

PRELIMINARY GEOLOGICAL REPORT

ON THE

JULIA CLAIM GROUP

WATSON LAKE MINING DIVISION  
YUKON TERRITORY  
N.T.S. 105H/5- 105G/8

Latitude: 61° 25'N

Longitude: 130° 00'W

WELCOME NORTH MINES LTD.

Report compiled by J. D. Guild, P.Eng.

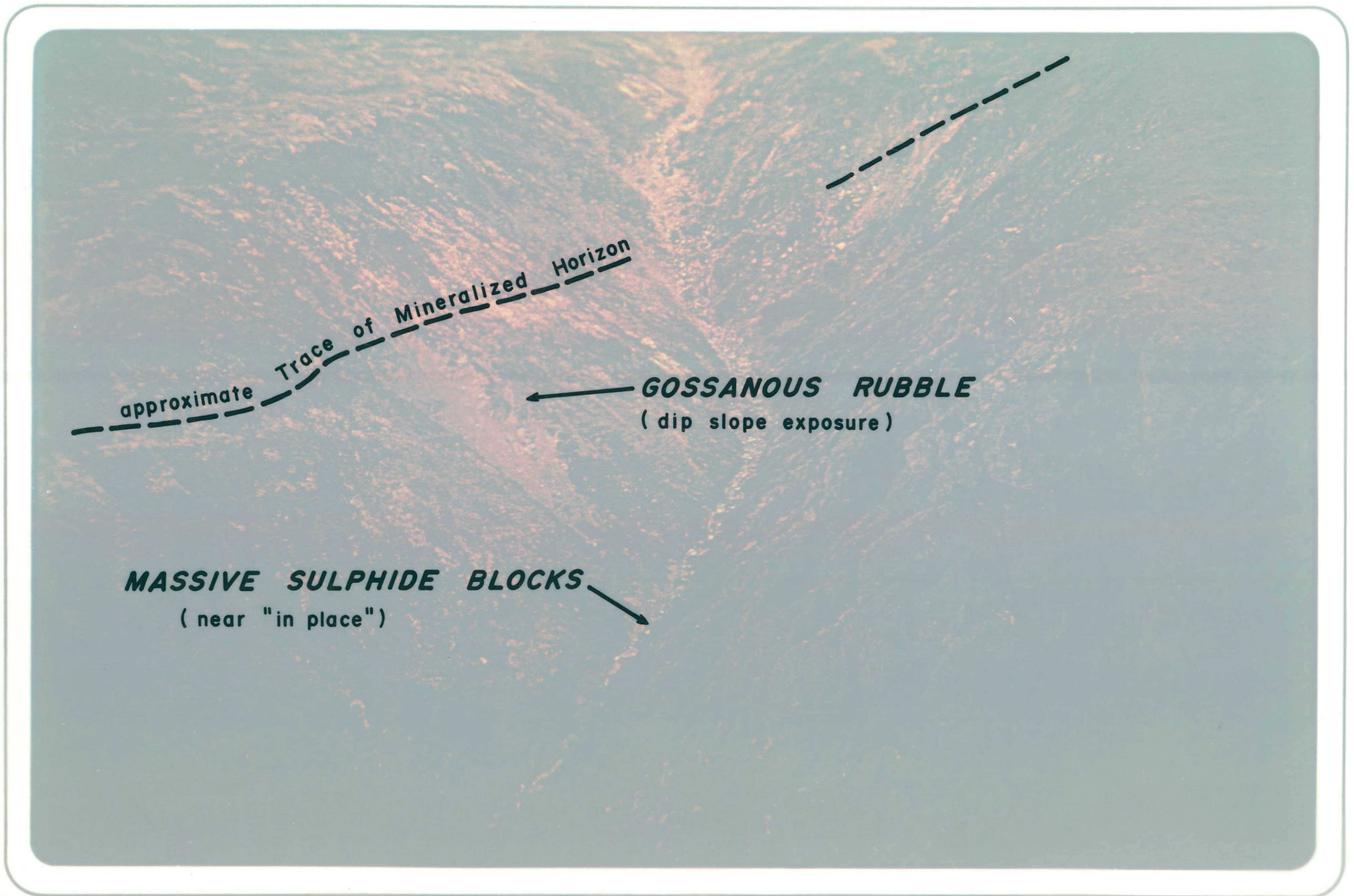
December, 1980.

## TABLE OF CONTENTS

	<u>Page No:</u>
INTRODUCTION	1
LOCATION & ACCESS	2
PROPERTY DEFINITION	3
PREVIOUS WORK	3
PROPERTY GEOLOGY	3
MINERAL OCCURRENCES	4, 5 & 6
CONCLUSION & RECOMMENDATIONS	7 & 8

## ILLUSTRATIONS

Frontispiece	Creek 2 (looking upstream)	
Figure 1	Location Map	2a
Figure 2	Claim Map	2b
Figure 3	Showing Locations	2c
Figure 4	Regional Geology	4a
Figure 5	Creek 2 Massive Sulphide Blocks	6a



approximate Trace of Mineralized Horizon

← GOSSANOUS RUBBLE  
( dip slope exposure )

MASSIVE SULPHIDE BLOCKS  
( near "in place" ) →

*JULIA PROPERTY* Creek 2 ( Looking Upstream )

## INTRODUCTION

The JULIA Claims were staked as the result of prospecting in the Frances Lake area of the Yukon Territory by P. Risby, chief prospector for Welcome North Mines Ltd. Iron gossans associated with gold-copper mineral showings on the property have produced prominent colour anomalies which were noted from the air.

Detailed prospecting on the ground resulted in the eventual discovery of unweathered mineralization in one location. This massive sulphide type mineralization led to speculation that all of the gossans may cap similar material. The gossanous zone is exposed in three creek cuts on the claim group and appears to form a continuous trend some 1800 metres in strike length.

Welcome North carried out only very preliminary exploration of the property consisting primarily of prospecting during the course of claim staking activities. Low grade but significant assays in copper and gold were obtained from both the massive sulphides and the gossans.

Subject to the approval of regulatory authorities the JULIA Claim Group was dealt by Welcome North to Arbor Resources Incorporated of Vancouver, B.C. in August, 1980 under an option agreement.

A two stage program of exploration involving the expenditure of \$184,000 to be followed by third stage diamond drilling if warranted has been recommended for the property by geological consultants to Arbor Resources.

LOCATION AND ACCESS

The JULIA Group of mineral claims is located in the Pelly Mountains of the Campbell Range about 150 kilometres southeast of the town of Ross River, Yukon Territory or 160 kilometres north of Watson Lake, (figure 1). The claims cover a ridge immediately above and below treeline just to the west of Money Creek and about 20 kilometres to the west of Frances Lake. The JULIA mineral showings occur at an elevation of approximately 1450 metres and are exposed in three prominent easterly flowing creek cuts which for convenient reference have been labelled from north to south creeks 1, 2 and 3 (figures 2 and 3).

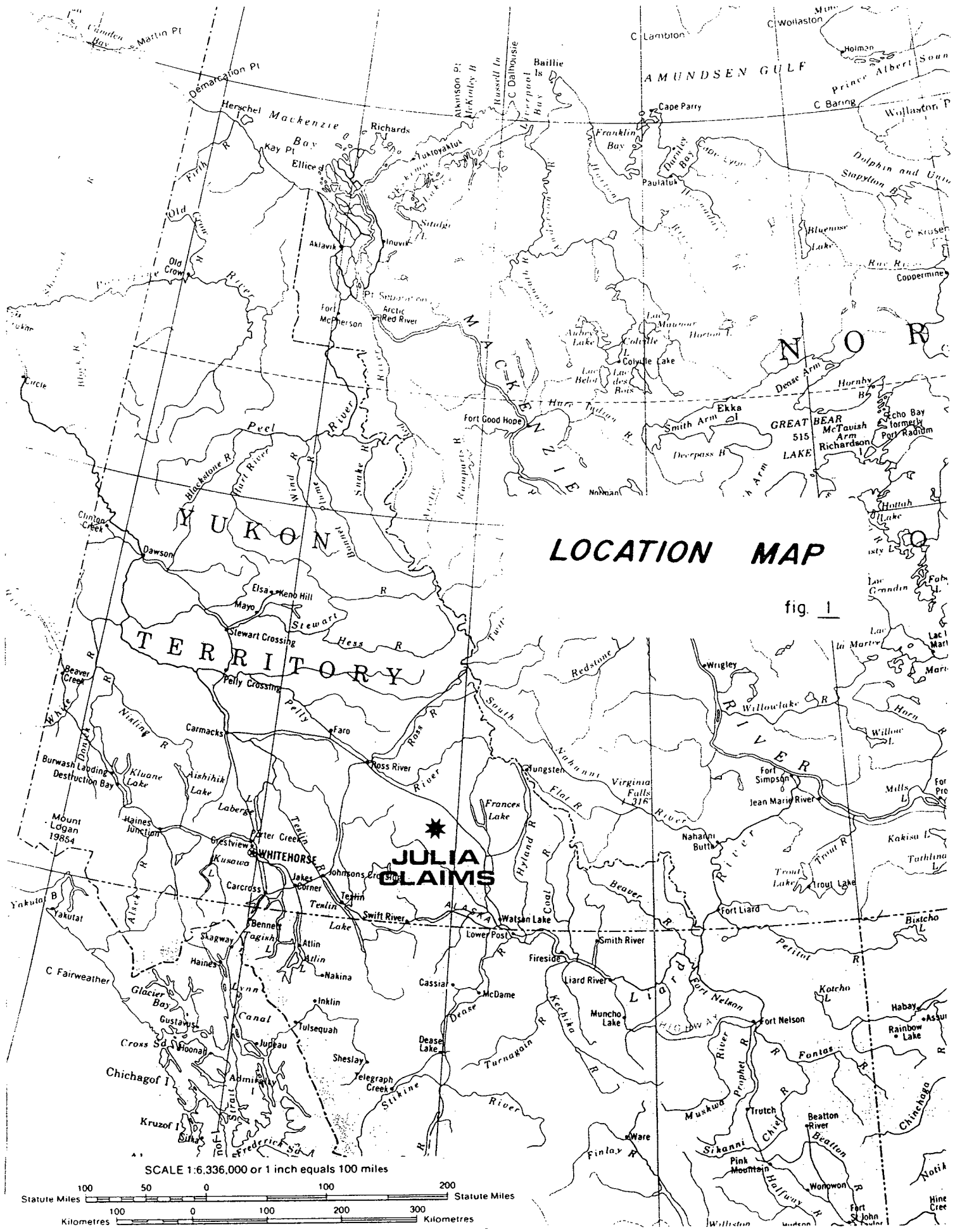
Specifically the property lies at:

Latitude 61° 25'N and Longitude 130° 00'W

Overlapping two N.T.S. Map Sheets

Frances Lake 105H/5  
Finlayson Lake 105G/8

Access to the property is by helicopter either from Ross River or from Watson Lake. Staging can be carried out from the Robert Campbell Highway a distance of 10 kilometres. Eventual road access could also conveniently be gained from the highway.



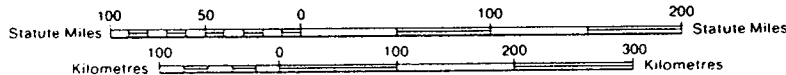
# LOCATION MAP

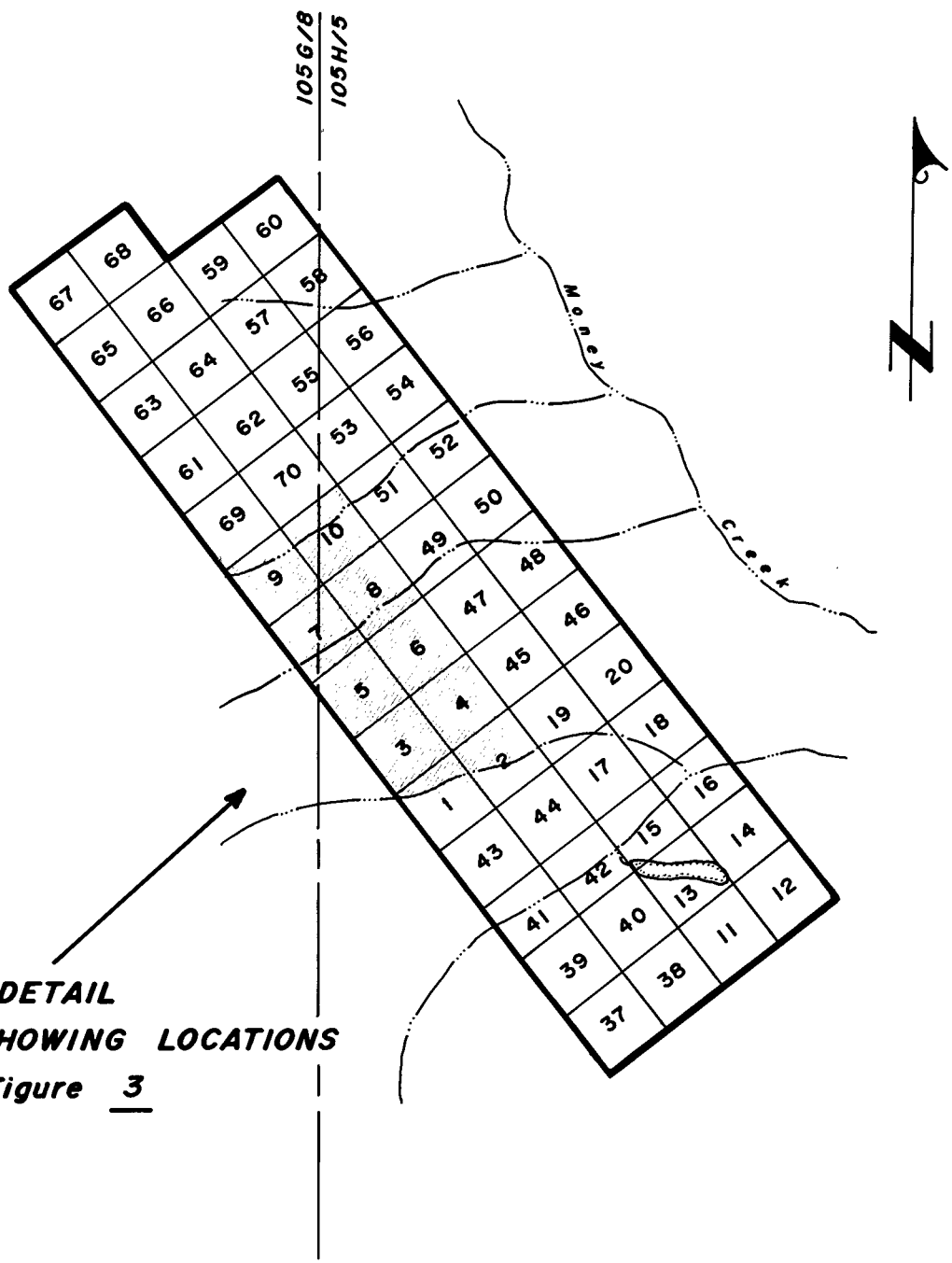
fig. 1

YUKON TERRITORY

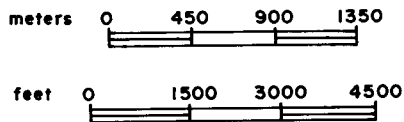
**JULIA GLAIMS**


SCALE 1:6,336,000 or 1 inch equals 100 miles





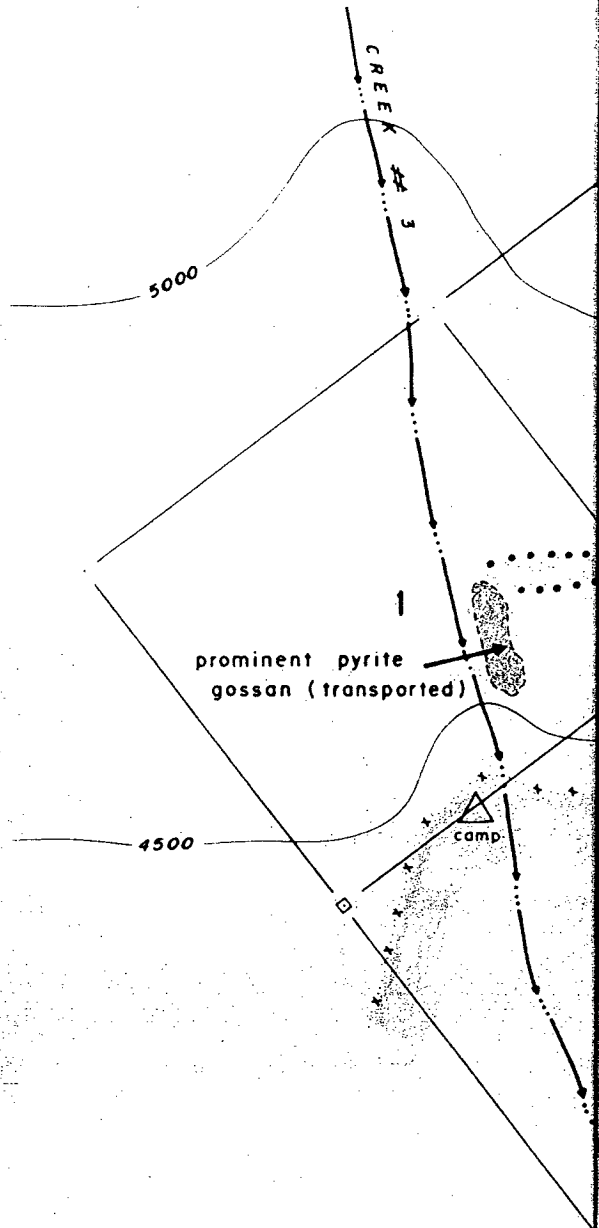
**FOR DETAIL  
and SHOWING LOCATIONS  
See Figure 3**









 WELCOME NORTH MINES LTD.		
BASIN PROJECT		
JULIA CLAIMS		
CLAIM MAP		
Scale: As Shown	Date: DEC. 1980	NTS.
Revised: _____	By: J.G. / d.h.	Fig. 2

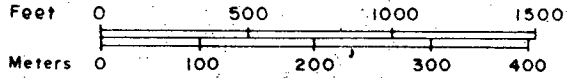
NORTH

Arc File




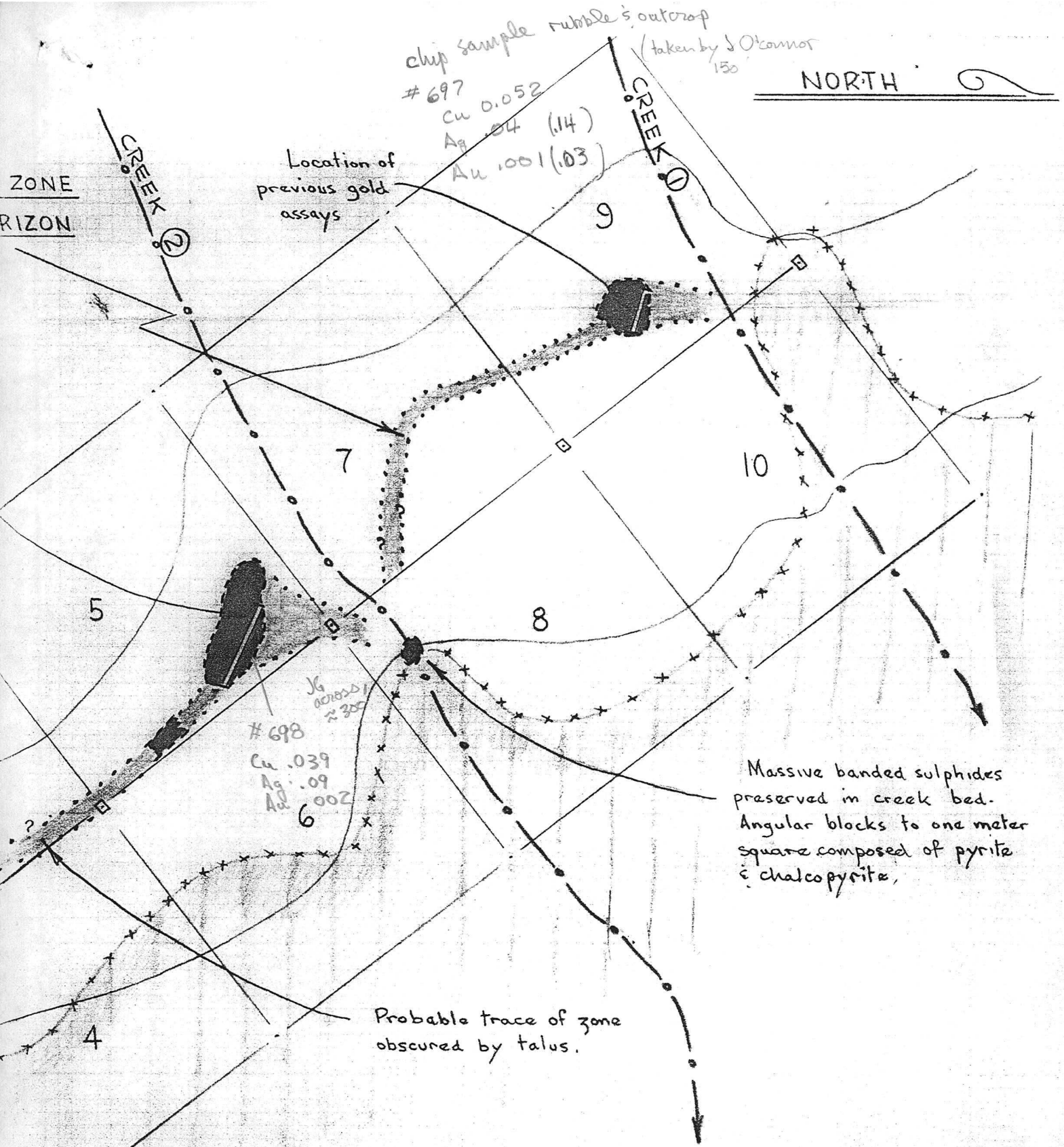
**LEGEND:**

-  MINERAL ZONE  
(Observed - Projected)
-  SAMPLE LOCATION
-  CREEK
-  CONTOUR (Feet)
-  CLAIM BOUNDARY
-  TREE LINE



FOR LOCATION SEE FIGURE 2

 WELCOME NORTH MINES LTD.		
BASIN PROJECT		
JULIA CLAIMS		
SHOWING LOCATIONS		
Scale	As Shown	Date: DEC. 1980
Revised:		By: J.G. / d.h.
		NTS 105H/5
		Fig. 3

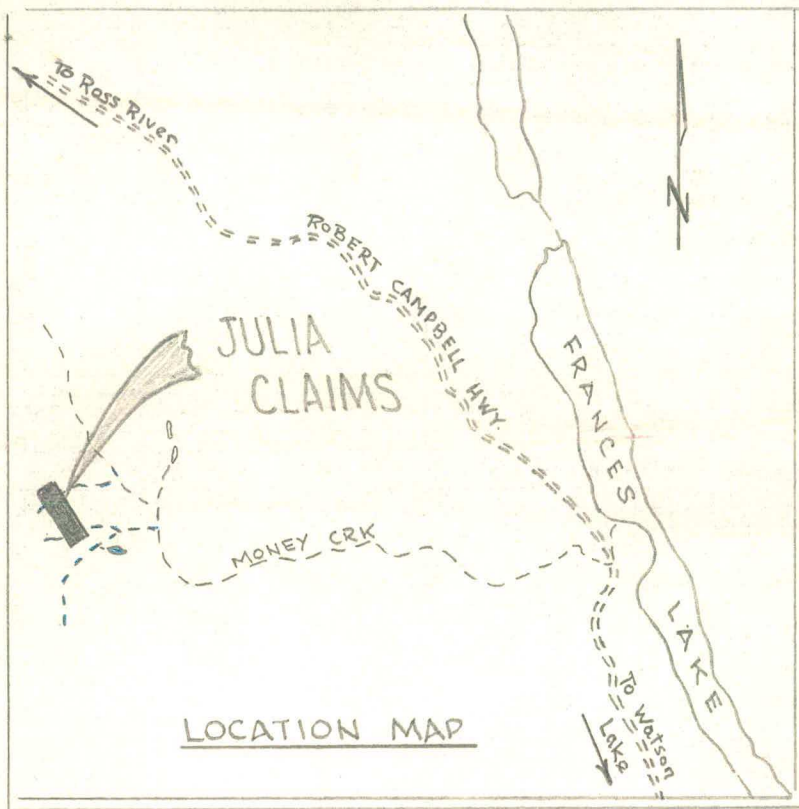


**NOTE** The mineral zone is enclosed in structureless altered green volcanic rocks including flows, tuffs & pyroclastic breccias.

WELCOME NORTH MINES LTD.  
 RISBY '80 PROJECT  
 JULIA CLAIMS  
 Aug. 3 1980 N.T.S. 105 H/5

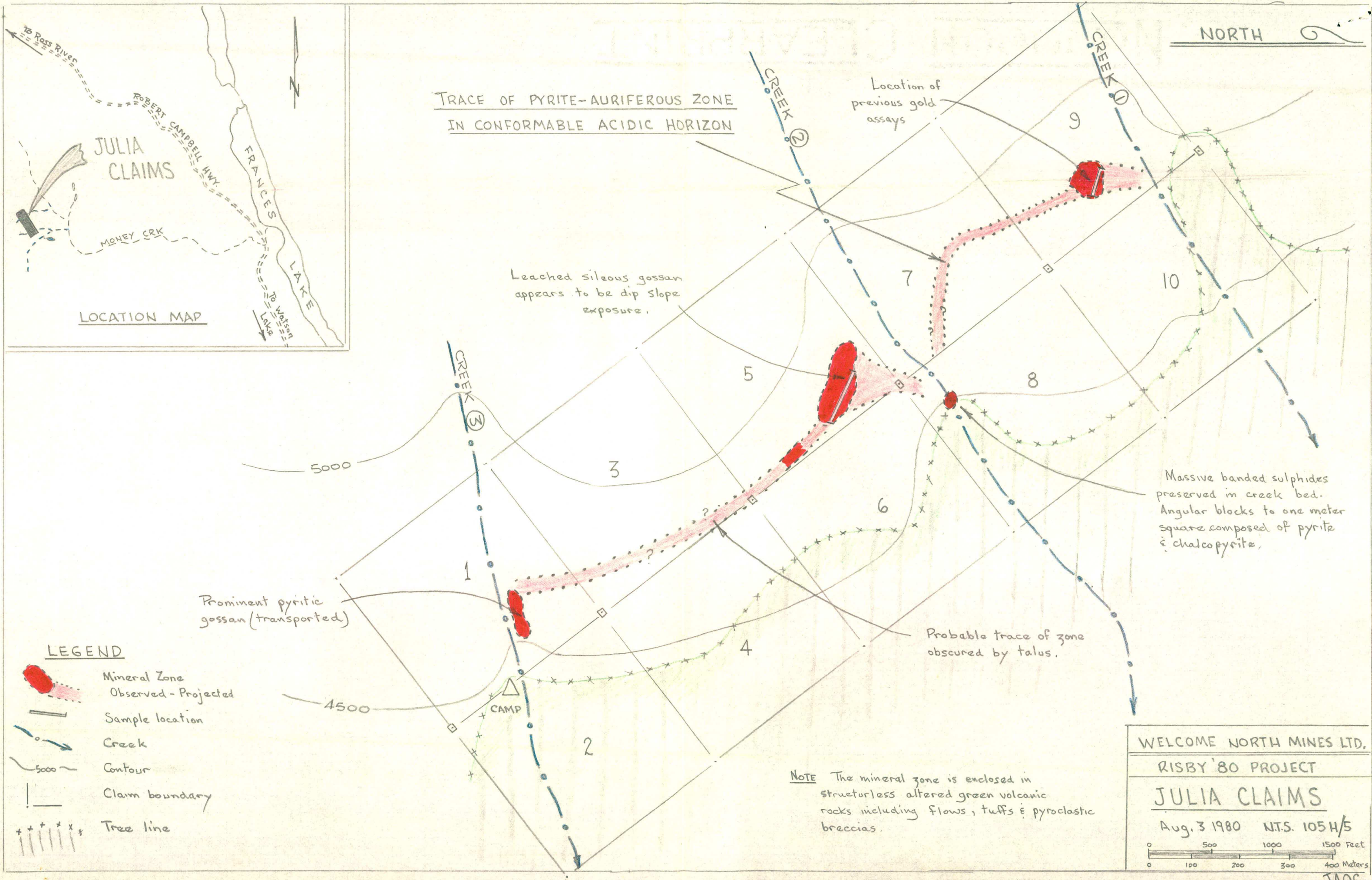
0 500 1000 1500 Feet  
 0 100 200 300 400 Meters

J.A.O.C.



TRACE OF PYRITE-AURIFEROUS ZONE  
IN CONFORMABLE ACIDIC HORIZON

NORTH



**LEGEND**

- Mineral Zone Observed - Projected
- Sample location
- Creek
- Contour
- Claim boundary
- Tree line

**NOTE** The mineral zone is enclosed in structureless altered green volcanic rocks including flows, tuffs & pyroclastic breccias.

WELCOME NORTH MINES LTD.  
RISBY '80 PROJECT  
**JULIA CLAIMS**  
Aug. 3 1980 NTS. 105H/5

0 500 1000 1500 Feet  
0 100 200 300 400 Meters

J.A.O.C.

### PROPERTY DEFINITION

Subject to the approval of regulatory authorities Arbor Resources Incorporated of Vancouver, B.C. has an option agreement to purchase the JULIA Property from Welcome North Mines Ltd.

The property is made up of the following 54 located mineral claims in the Watson Lake Mining Division of the Yukon Territories (fig.2).

<u>Claim Name</u>	<u>Grant Numbers</u>	<u>No. of Claims</u>	<u>Recording Date</u>
JULIA 1-10	YA56379-YA56388	10	August 19, 1980
JULIA 11-20	YA56518-YA56527	10	September 8, 1980
JULIA 37-68	YA56528-YA56559	32	September 8, 1980
JULIA 69-70	YA56652-YA56653	2	September 12, 1980

### PREVIOUS WORK

There is no history of previous work on the JULIA Claims known to the author although the ground was in part staked, but not recorded in the past. P. Risby who discovered the JULIA showings on behalf of Welcome North had examined some of the iron gossans prominent on the property during the 1960's and had obtained low gold values in specimens of the material. Less favourable economic conditions at that time had discouraged further work and the expense of claim recording.

### PROPERTY GEOLOGY

The JULIA Claims are underlain by a thick sequence of greenstones (ophiolites) which form a part of the Anvil-Campbell allochthon. The mass of the mountain which hosts the JULIA mineral deposits appears to be made up predominantly of massive greenstone breccias.

The immediate wallrock to the deposits is comprised of a 500 metre sequence of greenstones and pillow lavas with massive sheared greenstone forming the upper part of the succession and well preserved beds of pillow lava exposed at the lower part. Apparently on strike with the mineralized horizon and bounded by the pillow lavas is a 3 metre thick bed of red slate-iron formation which may represent a different facies of the pyritic beds. Another horizon approximately 150 metres lower in the succession consists of rusty weathering chlorite schist with abundant white quartz and limonite stain.

This horizon appears to be 50 metres thick and crosses the head of the gully at Creek 3 (figure 3). Another rusty schist was noted in green schists associated with the greenstones near the top of the succession (lower in the creek).

The property has not, as yet, been geologically mapped. The various lithologies described have been observed in the course of prospecting on the property but no attempt has been made to correlate the tentative units along strike from one creek-cut exposure to the next.

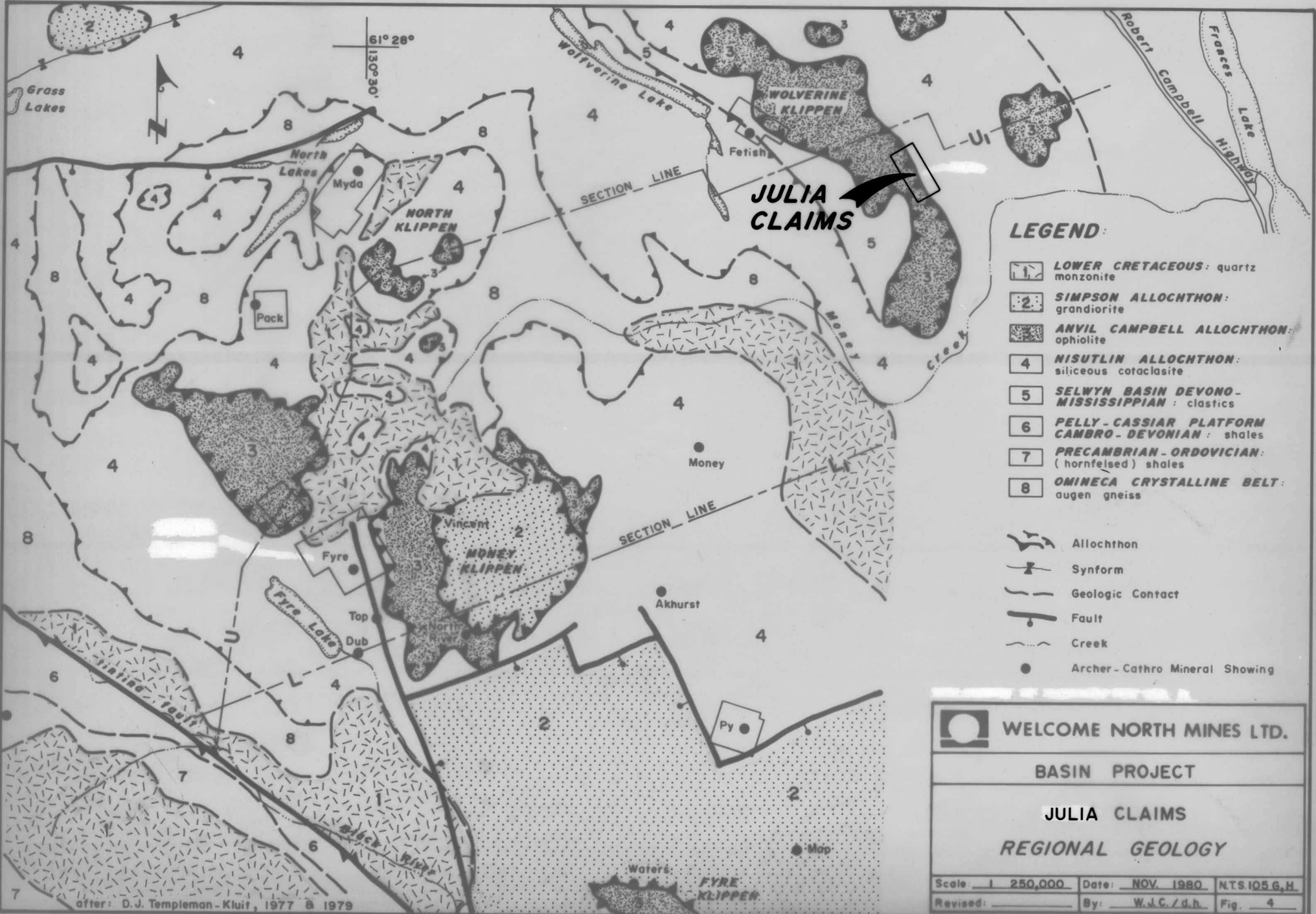
For a more detailed discussion of the regional aspects of the geology the reader is referred to the Regional Geology section of this report and to G.S.C. Paper 79-14 by D. J. Tempelman-Kluit (OF Map 486) (figure 4).

Ophiolite suites are characterized by a pillow lava-serpentine-chert trinity, hence the mineralization probably occurs as beds in a stack of pillow lavas. These beds may therefore be continuous horizons or perhaps discontinuous lenses at different levels in the lavas.

#### MINERAL OCCURRENCES

The JULIA copper-iron-gold zone is exposed in three parallel southerly flowing creek cuts over a strike distance of approximately 1800 metres (figure 3). The zone is highly weathered and leached so that in general the present exposures consist of only pyritic gossans in a siliceous boxwork rubble that exhibits a marked colour anomaly from the air.

The hostrock to the mineral zone is a slightly more acidic volcanic (rhyolitic phase) than the more basic greenstones which form the enclosing rocks. The mineralization is nowhere well exposed but is usually evident in gossanous heaps or talus rills. It consists of a fine grained, dense, cream coloured silica interbanded with darker chloritic layers. Pale coloured, fresh, crystalline pyrite is associated with the more siliceous bands. The pyrite most commonly takes the form of leached-out, remnant crystal indentations. White hydrothermal quartz is also associated with the zone. The mineral zone apparently strikes north-westerly and dips at 45° to the northeast.



**LEGEND:**

- 1 LOWER CRETACEOUS: quartz monzonite
  - 2 SIMPSON ALLOCTHON: grandiorite
  - ANVIL CAMPBELL ALLOCTHON: ophiolite
  - 4 NISUTLIN ALLOCTHON: siliceous cotacalsite
  - 5 SELWYN BASIN DEVONO-MISSISSIPPIAN: clastics
  - 6 PELLY-CASSIAR PLATFORM CAMBRO-DEVONIAN: shales
  - 7 PRECAMBRIAN-ORDOVICIAN: (hornfelsed) shales
  - 8 OMINECA CRYSTALLINE BELT: augen gneiss
- 
- Allocthon
  - Synform
  - Geologic Contact
  - Fault
  - Creek
  - Archer-Cathro Mineral Showing

<b>WELCOME NORTH MINES LTD.</b>		
<b>BASIN PROJECT</b>		
<b>JULIA CLAIMS</b>		
<b>REGIONAL GEOLOGY</b>		
Scale	Date	N.T.S.
1 250,000	NOV. 1980	105 G.H.
Revised:	By:	Fig. 4
	W.J.C./d.h.	

after: D.J. Templeman Kluit, 1977 & 1979

The hostrock greenstones are generally massive, highly chloritic and epidotic and locally hematitic. Some flow banding is evident and the rocks appear to be broken and fragmental. The sub-angular fragments are often subtle and evident only from the epidotic matrix which rims them. Fragments range up to one metre square. Vague pillow structures are common but the only positive top determinations were made in float pieces of displaced rubble. The present hanging wall rock is more highly altered and veined than the footwall but this may be only true locally.

For convenient reference the most northwesterly creek is termed Creek (1), the middle Creek (2), and the most southerly Creek (3) (figure 3).

The pyritic zone in Creek (1) occurs in the southwestèrly valley side. The hostrock is more chloritic at this location than at other points along the mineral trend. Siliceous-pyritic specimens from this showing assayed significantly in gold according to old assays reported. A chip sample of mixed outcrop and rubble taken over 40 metres at this showing in 1980 assayed 0.052% copper, 0.001 oz/ton (0.03 g/t) gold and 0.04 oz/ton (1.37 g/t) silver. The true thickness of this mineralization is not apparent from present exposure but it may approximate the width of the chip sample.

The zone does not visibly extend across Creek (1) to the northwest; this area however, was not prospected. A train of rusty rubble extends across the ridge between Creeks (1) and (2).

The mineral zone in the valley of Creek (2) is also best exposed in the southerly wall. The exposure forms a dip slope at this point.

A 60 metre chip sample across the rusty rubble in this area is probably not representative of the true thickness. This sample assayed 0.039% copper, 0.002 oz/ton (0.07 g/t) gold and 0.09 oz/ton (3.08 g/t) silver.

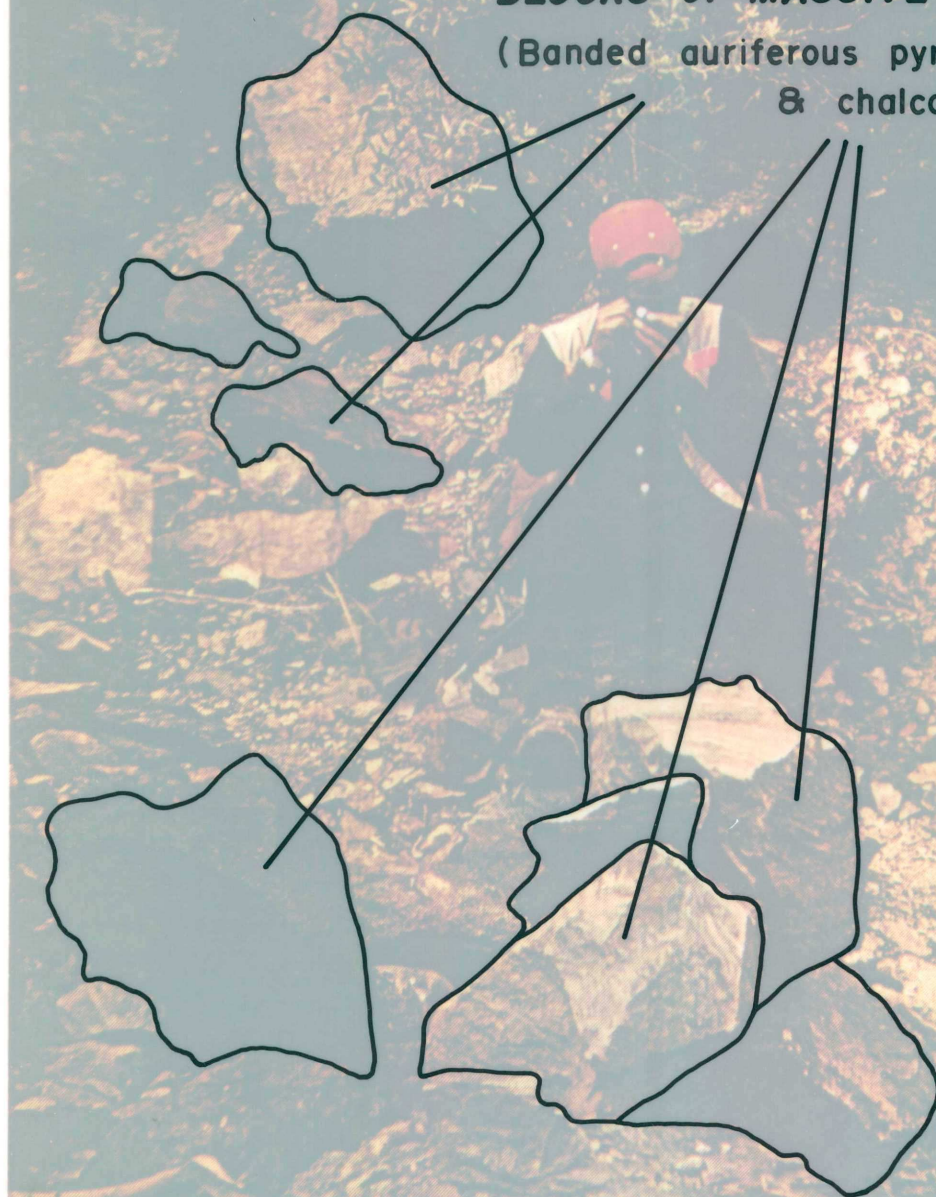
Down the dip projection of the above zone, in the creekbed itself, large blocks of unweathered massive pyrite-chalcopyrite were found. These angular blocks which range in size up to one metre square are concentrated in a limited area of the creek and appear to be near 'in place'. The mineralization consists of well banded pyrite with lesser amounts of interbanded chalcopyrite and quartz. It is postulated that similar material may be present throughout the indicated mineral zone on the property beneath the leached surface capping (figure 5).

Specimens of this massive sulphide assayed as follows:

	<u>Au oz/ton (g/t)</u>	<u>Ag oz/ton (g/t)</u>	<u>Cu %</u>
2CR - A	.002 (.07)	.13 (4.45)	.03
- B	.030 (1.03)		.84
C	.015 (.51)		.65
D	.040 (1.37)		2.06
E	.030 (1.03)	.83 (28.39)	.96
F	.040 (1.37)		.44
G	.060 (2.05)		.98
H	.020 (.68)		.50

The strike projection of the mineral zone between Creeks (2) and (3) is overburden and tulus covered and is therefore not apparent. Creek (3) contains a large transported gossan with random rock and bolder chunks cemented in an iron rust. This rust lines up and is tentatively correlated with the remainder of the zone. The source of the rust is unknown. The vicinity is largely covered and the area between creeks (2) and (3) has not been prospected in detail. The rocks upstream from the gossan are iron stained rhyolites similar to the host rock for the zone in other areas of the property and may represent fringes of the zone proper. Copper float was found downstream.

**BLOCKS of MASSIVE SULPHIDE**  
(Banded auriferous pyrite  
& chalcopyrite)



**JULIA PROPERTY**

**Creek 2**

**Fig. 5**

### CONCLUSIONS & RECOMMENDATIONS

At this preliminary stage the JULIA Property can only be considered a raw exploration prospect. There is sufficient evidence however to conclude that important tonnages carrying significant amounts of gold and copper may be present on the property and that a program of exploration as outlined below is therefore warranted.

Mr. G. H. Giroux, P.Eng. of Montgomery Consultants Ltd., in his September 2, 1980 report to Arbor Resources Inc. recommends the following program, the provisions of which are endorsed by the writer.

"The size of the mineralized gossan and therefore, the potential for significant tonnage and the presence of gold in assays, warrant an exploration program on the Julia claims. The program should be carried out in stages with each stage contingent on the previous.

Stage one would consist of detailed geochemical lines across the mineralized zone. Lines should be spaced 200 metres apart with samples taken every 20 metres. An EM-16 should be used to try and delineate the boundaries of the zone. This instrument might be able to detect a conductive layer under the greenstone and it is a very inexpensive survey tool.

If Stage one returns positive results, a more extensive program should be commenced. Geologic mapping over the claim area on a scale of 1 to 5,000 should be carried out. Additional geochemistry over the remainder of the claim area should be completed with samples every 50 metres on lines 200 metres apart, with a view to locating possible extensions or parallel beds.

An induced polarization survey should be the best method of delineating the sulfide zone. Lines should be tested across the zone and down dip. Allowance for several depth probes has been made to best position drill holes.

A preliminary diamond drill program of 2,000 feet is included in this stage. This should be sufficient to test the best geochemical and geophysical anomalies as well as determine the grade and thickness of the zone at depth.

Stage three would consist of additional diamond drilling if warranted by stage two results."