

MAP NO.: ASSESSMENT REPORT X  
105 D 3 PROSPECTUS CONFIDENTIAL X  
OPEN FILE

DOCUMENT NO: 092808  
MINING DISTRICT: Whitehorse  
TYPE OF WORK: Geological, Geochemical

REPORT FILED UNDER: Skukum Gold Inc.

DATE PERFORMED: 22 September-1 October, 1989 DATE FILED: 26 January, 1990

LOCATION: LAT.: 60°02'N AREA: Mt MacAuley

LONG.: 135°28'W VALUE \$: 3 200.00

CLAIM NAME & NO.: TARN 1-32(YB24226-57)

WORK DONE BY: H.F. MacKinnon

WORK DONE FOR: Skukum Gold Inc.

DATE TO GOOD STANDING:	

REMARKS: #280 TARN  
Mapping, prospecting and sampling turned up one major vein, the TARN vein. It is up to 2 m wide and traceable over a strike length of 200 m along a 6 m wide lineament. The vein is vuggy, cryptocrystalline and contains fluorite. Samples returned up to 7.8 g/t Au over 0.4 m along with 63.5 ppm Cu, 2010 ppm Pb, 1227 ppm Zn and 96 ppm As.



# SKUKUM GOLD INC.

GEOLOGICAL, GEOCHEMICAL &  
PROSPECTING

R E P O R T

ON THE

TARN 1-32 (YB24226-YB24257)  
Mineral Claims

Mt. MacAuley Area - Wheaton River Valley

WHITEHORSE MINING DISTRICT  
YUKON TERRITORY

N.T.S. : 105D/3

LATITUDE: 60 Degrees 01.5 Minutes North  
LONGITUDE: 135 Degrees 28 Minutes West

SEPTEMBER 22 to OCTOBER 1, 1989

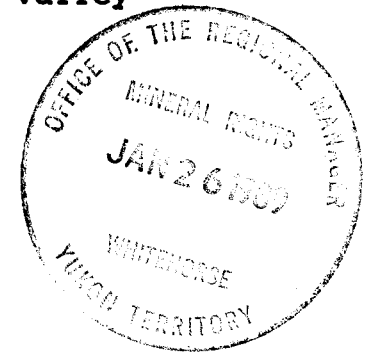
By

HUGH F. MacKINNON B.Sc.

NOVEMBER 17, 1989

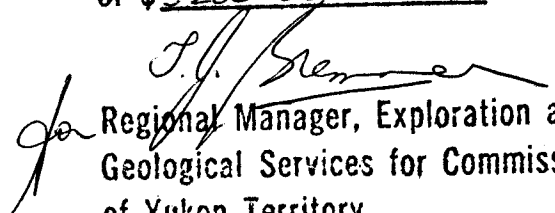
For

Ernest T. Bergvinson  
990 - 840 Howe St.  
Vancouver, B.C.  
V6Z 2L2



092808

This report has been examined by  
the Geological Evaluation Unit  
under Section 53 (4) Yukon Quartz  
Mining Act and is allowed as  
representation work in the amount  
of \$ 3200.00 .

 J. J. Gerner  
Regional Manager, Exploration and  
Geological Services for Commissioner  
of Yukon Territory.

## SUMMARY

This report describes the exploration work conducted by Skukum Gold Inc. on the TARN claims in 1989. The property consists of 32 contiguous mineral claims located at Mt. MacAuley in the southern Yukon Territory. Access is provided by helicopter from Whitehorse, Y.T..

The property is underlain to the north by Yukon Crystalline Terrane gneiss and quartzite and to the south by Cretaceous hornblende quartz monzonite of the Coast Plutonic Complex. These rocks are intruded by Eocene granitic stocks and Eocene Skukum Group Bennett Lake Cauldron Subsidence Complex volcanic rocks. The Skukum Group is composed of mostly pyroclastic rocks related to a former eruptive center, to the west, and rhyolitic ring dyke and ring dyke related rocks. The property is bounded to the north and south by major faults of which the one to the south represents a lineament at least 30 kilometers long. Many epithermal to mesothermal mineralized veins and structures occur throughout the Bennett Lake Complex and in the adjacent Wheaton River area.

Exploration work consisted of preliminary geological mapping, prospecting, and geochemical rock and silt sampling. One major vein, the TARN vein, was located and samples from the vein returned up to 0.226 oz/ton (7.75 gm/ton) gold (over 0.4 meters), 1.85 oz/ton (63.43 gm/ton) silver, 6026 ppm copper, 2010 ppm lead, 1227 ppm zinc and 96 ppm arsenic. The TARN vein is up to 2 meters wide and traceable for 200 meters. It occurs in a prominent  $\geq 6$  meters wide lineament and consists of quartz veins, vein breccias, quartz-fluorite-calcite veins and vein stockwork. The vein is hosted within shattered and brecciated granitic rocks. The vein trends southwest with steep dips to the southeast and is parallel to the major normal fault 500 meters to the southeast. Several talus fines samples from the saddle above the vein and one silt sample northeast of the vein returned anomalous values for lead, zinc, arsenic and or copper.

An epithermal origin for the veins is proposed based on the presence of fluorite, the vuggy to cryptocrystalline character of the vein, and their silver:gold ratio. Native gold may be present in the vein(s) as indicated by a lack of correlation of gold with any other element.

A program of prospecting, mapping, geochemical sampling and airborne geophysical surveying is recommended for 1990.

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# 1. INTRODUCTION

## 1.1 LOCATION & ACCESS

The TARN claims are located to the northeast of Mt. MacAuley in the Boudette Creek Valley adjacent to the Yukon Territory-British Columbia border and are centered at 60 degrees 01.5 minutes north latitude and 135 degrees 28 minutes west longitude (NTS:105D/3) (Figure 1). The property is accessible by helicopter with the nearest permanent base being Whitehorse, Yukon Territory, some 90 kilometers to the northeast.

## 1.2 CLIMATE, TOPOGRAPHY AND VEGETATION

The climate in the Bennett Lake-Wheaton River area is variable with hot summers, enhanced by 18-20 hours of daylight, and long cold winters. Precipitation is moderate (90 centimeters annually) with about half falling as snow. The northern exposure slopes are covered by permanent snowfields or seasonal snow year round. Avalanche deposits, cornices, and snow in the gullies on other exposures last till early August. Creeks and lakes are open from early June to late September.

The topography of the claims is rugged with precipitous mountainsides and ridges, glacial sculpted cirques, valleys and passes. Maximum relief in the property area is approximately 853 meters (2800 feet) with valley floors at 1311 meters (4300 feet) and summits up to 2164 meters (7100 feet).

All areas examined this year are above treeline. Alpine grasses and flowers are sparsely scattered throughout the lower elevations of this alpine terrain.

## 1.3 PROPERTY & CLAIM STATUS

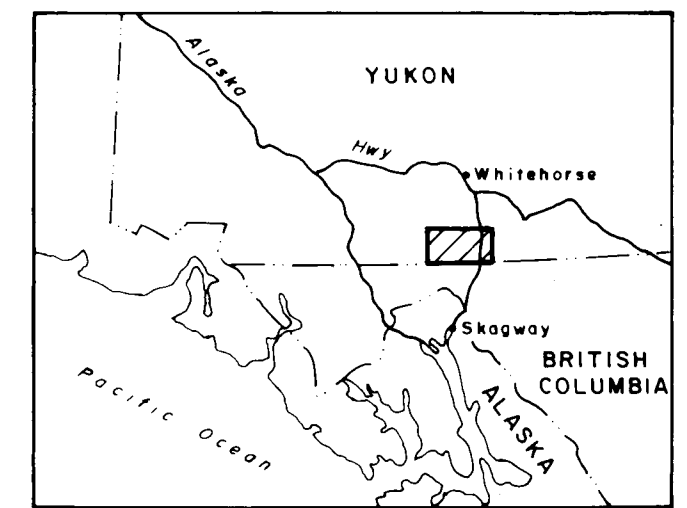
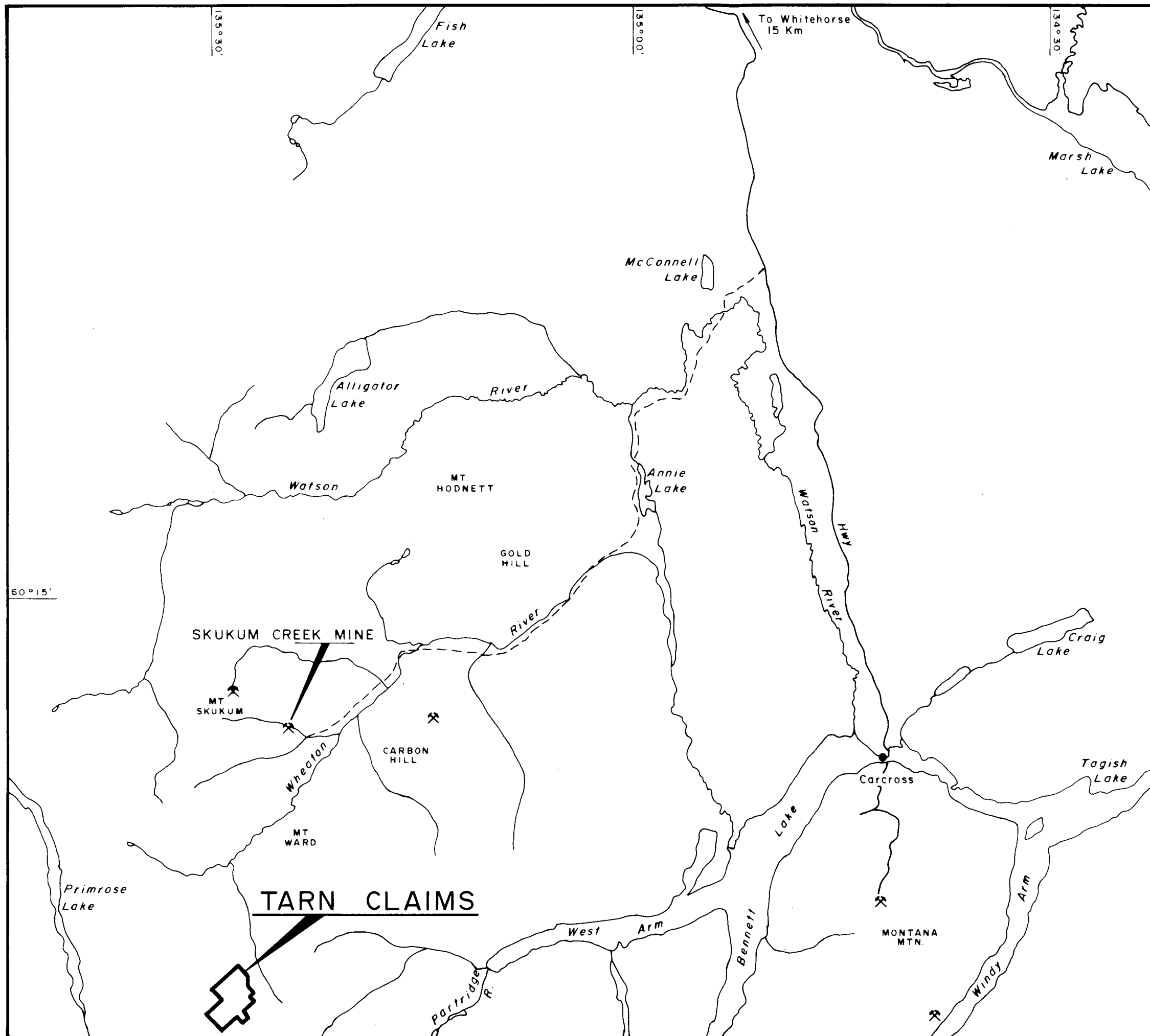
The TARN property consists of 32 contiguous 2 post claims located within the Whitehorse Mining District and staked under the provisions of the Yukon Quartz Mining Act (Figure 2). The claim status is listed in table 1 below.

Table 1: Claim Status

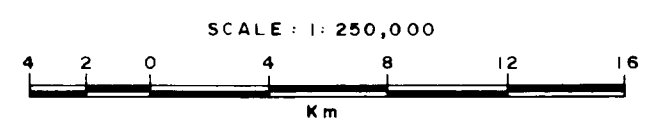
Claim Name	Grant Numbers	Recording Date	Renewal Period*	Total Claims
TARN 1-32	YB24226-257	Nov.2,1988	Nov.2,1990	32

\* Pending acceptance of assessment report.

All the claims are 100 % owned by Ernie T. Bergvinson of 990-840 Howe St., Vancouver, B.C..



LOCATION MAP

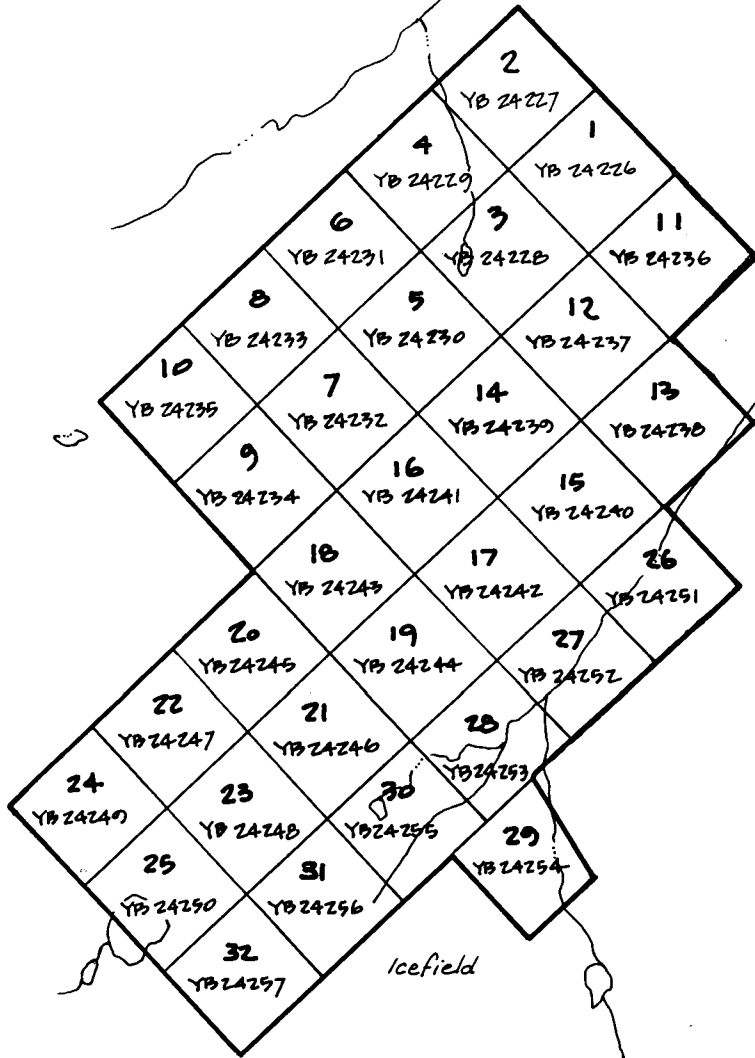


**SKUKUM GOLD INC.**  
**TARN CLAIMS**  
 WHITEHORSE MINING DIVISION - YUKON TERRITORY

**LOCATION MAP**

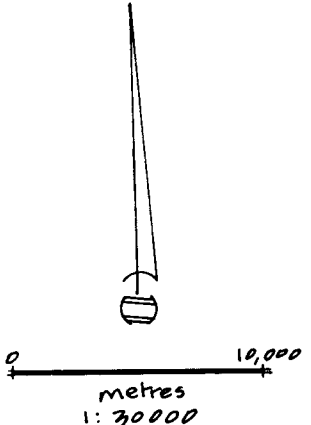
N.T.S. 105D3, 4, 5, 6	FIGURE No. 1
DRAWN BY: A.L.W., H.F.M., T.M.	DATE: DEC 1989

35°30'



▲ 7001±  
Mount  
Machuky

60°00'



ERNIE T. BERGVINSON  
TARN CLAIMS  
WHITEHORSE MINING DISTRICT

### CLAIM MAP

Drawn by: HM/vh Date: Jan 90  
NTS: 105/03 Scale: 1:30000

**1.4 PREVIOUS WORK HISTORY**

During the late 1970's and early 1980's several companies conducted regional uranium exploration programs in the area. In 1981 on the basis of Ag, Pb geochemistry Archer Cathro and Associates Ltd. staked the NAIAD claims, which covered some of the same area as the eastern TARN claims. High grade silver-lead vein float samples were found but a source was not located. Much of this area was restaked as the BOUD claims by R.Bilquist for Minequest. Several low grade lead silver veins were discovered but the claims were allowed to lapse in 1989.

In 1985 the Geological Survey of Canada conducted a regional geochemical stream sediment survey in the area and sampled several of the creeks draining the property (G.S.C.,1985). Anomalous values for lead or silver and arsenic were found in most of these samples.

In 1986 Kerr Addison Mines staked the MAJI claims over the same area as the TARN claims. A reconnaissance geological and geochemical survey was undertaken in 1987 and several anomalous areas were discovered (figure 3)(Pautler,1987). Quartz-fluorite veins and breccias with minor galena, pyrite and malachite were found throughout the claim block.

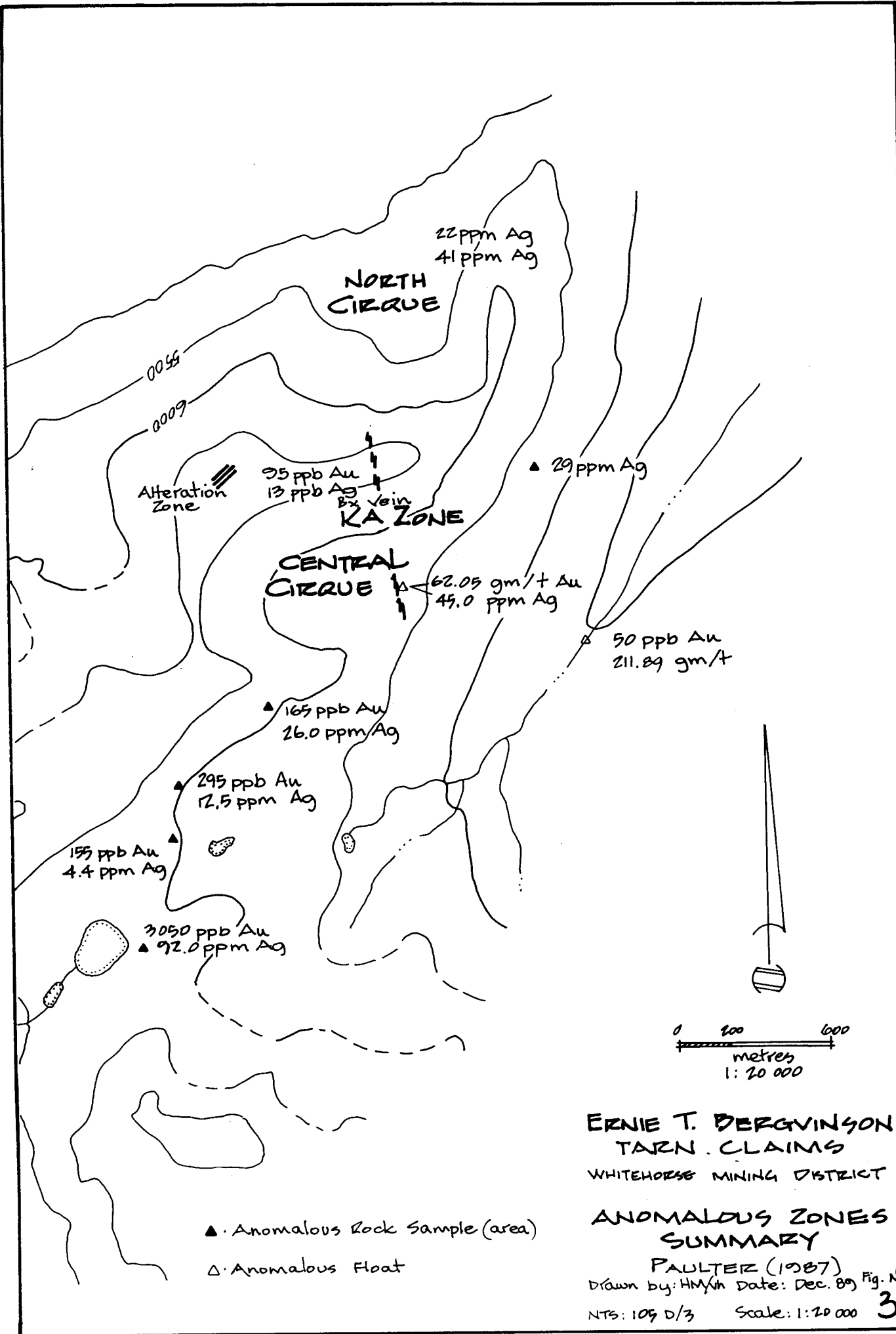
Since the early 1980's there has been exploration conducted on numerous properties located in the area since the discovery and development of TOTAL ERICKSON's MT.SKUKUM gold-silver mine and OMNI RESOURCES-SKUKUM GOLD's SKUKUM CREEK gold-silver-base metal deposit. Skukum Gold and other companies are conducting exploration work throughout the Boudette Creek - Jones Creek - Crozier Creek area.

**1.5 1989 EXPLORATION PROGRAM**

The 1989 work program was carried out by a one person crew on September 22 and October 1, 1989 and consisted of reconnaissance prospecting, geological mapping and geochemical sampling. Work was conducted out of the Skukum Gold-Omni Resources base camp in the Wheaton River Valley using a Bell 206 helicopter for access. The work was hampered by a light snow cover, particularlyly at higher elevations and on northern aspects.

The exploration was conducted by the following Skukum Gold Inc. personnel:

- Hugh MacKinnon B.Sc. ....Project Geologist
- Erik Bergvinson .....Prospector



ERNIE T. BERGVINSON  
TARN CLAIMS  
WHITEHORSE MINING DISTRICT

**ANOMALOUS ZONES SUMMARY**

PAULTER (1987)  
Drawn by: HMY/h Date: Dec. 89 Fig. No  
NTS: 109 D/3 Scale: 1:20 000 **3**

## 2. GEOLOGY

### 2.1 REGIONAL GEOLOGY

The regional geology is depicted in figure 4.

The TARN claims lie on the eastern edge of the Nisling Terrane, near the boundary with folded Mesozoic volcanic and sedimentary rocks of the Whitehorse Trough to the east. The Nisling Terrane is composed of rocks of the Proterozoic to Permian Yukon Crystalline Terrane and the Triassic to Tertiary Coast Plutonic Complex.

Lower Tertiary volcanics of the Skukum Group unconformably overlie and intrude the rocks of the Nisling Terrane. The Skukum Group, of Eocene age, is the northernmost part of the Sloko volcanic province and outcrops in two distinct areas. The Bennett Lake Cauldron Subsidence Complex is the more southerly of the two complexes and consists of rhyolitic to andesitic tuffs, lavas and related epiclastic deposits. The outer edge of the complex is marked by a rhyolitic ring dyke.

Twenty five kilometers to the north is another group of Skukum Volcanics that is also an Eocene aged caldera complex. Precious metal and base metal mineralized epithermal to mesothermal veins and faults occur associated with both volcanic complexes and throughout the Wheaton District. No economic deposits have as yet been found in the Bennett Lake Complex, but work is ongoing by numerous companies.

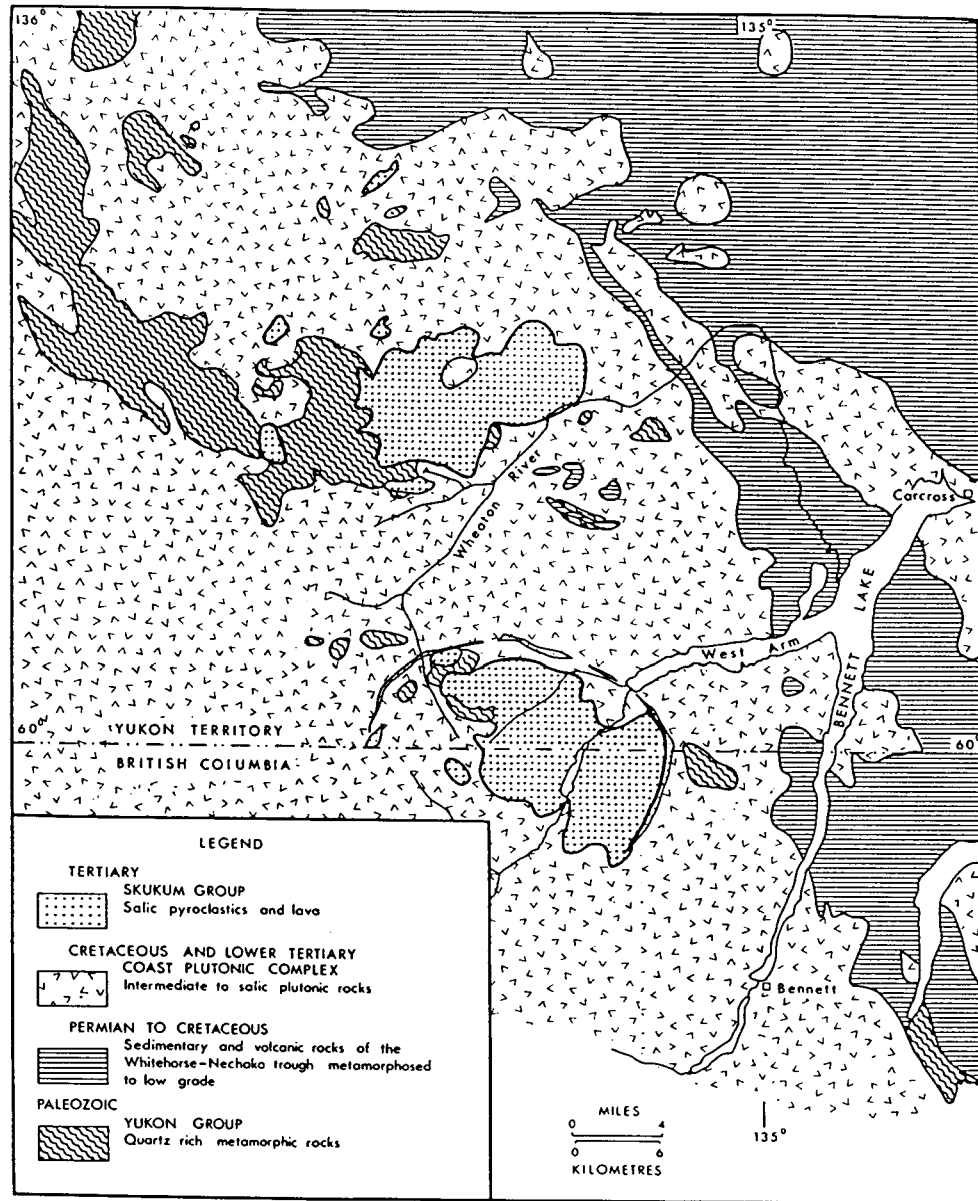
Additional information can be obtained by consulting Wheeler (1961), Lambert (1974) or Doherty and Hart (1988).

### 2.2 PROPERTY GEOLOGY

Mapping and prospecting, at a scale of 1:10,000, was conducted in the southwest corner of the property and a prospecting traverse was run in the northern half of the property in 1989 (Map 1). Outcrop comprises 60% of the property with the remainder covered in felsenmeer, talus or ice.

#### 2.2.1 LITHOLOGIES

The northeastern portion of the property is underlain by Paleozoic or older biotite or muscovite quartz gneiss and quartzite (HESn). These rocks are intruded by light grey weathered, medium grained, equigranular Cretaceous hornblende quartz monzonite (Kqm). In the southwest corner of the property and adjacent to the contact with Eocene rocks the quartz monzonite is shattered and or brecciated (Kqm-bx). In places the quartz monzonite is more a conglomerate than a breccia with coarse, up to 3 meter, fragments of quartz



SKUKUM GOLD INC.  
 REGIONAL GEOLOGY  
 After Lambert (1974)  
 Figure 4

monzonite in a dark green, milled and chloritized rock fragment matrix. Locally fragments of gneiss and marble are also present. The southwestern half of the property is underlain by an Eocene(?) high level leucocratic granite (Egr). This unit is rusty orange to pale brown weathered and strongly microlitic, with cavities infilled by fluorite, hematite, wad or calcite. The texture varies from medium to fine grained granite to fine grained rhyolite or porphyritic to subporphyritic quartz eye granite. Eocene Skukum Group Bennett Lake Cauldron Subsidence Complex volcanic rocks intrude and overlie these units (table 2).

The main outcrops of Skukum Group rocks occur to the north of Mt. MacAuley and represent a former eruptive center (Lambert, 1974). This group of rocks (ET) consists of dark grey to dark green, ignimbrite (welded tuff), and lapilli tuff with minor granitic conglomerate lenses. This unit is commonly bordered by quartz monzonite breccia. To the northeast these rocks are in contact with light grey to rusty orange weathered, splintery fracturing, rhyolitic rocks (Er). The rhyolites are interbedded or intruded by pale grey to white, felty textured, porphyritic rhyodacite (Erdp). The rhyodacites have up to 18% lmm plagioclase laths and 20% very fine grained hornblende crystals. Dacitic to andesitic dykes (Edd) and spherulitic flow banded to massive rhyolite dykes (Erd) intrude the above units. Ring dyke complex related quartz feldspar porphyry (Eqfp), quartz porphyry (Eqp) and feldspar porphyry (Efp) dykes up to 180 meters wide intrude all the above units. The dykes outcrop in a weakly concentric to radial pattern.

Disruption, brecciation and shattering of units adjacent to the volcanic rocks suggest that the volcanic eruptive cycles were explosive/violent (volatile rich?) and that the feeders pipes(?) were forcibly intruded into the country rock.

Three major faults cut the property:

- 1) A northeast trending normal fault extends from Mt. MacAuley northeastward. This fault shows up as a very prominent satellite lineament which strikes for at least 30 kilometers!
- 2) The valley to the north of the property is also marked by a northeast trending normal fault.
- 3) Northeast to north trending fault(s) mark the contact between the Cretaceous and Eocene rocks.

Most of these faults and related structures are believed to have developed with the evolution of the Bennett Lake Calderon Subsidence Complex and in particular the intrusion of the ring dyke rocks. The major lineament may represent a deep seated structure.

**Table 2: Table of Formations**

**QUATERNARY**

**PLEISTOCENE AND RECENT**

Qt.....Talus, glacial till, moraine and alluvium.

**Unconformity**

**TERTIARY**

**EOCENE**

**SKUKUM GROUP** (Bennett Lake Cauldron Subsidence Complex)

Eqfp.....Rhyolitic quartz feldspar porphyry

Eqp.....Rhyolitic quartz porphyry

Efp.....Rhyolitic feldspar porphyry

Er.....Undifferentiated rhyolitic rocks

Erd.....Rhyolite or spherulitic rhyolite dyke

Edd.....Dacitic to andesitic dyke

Erdp.....Rhyodacite porphyry

Egr.....High level leucogranite, quartz eye granite, rhyolite

ET.....Boudette Creek Formation(?): ignimbrite, minor tuff.

Kqm-bx.....Shattered quartz monzonite, quartz monzonite breccia, granitic conglomerate(?)

**Unconformity**

**CRETACEOUS**

**COAST PLUTONIC COMPLEX**

Kqm.....Hornblende quartz monzonite.

**PALEOZOIC OR OLDER**

**YUKON GROUP**

HEsn.....Biotite-quartz gneiss and quartzite.

## 2.2.2 MINERALIZATION & ALTERATION

Several small weakly mineralized quartz, chalcedony and quartz-fluorite-calcite veins were discovered this year. The largest of these veins is the TARN vein which is up to 2 meters wide and traceable for about 200 meters (figure 5). The TARN vein trends southwest and dips steeply to the southeast. Crystalline quartz, cryptocrystalline quartz, quartz-fluorite calcite veins, breccias and stockworks constitute the vein system. The vein is commonly vuggy and the vugs are frosted. Minor amounts of pyrite, chalcopryrite and malachite and azurite staining are associated with the vein or the host weakly propylitic altered quartz monzonite conglomerate and breccia.

The vein is hosted within a strong lineament parallel to the major fault lineament 500 meters to the southeast. It may be that this lineament is a similar structure.

Prospecting in the northeastern portion of the property failed to discover any significant zones.

The zones and veins reported by Pautler (1987) were not examined in 1989.

## 3. GEOCHEMISTRY

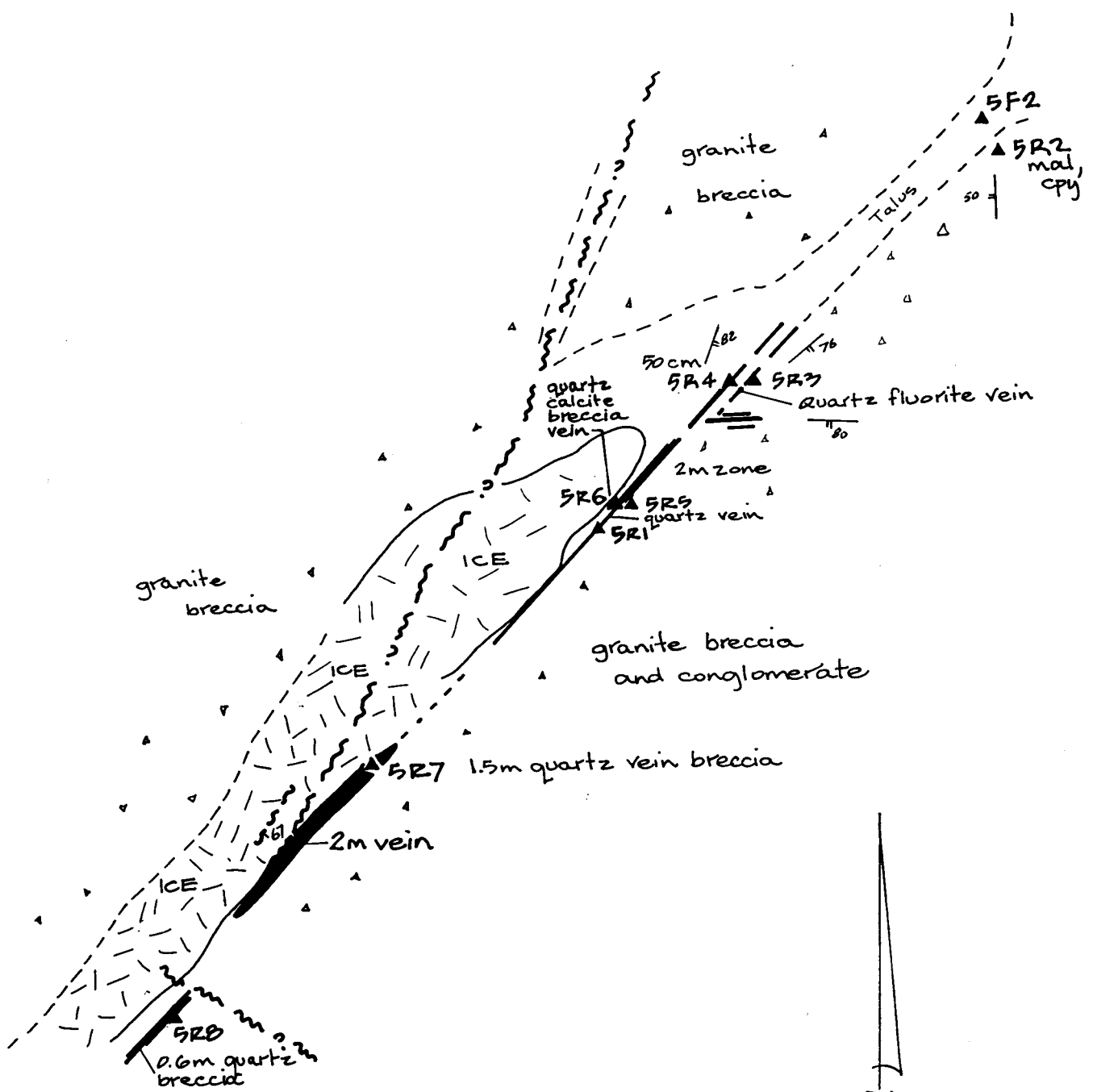
### 3.1 INTRODUCTION

Talus fines, stream sediment (silt) and rock samples were collected for geochemical analyses from selected portions of the properties during the 1989 exploration program. Rock samples were collected from interesting lithologies, float, alteration and mineralization. A total of 13 talus fines samples, 2 silt samples and 11 rock samples were collected.

All sample locations are shown on Map 1 and figure 5 and anomalous samples on figure 6. Analytical results for all samples are included in appendix 2.

### 3.2 SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Talus fines and stream sediment samples were collected in KRAFT gussetted paper bags and sent to ACME ANALYTICAL LABS of Vancouver, B.C.. At ACME, samples were oven dried at approximately 60 degrees Celsius and sieved to minus 80 mesh. Rock samples were collected in plastic bags and also sent to ACME. Samples were then crushed down to minus 3/16 of an inch, and then a 1/2 pound is pulverized to minus 100 mesh. A 0.5 gram sample of the minus 80 fraction of all samples was digested in hot, dilute aqua regia in a boiling water bath and then diluted to 10 ml. with distilled water. All samples were analyzed for silver, copper, lead, zinc and arsenic



- ▲ Rock sample location
- Quartz vein or group of veins
- Vein altitude
- ~ ~ ~ Inferred fault

**ERNIE T. BERGVINSON**  
**TARN CLAIMS**  
 WHITEHORSE MINING DISTRICT  
**SKETCH MAP OF TARN VEIN**  
**GEOLOGY AND SAMPLE**  
**LOCATIONS**

Drawn by: HM/vn    Date: 12/89    Fig. No. 5  
 NTS: 105/D3    Scale: 1:1000

using the Induced Coupled Plasma (ICP) technique. In addition gold was analyzed from a 10 gm fraction by the conventional Atomic Absorption (AA) technique. Selected samples were assayed for gold and/or silver using standard assay techniques.

### 3.3 LITHOGEOCHEMISTRY

Of the 11 rock samples collected all but one are anomalous in at least one element (table 3). The TARN vein returned seven samples which were anomalous in gold including 0.226 oz/ton gold over 0.4 metres (figure 6). This sample also returned 1.21 oz/ton silver and was anomalous in arsenic, and lead. An additional five samples from the TARN vein are anomalous in silver. One sample (89-4H-5R9), from a small bull quartz vein northeast of the TARN vein, returned slightly anomalous values in silver and lead. Copper, lead and or zinc were anomalous in several samples from the TARN vein area.

**Table 3: Anomalous Rock Samples**

Sample #	Location	Cu ppm	Pb ppm	Zn ppm	As ppm	Ag OPT ppm	Au OPT ppb
5F1	Elv. 6730'	3	11	15	<u>58</u>	.1	3
5F2	TARN VEIN	30	24	62	11	.1	<u>38</u>
5R1	"	<u>146</u>	<u>213</u>	<u>164</u>	6	<u>13.8</u>	<u>2020</u>
5R2	"	<u>6026</u>	<u>2010</u>	<u>1227</u>	17	<u>1.85</u>	<u>0.001</u>
5R3	"	48	66	39	4	<u>27.1</u>	<u>1390</u>
5R4	"	36	<u>70</u>	58	11	.3	<u>18</u>
5R5	"	45	<u>231</u>	52	<u>96</u>	<u>1.21</u>	<u>0.226</u>
5R6	"	75	<u>139</u>	<u>146</u>	<u>31</u>	<u>4.3</u>	<u>240</u>
5R7	"	<u>105</u>	<u>96</u>	74	8	<u>5.4</u>	<u>370</u>
5R9	TARN 19	19	<u>113</u>	62	2	<u>1.0</u>	2

### 3.4 TALUS FINES & STREAM SEDIMENT GEOCHEMISTRY

Talus fines samples were collected at roughly 50 meter intervals over the saddle ridge on the western boundary of the property. This traverse was selected to cover the contacts between most of the major lithologies present on the property. Most of the samples collected were rusty orange, brown to pale yellow accumulations of residual felsensmeer fines.

Two silt samples were collected from the active portion of streams draining into the tarn in the southwestern corner of the claims.

Results were compared with the 1988 Skukum Gold Inc. Bennett

Tarn Lake

5F2  
11 ppm As  
38 ppm Au

5R2  
6026 ppm Cu  
2010 ppm Pb  
1227 ppm Zn  
17 ppm As  
1.85 oz/t Au  
11 ppb Au

5R4 - 0.5m  
70 ppm Pb

5R3 - 0.2m  
1390 ppb Au  
27.1 ppm Ag  
66 ppm Pb

5R6 - 0.7m  
240 ppb Au  
75 ppm Cu  
139 ppm Pb  
146 ppm Zn  
4.3 ppm Ag  
13 ppm As

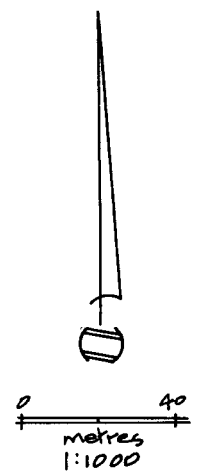
5R5 - 0.4m  
0.226 oz/t Au  
1.21 oz/t Ag  
231 ppm Pb  
96 ppm As

5R1 - 0.25m  
2020 ppb Au  
146 ppm Cu  
213 ppm Pb  
164 ppm Zn  
13.8 ppm Ag

5R7 - 0.6m  
370 ppb Au  
105 ppm Cu  
5.4 ppm Ag  
96 ppm Pb

▲ 5R5 - 0.4m Strongly anomalous rock sample  
Sample number with chip sample width in metres.

△ Anomalous rock sample



EZNE T. BERGVINSON  
TARN CLAIMS  
WHITEHORSE MINING DISTRICT  
TARN VEIN  
ANOMALOUS  
GEOCHEMICAL SAMPLES

Drawn by: HM/vh Date: 12/89 Figure  
NTS: 105/03 Scale: 1:1000 6

Lake Complex regional exploration program for determination of anomalies. The anomalous divisions are outlined in table 3 below and the method of determining anomalies in MacKinnon and Wilkins (1988). Arsenic threshold and anomalous values are based on visual examination of the data.

**Table 4: Summary of Anomalies**

Element	Possibly Anomalous	Threshold	Anomalous	Strongly Anomalous
Cu ppm	75-105	105-179	180-254	255+
Pb ppm	100-193	194-325	326-457	458+
Zn ppm	200-260	261-372	373-484	485+
As ppm	10-20	21-30	31-50	51+
Ag ppm	1.0-2.5	2.6-4.5	4.6-6.5	6.6+
Au ppb	15-29	30-53	54-77	78+

Of the 13 soils collected 4 are anomalous in at least one element (table 5). The most anomalous sample (89-4H-5R13) is possibly anomalous in lead and anomalous in zinc. This sample was taken at the edge of a steep northwest trending gully.

The silt sample of the stream draining the area below the saddle ridge is possibly anomalous in copper and lead and strongly anomalous in zinc.

**Table 5: Anomalous talus fines (S) and silt (L) samples**

Sample #	Location	Cu ppm	Pb ppm	Zn ppm	As ppm	Ag ppm	Au ppb
5S2	Saddle	<u>90</u>	<u>177</u>	188	8	.5	5
5S3	"	28	66	185	<u>35</u>	.2	3
5S4	"	14	46	145	<u>11</u>	.1	3
5S13	"	54	<u>182</u>	<u>427</u>	4	.3	8
5L2	N. side of tarn	<u>76</u>	<u>149</u>	<u>562</u>	<u>12</u>	.1	5

#### 4. DISCUSSION

The greatest concentration of anomalous gold values is in the southwestern half of the property. Values range up to 62.05 gm/ton gold and 211.89 gm/ton silver and occur over a 1.8 kilometer distance. Within this area are numerous chalcedony, quartz, quartz - calcite ± fluorite veins and stringers of which the TARN vein is the largest. The TARN vein is more a zone than a single vein for it consists of a series of cryptocrystalline quartz veins, quartz stringer

zones, quartz-fluorite-calcite veins, quartz-calcite breccias and quartz veins. Other than a small zone of pyritization the vein does not contain significant amounts of metallic minerals. The zone of pyritization is important though because it returned 0.226 oz/ton gold over 40 centimeters. Prospectors should sample similar zones in the future. The vein is enriched in copper, lead, zinc and arsenic. Higher gold values are usually accompanied by anomalous silver and lead values but there is no direct correlation. This suggests that native gold is present in the vein and that gold is the best indicator element for gold mineralization. The varied chemistry and textures of the vein(s) may indicate that there was several episodes of hydrothermal fluid movement through the structure.

Although the TARN vein is only 2 meters wide at the most it is hosted within a much larger >6 meter lineament structure and thus may have greater width potential at depth.

The TARN vein and most of the prospects on the TARN property have an epithermal character and may represent high to intermediate level stockwork and vein zones of a much larger system. A theoretical location just above the boiling level of an epithermal system, of the types documented by Panteleyev (1986), is suggested by:

- 1) The texture of the veins.
- 2) The presence of fluorite and calcite in the veins.
- 3) Silver to gold ratios are roughly in the order of 10-20:1.
- 4) Chalcedony vein float on the saddle above the TARN vein.
- 5) Base metal and arsenic enrichment in the veins.

Mineralization has been observed in most of the pre ring dyke lithologies which suggests that mineralization is syn or post ring dyke intrusion.

The source of the silt sample anomaly has not been located.

## **5. CONCLUSIONS AND RECOMMENDATIONS**

To date two principal zones of interest have been discovered on the TARN claims. The first zone (KA zone) is a quartz and calcite fault breccia and stringer zone which strikes for possibly 200 meters and is up to 7 meters wide. Anomalous gold (95 ppb) and silver (13.0 ppm) values are reported (Pautler, 1987) from this zone. The second area of interest is the TARN vein. This vein system strikes for 200 meters and is up to 2 meters. It is hosted within a 6 (or more) meter wide structure within brecciated and shattered granitic rocks. Values of up to 0.226 oz/ton gold and 1.85 oz/ton silver have been returned from this vein. Additional samples from the vein and area are anomalous in lead, zinc, copper or

arsenic. Both of these zones, and additional areas of interest on the property, have an epithermal character.

Reconnaissance prospecting by KERR ADDISON (Paulter, 1987) and SKUKUM GOLD has shown that the TARN claims have good potential to host a significant gold deposit. The factors which make the TARN claims an excellent exploration target are summarized below:

1) Ring dyke and ring dyke related rocks and structures crosscut the property. Ring dykes structures have historically been an important gold deposit host.

2) Fluid rich specialized Eocene granitic rocks to the northwest and in the central portion of the claims may have provided both a heat source and a 'magmatic' hydrothermal fluid source.

3) The far western portion of the property is underlain by an eruptive center. This center not only could have provided a heat source for hydrothermal convection but also allowed for structural preparation of the ground.

4) The claims are bounded to the north and south by major fault lineaments. Parallel to subparallel structures and splays off of these lineaments host much of the gold mineralization found to date (eg. TARN vein).

Further work is definitely warranted on the TARN claims. Recommendations are as follows:

1) More reconnaissance prospecting and sampling follow up of previously outlined anomalies and in those areas not previously examined.

2) Mapping, sampling and prospecting of the KA zone and TARN vein areas.

3) Airborne geophysical survey to help define contacts and secondary structures. This survey should be flown in conjunction with other surveys to save on costs.

6. REFERENCES

- Doherty, R.A., & Hart, C.J.R., 1983** Preliminary Geology of Fenwick Creek (105D/3) and Alligator Lake (105D/6) Map Areas; Department of Indian and Northern Affairs Canada; Open File 1988-2, 80pp. With 1:50,000 scale maps.
- G.S.C., 1985** Stream Sediment and Water Geochemical Survey Southern Yukon Territory. G.S.C. Open File 1218.
- Lambert, M.B., 1974** The Bennett Lake Cauldron Subsidence Complex, British Columbia and Yukon Territory. Geological Survey of Canada Bulletin 227, 213pp. With 1:25,000 scale map.
- Panteleyev, A., 1986** A Canadian Cordilleran Model for Epithermal Gold-Silver Deposits. In Geoscience Canada, v. 13, no. 2, p. 31-43.
- Pautler, J., 1987** Geological and Geochemical report on the MAJI claims. Unpublished assessment report for Kerr Addison Mines Ltd.
- Wheeler, J.O., 1961** Whitehorse Map Area, Yukon Territory, 105D; Geological Survey of Canada Memoir 312, 156 pp.
- Wilkins, A.L., and MacKinnon, H.F., 1988** Geological and Geochemical Survey of the ETTE claims. Unpublished assessment report for Skukum Gold Inc..

**7. STATEMENT OF EXPENDITURES**

**Labour Costs:**

H. MacKinnon; September 22, 1989  
1 day field work; 3.5 days report  
preparation; 4.5 days at \$220 per day..... \$990.00

E. Bergvinson; October 1, 1989  
1 day field work at 175 per day ..... \$175.00  
-----

**Total Labour Costs            \$1,165.00**

**Analytical Costs:**

Talus Fines Samples: 13 at \$9.85 per sample.... \$128.05  
Steam Sediment Samples: 2 at \$9.85 per sample... \$ 19.70  
Rock Samples: 11 samples at \$12.00 per sample.. \$132.00  
                  2 samples at \$4.50 per sample... \$ 9.00  
Sample Shipping: 41 lbs ..... \$ 32.65  
-----

**Total Analytical Costs        \$321.40**

**Camp & Transportation Costs:**

Helicopter Costs: 2.175 hours at \$610.00 per hour  
+ 217.5 liters fuel at \$0.57 per litre..... \$1450.73  
Truck Rental: 60.00 per day..... \$ 120.00  
Camp Supplies and Room & Board: 5.5 man  
days at an estimated \$40.00 per day ..... \$220.00  
-----

**Total Camp & Transportation Costs        \$1,790.73**

**Report & Miscellaneous Costs:**

Field Supplies (flagging, sample bags etc.) .... \$ 15.00  
Drafting & base map preparation: Estimated .... \$250.00  
Photocopying, binding, map copying; estimated  
20.00 per report..... \$120.00  
-----

**Total Report & Miscellaneous Costs        \$385.00**


**Total 1989 exploration expenditures for assessment  
on the TARN 1-32 claims..... \$3,662.13**

8. STATEMENT OF QUALIFICATIONS

I, Hugh Francis MacKinnon of P.O. Box 1785, Rossland, B.C., hereby certify that:

- 1) I graduated with a Bachelor of Science Degree with Honours in Geology from Carleton University, Ottawa, Ontario, in 1986.
- 2) I have been engaged in mineral exploration since 1980 in Ontario, Saskatchewan, The Northwest Territories, British Columbia, Nova Scotia and The Yukon Territory.
- 3) I was the project geologist for Skukum Gold's regional claims program.
- 4) I was involved in the work performed on the TARN claims in the summer of 1989 and am the author of this report.

Dated this seventeenth day of November, 1989

  
-----  
Hugh F. MacKinnon, B.Sc.

**APPENDIX 1**

**SAMPLE DESCRIPTIONS**



**APPENDIX 2**  
**ANALYTICAL RESULTS**

ACME ANALYTICAL LABORATORIES LTD.  
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6  
PHONE(604)253-3158 FAX(604)253-1716

DATE RECEIVED: OCT 17 1989

DATE REPORT MAILED: *Oct 23/89*

### GEOCHEMICAL ANALYSIS CERTIFICATE

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER.  
THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.  
- SAMPLE TYPE: P1 ROCK P2 SOIL P3 SILT **AU\*** ANALYSIS BY ACID LEACH/AA FROM 10 GM SAMPLE. P-pulverized, -30 mesh.

SIGNED BY *C. Leong* D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

Skukum Gold Inc. PROJECT 4H-TARN FILE # 89-4317 Page 1

SAMPLE#	Cu PPM	Pb PPM	Zn PPM	Ag PPM	As PPM	Au* PPB
89-4H-5F1	3	11	15	.1	58	3
89-4H-5F2	30	24	62	.1	11	38
89-4H-5R1	146	213	164	13.8	6	2020
89-4H-5R2	6026	2010	1227	54.9✓	17	11
89-4H-5R3	48	66	39	27.1	4	1390
89-4H-5R4	36	70	58	.3	11	18
89-4H-5R5	45	231	52	37.1✓	96	6630✓
89-4H-5R6	75	139	146	4.3	13	240
89-4H-5R7	105	96	74	5.4	8	370
89-4H-5R8	4	9	32	.2	2	4
89-4H-5R9	19	113	62	1.0	2	2
STD C/AU-R	60	40	132	7.1	41	480

✓ ASSAY IN PROGRESS

SAMPLE#	Cu PPM	Pb PPM	Zn PPM	Ag PPM	As PPM	Au* PPB
89-4H-5S1	14	31	143	.1	3	3
89-4H-5S2	90	177	188	.5	8	5
89-4H-5S3	28	66	185	.2	35	3
89-4H-5S4	14	46	137	.1	11	3
89-4H-5S5	14	57	145	.1	4	2
89-4H-5S6	12	51	137	.1	2	2
89-4H-5S7	21	69	159	.2	4	5
89-4H-5S8 P	8	26	78	.1	2	5
89-4H-5S9	13	37	98	.1	3	5
89-4H-5S10 P	9	27	81	.1	4	2
89-4H-5S11 P	20	58	120	.1	2	3
89-4H-5S12 P	25	82	120	.3	2	3
89-4H-5S13	54	182	427	.3	4	8
STD C/AU-S	60	41	132	7.1	42	51

SAMPLE#	Cu PPM	Pb PPM	Zn PPM	Ag PPM	As PPM	Au* PPB
89-4H-5L1	21	54	197	.1	2	2
89-4H-5L2	76	149	562	.1	12	5

ACME ANALYTICAL LABORATORIES LTD.  
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6  
PHONE(604)253-3158 FAX(604)253-1716

DATE RECEIVED: OCT 22 1989  
DATE REPORT MAILED: *Oct. 30/89*

### ASSAY CERTIFICATE

- SAMPLE TYPE: ROCK PULP AU\*\* AND AG\*\* BY FIRE ASSAY FROM 1/2 A.T.

SIGNED BY... *C. Leong* ... D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

Skukum Gold Inc. PROJECT 4H-TARN FILE # 89-4317R

SAMPLE#	Ag** OZ/T	Au** OZ/T
89-4H-5R2	1.85	.001
89-4H-5R5	1.21	.226



**LITHOLOGY**

**Eocene**

- Egfp Rhyolitic quartz feldspar porphyry (Eng dyke related)
- Eqp Rhyolitic quartz porphyry
- Efp Rhyolitic feldspar porphyry
- Edd Dacite dykes
- Er Rhyolite, undifferentiated; Erd - rhyolite or spherulitic rhyolite dyke
- Edp Rhyodacite porphyry
- ET Enpylitic to dacite ignimbrite and tuff
- Egr High level granite, quartz eye granite, rhyolite

**CRETACEOUS (\*Eocene)**

- Kqm Quartz monzonite; \*Kqm-bx - shattered and/or brecciated quartz monzonite  
\*ss - quartz monzonite breccia and conglomerate

**PALEOZOIC or OLDER**

- HEsn Biotite quartz gneiss

**SYMBOLS**

- - - geological contact (observed; inferred)
- ~ ~ ~ Fault (circle indicating downthrown side)
- Talus fines sample location
- ▲ Rock sample location
- silt sample location
- qm quartz vein
- fl fluorite
- bx breccia
- qc chalcedony vein

Erik Bergvinson Oct 1989 traverse  
 NOTES: 1. Prefix all samples '89-44'  
 2. Compilation of 1989 mapping and prospecting, Lambert (1974), Doherty and Hart (1988) and Pautler (1987)

092808

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ERNIE T. BERGVINSON  
 TARN CLAIMS  
 WHITEHORSE MINING DISTRICT  
**GEOLOGY**  
 and  
**SAMPLE LOCATIONS**  
 Drawn by: HM/vh Date: Nov. 89  
 NTS: 109/03 Scale: 1:10,000  
 MAP No 1

60°00'  
 135°30'

YUKON TERRITORY  
 BRITISH COLUMBIA