



ASSESSMENT REPORT

ON THE

TAN 1-72 MINERAL CLAIMS  
WATSON LAKE MINING DISTRICT

N.T.S. 105-H-12

61° 36' N 129° 52' W

YUKON TERRITORY

FOR

SOVEREIGN METALS CORP.

BY

D. YEAGER - GEOLOGIST

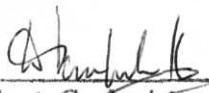
C. K. IKONA - P.ENG.

MAY, 1980



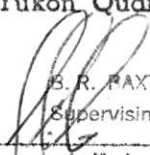
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This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of \$ 6300.00




Resident Geologist or  
Resident Mining Engineer

Considered as representation work under  
Section 53 (4) Yukon Quartz Mining Act.



B. R. PAXTER  
Supervising Mining Recorder



Commissioner of Yukon Territory

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## 1.0 INTRODUCTION

The TAN 1-72 mineral claims were staked by Pamicon Developments Ltd. and Mountaineer Mines Ltd. in March, 1978 to cover a geochemical anomaly in the Frances Lake area of the southeastern Yukon. The initial reconnaissance geochemical sampling was conducted under the supervision of R. Darney and indicated a number of streams having anomalous values for zinc in sediments. The TAN 73-96 mineral claims were staked adjacent to the northeast corner of the property to cover the barite showings reported by D. Yeager (1978) in the Preliminary Report on the TAN claims.

During the latter part of March and early April, 1979, a D-7E bulldozer was used to construct a tote road from the Campbell Highway to the TAN claims, a distance of 12 miles and expose some of the barite occurrences by means of trenches.

From July 13 to July 18, 1979 a hand trenching program was carried out by G. Stephen of Watson Lake to expose another barite occurrence in the northernmost part of the claims. During the period October 4 to October 12, 1979 the property was visited by the author for the purposes of investigating the newly exposed barite and to conduct a geologic evaluation of base metal potential of the claims.

## 2.0 LIST OF CLAIMS

<u>Claim Name</u>	<u>Grant No.</u>	<u>Anniversary Date</u>
TAN 1 - 72	YA 28319 to YA 28390	April 14, 1981
TAN 73 - 96	YA 36029 to YA 36052	March 15, 1981

Sovereign Metals Corporation is the sole owner of the claims. Records are maintained at the Mining Recorder's office in Watson Lake.

Claim posts examined by the author appear to conform with the requirements of the Yukon Quartz Mining Act.

### 3.0 LOCATION AND ACCESS

The TAN 1-96 claims are located on N.T.S. Sheet 105-H-12 approximately 5 miles northwest of Frances Lake in the south-eastern Yukon Territory. The approximate N.T.S. coordinates of the claim group are  $61^{\circ} 36'$  N latitude and  $129^{\circ} 52'$  W longitude.

Access to the property is by helicopter from the Robert Campbell Highway, situated 5 miles to the southwest at its closest point. In addition, a recently constructed tote road, from the Highway to the claims, can be traversed by bulldozer sloop to facilitate movement of equipment to and from the property--ground conditions permitting.

Both helicopter and fixed wing aircraft, as well as full expediting services are available in Ross River, approximately 88 miles to the west, northwest. Daily jet service and all essential supply services are also available at Watson Lake, some 122 road miles to the south.

### 4.0 TOPOGRAPHY AND VEGETATION

The property covers a high, plateau topped mountain on the west side of the Frances Lake Valley and lies between elevations of 3,500 feet and 5,000 feet A.S.L. Topography ranges from gentle to steep. The claims area is cut by a number of deeply incised southeasterly trending creek canyons.

Treeline is at the 4,000 foot elevation level where birch, poplar, and black spruce give way to scattered scrub balsam, lichen and grasses typical of an arctic-alpine environment.

### 5.0 GEOLOGY

The geology of the entire area has been mapped by the Geological Survey of Canada at 1:250,000 scale and is presented in Map 6 - 1966, Geology of Frances Lake, Yukon Territory and

PAMICON DEVELOPMENTS LTD.

# YUKON LOCATION MAP

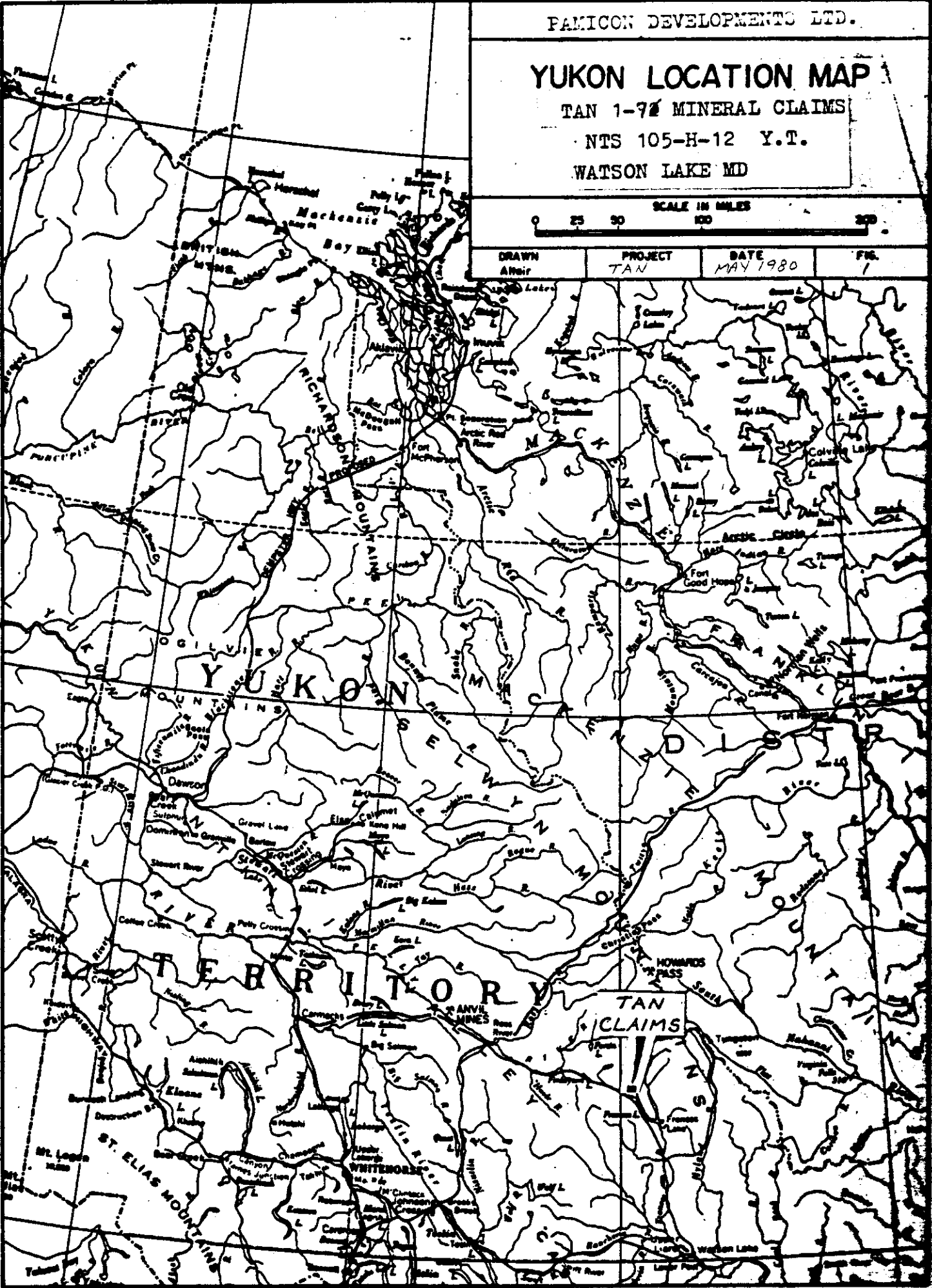
TAN 1-7<sup>1/2</sup> MINERAL CLAIMS

NTS 105-H-12 Y.T.

WATSON LAKE MD



DRAWN Altoir	PROJECT TAN	DATE MAY 1980	FIG. 1
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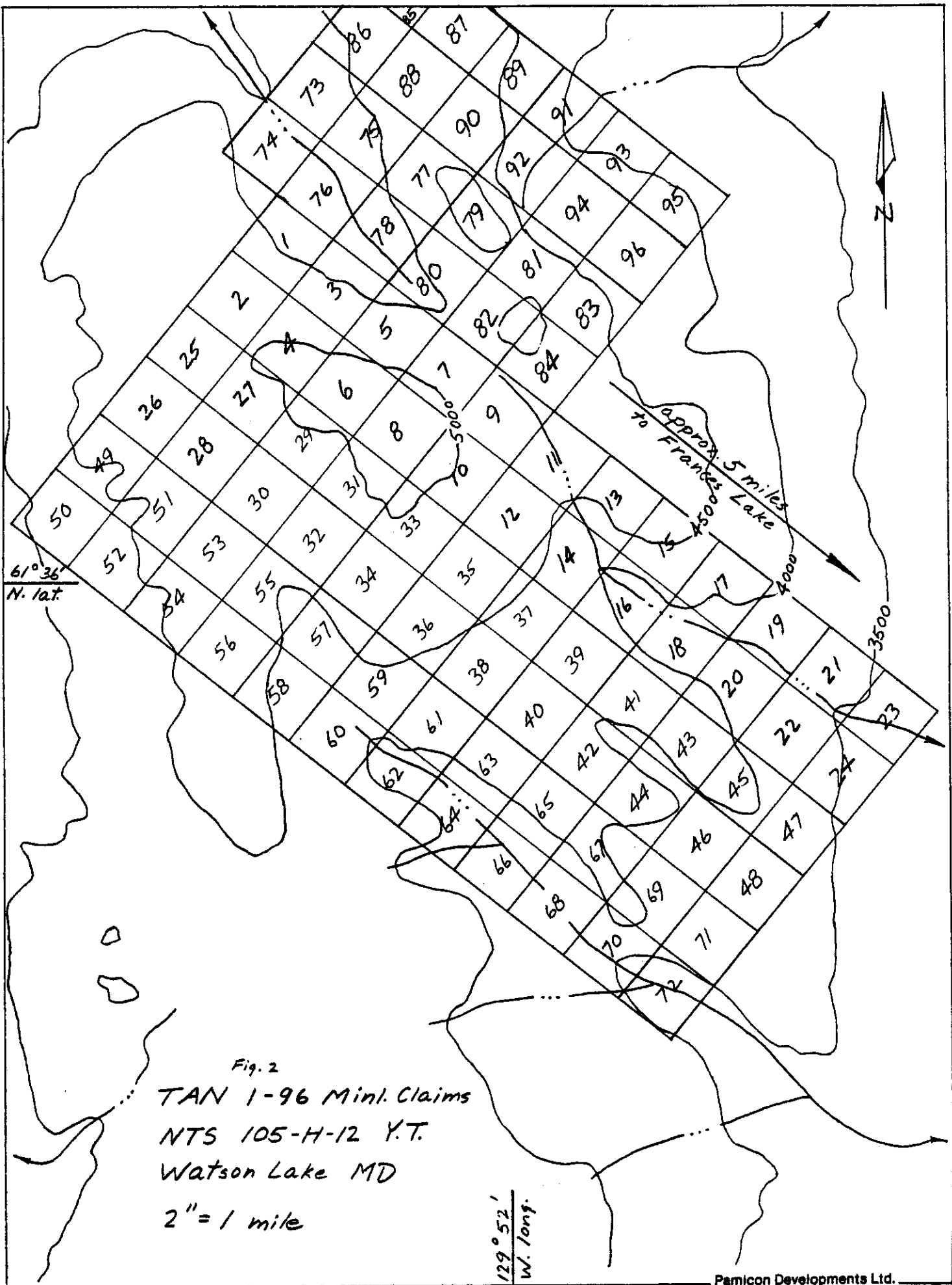


Fig. 2  
 TAN 1-96 Mini. Claims  
 NTS 105-H-12 Y.T.  
 Watson Lake MD  
 2" = 1 mile

129° 52'  
W. long.

District of Mackenzie, by E.F. Roots (1953), L.H. Green and<sup>5</sup>  
J.A. Roddick (1960) and S.L. Blusson (1962, 1965).

The property geology is presented in Figure 3 of this report and geology of the barite zones in Figure 4.

### 5.1 Lithology

Two major units are present in the claims area. A thin wedge of Silurian to Devonian dolomites, quartzites, and silty dolomites lie immediately to the east of the claim block (Unit A Figure 3). These rocks are felt to be equivalent to the Road River Formation. They are overlain, presumably unconformably, by shales, cherts, quartzites, greywackes, conglomerates, limestones and dolomites of Upper Devonian age (Unit B Figure 3). This unit is felt to be equivalent in age to rocks of the Canol Formation.

Geologic mapping was confined mainly to the area presented in Figure 4 of this report where the wind kept snow cover to a minimum.

In this map area, the majority of Unit B is comprised of a thick sequence of finely interbedded, porous calcareous siltstone and faintly laminated, light brown, silty shales. In places the siltstone member increases in thickness from a fraction of an inch to approximately one foot. This thickening is sometimes associated with an increase in calcite content in which case the rock becomes a silty limestone. The rocks are generally a uniform light brown in colour, however, in places the shales become finer grained and more graphitic in nature. The thicknesses of beds pinch and swell quite variably. No cross bedding was noticed.

Bedding attitudes in the map area were difficult to determine due to the advanced state of weathering of most of the outcrops. The measurements taken indicate a dip of 50° to 65° to the north or northwest.

Mapping to the north of the siltstone/shale/limestone unit indicates that it is overlain by a thick sequence of black, graphitic, pyritic shales and black fetid limestones.



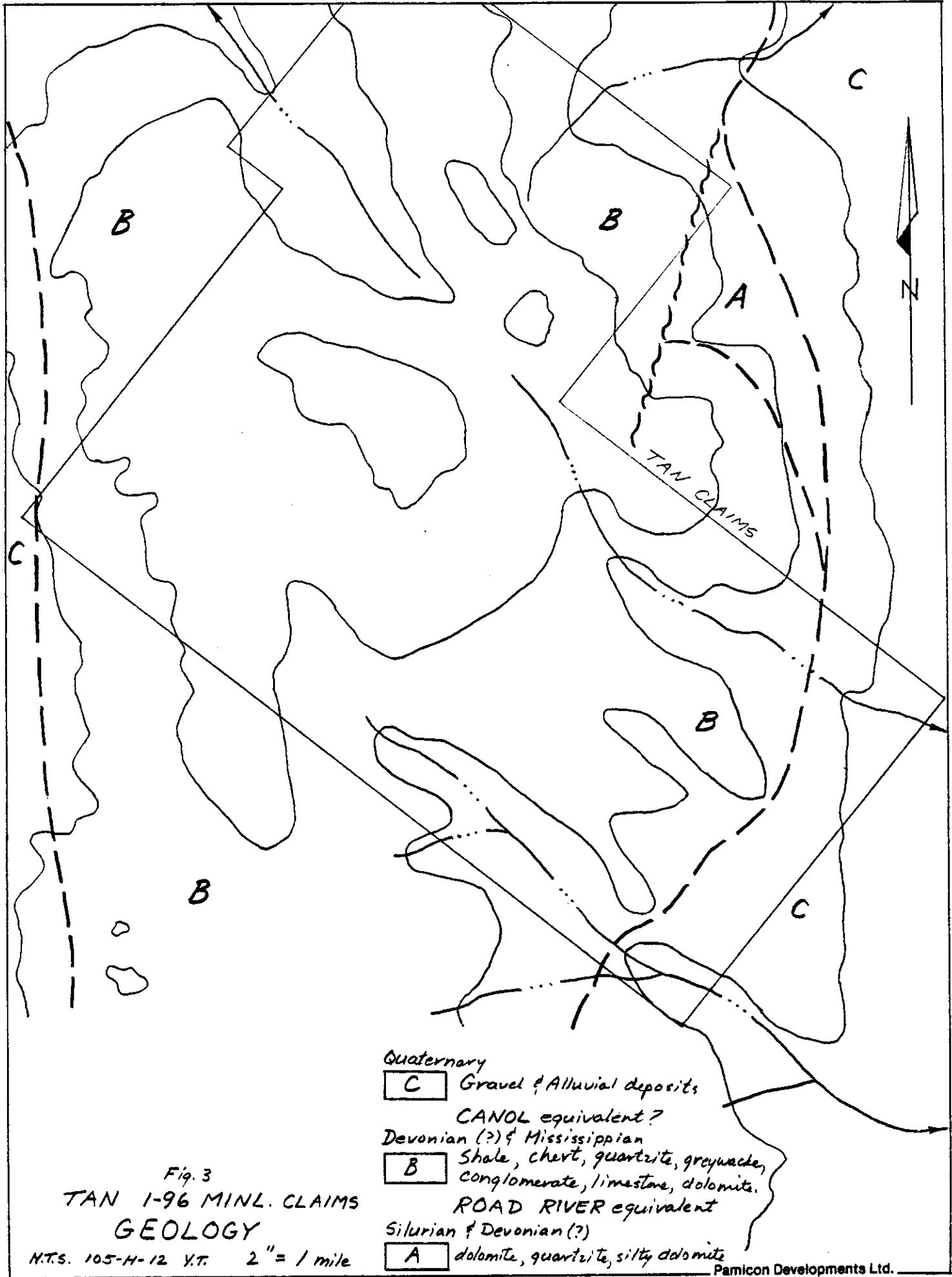
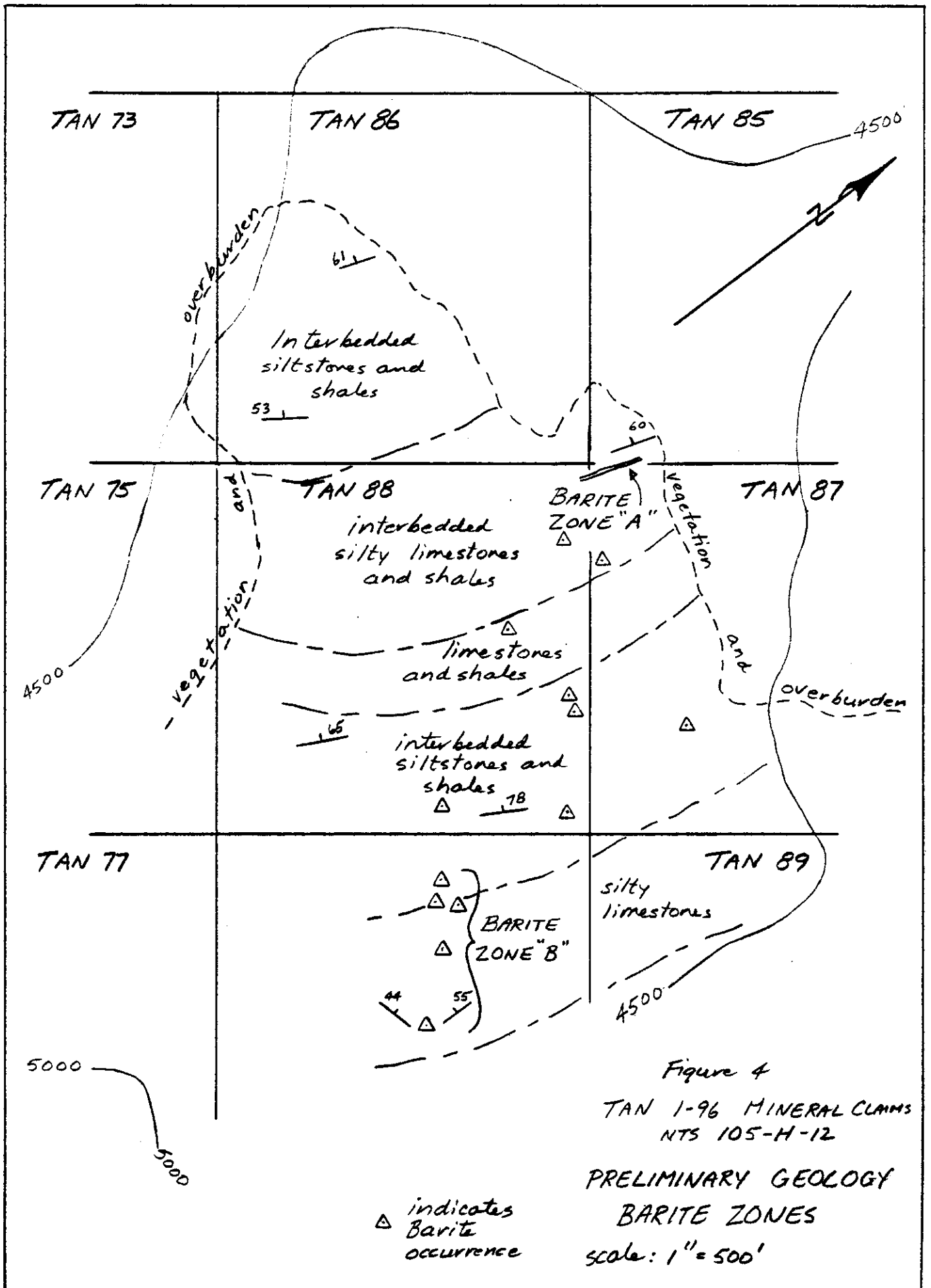


Fig. 3  
 TAN 1-96 MINL. CLAIMS  
 GEOLOGY  
 N.T.S. 105-H-12 Y.T. 2" = 1 mile



This unit weathers recessively and is not seen well in outcrop until well to the north of the Figure 4 map area where it is cut by streams lower in the valley. The intervening vegetation cover obscures the contact relationships as well as the relative thicknesses of the units.

These black shales are typical of those formed in a restricted basin type environment and indicate the possible existence of conditions suitable for the hosting of stratiform barite/zinc/lead/silver occurrences.

## 5.2 Mineralization

A very large number of barite beds occur in the interbedded siltstone/limestone/shale unit. Typically these beds are in the order of one half inch to a maximum of one foot thick and are continuous for ten to thirty feet along strike. Large beds range from fifty to two hundred feet stratigraphically apart however zones of barite beds occur in which beds up to one inch thick occur several inches apart for up to twenty or thirty feet of stratigraphic thickness.

Two zones have been mapped to date which contain significant amounts of barite. Seven hand trenches excavated in Barite Zone "A" (Figure 5) reveal a barite lens 260 feet in length, ranging from 3 feet to 12 feet in width, assaying 85% to 95% pure white barite. This lens as exposed to date contains roughly 200 tons of barite per vertical foot; however, a kill zone along strike to the north of the trenched area indicates the possibility of additional tonnage in that direction.

Another barite zone, Zone "B" was first reported by Scott (1979) following cat trenching in an area approximately 1800 feet south of Zone "A". Four cat trenches were excavated across a 640 foot long barite vein/stockwork complex. While the barite in this zone is more erratically emplaced than that in Zone "A" and is often mixed with bull quartz and white calcite, it does indicate the presence of significant barite tonnages on the property. In addition, the large number of

Total Tons/vertical foot:  
 Blocks 2 to 5 (probable) = 179.98  
 Block 1 (possible) =  $\frac{18.40}{198.38}$

Barite float  
 grab sample  
 64503  
 52.1% Ba



Block No. 1 (possible)  
 length: 44.8 ft  
 width: 3.0 ft. (?)  
 grade: 94.0% barite  
 18.40 Tons/vertical foot

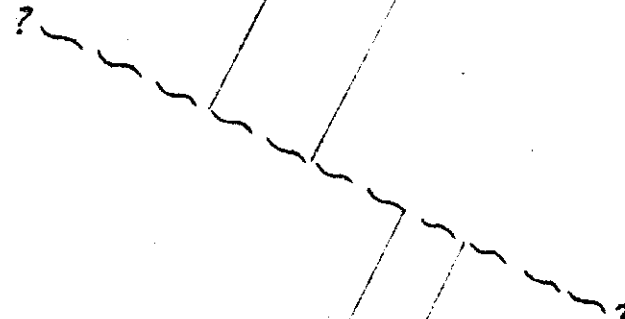
Trench No. 1  
 Barite float and  
 suboutcrop:  
 grab sample 64504  
 55.3% Ba

Block No. 2 (probable)  
 length: 65.0 ft.  
 width: 3.0 ft.  
 grade: 90.6% barite  
 26.33 Tons/vertical foot

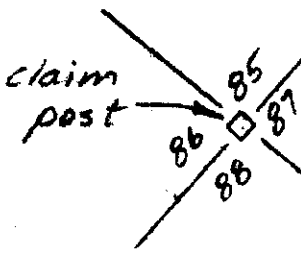
Trench No. 2  
 3.0 ft. (horiz.) barite:  
 Continuous chip sample  
 64505  
 53.3% Ba

Block No. 3 (probable)  
 length: 52.0 ft.  
 width: 12.0 ft.  
 grade: 88.9% barite  
 83.65 Tons/vertical foot

Trench No. 3  
 12.0 ft. (horiz.) barite:  
 Continuous chip sample 64507  
 52.3% Ba



Block No. 4 (probable)  
 length: 54.3 ft.  
 width: 7.0 ft.  
 grade: 87.5% barite  
 50.65 Tons/vertical foot



Trench No. 4  
 7.0 ft. (horiz.) barite:  
 Continuous chip sample 64508  
 51.5% Ba

Block No. 5 (probable)  
 length: 41.8 ft.  
 width: 3.5 ft.  
 grade: 85.7% barite  
 19.35 Tons/vertical foot

Trench No. 5  
 3.5 ft. (horiz.) barite:  
 Continuous chip sample 64509  
 50.4% Ba

Trenching by G. Stephen  
 of Watson Lake July  
 13-18, 1979.

Trench No. 6  
 3.5 ft. (horiz.) barite:  
 Continuous chip sample  
 64510 43.2% Ba

Trench No. 7  
 3.5 ft. (horiz.) barite:  
 Continuous chip sample 64511 - 27.3% Ba

Figure 5

SOVEREIGN METALS CORP.		
TAN MINERAL CLAIMS NTS 105 H-12		
BARITE ZONE "A"		
0 10 20 30 40 50 Scale in feet		
PAMICON DEVELOPMENTS LTD		
Pamicon	TAN	MAY 1980

as yet untested barite float occurrences points to the existence of extensive barite deposits in the claims area.

## 6.0 GEOCHEMISTRY

The results of a reconnaissance silt sampling program mentioned by Scott (1979) indicate anomalous levels of zinc in stream sediments taken from four streams draining the south-eastern and western portions of the property. These streams are indicated in Figure 6 of this report.

## 7.0 DISCUSSION AND CONCLUSIONS

The claim group is accessible over an existing winter cat trail a distance of eight miles from the Robert Campbell Highway. Its excellent location makes it a relatively inexpensive property on which to carry out exploration work. In the event of a production and development decision, one bridge across the Finlayson River and upgrading of the present road would make all weather access easily possible.

Development and exploration of the property should explore two possibilities:

a. The high grade barite lens in Zone A dips moderately to the northwest and is hosted by brown, silty limestones and dolomite. It would be readily open pit mined using a payloader equipped with blade and bucket. The barite is easily distinguishable from the host rocks for grade control. More cat trenching is required to the north to determine if there is enough contained, available barite to pay for the infrastructure necessary to develop the deposit.

b. The geochemically anomalous streams draining the south and west of the property should be followed up by soil sampling along reconnaissance type lines in the anomalous drainages as well as detailed prospecting and geologic mapping in the area. Any zones of interest should then be investigated by caterpillar trenching.

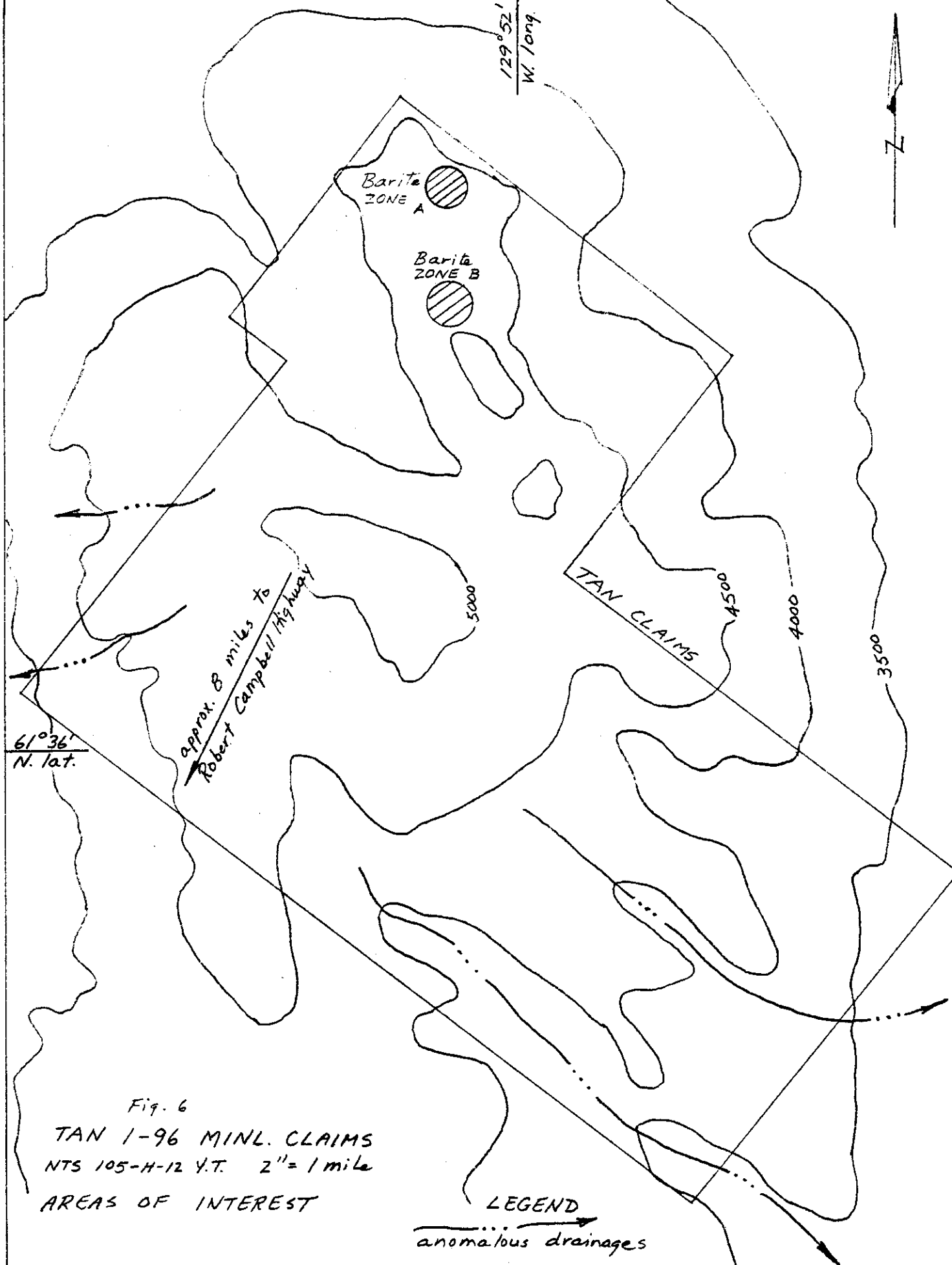


Fig. 6  
 TAN 1-96 MINL. CLAIMS  
 NTS 105-H-12 Y.T. 2" = 1 mile  
 AREAS OF INTEREST

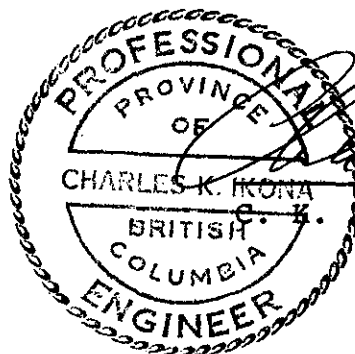
LEGEND  
 .....  
 anomalous drainages

## 8.0 RECOMMENDATIONS

It is recommended that the following work program be carried out:

1. Establish reconnaissance soil sample lines in the southeastern and western parts of the claims group to test the geochemically anomalous drainages in those areas.
2. Detailed prospecting using zinc test solution should be carried out in the anomalous drainages.
3. Any showings located should be geologically mapped and assay sampled.
4. Additional prospecting, trenching, and mapping should be completed along Barite Zone "A" to investigate its total strike length as well as in the areas adjacent to Zones "A" and "B" to locate any additional barite zones of significant tonnage.

Respectfully submitted,



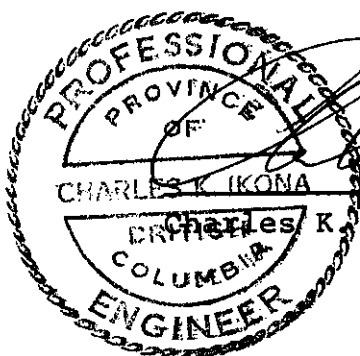
*[Signature]*  
C. K. McKona, P.Eng.

ENGINEER'S CERTIFICATE

I, Charles I. Ikona, of 5 Cowley Court, Port Moody in the Province of British Columbia, do hereby certify that:

1. I am a Consulting Mining Engineer with offices at 208, 850 West Hastings Street, Vancouver, B.C.
2. I am a graduate of the University of British Columbia with a degree in Mining Engineering.
3. I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia.
4. I personally inspected the property on June 12, 1977.
5. The work reported herein was conducted during a program under my supervision and under the supervision of a geologist, D.A. Yeager, whom I have known for a period of years and in whom I have every confidence.

Dated this 22 day of MAY 1980  
at VANCOUVER, B.C.



Charles K. Ikona, P. Eng.



## APPENDIX II

LIST OF PERSONNEL EMPLOYED

July 13 - 18, 1979

G. Stephen - Prospector, Watson Lake

M. Lutz - Prospector, Lower Post

October 4 - October 12, 1979 (part-time)

D. Yeager - Geologist, Bowen Island, B.C.

AFFIDAVIT OF EXPENDITURES

I hereby certify that the following funds were expended on the project herein discussed.

Travel and Accommodation	\$ 391.43
Food	240.00
Wages and Fringe Benefits	1,525.00
Equipment Rental and Camp Costs	300.00
Helicopter Support	3,324.56
Assays	76.00
Report Preparation	<u>600.00</u>
	<u>\$6,456.99</u>

Charles K. Ikona, P.Eng.



ASSAY CERTIFICATES



# CHEMEX LABS LTD.

212 BROOKSBANK AVE.  
 NORTH VANCOUVER, B.C.  
 CANADA V7J 2C1  
 TELEPHONE: 985-0648  
 AREA CODE: [REDACTED] 984-0221  
 TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

## CERTIFICATE OF ASSAY

CERTIFICATE NO. 66649

TO: Pamicon Developments Ltd.  
 208 - 850 W. Hastings St.  
 Vancouver, B. C.  
 V6B 1P1  
 ATTN: Dave Yeager

INVOICE NO. 33608

RECEIVED Oct. 11/79

ANALYSED Nov. 2/79

SAMPLE NO. :	% Pb	% Zn	% Ba	Oz./T Ag	Oz./T Au
64501 A	0.65	0.14		1.42	0.005
64502	0.31	1.00		0.22	
64503			52.1		
64504			55.3		
64505			53.3		
64506	< 0.01	0.48		0.01	
64507			52.3		
64508			51.5		
64509			50.4		
64510			43.2		
64511			27.3		
64512	< 0.01	0.01		0.06	0.003
64746	0.07	0.71		0.04	
64748	0.26	1.59		0.12	
64749	0.16	0.69		0.16	
64750 A	0.43	0.20		0.68	



MEMBER  
 CANADIAN TESTING  
 ASSOCIATION

*[Signature]*  
 REGISTERED ASSAYER, PROVINCE OF BRITISH COLUMBIA