in a crystal tuff matrix. Fragments are typically intermediate composition but mafic, chloritic fragments and cherty felsic fragments occur locally.

One outcrop on Highway 599 shows a sequence of interbedded flows and tuffs. Beds are half to one meter in thickness, dip steeply and strike southeast. Individual beds are discerned by changes in the amount, size and types of phenocrysts. Locally the unit appears intruded by felsite dykes.

METASEDIMENTS

Metasediments found on the Evans Lake claim group consist of reworked tuffaceous metasediments, arkosic greywacke and greywacke. Metasediments occur in the felsic metavolcanic sequences as thin intercalated lenses in several locations. They also outcrop along Highway 599 near the Marchington Road. The presence of the metasediments indicates a subaqueous environment for at least part of this area's depositional history.

At the corner of Highway 599 and the Marchington Road, greywacke and reworked tuffaceous material is observed. It is equigranular, fine to medium grained and locally contains small euhedral garnets. These metasediments appear to grade into the felsic to intermediate metavolcanics.

At the west end of lines 1300 South and 1400 South a lens of arkosic wacke occurs. It is equigranular fine to medium grained, very biotitic and contains an abundant amount of magnetite. This could be a "dirty" iron formation: iron formation deposition in an area too depositionally active to form a true iron formation. At other locations metasediments are distinguished by bedding, good sorting and a lack of fragments. Garnet is common and often reaches 15-20% of the rock. Garnet occurs as small euhedral porphyroblasts and retrograded, sericitic lumps.

FELSIC-INTERMEDIATE INTRUSIVES

Felsic to intermediate intrusive rocks make up a very minor component of the Evans Lake claim group stratigraphy. Quartz feldspar porphyry, feldspar porphyry and "felsite" occur as small, discontinuous lenses and sills.

Quartz feldspar porphyry typically contains two millimeter quartz and feldspar phenocrysts in amounts from five to seven percent. Quartz phenocrysts are occasionally blue. The matrix is very siliceous.

Feldspar porphyry is of similar composition and texture but contains up to twenty-five percent feldspar phenocrysts and less than three percent quartz phenocrysts.

Felsite refers to a very fine grained, massive rhyolitic intrusive. This unit was mapped only where intrusive contacts were discernable in the field. It is possible that at least part of the massive rhyolitic flow material could also be of intrusive origin. The rhyolitic flows and recognizable felsite intrusive rocks are texturally and compositionally similar. Felsite could represent a small subvolcanic intrusive phase.

In some outcrops which contain the "mixed metavolcanic" phase (see "alteration") an intrusive relation was established for the felsite material. The felsite contains no "mixed metavolcanic" phase while the rest of the outcrop does. This suggests that felsite was emplaced as an intrusive subsequent to emplacement of the "mixed"phase.

ALTERATION

1) MIXED METAVOLCANIC-PATCHY ALTERATION

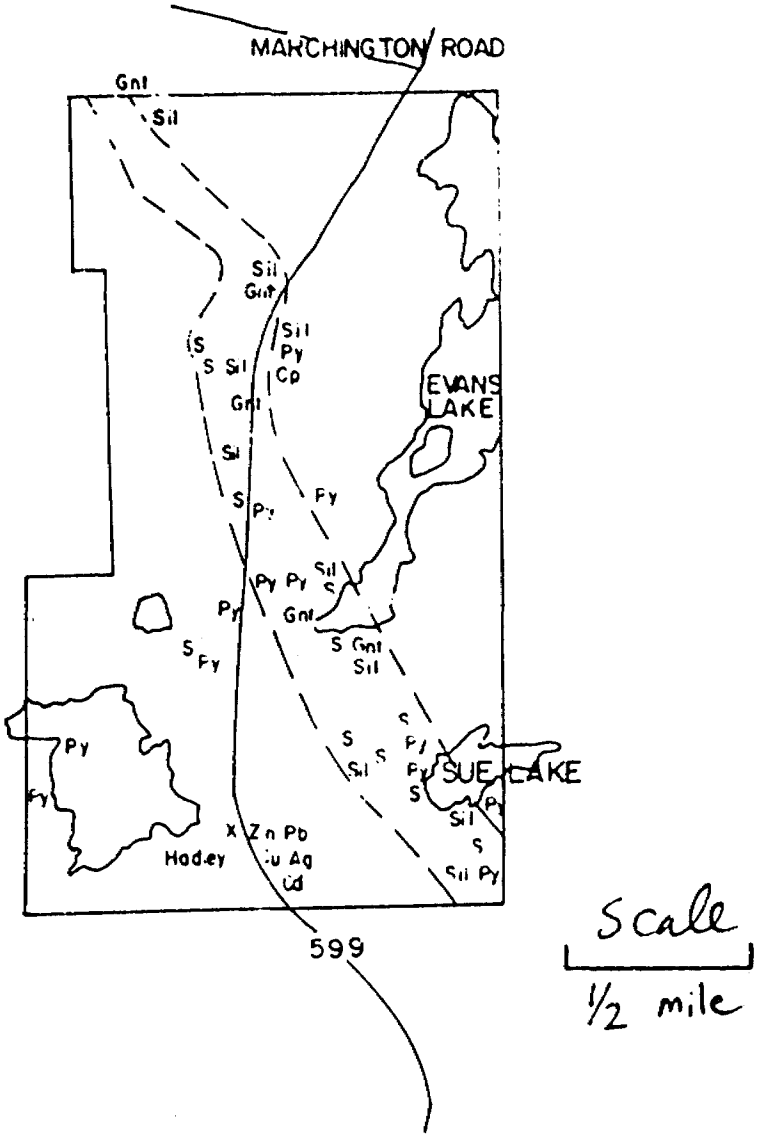
This phase appears as positively weathered patches, clots, clustered lenticular lenses, and boudinaged veins. It also appears as thin veinlets and stringers associated with quartz. It is observed in amounts from less than three percent surface area to greater than fifty percent of outcrop surface area. In the field this patchy alteration was mapped quantitatively into three categories. Trace patchy alteration occurs where alteration makes up less than three percent of the outcrop. Patchy alteration occurs where alteration constitutes from three to thirty percent of outcrop. The host rock type is still identifiable. Pervasive alteration occurs where alteration makes up greater than thirty percent of the outcrop. Often the host rock ceases to be an identifiable rock type.

The patchy alteration is a distinct dark green to black color. It is comprised of a randomly oriented, homogenous medium to fine grained assemblage of amphibole + biotite + quartz + feldspar + calcite. Crystals are subhedral to anhedral; amphibole crystal faces are common.

The mixed metavolcanic - patchy alteration is described in detail by Bond (1980). Several possible explanations are proposed for this phase. The author favours a secondary alteration explanation for this material. Observed field relationships between the patchy alteration and the metavolcanic rocks seem to confirm a secondary or alteration explanation. The patchy alteration is ubiquitous in occurrence throughout the Evans Lake Stratigraphy. It is often found in close association with quartz stringers or contains quartz veinlets. Positively weathered reaction rims are observed locally around alteration patches.

The Hadley Occurrence described by Turner (1978), Bond (1980) and Kissen and Turner (1982) appears related to the patchy alteration.

Kissen and Turner (1982) suggest that the alteration assemblage of calcite- tremolite - quartz - clinozoesite - diopside - muscovite is the result of progressive contact metamorphic reactions of an original talc and (or) chlorite - quartz - calcite assemblage. This original talc and (or) chlorite - quartz - calcite alteration assemblage is proposed by Turner (1978) and Kissen and Turner (1982) to be formed by "hydrothermal solutions discharging onto the sea floor to form a massive sulphide body.....is thus originally thought to have been a portion of a chloritized alteration



Scale
1/2 mile

TAKEN FROM EVANS LAKE, GEOLOGY AND OGS MAP 2431 BECKINGTON LAKE

LEGEND

Gnt	Garnet
Sil	Sillimanite
Py	Pyrite
Cp	Chalcopyrite
S	Silicification
Zn	Zinc
Cu	Copper
Pb	Lead
Ag	Silver
Cd	Cadmium
----	Approximate boundary of silicified, altered, pyritic zone

CUMBERLAND RESOURCES LIMITED

EVANS LAKE CLAIM GROUP

map title
ALTERATION & MINERALIZATION

scale
1" = 1/2 M.LE

date
AUGUST 1985

geology by
B. KITE

map no.
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pipe."

Garnet, sillimanite and kyanite also occur in the metavolcanics hosting the Hadley Occurrence. These minerals, when they appear in metavolcanic rock units, are also indicative of massive sulphide alteration.

2) SILICIFIED PYRITIC ZONE WITH LOCALIZED MASSIVE SULPHIDE ALTERATION

A discontinuous zone of silicification with disseminated pyrite and localized massive sulphide alteration can be traced through the centre of the Evans Lake Claim group. (see figure 2) The zone trends roughly southwest and is approximately parallel to the base line. It becomes thicker stratigraphically, more prominent and continuous from the southern end of Evans Lake to the southeastern corner of the claim group.

Typically, this zone is recognized by silicification, local gossan on outcrop faces, and disseminated pyrite in amounts from less than one percent to greater than fifteen percent. Pyrrhotite occurs rarely. Gossan is not a strong feature of this zone.

Pyrite occurs as small blebs, euhedral cubes up to two millimeters and rarely as thin veinlets less than one millimeter wide. Sericite is common within this zone, appearing with the silicification and often alone.

At the south end of Evans Lake massive sulphide type alteration is recognized. This alteration is hosted in a fine grained felsic metavolcanic rock. It is characterized by irregular bands and patches of biotite, chlorite, garnet and sillimanite. Garnet appears as positively weathered, subhedral crystals making up seven percent of the outcrop. Sillimanite was recognized in the field in a nearby outcrop. Trowell (1981) has identified staurolite and andalusite at this location through thin section work. Garnet, sillimanite, andalusite, kyanite and tourmaline have been identified by Trowell (1981) in other locations through thin section work. He states that these minerals are not commonly observed at outcrop scale. These minerals are indicative of massive sulphide alteration when found in felsic volcanic rocks.

MINERALIZATION

Figure two shows the silicified, pyritic zone discussed previously. Pyrite and local pyrrhotite mineralization occurs in this zone as local fine disseminations up to 15% of the rock composition.

Pyrite in fine disseminations also occurs in association with patchy alteration. Pyrite is found locally up to 2% within patchy alteration zones.

At Sue Lake, a silicified, sericitic, pyritic occurrence is noted. Pyrite appears as disseminated blebs and crystals up to 10% and as elongate, fractured nodules half a centimeter wide and up to four centimeters long. A locally banded appearance in outcrop suggests the nodules are boudinaged. These nodules comprise five to seven percent of the outcrop.

Grab sample 8702 from a location on line 16+00 South, 3+50 west contains .02 oz/ton Au, .16 oz/ton Ag, .01% Cu and .22% Zn. (see appendix #1)

STRUCTURE

The Evans Lake region, including the Evans Lake claim group has been interpreted by Bond (1980) to be a major anticlinal fold. The fold has a steeply dipping, east to northeast plunging curvilinear fold axis.

The Evans Lake claim group is situated on the south eastern limb of this fold, very close to the fold hinge.

The foliation and bedding orientations are fairly consistent throughout the claim group. Foliation dips from vertical to 58° northeast and strikes from 110° to 154°: roughly southeast. Bedding is not a common feature in the Evans Lake metavolcanics. It is found to strike roughly 110° to 113° and dip steeply north to vertical. Foliation refracts and bends around the nose of felsic fragments in felsic tuff and lapilli tuff. It is often defined by the preferred orientation of sericite and mica minerals.

No top determinations were made in the field. However, Trowell (1981), Bond (1980), Turner (1978) and Kissen and Turner (1982) found the younging direction to be north to northeast. A fault was interpreted from geological contacts and aeromagnetic data. It trends at 60° and occurs in the centre of Sue Lake.

CONCLUSIONS

The Evans Lake claim group is underlain by a felsic to intermediate metavolcanic sequence consisting of tuff, lapilli tuff, crystal tuff, tuff breccia, debris flows and flows. Local intercalated tuffaceous metasedimentary lenses occur within the metavolcanic sequence.

The south central area is underlain by coarse pyroclastics and local rhyolite flows. It is interpreted to be a more proximal environment. The northern part of the claim group is believed to be more distal. The felsic pyroclastics appear to grade into reworked tuffaceous metasediments, arkosic wacke and greywacke in the northern part of the claim group. A silicified, pyritic zone, with local massive sulphide alteration, appears in the centre of the claim group. It trends roughly southeast, parallel to the base line. This zone is thicker, more prominent and continuous in the area south of Evans Lake.

Felsic fragmented stratigraphy, the appearance of alterations and trace mineralization, their correlation to airborne geophysical anomalies and lithogeochemical data make this claim group an excellent target for volcanogenic massive sulphide exploration.

QUALIFICATIONS

I, Blair Kite, of 74 Winnipeg Avenue, Thunder Bay, Ontario hereby certify:

1. I am a graduate of Lakehead University (1981) and hold an Honours B.Sc.degree in geology.

2. I have been employed in my profession by various mining companies during university and for three years since graduation.

3. I am presently employed as a geologist with Cumberland Resources Limited, Thunder Bay, Ontario.

4. The information contained in this report was obtained from personal field traversing and the various publications listed in the bibliography.

5. I am a member of the Canadian Institute of Mining and Metallurgy.

dated at Thunder Bay, Ontario

September 24, 1985

Blair Kite

Blair Kite

Geologist

RECOMMENDATIONS

The following work is recommended to test the full economic potential of Cumberland's Evans Lake Property.

1. Further lithogeochemical and soil sampling work should be done to better define the potential economic mineralization targets identified to date. The sample pulps from the current program should be analysed for Cu, Zn, Ag, Au, MgO, K2O, MnO. Selected sample pulps should also be analysed for TiO . This will help in confirming rock lithologies and better defining the relationship between rock units.

2. Detailed 1:2000 scale geological mapping and outcrop stripping should be performed over the area between the south end of Evans Lake and the southeastern corner of the claim group.

3. Linecutting, geological mapping and lithogeochemical sampling must be conducted on the newly staked claims to the north, east and south of the original 42 claims.

4. Thin section work should be done to help determine the relation between patch alteration and the metavolcanic sequence. Thin section work should be done to confirm the alteration mineral assemblage found on Evans Lake.

5. Whole rock analysis should be done to determine compositions of: patch alteration; felsic to intermediate metavolcanics; and metasediments.

6. Geophysics, either Max-Min or I.P. or both, should be conducted over all the anomalous zones, geochemical and airborne geophysical.

7. Computer-assisted statistical analysis of the geochemical data should be run.

8. Overburden stripping and trenching should be carried out on all showings.

9. An initial diamond drilling program is required to test geochemical and geophysical conductors.

10. Following the initial diamond drill program a series of down-hole geophysical surveys will be necessary to test for non to weakly conductive massive sulphide deposits.

11. A detailed diamond drilling program to test the deeper anomalies and to fill in any required grid drill pattern.

BIBLIOGRAPHY

1. Bond, W.D. 1980: Geology of the Houghton - Hough Lakes Area, Ontario Geological Survey Report #195.

2. Fraser, D.C. 1984: Dighem iii survey of the Savant Lake Area for Cumberland Resources Limited. Company report in assessment files, Sioux Lookout, Ontario.

3. Kissen, S.A. and Turner G.W. 1982: A pseudo- tactite assemblage in the footwall of a massive sulphide occurrence, Savant Lake - Sturgeon Lake Greenstone Terraine, Ontario. Canadian Journal of Earth Sciences, vol 19, no. 8.

4. Trowell, N.F. 1981: Geology of the Beckington Lake Area, Ontario Geological Survey Report #200.

5. Turner, G.W. 1978: A paragenetic study of the Hadley Prospect, A lead-zinc occurrence, Savant Lake , Ontario. Unpublished Bachelor's Thesis, Lakehead University.

6. Wittrup, M.B. 1979: Geology of the Falconbridge Copper Limited, Volcanogenic Massive Deposit, Sturgeon Lake , Ontario. Unpublished Bachelor's Thesis, Lakehead University.

QUALIFICATIONS

I, Blair Kite, of 74 Winnipeg Avenue, Thunder Bay, Ontario hereby certify:

1. I am a graduate of Lakehead University (1981) and hold an Honours B.Sc.degree in geology.

2. I have been employed in my profession by various mining companies during university and for three years since graduation.

3. I am presently employed as a geologist with Cumberland Resources Limited, Thunder Bay, Ontario.

4. The information contained in this report was obtained from personal field traversing and the various publications listed in the bibliography.

5. I am a member of the Canadian Institute of Mining and Metallurgy.

dated at Thunder Bay, Ontario

September 24, 1985

Blair Kite

Blair Kite

Geologist

APPENDIX #1

SWASTIKA LABORATORIES LIMITED

P.O. BOX 10, SWASTIKA, ONTARIO P0K 1T0
TELEPHONE: (705) 642-3244
ANALYTICAL CHEMISTS • ASSAYERS • CONSULTANTS

Certificate of Analysis

Certificate No. 60621 Date: July 26 1985

Received July 22/85 15 Samples of ore

Submitted by Cumberland Resources Ltd., Thunder Bay, Ontario Att'n: Mr. W. McCrindle

SAMPLE NO.	GOLD Oz./ton	SILVER Oz./ton	COPPER %	ZINC %
8631	Nil	Nil	0.005	None
8632	Nil	Nil	0.005	None
8633	Nil	Nil	0.005	0.005
8634	Nil Nil	Trace	None	None
8635	Nil	0.01	None	None
8636	Nil	Nil	0.005	None
8637	Nil	Trace	None	0.005
8638	Nil	Nil	None	None
8639	Nil	Nil	None	None
8640	0.002	0.01	None	0.01
8641	0.002	0.01	0.01	0.005
8642	Nil	Nil	None	None
8643	Nil	Nil	None	None
8644	Nil	Trace	None	0.005
8702	0.02 0.01	0.16	0.01	0.22

Per G. Lebel

G. Lebel -- Manager

ESTABLISHED 1928

Ontario

Ministry of Natur

52J07SE8786 2.8522 EVANS LAKE

900

GEOPHYSICAL – GEOLOGIC TECHNICAL DATA STATEMENT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) GEOLOGICAL

Township or Area EVANS LAKE

Claim Holder(s) CUMBERLAND R.L.

Survey Company CUMBERLAND R.L.

Author of Report B. KING

Address of Author % CUMBERLAND R.L. 74 WINNIPEG AVE THUNDER BAY

Covering Dates of Survey JUNE 1/85 - AUG. 1/85 (linecutting to office)

Total ~~Miles~~ of Line Cut 60 KMS

SPECIAL PROVISIONS CREDITS REQUESTED		DAYS per claim.
ENTER 40 days (includes line cutting) for first survey.	Geophysical	
	–Electromagnetic	
	–Magnetometer	
	–Radiometric	
ENTER 20 days for each additional survey using same grid.	–Other	
	Geological	40
	Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: Oct. 3/85 SIGNATURE: [signature]
Author of Report or Agent

Res. Geol. _____ Qualifications 28521

Previous Surveys

File No.	Type	Date	Claim Holder

OFFICE USE ONLY

MINING CLAIMS TRAVERSED
List numerically

(prefix) (number)

PA. 659539
(list 1/42 to attached)

TOTAL CLAIMS 42

If space insufficient, attach list

837 (5/79)

EVANS LAKE GROUP #1 - SAVANT

Location: Evans Lake M-1774, Patricia Mining Division, Ontario
Ownership: by agreement dated June 1/83
Cumberland Resources Ltd. 50%
Redfern Resources Ltd. 25%
Vestor Exploration Ltd. 25%
Registered: in name of Cumberland Resources Ltd. May 5/83
Recorded: March 21/83

PA659539
PA659540
PA659541
PA659542
PA659543
PA659544
PA659545
PA659546
PA659547
PA659548
PA659549
PA659550
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PA659578
PA659579
PA659580

Ministry of Natural Resources
Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

2.8522.
#85-176

Mining Act

Instructions: – Please type or print.
– If number of mining claims traversed exceeds space on this form, attach a list.
Note: – Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

Having Bonds' R. Miller

Type of Survey(s): GEOLOGICAL
Township or Area: EVANS LAKE G-2031

Claim Holder(s): CUMBERLAND RESOURCES LIMITED (LTD.)
Prospector's Licence No: T1303

Address: 74 WINNIPEG AVE. THUNDER BAY. P7B 3P9

Survey Company: CUMBERLAND R.L.
Date of Survey (from & to): 1 JUNE 85 to 1 AUG. 85
Total Miles of line Cut: 60 kms.

Name and Address of Author (of Geo Technical report): B. KITE c/o CUMBERLAND R.L

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical	
	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	40
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical	
	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.	Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
PA	659539 etal (list of 42 cl. attached)				

PATRICIA MINING DIV.
RECEIVED
OCT – 7 1985

Total number of mining claims covered by this report of work: 42

Pa. 659539

Expenditures (excludes power stripping)

Type of Work Performed:

Performed on Claim(s):

Calculation of Expenditure Days Credits
Total Expenditures: $ ____ + 15 = Total Days Credits: ____

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

Date: Oct. 3/85
Recorded Holder or Agent (Signature): W. McCrindle

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
1680	Oct. 7, 1985	
	Date Approved as Recorded	Branch Director

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying: W. McCRINDLE c/o CUMBERLAND RESOURCES LIMITED 74 WINNIPEG AVE. THUNDER BAY.

Date Certified: Oct. 3/85
Certified by (Signature): W. McCrindle

1362 (81/9)

Ministry of Northern Affairs and Mines
Ontario

Technical Assessment Work Credits

File: 2.8522

Date: 1985 11 04

Mining Recorder's Report of Work No.: 85-176

Recorded Holder: CUMBERLAND RESOURCES LIMITED (LTD)

Township or Area: EVANS LAKE AREA

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	
Electromagnetic _____ days	
Magnetometer _____ days	
Radiometric _____ days	
Induced polarization _____ _____ days	
Other _____ days	
Section 77 (19) See "Mining Claims Assessed" column	
Geological 35 days	PA 659539 to 580 inclusive
Geochemical _____ days	
Man days ☐ Airborne ☐	
Special provision ☒ Ground ☒	
☒ Credits have been reduced because of partial coverage of claims.	
☐ Credits have been reduced because of corrections to work dates and figures of applicant.	

Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

☐ not sufficiently covered by the survey ☐ insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80, Geologocal - 40; Geochemical - 40; Section 77(19) - 60.

2.8522

659539	✓			659560	✓								
40	✓			61	✓								
41	✓			62	✓								
42	✓			63	✓								
43	1/4			64	✓								
44	3/4			65	✓								
45	1/2			66	1/2								
46	✓			67	1/4								
47	✓			68	✓								
48	3/4			69	✓								
49	✓			70	✓								
50	✓			71	✓								
51	✓			72	✓								
52	✓			73	✓								
53	1/2			74	✓								
54	✓			75	1/4								
55	1/4			76	1/4								
56	✓			77	✓								
57	3/4			78	✓								
58	1/4			79	✓								
59	1/2			80	✓								

5.75 / 1 C

42 x 40 - 1680

1680 ÷ 47.5 = 35

Telephone
(807)344 6598

Cumberland Resources Limited

74 Winnipeg Avenue,
THUNDER BAY, ONTARIO
P7B 3P9

OCT. 3, 1985

MR. ROY SPOONER,
MINING RECORDER,
SIOUX LOOKOUT,
ONTARIO.

DEAR MR. SPOONER;

The attached geological report covers the claims listed on the enclosed report of work. The geology was mapped on grid lines over these claims. This report also covers twelve claims recorded on August 20, 1984 for which I submitted the report of work on August 8, 1985. The geology was mapped on compass line traverses on these claims. The claims are numbered 1A 814148, 149, 152, 153 and 814177 to 814184 inclusive.

I trust that this information will assist you to credit our claims with the corresponding assessment credits.

Yours truly.

Bill McIndoe

1985 10 17 File: 2.8522

Mining Recorder
Ministry of Northern Affairs and Mines
P.O. Box 309
Sioux Lookout, Ontario
P0V 2T0

Dear Sir:

We received reports and maps on October 9, 1985 for a Geological Survey submitted under Special Provisions (credit for Performance and Coverage) on Mining Claims PA 695939, et al, in the Area of Evans Lake.

This material will be examined and assessed and a statement of assessment work credits will be issued.

This material will be examined and assessed and a statement of assessment work credits will be issued.

Yours sincerely,

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone:(416)965-4888

BB/mc

cc: Cumberland Resources Limited
74 Winnipeg Avenue
Thunder Bay, Ontario
P7B 3P9

Ministry of Natural Resources

Ontario

Notice of Intent

for Technical Reports

1995 11 04

2.8522/85-176

An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the "Special Provision Performance and Coverage" method and you are of the opinion that a re-appraisal under the "Man-days" method would result in the approval of a greater number of days credit per claim, you ma,, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns sl ould be submitted direct to the Land Management Branch, Toronto. The report will be re-ass' ;sed and a new statement of credits based on actual days worked will be issued.

Ministry of Natural Resources

Ontario

Nov. 19/85

1985 11 04

Your File: 85-176
Our File: 2.8522

Mining Recorder
Ministry of Northern Affairs and Mines
P.O. Box 309
Sioux Lookout, Ontario
P0V 2T0

Dear Sir:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

For further information, if required, please contact Mr. R.J. Pichette at 416/965-4888.

Yours sincerely,

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3

SH/mc

Encls.

cc: Cumberland Resources Limited (Ltd)
74 Winnipeg Avenue
Thunder Bay, Ontario
P7B 3P9
Attention: W. McCrindle

Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

845

1985 12 04

Your File: 85-176
Our File: 2.8522

Mining Recorder
Ministry of Northern Development and Mines
Court House
P.O. Box 309
Sioux Lookout, Ontario
P0V 2T0

Dear Sir:

RE: Notice of Intent dated November 4, 1985
Geological Survey on Mining Claims PA 659539, et al, in the Evans Lake Area

The assessment work credits, as listed with the above-mentioned Notice of Intent, have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours sincerely,

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone:(416)S65-4888

SH/mc

cc: Cumberland Resources Limited (Ltd)
Thunder Bay, Ontario
Attention: W. McCrindle

Resident Geologist
Sioux Lookout, Ontario

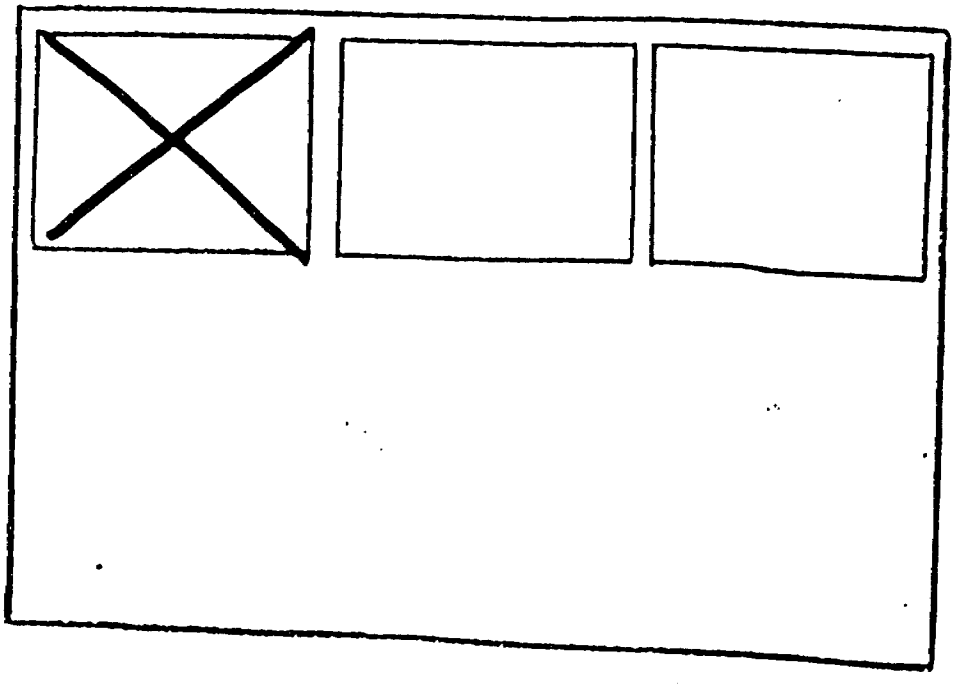
Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

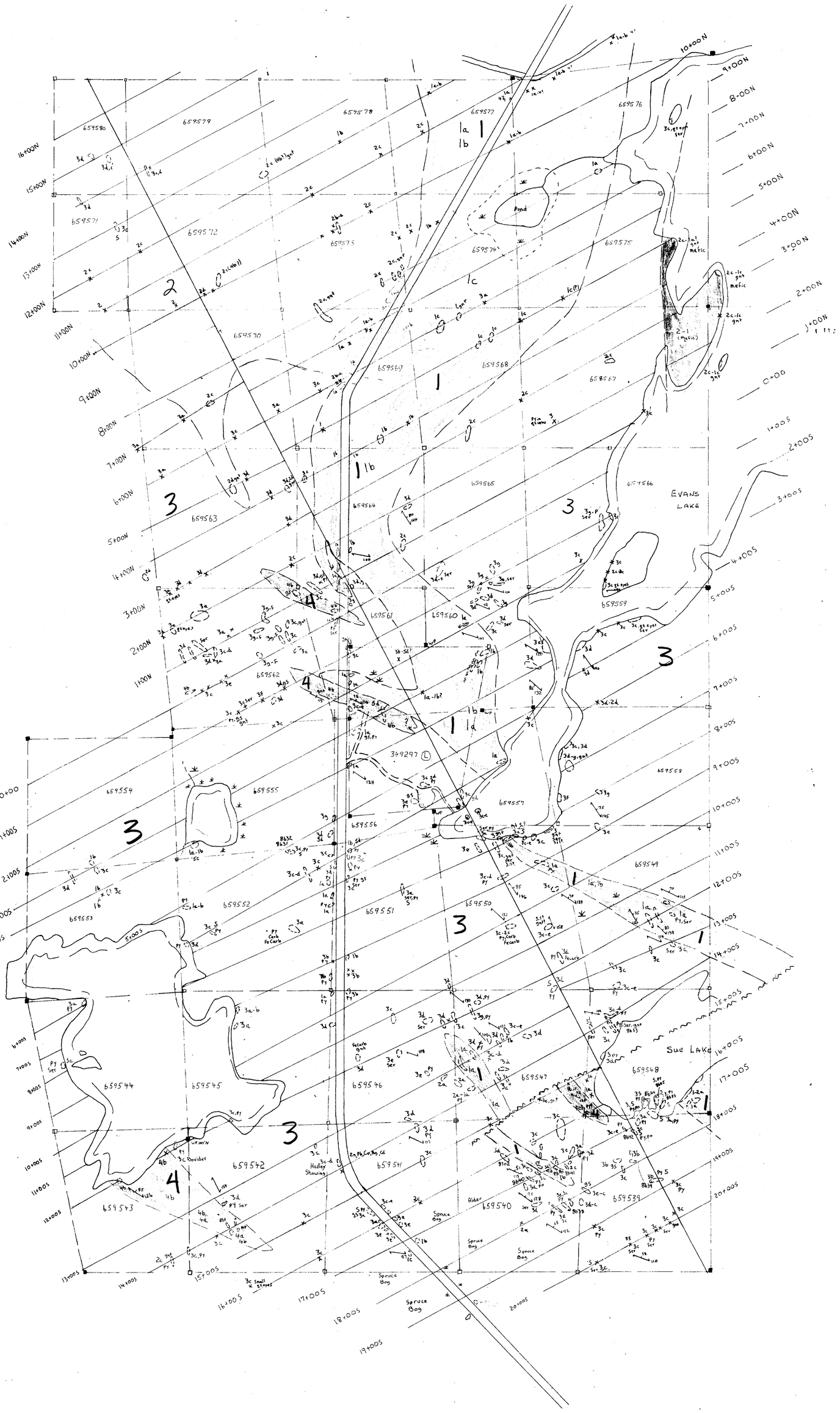
Encl.

SEE ACCOMPANYING MAP(S) IDENTIFIED AS

52J/07SE-0060 #1

LOCATED IN THE MAP CHANNEL IN THE FOLLOWING SEQUENCE (X)





N

LEGEND

5 Felsic to Intermediate Intrusive Rocks
- 5a Feldspar porphyry
- 5b Quartz feldspar porphyry
- 5c Quartz porphyry
- 5d Felsite

Intrusive Contact

4 Metasediments
- 4a Arkosic metasediments
- 4b Tuffaceous metasediments
- 4c Greywacke

3 Felsic Metavolcanics
- 3a Massive flows
- 3b banded flows
- 3c Tuff
- 3d Lapilli tuff
- 3e Crystal tuff - Crystal lapilli tuff
- 3f. Breccia
- 3g Debris flow

2 Felsic - Intermediate Metavolcanics
- 2a Crystal tuff
- 2b Porphyritic flow
- 2c Tuff
- 2d Lapilli tuff

1 Intermediate Metavolcanics
- 1a Crystal tuff
- 1b Porphyritic flow
- 1c lapilli tuff - Debris flow

Symbols

- Bedrock Outcrop: large , small
- Bedding: inclined, vertical
- Foliation: inclined, vertical
- Fault
- Shearing: inclined, vertical
- Geological Contact: observed : infered
- Swamp
- Highway
- Road
- Building
- ClaimPost : Found : Position Assumed

Mineral Abbreviations

py	pyrite	gs	gossan
cpy	chalcopyrite	Sill	sillimanite
po	pyrrhotite	Carb	Carbonate
gnt	garnet	FeCarb	Iron Carbonate
ser	serricite	mt.	magnetite
qz	quartz		

Alteration

- Pervasive
- Patchy
- Trace

} "Mixed Metavolcanic" of Bond (1980) Amphibole, feldspar, mica, carbonate in patches, clots, veins, veinlets

S - Silicification

Assay Sample Location and Number • 1234

Scale : 1:5000

100 0 100 200 300 400 metres

B.L @ 332° : 2.6 Km
lines @ 62° 29.5 Km

28522 dup

CUMBERLAND RESOURCES LTD.	
SAVANT - EVANS LAKE PROPERTY	
map title: Geology	scale 1:5000
	date August 1985
	B. KNE
	map no.

52 J/07SE-0060 #1